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Doctor of Philosophy (PhD)

**ANALYZING BEHAVIORAL BIASES IN SHIP
INVESTMENTS IN TURKEY FROM THE
PERSPECTIVES OF STAKEHOLDERS**

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İZMİR - 2019

THESIS APPROVAL PAGE



DECLARATION

I hereby declare that this doctoral thesis titled as “Analyzing Behavioral Biases in Ship Investments in Turkey from the Perspectives of Stakeholders” has been written by myself in accordance with the academic rules and ethical conduct. I also declare that all materials benefited in this thesis consist of the mentioned resources in the reference list. I verify all these with my honour.

.../.../.....

Ersin Fırat AKGÜL

ABSTRACT
Doctoral Thesis
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Analyzing Behavioral Biases in Ship Investments in Turkey from the
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Investments are vital for the future of companies. Especially in view of the irreversibility of fixed capital investments, investment decisions should be made in accordance with rational patterns. An investment decision made at the right time may lead to high profitability for the company, while the wrong decisions may also drag the company into bankruptcy. In this sense, due to its capital-intensive structure, ship investment is a strategic decision for the shipping companies.

Ship investments need to be continuous mainly because of rising fleet age, high insurance and maintenance costs of old ships, technological developments, quality standards, increasing competition, expectation of increase in demand for maritime transport. Due to the high capital requirement, ship investments should be made according to rational patterns. Considering the importance of ship investments for a shipping company and the importance of maritime transportation industry for Turkey, it is intended to answer to the questions of what the factors driving ship investments and what the common behavioral biases that occur in ship investments in Turkey are in this dissertation.

The population of the research constitutes Turkish-owned merchant fleet, and since the fleet is mainly composed of coasters by numbers, the sampling of this dissertation consists of coasters. In addition, consultants that give consultancy service in various fields to the investors, sale and purchase brokers

that give intermediary services to the sellers and buyers, and senior representatives of associations established to gather stakeholders in maritime industry in Turkey were interviewed based on the qualitative research strategy. The data was collected by assuming the role of “miner” as defined by Kvale (1996), and collected data was analyzed based on the systematic approach proposed by Wolcott (1994). In order to implement the systematic approach, the action flows proposed by Miles and Huberman (1994) were considered in the data analysis phase within the scope of this dissertation. According to the findings, factors affecting ship investments in Turkey were categorized as market timing, profile and business models of ship investors, ship specifications, ship finance and external environment. Furthermore, behavioral biases that mainly occur in ship investments in Turkey were detected as desirability bias, endowment effect, anchoring bias, bandwagon effect, overconfidence, status quo bias and home bias.

Keywords: Behavioral Bias, Investor Behaviors, Ship Investment, Ship Management, Desirability Bias, Endowment Effect, Anchoring Bias, Bandwagon Effect, Overconfidence, Status Quo Bias, Home Bias

ÖZET

Doktora Tezi

Türkiye'deki Gemi Yatırımlarında Davranışsal Önyargıların Paydaş Perspektifleri Açısından İncelenmesi

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Yatırımlar işletmelerin geleceği için oldukça önemlidir. Özellikle sabit sermaye yatırımlarının geri döndürülemezlik özelliği dikkate alındığında, yatırım kararlarının rasyonel kalıpların gerektirdiği şekilde verilmesi gerekmektedir. Doğru zamanda verilmiş bir yatırım kararı, bir işletmeyi çok yüksek karlılıklara ulaştırabilirken, yanlış yatırım kararları işletmeleri iflasa dahi sürükleyebilmektedir. Dolayısıyla, sermaye yoğun yapısı dikkate alındığında, denizcilik işletmeleri için gemi yatırımları stratejik bir karardır.

Yükselen filo yaşı, yaşlı gemilerin yüksek sigorta ve bakım tutum maliyetleri, teknolojik gelişmeler, kalite standartları, artan rekabet, denizyolu taşımacılığı talebinin yükseleceğine dair beklentiler, gemi yatırımlarının sürekli yapılmasını gerektirmektedir. Yüksek sermaye gereksinimi nedeniyle gemi yatırımlarının rasyonel temellere dayanması gerekmektedir. Denizcilik işletmeleri için gemi yatırımının ve Türkiye için denizcilik sektörünün önemi dikkate alındığında, gemi yatırımlarını yönlendiren faktörlerin neler olduğu ve gemi yatırımlarında ağırlıklı olarak ortaya çıkan davranışsal önyargıların neler olduğu sorularına bu tez kapsamında cevap aranmıştır.

Araştırmada kalitatif araştırma stratejisi benimsenmiştir. Araştırmanın anakütlesini, Türk kontrollü deniz ticareti filosu oluşturmaktadır. Gemi adedi bakımından söz konusu filo, ağırlıklı olarak koster tipi gemilerden oluştuğu için bu tez çalışmasının örneklemi kosterler oluşturmaktadır. Ayrıca, gemi yatırımcılarına birçok konuda çeşitli hizmetler veren danışmanlar, gemi alım

satım işlemlerine aracılık hizmeti veren gemi alım satım brokerleri, Türkiye’deki denizcilik sektöründe yer alan paydaşların bir araya gelerek kurdukları birlik ve derneklerin üst düzey temsilcileri de araştırmaya dahil edilmiştir. Veriler, Kvale (1996) tarafından ifade edilen “madenci” rolüne uygun olarak toplanmış, toplanan veriler de Wolcott (1994) tarafından ileri sürülen sistematik yaklaşım dikkate alınarak analiz edilmiştir. Söz konusu sistematik yaklaşımın uygulanabilmesi için de Miles and Huberman (1994) tarafından ileri sürülen aksiyon akışı dikkate alınmıştır. Elde edilen bulgulara göre, Türkiye’deki gemi yatırımlarını etkileyen faktörler; piyasa zamanlaması, gemi yatırımcılarının profili ve iş modelleri, geminin teknik özellikleri, gemi finansmanı ve dış çevre başlıkları altında gruplandırılmıştır. Ayrıca, Türkiye’deki gemi yatırımlarında ağırlıklı olarak cazibe yanlılığı, sahiplik etkisi, çıpalama önyargısı, sürü psikolojisi, aşırı güven, statüko yanlılığı ve yerel yatırım yanlılığı davranışsal önyargıları tespit edilmiştir.

Anahtar Kelimeler: Davranışsal Önyargı, Yatırımcı Davranışları, Gemi Yatırımı, Gemi Yönetimi, Cazibe Yanlılığı, Sahiplik Etkisi, Çıpalama Önyargısı, Sürü Psikolojisi, Aşırı Güven, Statüko Yanlılığı, Yerel Yatırım Yanlılığı

ANALYZING BEHAVIORAL BIASES IN SHIP INVESTMENTS IN TURKEY FROM THE PERSPECTIVES OF STAKEHOLDERS

CONTENTS

THESIS APPROVAL PAGE	ii
DECLARATION	iii
ABSTRACT	iv
ÖZET	vi
CONTENTS	viii
LIST OF ABBREVIATIONS	xiii
LIST OF TABLES	xv
LIST OF FIGURES	xvi
LIST OF APPENDICES	xviii
INTRODUCTION	1

CHAPTER ONE

MARITIME TRANSPORTATION INDUSTRY AND SHIP INVESTMENT

1.1. MARITIME TRANSPORTATION INDUSTRY	8
1.1.1. Demand in Maritime Transportation Industry	9
1.1.1.1. World Seaborne Trade	11
1.1.1.2. Key Commodity Markets	17
1.1.1.2.1. Dry Bulk Market	17
1.1.1.2.2. Tanker Trade	20
1.1.1.2.3. Containerized Trade	22
1.1.2. Supply in Maritime Transportation Industry	24
1.2. SHIP INVESTMENT	29
1.2.1. Investment	29
1.2.1. Firm-level Investment Theories	35
1.2.1.1. Traditional Investment Theories	36
1.2.1.1.1. Fisher's Theory of Investment Decision	37

1.2.1.1.2. Accelerator Theory	37
1.2.1.1.3. Neoclassical Theory	39
1.2.1.1.4. Tobin-Q Theory	40
1.2.1.1.5. Keynes's Investment Theory	40
1.2.1.2. Modern Investment Theories	41
1.2.1.2.1. Hartman-Abel Approach	43
1.2.1.2.2. Real Options Theory	44
1.2.2. Ship Investments	45
1.2.3. Literature Review on Ship Investments	50
1.2.3.1. Studies on Ship Investments	50
1.2.3.2. Dissertations on Ship Investments in Turkey	65

CHAPTER TWO

BEHAVIORAL FINANCE

2.1. PARADIGM SHIFT IN ECONOMIC BEHAVIOR	71
2.1.1. Rational Economic Behavior	71
2.1.1.1. Expected Utility Theory	72
2.1.1.2. Efficient Market Hypothesis	73
2.1.2. The Role of Psychology in Economic Behavior	74
2.1.3. Emergence of Behavioral Finance	77
2.1.4. Prospect Theory	80
2.2. BEHAVIORAL BIASES OF INVESTORS	83
2.3. STUDIES ON BEHAVIORAL FINANCE IN TURKEY	89

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.1. RESEARCH METHOD	94
3.2. RESEARCH SETTING	99
3.2.1. Analysis of Turkish-owned Merchant Fleet	99
3.2.1. Coaster Fleet in the Region	104

3.2.1. Importance of Coasters in Turkey	106
3.2.2. Profile of Ship Owners in Turkey	110
3.3. RESEARCH SAMPLING	112
3.4. DATA COLLECTION	115
3.5. DATA ANALYSIS	117
3.6. RIGOR OF THE STUDY	122
3.6.1. Credibility	123
3.6.2. Transferability	125
3.6.3. Dependability	126
3.6.4. Confirmability	126

CHAPTER FOUR **A QUALITATIVE INVESTIGATION ON SHIP INVESTMENTS IN** **TURKEY**

4.1. CONTENT ANALYSIS FINDINGS	129
4.1.1. Market Timing	129
4.1.1.1. Investment Signals	129
4.1.1.2. Investment Literacy	135
4.1.1.2.1. Macro Perspective	135
4.1.1.2.1. Micro Perspective	141
4.1.1.2.1.1. Optimism on Market Condition	142
4.1.1.2.1.2. Payback Period	152
4.1.1.2.1.3. Reference Points	154
4.1.1.2.1.4. Fleet Power	157
4.1.1.2.1.5. Recommendations and Behaviors of Others	159
4.1.2. Profile and Business Models of Turkish Ship Investors	162
4.1.2.1. Profile of Ship Investors	162
4.1.2.1.1. Family Firms	162
4.1.2.1.2. Ship Investors from Different Backgrounds	165
4.1.2.2. Business Models of Ship Investors	167
4.1.2.2.1. Outsourcing	169

4.1.2.2.2. Intermediary Services	174
4.1.2.2.3. Proximity to Home	175
4.1.3. Ship Specifications	177
4.1.3.1. Main Engine and Auxiliaries	179
4.1.3.2. Ship Design	181
4.1.3.3. Age and Condition of the Ship	186
4.1.3.4. Ship Tonnage	189
4.1.4. Ship Finance	193
4.1.4.1. Equity Capital	193
4.1.4.2. Debt Capital	196
4.1.4.3. Government Incentives	202
4.1.5. External Environment	205
4.1.5.1. Political Developments	205
4.1.5.2. Legal Developments	207
4.1.5.3. Technological Developments	208
4.2. DISCUSSION OF THE FINDINGS	210
4.2.1. Market Timing	212
4.2.1.1. Behavioral Biases Related to Market Timing	216
4.2.1.1.1. Desirability Bias	216
4.2.1.1.2. Endowment Effect	217
4.2.1.1.3. Anchoring Bias	218
4.2.1.1.4. Overconfidence	220
4.2.1.1.5. Bandwagon Effect	221
4.2.2. Profile and Business Models of Ship Investors	222
4.2.2.1. Behavioral Biases Related to Profile and Business Models of Ship Investors	225
4.2.2.1.1. Status Quo	225
4.2.2.1.2. Home Bias	227
4.2.3. Ship Specifications	228
4.2.4. Ship Finance	230
4.2.5. External Environment	235

CONCLUSION	237
REFERENCES	244
APPENDICES	



LIST OF ABBREVIATIONS

AD	Anno Domini
BC	Before Christ
BDI	Baltic Dry Index
BIST	Borsa Istanbul
BOE	Bank of England
BOJ	Bank of Japan
CPP	Controllable Pitch Propeller
DCF	Discounted Cash Flow
DWT	Deadweight Tonnage
ECB	European Central Bank
EMH	Efficient Market Hypothesis
FED	Federal Reserve System
GDP	Gross Domestic Product
GM	Metacentric Height
GNP	Gross National Product
GT	Gross Tonnage
IFO	Intermediate Fuel Oil
IHS	Information Handling Services
IMF	International Monetary Fund
IMO	International Maritime Organization
ISE	Istanbul Stock Exchange
ISTFIX	Istanbul Freight Index
KG	Kommanditgesellschaft
LNG	Liquefied Natural Gas
MGO	Marine Gasoil
MOA	Memorandum of Agreement
NPV	Net Present Value
QFD	Quality Function Deployment
R&D	Research and Development
RC	Running Cost
ROE	Return on Equity
SECA	Sulphur Emission Control Area
SoQ	Ship of Quality
TC	Time Charter
TEU	Twenty-foot Equivalent Unit
TOPSIS	Technique for Order Preference by Similarity to Ideal Solution
U.S.	United States
U.K.	United Kingdom

UNCTAD	United Nations Conference on Trade and Development
USD	United States Dollar
VLCC	Very Large Crude Carriers
WTO	World Trade Organization



LIST OF TABLES

Table 1: Different Size Vessels With Their Respective Cargo And Routes	p.19
Table 2: Cruide Oil Shipments By Regions (Million Tonnes)	p.21
Table 3: World Merchant Fleet, Total Number Of Ships, By Type And Size	p.25
Table 4: World Fleet, Gross Tonnage (In 1000 Grt), By Type And Size	p.25
Table 5: Development Of World Merchant Fleet By Type Of Ship, Annual, 1980-2018 (Dwt In Thousands)	p.26
Table 6: World Merchant Fleet By Flag State, Annual 2014-2018, By Dwt In Thousands	p.27
Table 7: World Merchant Fleet By Flag State, Annual 2014-2018, By Number Of Ships	p.28
Table 8: Top 20 Maritime Nations Based On Beneficial Ownership (Dwt In Thousands)	p.29
Table 9: Important Factors In Evaluating Investment Alternatives	p.34
Table 10: Dissertations on Ship Investments in Turkey	p.66
Table 11: Details of Web of Science Query	p.80
Table 12: Examples on Prospect Theory	p.82
Table 13: Taxonomy of Behavioral Biases Proposed by Carter et al. (2007)	p.85
Table 14: Behavioral Biases in the Literature	p.86
Table 15: Distribution of Dissertations by years in Turkey	p.92
Table 16: Turkish-owned Ship Fleet	p.100
Table 17: Breakdown of Turkish of Merchant Fleet	p.100
Table 18: Beneficial Ownership by dwt in thousands	p.101
Table 19: Beneficial Ownership by number of ships	p.101
Table 20: Distribution of Turkish-owned General Cargo Ships	p.102
Table 21: Breakdown of Turkish-Owned Merchant Fleet In The Range of 1.000-12.000 Dwt	p.103
Table 22: Share of Turkish-owned Coaster Fleet	p.104
Table 23: Share of Fleet of Participants in Turkish-owned Merchant Fleet	p.115
Table 24: Scientific and Naturalistic Terms and Four Criteria of Trustworthiness	p.123

LIST OF FIGURES

Figure 1: Ratio of World Merchandise Trade Volume Growth to World Real GDP Growth, 1981-2018	p.11
Figure 2: Annual Percentage Growth In World Gross Domestic Product, World Merchandise Trade And World Seaborne Trade 1975-2016 (1990=100)	p.12
Figure 3: Development of World Seaborne Trade by Types of Goods Loaded	p.13
Figure 4: Development of World Seaborne Trade by Types of Goods Unloaded	p.13
Figure 5: Regional Distribution of World Seaborne Trade by Goods Loaded	p.14
Figure 6: Regional Distribution of World Seaborne Trade by Goods Unloaded	p.14
Figure 7: World Economic Growth (1980-2019)	p.15
Figure 8: Participation of Developing Regions in World Seaborne Trade by Goods Loaded	p.15
Figure 9: Participation of Developing Regions in World Seaborne Trade by Goods Unloaded	p.16
Figure 10: 1-year time charter rate, USD (United States Dollar) per day	p.20
Figure 11: Oil Production and Consumption by Region	p.21
Figure 12: 1-year Time Charter Rate for Tankers (USD per day)	p.22
Figure 13: Global Container Trade since 1996 (million TEU and annual % change)	p.23
Figure 14: World merchant fleet, by dwt in thousands	p.24
Figure 15: Gross Fixed Capital Formation (% of GDP)	p.31
Figure 16: Cycles in Maritime Transportation Industry	p.48
Figure 17: Number of studies on behavioral finance by years, Clarivate Analytics Web of Science	p.79
Figure 18: Number of studies on behavioral economics by years	p.79
Figure 19: A Hypothetical value function	p.82
Figure 20: Number of Dissertations by Years	p.92
Figure 21: Research Process	p.97
Figure 22: Flow Diagram of Dissertation	p.98
Figure 23: Turkish-owned Merchant Ship Fleet, >300GRT, by the end of 2017	p.102

Figure 24: Total Coaster Fleet in the Mediterranean and the Black Sea	p.104
Figure 25: Distribution of the Total Coaster Fleet in the Mediterranean and the Black Sea by Number of Coaster and Total Carrying Capacity as of January 2018	p.105
Figure 26: Distribution of the Total Coaster Fleet in the Mediterranean and the Black Sea by Number of Coaster and Average Age as of January 2018	p.106
Figure 27: Share of Maritime Trade in Europe	p.106
Figure 28: Share of Short Sea Shipping in Europe, in thousands tons	p.107
Figure 29: Share of Dry Cargo Shipping in Europe	p.108
Figure 30: Share of Turkey in maritime transport and short sea shipping in Europe	p.108
Figure 31: Share of Turkey in Dry Cargo Shipping in Europe	p.109
Figure 32: Approaches on Qualitative Data Analysis	p.118
Figure 33: Flow of Activities in Qualitative Data Analysis	p.119
Figure 34: Actions Taken for Qualitative Data Analysis	p.120
Figure 35: Illustration of Coding Process	p.121
Figure 36: Factors Driving Ship Investments in Turkey	p.211
Figure 37: Behavioral Biases in Ship Investments in Turkey	p.212
Figure 38: Market Timing in Ship Investments in Turkey	p.213
Figure 39: Profile and Business Models of Ship Investors	p.223
Figure 40: Ship Specifications in Ship Investments in Turkey	p.228
Figure 41: Ship Finance in Ship Investments in Turkey	p.231
Figure 42: Shipping Loan Portfolio of Top 40 banks Between 2007 and 2016	p.233
Figure 43: Breakdown Of Global Shipfinance Portfolios According To Geographical Area, In US\$bn	p.234
Figure 44: External Environment in Ship Investments in Turkey	p.235

LIST OF APPENDICES

Appendix 1: Distribution of Turkish-owned Merchant Fleet by Ship Type	app p.1
Appendix 2: Categorization of Turkish-owned Merchant Fleet with the Purpose of Cargo Transport at Sea as of January 2018	app.p.3
Appendix 3: Semi-Structured Interview Questions	app.p.5
Appendix 4: Profile of Participants	app.p.6
Appendix 5: Details of Interviews	app.p.8

INTRODUCTION

One of the most important factors that will determine success, profitability, efficiency, cash flow and degree of risk of a firm is the investments. Although investment decisions are of vital importance for the future of the company, these decisions are made with prejudices and intuitions in some firms instead of applying feasibility studies, which are conducted whether the investment is noteworthy. Besides, new investments are made by neglecting the marketing aspect of the goods and services to be produced and sometimes investment decisions are taken with the technical attractiveness of the new investment. Some of investors prepare feasibility studies of their investments to obtain loans from banks or to benefit from incentives of government instead of determining whether the intended investment is appropriate with future expectations of the firm (Akgüç, 2010: 321-322).

According to the studies (e.g. Statman et al., 2006; Gervais and Odean, 2001), investors act with psychological biases, and that these biases affect financial decision making which is to choose best alternative among others, and is the process of solving problems, sorting or preference in available alternatives. Psychological biases can be harmful or destructive, especially when the market is undergoing major changes and when emotions are exaggerated. As indicated by Nofsinger (2014), most of these mistakes are due to cognitive errors, psychological biases and emotions. When emotions are involved, it should not be surprising that the result is mostly biased decisions. These problems are indispensible in traditional finance, whereas it is the subject of behavioral finance.

Decisions in shipping markets, where the structure constantly changes and multiple variables are effective, is important. Because, a decision may generate huge amount of profits or may lead to bankruptcy of the firms operating in this business. Decisions in financial management of shipping industry consists of three main components which are investment referring to the market for newly built and secondhand vehicles and related infrastructure projects, financing associated with the markets for debt and equity capital and operation related with the freight market as asserted by Merikas et al. (2011). Considering the forecasts and new technological developments, firms operating in this industry need to continuously expand their

current business activities by applying new investments, which might show up at a very high price both environmentally, and financially as well unless they are not conducted in terms of the global economic conditions thoroughly.

Considering the complex and ambiguous nature of the shipping industry, rational behavioral patterns based on the principle "buy low sell high" or "stay spot when the market rises, or charter the ship in time basis when the market declines" does not often take place. Instead, cognitive and emotional factors come to the prominence in making such decisions. Taking into account the importance of ship investment decision in the industry, deciding when the ships to be operated in time charter or spot, or when to be bought or sold in such a dynamic industry can generate huge profits or lead to bankruptcy.

Wrong decisions may harm not only the ship investors that make the decision but also the countries where the investors carry out their operations from macroeconomical perspective. However, as detected from various sectoral reports, news and academic papers (e.g. Goulielmos and Psifia, 2006; Scarsi, 2007; Bulut et al. 2013; Duru, 2013; Duru, 2016), ship investors have often made irrational decisions on such critical issue, and undesirable results may occur. In this respect, the supply surplus problem in shipping industry proves this issue.

Rationale and Research Questions of the Study

The motivations of this dissertation were derived from the current literature and the expectations of the practitioners. During the course of topic setting, a number of journals on finance, economics, management and shipping, especially topics highlighted in the special issues of such journals were reviewed. After determining a few topics, it is consulted with experienced practitioners to get their views to figure out the current economical and financial issues in the industry. Among them, Captain Behzat Esinduy, who is an alumni of Maritime Faculty of Istanbul Technical University, known as the High Maritime School, served as the general manager of the fleet of the shipping company for 16 years, and has more than 50 years of experience in different fields of maritime business, emphasized following statements:

“...It is very important and necessary to make analysis based on mathematical basis. However, when I look at the historical development of the industry and its demographic characteristics, I have a doubt that studies consisting complex analyzes, and deals with just a specific issue may not draw enough attention. Instead, I think it would be more appropriate to choose a topic on how Turkish ship investors act, what are the gaps and how they should act. Turkish ship investors have always bought dreams instead of an asset, but as a result Turkish maritime industry could not achieve to the desired levels. Wrong investment decisions have caused huge amount of loss. Instead of earning money from this business, we have often been at the losing side. The introduction of a scientific clarification on this issue will undoubtedly be a huge gain for the industry.”

Decisions on such an important issue is a process in which human beings play a role, and human behavior needs to be sufficiently understood in making the right decision. Irrationality, defined as all processes that deviate from the best decisions or conclusions in the current conditions, affects not only daily decisions of an individual but decisions of an institution. Although common dynamics of decision making in shipping markets has been explained by many studies, decision makers may be affected by the cognitive noise and destruction (Duru 2016: 169).

Celik-Girgin et al. (2018) emphasized that the previous studies on ship investments were mainly related to market analysis and the research models were designed considering certain parameters. From this point of view, ship investments that are one of the most important strategic decisions for a shipping firm need to be investigated in depth and from different point of views. In this context, Fan and Luo (2013: 512) also draw attention on the lack of studies on ship investment decisions in the literature as follows:

“...Difficulties of making ship investment decisions and the significant role of ship investment in both the private shipping business and international trade highlight the importance of studying ship investment behaviour. Nevertheless, in comparison with all the many studies of the shipping market, there are only a few publications analyzing ship investment decisions.

As indicated by Duru and Yoshida (2009), judgmental impacts of decision makers in shipping business drives the market, and behavior and psychology of shipping markets have an orienting role in determining prices (Duru and Yoshida, 2009: 191-192).

This should not be limited to shipping markets but should be considered for all economic components in which people are involved. In this sense, Carter et al. (2007) highlighted the need of behavioral studies by referring highly cited papers indicating that human cognition will be attractive area in economics in the next decades as follows (Carter et al., 2007: 653):

“In the coming decades acknowledged scholars predict that the study of human cognition will be an important area of research in economics (Thaler, 2000; Frey and Stutzer, 2002; Kahneman, 2003).”

Short-distance maritime transport in Europe, where the world's most intensive maritime trade activities are carried out after Asia, constitutes an important part of the total maritime transport in the region. Within the scope of short-distance maritime transport, Turkish-owned merchant fleet consisting of coasters that vary in the range of 1.000-12.000 deadweight (dwt) has the biggest share in carrying out maritime trade between Mediterranean, Black Sea and Continental Europe especially since 1980s.

According IHS (Information Handling Services) Sea-web figures, Turkish-owned coaster fleet between 1.000 – 12.000 dwt consists of 765 ships with around 3,44 million dwt as of the beginning of 2018 that accounts for 35% of total ship supply by total carrying capacity in the region. In this sense, ship investments in Turkey affected by many parameters should be carried out properly to sustain competitive power in the region. However, considering that the majority of merchant fleet in Turkey is composed of coasters that carry general cargo from the range of 1.000-12.000 dwt, and that the structure of shipowners running coasters is far from the structure required by institutionalization, investment behaviors of such investors is assumed to be contrary to the rational pattern. From this point of view and experiences faced so far, ship investments in Turkey are regarded as research setting in this study considering current supply power of Turkish-owned merchant fleet in Mediterranean and Black Sea, and it is aimed to determine the factors driving ship investments in Turkey and behavioral biases occurred in the process that could not be explained with rational patterns by considering qualitative research perspective. In light with the rationale as indicated above, the research questions of this study are:

- 1) What are the factors driving ship investments in Turkey?
- 2) What are the behavioral biases in ship investments in Turkey?

Significance of the Study

Defining and evaluating the trend on international trade and demand for international seaborne transport bear importance because the competitive advantages of countries are mostly based on their maritime power. The more a country has the ability to participate in maritime transport services efficiently, the higher added value is generated. Therefore, it is essential to understand the dynamics of maritime transport correctly. However, Paine (2013) asserted the question which as to why the maritime transportation industry has been absent from mainstream research in economics and economic history, despite having a very long and fascinating contribution in the world history. The absence of maritime transportation industry from mainstream research is explained by Harlaftis et al. (2012). The authors alleged that economic and historical research have not paid enough attention on service sector, because studies on the emergence of modern economic growth in industrialized economies have substantially taken into account manufacturing activities the service activities have not seen the value they deserve (Harlaftis et al., 2012: 268).

Fixed capital investments of firms are one of the main factors in understanding economic activities and maritime transportation industry has a direct interaction with the general economy due to its capital-intensive nature. Investments should be planned well and the right actions should be taken at the right time. Incorrect investments can lead to waste of resources and over-supply problems. Therefore, firm-level investment decisions are one of the important issues in achieving industrial growth as well as economic growth. In this respect, it is important to examine the ship investments considering the current investment theories.

Considering the current literature on economic analysis of maritime transportation industry, there are valuable contributions on understanding the dynamics of shipping markets, and the majority are related with conventional economic analysis including supply-demand framework, fair competition and market efficiency, but these studies are only give insights from macro level, and they are limited from micro level, that is, there is a lack of studies illustrating the preferences of decision makers. Although economic models developed are useful tools for policy making, it is not valid for individuals (Duru 2016: 165).

Comprehending the dynamics of ship investment decisions in such a market where the consequences of a simple decision may generate serious consequences, may provide a contribution for Turkey to being one of the maritime nations.

The findings of this paper may have implications for ship investors and also academics alike since the effects of behavioral biases need to be considered by ship investors to make sound decisions and not to face unexpected results. Investors can only make the right decisions if they are aware of their cognitive and emotional weaknesses. Otherwise, it can be turned into irreversible paths, and there might be consequences that cannot be overcome.

Structure of the Study

The first chapter of the dissertation consists of two sub-sections. In the first section, the maritime transportation industry is examined in detail in the light of current data that can be reached in terms of supply and demand. In the second section, after the investment is explained in detail, an explanation about traditional and modern investment theories is given. Then, information about ship investments including cycles, financing sources and ownership structure is given and the previous studies on ship investment are examined.

In the second chapter of the study, behavioral finance is investigated. The reasons for the paradigm shift in economic behavior and theoretical approaches put forward in the literature about this subject are given. It was analyzed that when and how the impact of psychology in the economy is taken into consideration, how behavioral finance emerges and what kind of assumptions are theoretically based on. Afterwards, common behavioral biases that the investors have in their investment decisions is examined within the context of the literature. Finally, national and international studies on behavioral finance are discussed.

The third chapter of the study consists of six sub-sections. In the first section, the research method that was employed is explained. Then, research setting, research sampling, data collection, data analysis and rigor of the research are explained in detail.

In the fourth chapter, content analysis findings are given by considering systematic approach. In the second section of the chapter, the findings are summarized and discussed with the current literature and presented visually for the better understanding of the readers.

In the conclusion of the research, theoretical and managerial implications are discussed, and the research ends with the limitations and suggestions for future research.



CHAPTER ONE

MARITIME TRANSPORTATION INDUSTRY AND SHIP INVESTMENT

1.1. MARITIME TRANSPORTATION INDUSTRY

Maritime transportation is the oldest transportation form of all kinds of cargoes with large volumes. People who lived along the coastline, rivers or lakes from prehistoric times have used a variety of watercraft to transport goods through natural water corridors (Heidbrink 2012: 34). This allowed people or large quantities of products to be transported at one time between certain points depending on the movement of the water. Transportation through various means on water, which has an important role in meeting the transportation needs of people and societies from the prehistoric times, still serves the same purpose today, although it has undergone changes in many areas so far. Therefore, whether it is economic or political, the need for water transport, regardless of national or international conjuncture, will continue as long as human beings exist.

Maritime trade has developed along the west line through the years. The starting point of this 'Westline' was Mesopotamia in 3.000 BC, moving to Tyre then on to Rhodes. Venice became the trade center between the Mediterranean and the emerging Northwestern European centers in 1.000 AD. Meanwhile Hanseatic towns were developing their trade relations with the Baltic and Russia. The line moved and Amsterdam became the maritime center in the seventeenth century and London in the eighteenth century. Then in the nineteenth century the Westline carried across the Atlantic and North America became the center of maritime trade. At those times liners and tramps were introduced which were highly flexible transport systems and productivity increased. Twentieth century Japan, South Korea, China and India are at the leading position in terms of maritime trade with passing the Pacific as an important step. In the second half of the twentieth century liners and tramps were replaced by the transport system which is more mechanization technology, containerization, bulk and specialized shipping (Stopford 2009: 5-7).

Over the last 40 years, maritime transport has not only contributed to the globalization of commodity production and trade, but has also become one of the most

globalized sectors. While the ship was built, registered and operated in the same country, which is called “maritime nation” in the 1960s and 1970s, nowadays ships could be built, registered and operated in different countries (Valentine et al., 2013: 233).

The maritime industry is one of the least regulated markets in the world (Duru, 2016: 174). The reasons for this are that the owners are composed of different nationalities, the firms are different in terms of both size and type of management, and there is no central control regarding supply and demand. In addition, since the maritime industry is a market with free competition, these factors can increase the volatility in freight rates and create imbalance in revenues (Paixao and Marlow, 2001: 187).

Shipping is undoubtedly one of the most globalized sectors. Players from different nationalities are able to take part in different areas in the industry. For example, a Turkish ship built in the Netherlands can be manned with Indian seamen through a Russian agency. The ship can fly Liberian flag and be insured in England. It can carry goods produced in Germany from Belgium to Georgia. Necessary repairs can be carried out at a shipyard in Spain and fuel and provisions can be supplied in the port of Italy (Hoffmann, 2010: 121-122).

Maritime transport service is classified as dry cargo or wet cargo shipments. While dry cargoes are transported by dry bulk carriers, general cargo ships, cellular containerhips etc., wet cargoes are transported by tanker vessels (Bulut et al., 2012: 1912).

Freight market, new building market, second hand market, and demolition market have been considered as different markets in maritime transportation and the price in these markets is formed based on the law of supply and demand (Dikos and Marcus 2003: 251).

1.1.1.Demand in Maritime Transportation Industry

The only practicable way of transporting large quantities of goods has been maritime transport for centuries between continents (Stalhane et al., 2014: 60). As ships are involved in around 90% of the global trade, maritime industry plays

important role in international trade by bridging different markets all around the world (Angelopoulos et al., 2016: 228). Accordingly, international trade and shipping is highly correlated each other (Li and Cheng 2007: 527).

In the last 60 years, the growth in international trade has outpaced world Gross Domestic Product (GDP) growth and the difference has increased in time (Hoffmann, 2010: 121). Accordingly, the demand for maritime transport has also increased (Valentine et al., 2013: 228). As the increase in freight rates has a cost-increasing effect, maritime markets have a direct impact on inflation. On the other hand, in order to reduce the cost of transportation per unit, maritime transport stands forward as the cheapest transportation mode. Most importantly, the maritime sector has a tremendous effect on employment and most of the GDP of countries such as Greece and South Korea is composed of maritime activities (Angelopoulos et al., 2016: 228-229).

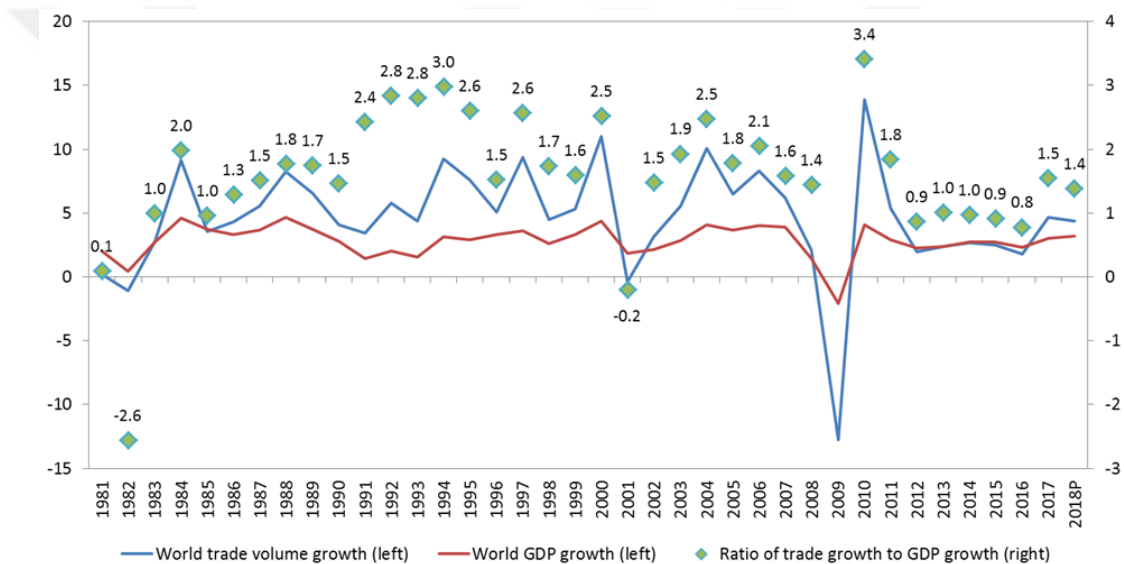
The industry has been a catalizor for the shift of industrial production to emerging economies (Drobetz et al., 2016: 26). In particular, the fact that rapidly growing middle class demand for consumption goods, increasing demand for raw materials, energy and intermediate goods due to increasing industrial activities in developing countries and expanding trade between developing countries (South-South trade) have made shipping attractive. The fact that developing countries such as China and India have high demand for raw materials such as coal and iron ore which are used as input for infrastructure investments, can be shown as one of the main triggers of the growth of dry bulk commodity trade (Valentine et al., 2013: 229-230).

In particular, the bulk shipping market is a highly volatile market, influenced by geopolitical developments and the ups and downs of the world economy (Chiste and van Vuuren, 2014: 3). The demand for maritime transport is related to changes in the bulk cargo demand as well as the changes in the geographic demand and supply model. Therefore, the demand for bulk transport is considered to be independent of freight rates. As the world economy grows, demand for raw materials increases and demand for international transport increases. Conversely, when world economic growth slows down, demand decreases, so does transport demand. Therefore, demand for maritime transport is expressed as derived demand (Scarsi, 2007: 577).

1.1.1.1. World Seaborne Trade

World merchandise trade has been growing strongly. Although the ratio of trade growth to GDP growth has fallen after the 2008 financial crisis, it has returned to its historical average in recent years as indicated in Figure 1. This indicates the role of world merchandise trade in the growth of the world economy, the development of countries and the creation of employment opportunities (WTO-World Trade Organization, 2018: 5).

Figure 1: Ratio of World Merchandise Trade Volume Growth to World Real GDP Growth, 1981-2018



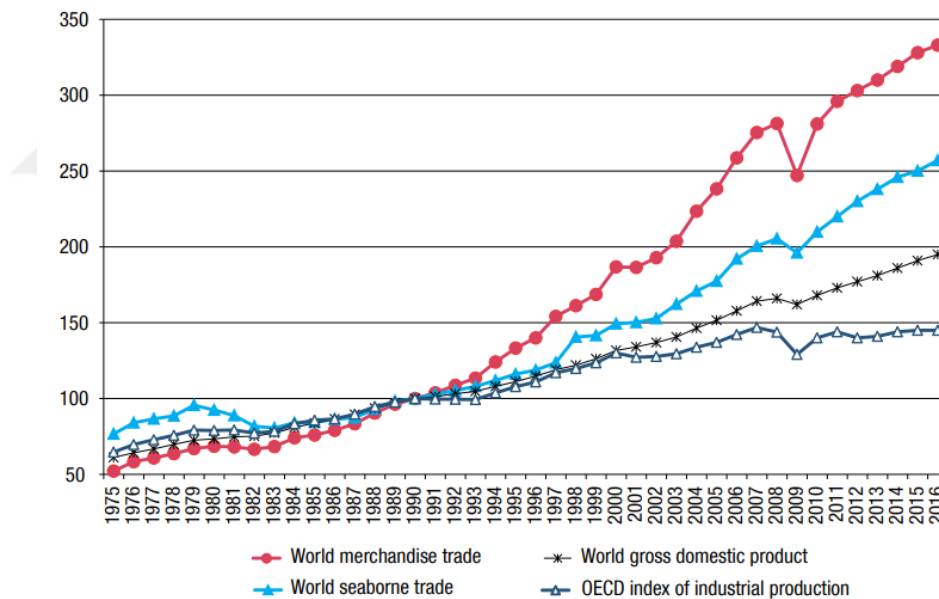
Source: World Trade Organization, *Strong trade growth in 2018 rests on policy choices*. https://www.wto.org/english/news_e/pres18_e/pr820_e.htm, 08.05.2019.

Maritime transportation industry is strongly associated with world merchandise trade activities and therefore interrelated with global markets (Angelopoulos et al., 2016: 228).

World merchandise trade is positively correlated with world seaborne trade and world GDP as demonstrated in Figure 2. Due to the significant increase in international trade as of 1990s as a result of free movement of people, goods, services and capital across national borders, all other parameters increased as well (Casaca and Marlow, 2005: 363). To be more precise, there have been many developments in world seaborne trade since the 1970s, such as (Valentine et al., 2013: 227-228):

- political and geopolitical transformations,
- trade liberalization,
- more active role of the private sector in the provision of transport infrastructure and services;
- shocks in energy markets and prices; and
- containerization;
- intensification of world trade and international division of labor;
- globalization of production and distribution processes;
- more economic integration and interdependence;
- the emergence of complex logistics services and providers; and
- reduced transport costs.

Figure 2: Annual percentage growth in world gross domestic product, world merchandise trade and world seaborne trade 1975-2016 (1990=100)

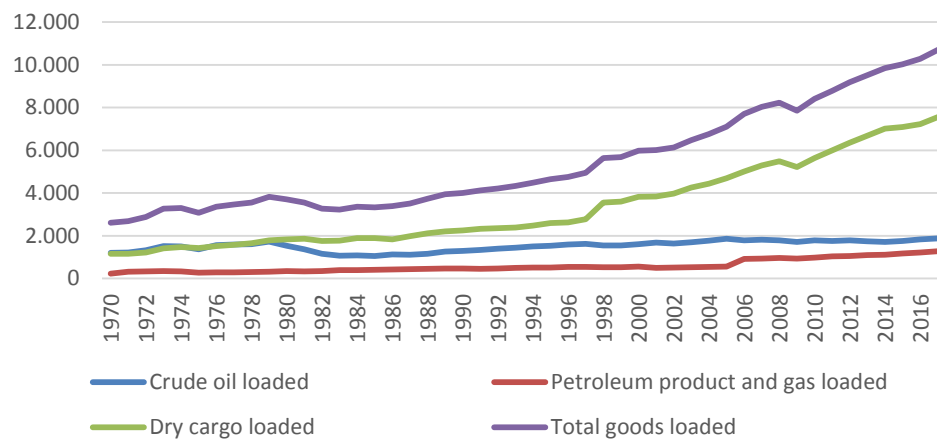


Source: UNCTAD (United Nations Conference on Trade and Development), *Review of Maritime Transport*, https://unctad.org/en/PublicationsLibrary/rmt2017_en.pdf, 15.04.2019, p.3

Maritime transportation has an advantage especially considering its cost advantage compared with road, air and rail transport in long-distance cargo transportation. This advantage increases as the transport distance increases. Therefore, most of the combined transport is carried out by sea.

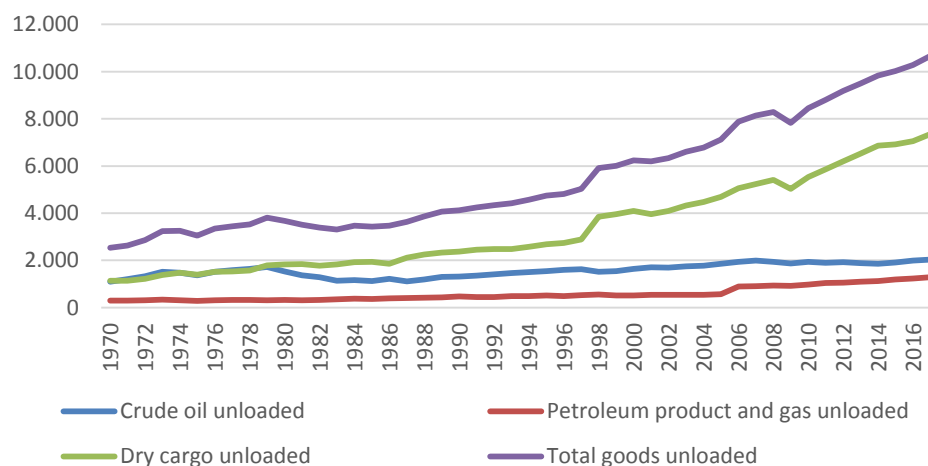
Development of world seaborne trade by types of goods loaded and unloaded are illustrated in Figure 3 and Figure 4. Accordingly, transportation of crude oil, petroleum products and gas both loaded and unloaded has remained relatively stable. There is a slight increase in transportation of petroleum product and gas after 2005. On the other hand, there has been a sharp increase in general cargo and dry bulk shipments especially since the end of 1990s.

Figure 3: Development of World Seaborne Trade by Types of Goods Loaded



Source: UNCTADSTAT, *World Seaborne Trade by Types of Cargo and by Group of Economies*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

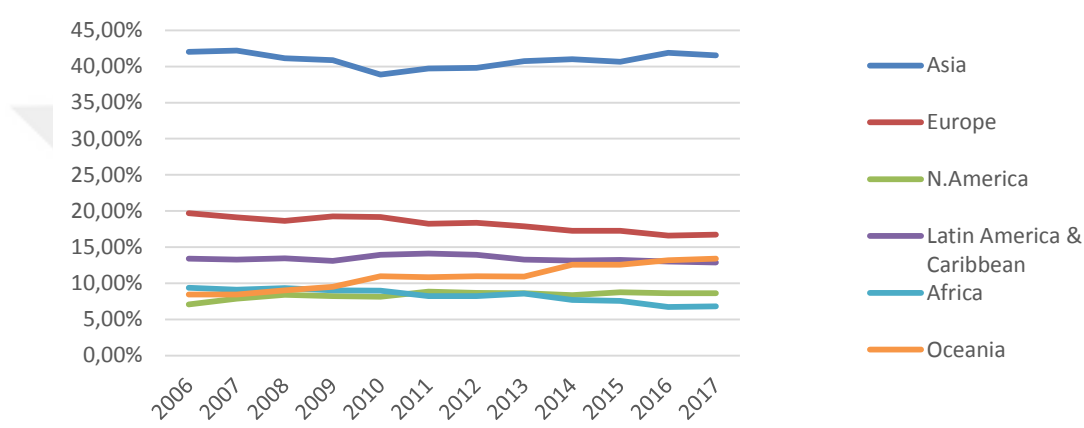
Figure 4: Development of World Seaborne Trade by Types of Goods Unloaded



Source: UNCTADSTAT, *World Seaborne Trade by Types of Cargo and by Group of Economies*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

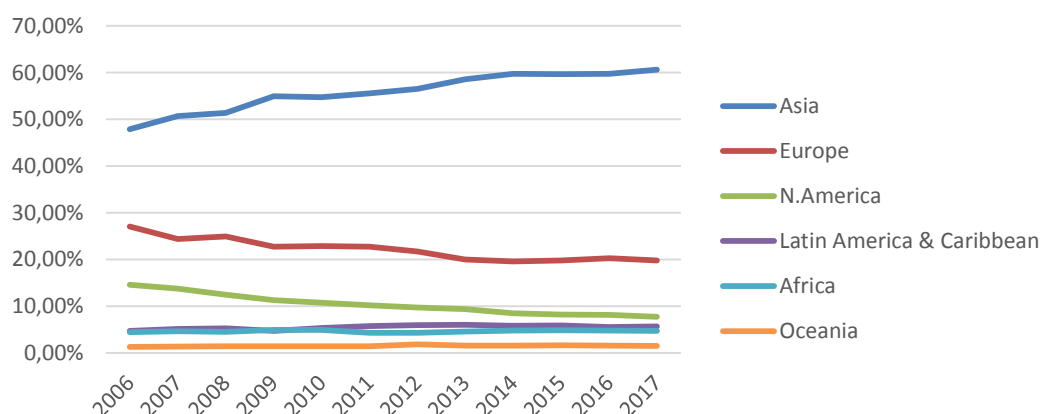
The regional distribution of world seaborne trade by goods both loaded and unloaded is demonstrated in Figure 5 and Figure 6 respectively. According to Figure 5, Asia seems the main source of cargoes that are shipped all over the world. Asia is followed by Europe, Oceania, Latin America and Caribbean, North America and Africa respectively. On the other side, countries located in Asia are the leading importers followed by the countries located in Europe, North America, Latin America and the Caribbean, Africa and Oceania respectively as illustrated in Figure 6.

Figure 5: Regional Distribution of World Seaborne Trade by Goods Loaded



Source: UNCTADSTAT, *World Seaborne Trade by Types of Cargo and by Group of Economies*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

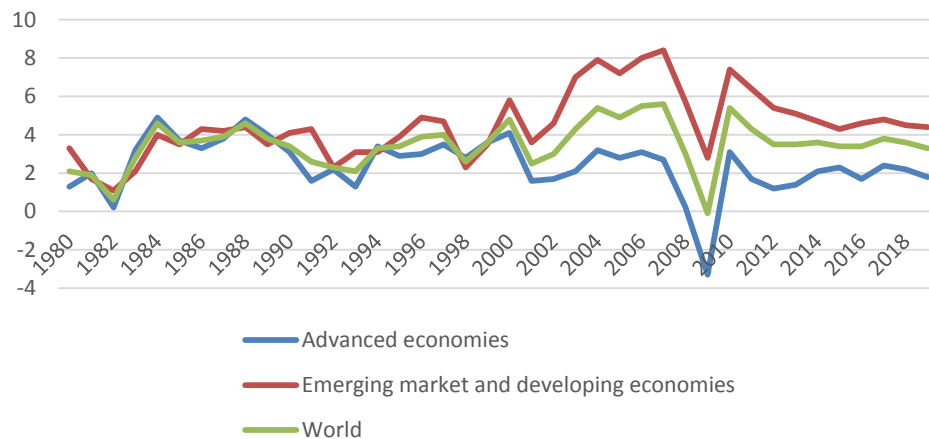
Figure 6: Regional Distribution of World Seaborne Trade by Goods Unloaded



Source: UNCTADSTAT, *World Seaborne Trade by Types of Cargo and by Group of Economies*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

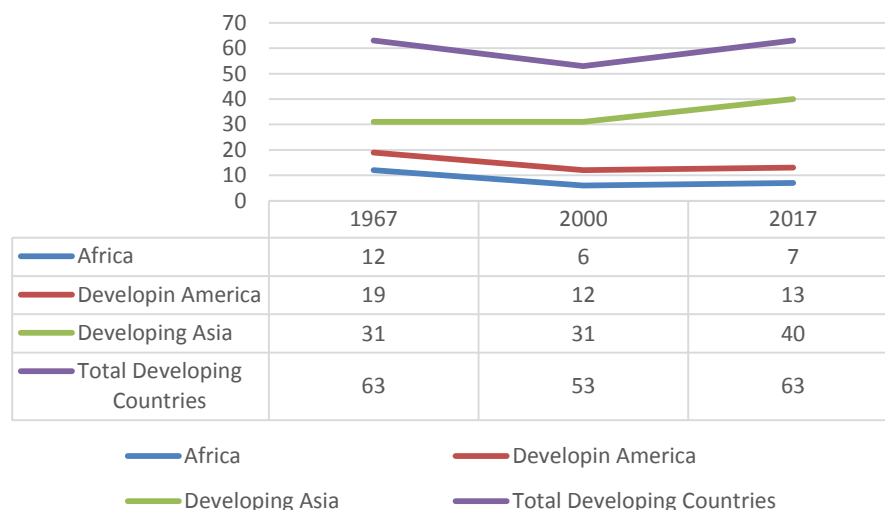
The way in which advanced and emerging economies contribute to world economic growth is shown in Figure 7. Although there is no difference between the two groups until the beginning of 1990s, it is seen that developing countries have opened the gap very much and become highly effective in shaping the world economy.

Figure 7: World Economic Growth (1980-2019)



Source: International Monetary Fund (IMF) Data Mapper, *Real GDP Growth*, https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WEOWORLD, 08.05.2019

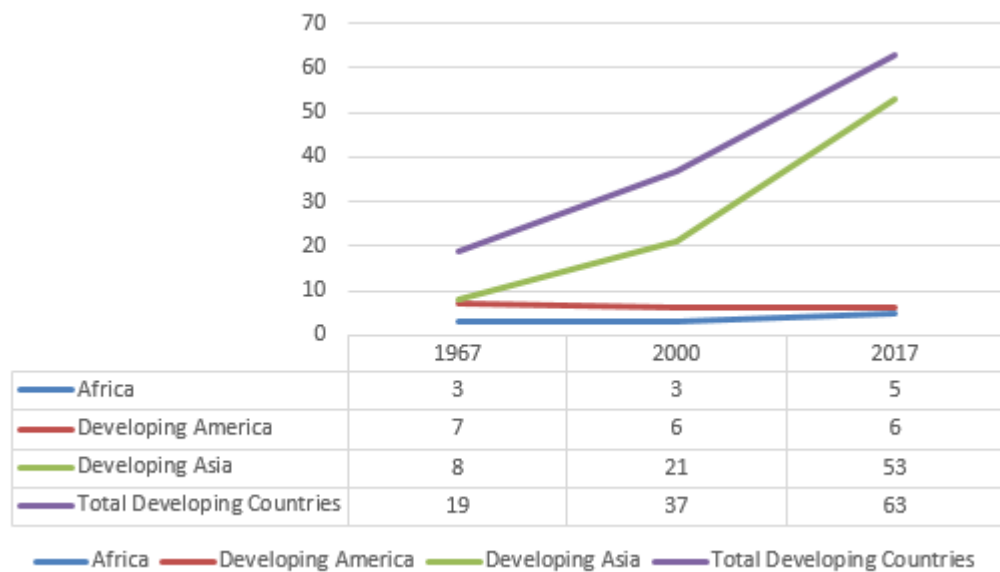
Figure 8: Participation of Developing Regions in World Seaborne Trade by Goods Loaded



Source: UNCTAD, *50 years of Review of Maritime Transport, 1968–2018*, <https://unctad.org/en /pages/PublicationWebflyer.aspx?publicationid=2289>, 08.05.2019, p.7

Many developing countries has begun to be major exporters and importers of not only primary products, but also finished and semi-finished products. Accordingly, the increase in world merchandise trade over the last decades has mostly driven by the expansion on merchandise trade between developing economics, which is called South-South trade, as indicated in Figure 8 and Figure 9.

Figure 9: Participation of Developing Regions in World Seaborne Trade by Goods Unloaded



Source: UNCTAD, *50 years of Review of Maritime Transport, 1968–2018*, <https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2289>, 08.05.2019, p.7

Considering world seaborne trade by the goods loaded, the participation of developing regions remains stable in last 50 years. Although the share declined in the beginning of 2000s, it has reached its historical levels by the end of 2017 thanks to the activities in developing Asian countries. However, the share of African and developing American countries has shrunk in the specified period.

Taking into account importing activities of developing regions, the picture changes. Specifically, developing countries particularly located in Asia have become part of global supply chains. Accordingly, demand for maritime transportation has increased mainly because of service quality and reliability, service frequencies and low cost transportation.

1.1.1.2. Key Commodity Markets

1.1.1.2.1. Dry Bulk Market

Dry cargo shipment has been developed as a result of transporting large quantities of commodities from the point where they are produced to the point where the commodity is required by transporting them with ships in order to reduce the transportation costs. This type of transport dates back to the 19th century, when small wooden ships fully loaded with coal were completely used to meet the increasing demand for coal between northern England and London. The number of goods transported on "one ship, one cargo" basis has increased mainly because of; global economic growth, increased demand for raw materials and energy goods, liberalization in international trade, internationalization of industrial processes and technological developments in shipbuilding and design. The growth in international trade led to the expansion of the bulk cargo fleet (Alizadeh and Nomikos: 2010: 319).

As a market where prices reflect all available information and new information affects price immediately, risk preferences of decision makers and random factors are the only sources for competitive advantage, the dry bulk market is one of the best examples of competitive markets worldwide (Scarsi, 2007: 581). The features of dry bulk shipping are as follows (Alizadeh and Nomikos, 2002: 232-234; Nomikos and Alizadeh, 2002: 693; Arslan, 2008: 232):

- Entry and exit to the market is easy should a source to purchase or charter the ship is found. Moving between various sub-sectors of the dry bulk market is possible.
- Unlike liner market in which prices and market entries and exits are controlled by a few buyers and sellers, perfect competition market conditions exists. The service and quality is homogeneous and differentiation is not possible compared with liner market.
- There is an effective intelligence transfer in the market. Anyone can reach intelligence provided by institutions such as Baltic Exchange, Lloyd's Maritime Information Services, Lloyd's Registers of Shipping, various brokering firms etc.

- As the ship and shipping services are mobile, disruptive impact on the practices of perfect competition in various regions and routes by few players does not affect the market.

Dry bulk carriers are divided into 4 sizes by Clarksons Shipping Intelligence Network (CSIN) as follows (Chou and Chen, 2019: 228):

- Handysize vessels; 10.000-40.000 dwt
- Handymax vessels; 40.000-60.000 dwt
- Panamax vessels; 60.000-80.000 dwt
- Capesize vessels: exceeding 80.000 dwt

Table 1 illustrates the cargo types and major trading routes in dry bulk shipping market. As it is seen, handysize and handymax vessels are mainly employed for grain commodity transportation from North and South America and Australia to Europe and Asia and minor dry bulk commodities such as fertilisers, rice, sugar, bauxite and alumina, steel and scrap around the world.

Panamax and Supramax vessels are employed for coal, grain and iron ore transportation, from North America and Australia to Japan and Western Europe. Besides, capesize vessels are mainly employed for iron ore transportation from South America and Australia to Japan, Western Europe and North America and also for coal transportation from Australia and North America to Japan and Western Europe.

As in other markets, the freight market is shaped by supply and demand. Therefore, in determining the freight rates, it is necessary to detect the demand for maritime transport and the level of supply in response to the demand and to analyze the interaction between the two variables. Demand for shipping services is derived demand depending on various factors such as; world merchandise trade, seasonal and cyclical changes for different commodities carried through ships, the distance of origin and destinations of these commodities etc. The supply in maritime transportation services is composed of the vessels that are put into service in order to be able to transport commodities by sea and freight rates illustrates the balance between supply and demand for maritime transportation services (Alizadeh and Nomikos, 2010: 324).

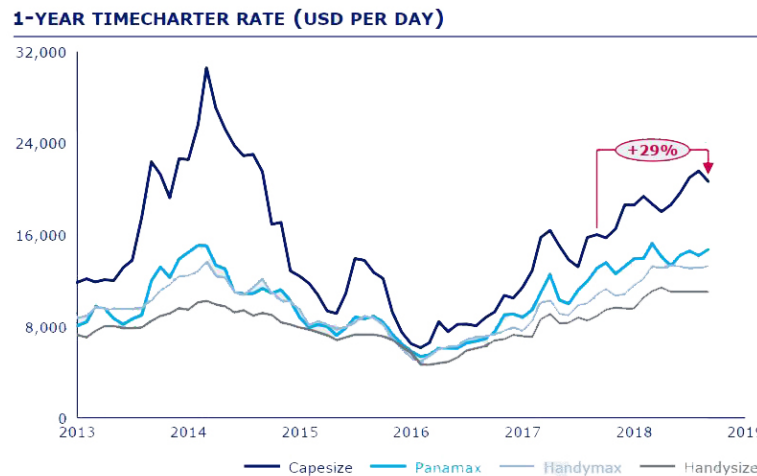
Table 1: Different size vessels with their respective cargo and routes

Commodities (% of total shipments)					
Class of Bulk Carriers	Iron Ore	Coal	Grain	Bauxite & Alumina	Phosphate Rock
Capesize	70%	45%	7%	-	-
Panamax	22%	40%	43%	45%	20%
Handy Class	8%	15%	50%	55%	80%
Major Routes					
Capesize (80K+ dwt)	- Brazil to W. Europe and the Far East; - W.Australia to W. Europe and the Far East	- E.Australia to Far East, Japan and W. Europe - S. Africa to W. Europe and the Far East	- Argentina and River Plate to Near East and E. Europe		
Panamax (55K - 75K dwt)	- Brazil to W. Europe and the Far East - Australia to W. Europe and the Far East	- N.America to Japan and Western Europe - E.Australia to Far East, Japan and Western Europe	- N.America to Far East, W. Europe and Near East		
Handy Class (25K-55K dwt)	- India to the Far East - Canada to USA and Japan - Liberia and Mauritania to Western Europe	- S. Africa to Far East and Europe	- Australia to Far East, Japan and Middle East - N.America to Africa and W.Europe	- Caribbean to N.America and W.Europe - W.Africa to W.Europe and Japan - Australia to Japan and W.Europe	- Morocco to W.Europe - Russia to W.Europe - US to Japan and W.Europe

Source: Alizadeh, A., and Nomikos, N. 2002, The Dry Bulk Shipping Market, *The Handbook of Maritime Economics and Business*, pp. 227-250, Editor C. Grammennos, London: Informa Professional, p.323

Figure 10 demonstrates the 1-year time charter rate for different tonnage segments in recent years. Accordingly, time charter rates for most segments have continued to increase as of the beginning of 2016. Especially the segment with the best recovery in this period seems capesize vessels. Between the end of 2017 and 2018, the recovery rate is 29% in this tonnage.

Figure 10: 1-year time charter rate, USD (United States Dollar) per day



Source: Danish Ship Finance, 2018, *Shipping Market Review*, <https://www.shipfinance.dk/media/1851/shipping-market-review-november-2018.pdf>, p.41

1.1.1.2.2. Tanker Trade

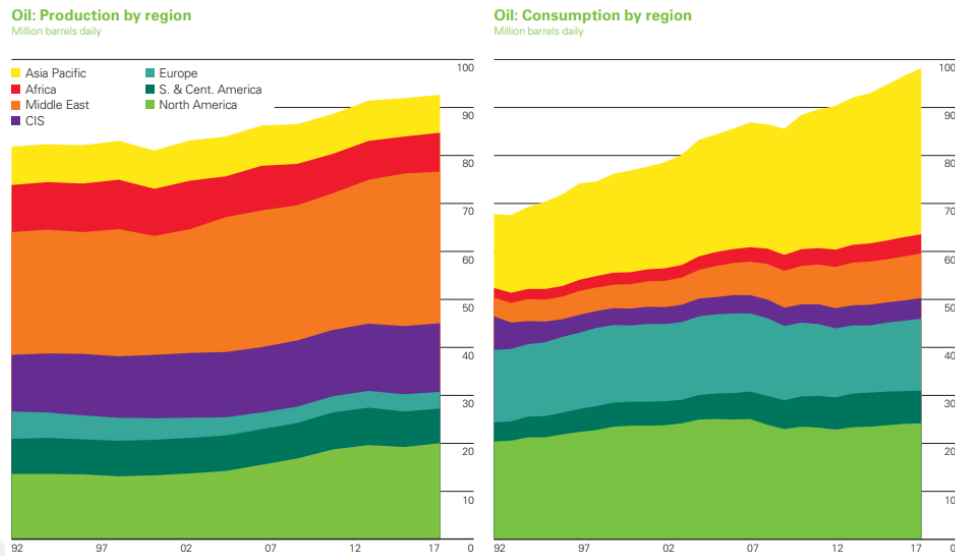
Tanker is designed to carry liquid cargoes. Although refined petroleum products and crude oil are the most common types of cargo transported in tankers, they also transport chemicals, wine, vegetable and other food oils (Glen and Christy, 2010: 355). One of the major commodities carried by tankers is crude oil and crude oil transportation by sea has remarkable increased over the last five decades, mainly because of discovery of new sources in the Middle East, West Africa, the US Gulf and the North Sea (Alizadeh and Nomikos, 2006: 119).

As indicated in Figure 11, the vast majority of oil is supplied from the Middle East and followed by North America. On the other hand, Asia is the region with the highest demand for oil, followed by North America and Europe respectively.

Because of transportation needs and the physical characteristics of the routes and ports, the tanker market is divided into four major sub-sectors and the types of vessels operating in this market are (Alizadeh and Nomikos, 2006: 124):

- Handysize, between 20.000 and 40.000 dwt
- Aframax, between 40.000 and 80.000 dwt
- Suezmax, between 80.000 and 160.000 dwt
- Very large crude carriers (VLCC), 160.000 dwt and over

Figure 11: Oil Production and Consumption by Region



Source: British Petroleum (BP), 2018, *BP Statistical Review of World Energy*.
<https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2018-full-report.pdf>, 09.05.2019, p.18

World seaborne crude oil trade is given by loading and unloading in Table 2.

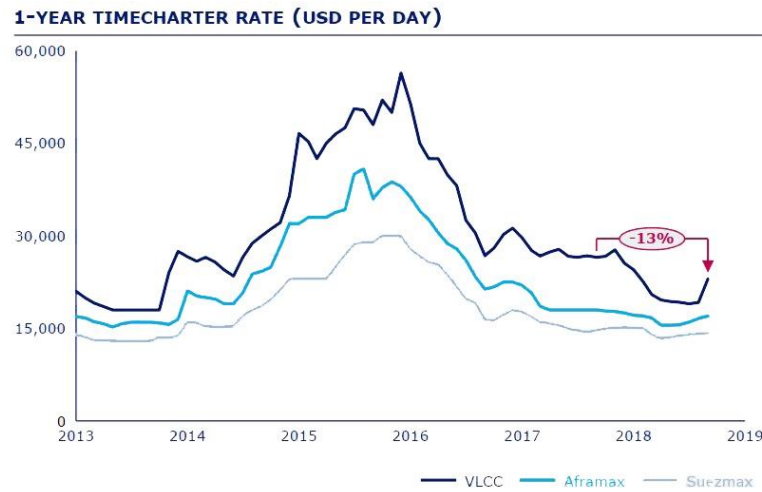
Table 2: Crude Oil Shipments by Regions (million tonnes)

	Asia		N.America		Europe		L.America & Caribbean		Africa		Oceania		TOTAL	
	Loading	Unloading	Loading	Unloading	Loading	Unloading	Loading	Unloading	Loading	Unloading	Loading	Unloading	Loading	Unloading
2006	921	772	22	501	224	541	251	50	354	41	11	26	1.783	1.931
2007	938	834	25	514	221	499	252	76	363	46	14	27	1.813	1.996
2008	903	820	24	481	226	494	235	74	379	45	18	27	1.785	1.942
2009	872	827	24	445	220	471	226	64	354	45	14	21	1.711	1.874
2010	907	843	25	465	244	488	242	70	351	43	18	25	1.788	1.933
2011	916	885	24	413	210	462	254	71	338	38	17	28	1.759	1.897
2012	906	917	31	402	215	472	253	75	364	33	17	32	1.786	1.930
2013	909	957	34	356	211	436	240	69	328	37	16	27	1.738	1.882
2014	899	972	43	313	219	435	233	65	299	37	14	28	1.707	1.850
2015	948	999	51	289	229	488	223	66	294	39	15	29	1.761	1.910
2016	999	1.086	61	297	252	490	232	52	271	39	15	25	1.831	1.990
2017	1.005	1.162	70	263	271	496	227	55	288	34	14	26	1.875	2.035

Source: UNCTADSTAT, *World Seaborne Trade by Types of Cargo and by Group of Economies*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

As regards the regional distribution of crude oil transported by sea, Asia stands out as the region where crude oil trade is most concentrated both in terms of loading and unloading, followed by North America and Europe respectively. Africa is the second most loading region after Asia in order to carry the crude oil it produces due to its oil resources, but also ranks last with Oceania in terms of oil demand.

Figure 12: 1-year Time Charter Rate for Tankers (usd per day)



Source: Danish Ship Finance, (2018), *Shipping Market Review*, <https://www.shipfinance.dk/media/1851/shipping-market-review-november-2018.pdf>, p.62

As of 2013, 1-year tanker freight rates had a rising trend, however the trend moved opposite and declined for all segments since the beginning of 2016. Figure 12 demonstrates that while suezmax and aframax freight rates have stabilized recently, VLCC timecharter rates have declined 13% between the end of 2017 and 2018.

1.1.1.2.3. Containerized Trade

High transport costs is regarded an important obstacle on trade competitiveness and access to international markets of countries. Therefore, lower transportation costs, trade facilitation and increased connectivity are the key enablers of trade volumes and growth.

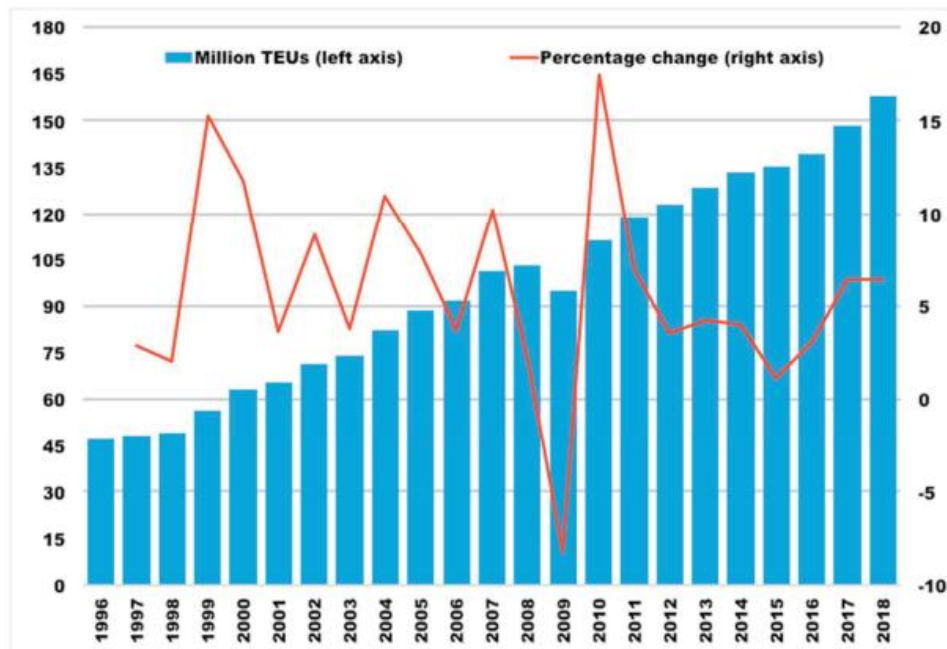
Because of the convenience and benefits of using containers, container transportation has shown a rapid improvement. Container types have been developed in parallel with the capture of standardization and increasing diversity for commodities to be transported. Various types of containers, such as general, tank, reefer etc., which are widely used in many areas today are designed to address all kinds of cargoes. The rapid expansion of container handling and transportation in the world has naturally brought about rapid development in container ships. While various cargoes and

containers were carried on the same ships, and now the number and capacity of the vessels designed to transport only containers is increasing day by day.

New ship designs and cargo handling facilities, international door-to-door traffic, early use of information technology, and organizational transformations such as alliances are the main results of containerization. The need to procure raw materials and semi-finished products, which are necessary for the production of a product, from the producers operating in many different countries of the world and to bring them to the consumption markets in many different regions of the world can be seen as the main reason underlying the containerization. Although the number of liner companies has increased in order to meet this need, many companies either withdrew from the sector or are involved in various mergers or acquisitions due to high capital costs and requirements to establish global networks to meet customer needs (Harlaftis and Theotokas, 2010: 11).

Global container trade since 1996 is given in Figure 13. From the beginning of the 2000s until 2018, there has been a significant increase in global container trade except for 2009 when global finance crisis occurred. As of the end of 2018 global container trade exceeded 150 million TEU (Twenty-foot Equivalent Unit).

Figure 13: Global Container Trade since 1996 (million TEU and annual % change)



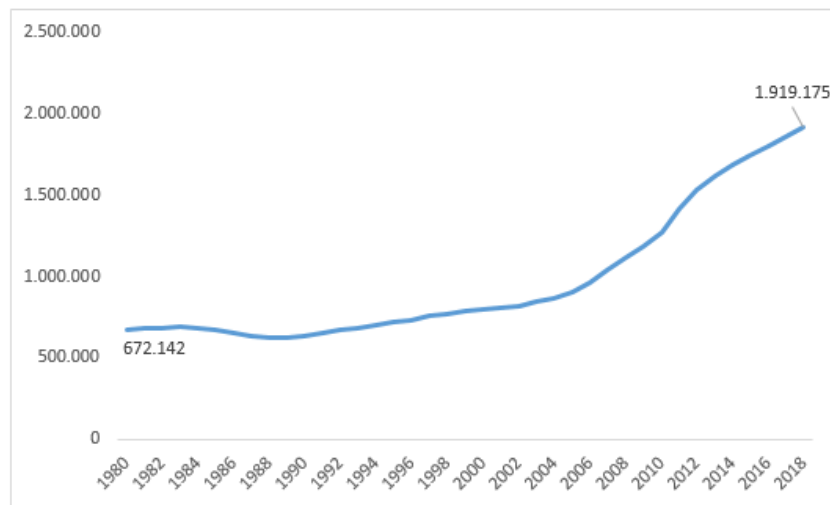
Source: UNCTAD, *50 years of Review of Maritime Transport, 1968–2018*, <https://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=2289>, 08.05.2019, p.10

1.1.2. Supply in Maritime Transportation Industry

Ship tonnage and fleet utilization available for trading, delivery of new newbuilding ships, ownership transfer through second hand sales, scrapping rate and losses, and the level of freight rates in the market are the main factors in determining supply of shipping services (Angelopoulos et al., 2016: 229-230; Alizadeh and Nomikos, 2010: 324).

Demand for maritime transport and freight revenue depends on the increase in world economic activities. Particularly, increase in freight rates is one of the key points for ship supply expansion (Chiste and van Vuuren, 2014: 1). As depicted in Figure 14, world merchant fleet capacity has dramatically increased mainly because of increasing international commercial activities as of the beginning of 2000s. While total capacity was around 800 million dwt in 2000, it reached 1,9 billion dwt by the end of 2018.

Figure 14: World merchant fleet, by dwt in thousands



Source: UNCTADSTAT, *World Seaborne Trade by Types of Cargo and by Group of Economies*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

Transportation systems and ship structure are designed to meet the need for efficient transportation of different types of commodities. (Panayides et al., 2011: 681). Even though many ships in different types and tonnage operate in maritime trade around the world, Equasis provided a picture of the world merchant fleet by the end of 2017, as shown in Table 3 and Table 4.

Table 3: World Merchant Fleet, total number of ships, by type and size

Ship Type	Small ¹		Medium ²		Large ³		Very Large ⁴		TOTAL	
General Cargo Ships	4.317	12,79%	11.691	29,87%	238	2,02%	0	0,00%	16.246	17,91%
Specialized Cargo Ships	8	0,02%	237	0,61%	68	0,58%	5	0,08%	318	0,35%
Container Ships	19	0,06%	2.256	5,76%	1.527	12,96%	1.400	23,18%	5.202	5,73%
Ro-Ro Cargo Ships	29	0,09%	648	1,66%	581	4,93%	235	3,89%	1.493	1,65%
Bulk Carriers	313	0,93%	3.786	9,67%	5.945	50,45%	1.704	28,22%	11.748	12,95%
Oil and Chemical Tankers	1.904	5,64%	7.043	17,99%	2.642	22,42%	1.842	30,50%	13.431	14,81%
Gas Tankers	36	0,11%	1.128	2,88%	351	2,98%	464	7,68%	1.979	2,18%
Other Tankers	388	1,15%	663	1,69%	11	0,09%	0	0,00%	1.062	1,17%
TOTAL	7.014	20,78 %	27.452	70,14 %	11.363	96,44 %	5.650	93,56 %	51.479	56,75 %
Others *	26.738	79,22%	11.689	29,86%	420	3,56%	389	6,44%	39.236	43,25%

¹GT<500 ²500≤GT < 25.000 ³25.000 < GT < 60.000 ⁴GT > 60.000

* Others includes Passenger ships, offshore vessels, service ships and tugs

Source: Equasis, 2017, *The world merchant fleet*, <http://www.emsa.europa.eu/equasis-statistics/items.html?cid=95&id=472>, 10.05.2019.

According to the data in Table 3, the world merchant fleet is composed of 51.479 ships and these ships corresponds to around 57% of the total ship supply. When the type of ships is investigated, it is seen that the majority of fleet consists of general cargo ships, oil and chemical tankers and bulk carriers respectively. Furthermore, 67% of total world merchant fleet consist of small and medium sized ships up to 24.999 GT (Gross Tonnage) by number. World merchant fleet is illustrated by gross tonnage as of the end of 2017 in Table 4.

Table 4: World Fleet, gross tonnage (in 1000 grt), by type and size

Ship Type	Small ¹		Medium ²		Large ³		Very Large ⁴		TOTAL	
General Cargo Ships	1.457	16,29%	49.183	21,59%	7.789	1,76%	0	0,00%	58.429	4,48%
Specialized Cargo Ships	3	0,03%	1.896	0,83%	2.564	0,58%	371	0,06%	4.834	0,37%
Container Ships	8	0,09%	26.403	11,59%	57.909	13,06%	148.557	23,80%	232.877	17,85%
Ro-Ro Cargo Ships	10	0,11%	6.418	2,82%	27.599	6,22%	15.788	2,53%	49.815	3,82%
Bulk Carriers	123	1,38%	56.597	24,85%	220.764	49,79%	170.408	27,30%	447.892	34,34%
Oil and Chemical Tankers	612	6,84%	42.941	18,85%	94.975	21,42%	196.210	31,43%	334.738	25,66%
Gas Tankers	14	0,16%	7.068	3,10%	15.150	3,42%	51.356	8,23%	73.588	5,64%
Other Tankers	115	1,29%	1.907	0,84%	324	0,07%	0	0,00%	2.346	0,18%
TOTAL	2.342	26,19 %	192.413	84,48 %	427.074	96,32 %	582.690	93,35 %	1.204.519	92,35 %
Others *	6.601	73,81%	35.361	15,52%	16.324	3,68%	41.500	6,65%	99.786	7,65%

¹GT<500 ²500≤GT < 25.000 ³25.000 < GT < 60.000 ⁴GT > 60.000

* Others includes Passenger ships, offshore vessels, service ships and tugs

Source: Equasis, 2017, *The world merchant fleet*, <http://www.emsa.europa.eu/equasis-statistics/items.html?cid=95&id=472>, 10.05.2019.

In this context, 16% of the world merchant fleet is composed of small and medium-sized vessels, while a majority consists of large and very large tonnage

vessels. Furthermore, it is found that the largest tonnage vessels consist of dry bulk carriers, crude oil and chemical tankers and container ships, respectively.

Table 5: Development of World Merchant fleet by type of ship, annual, 1980-2018 (dwt in thousands)

	BULK	CONTAINER	GENERAL	TANKER	OTHER	TOTAL
1980	181.880	10.290	112.841	337.896	29.236	672.142
1981	184.501	11.061	114.833	338.616	30.694	679.705
1982	193.217	12.108	113.294	334.238	33.172	686.029
1983	204.631	12.810	113.269	323.668	35.715	690.093
1984	212.915	14.089	111.863	304.466	38.206	681.539
1985	218.518	17.248	108.308	284.946	39.101	668.140
1986	227.551	18.733	103.921	258.932	45.191	654.327
1987	226.967	20.158	100.222	238.145	46.723	632.238
1988	223.659	21.436	97.110	234.908	47.878	625.046
1989	222.432	22.164	93.796	233.609	48.603	620.734
1990	223.619	22.197	100.457	235.785	47.770	629.976
1991	230.028	23.513	102.109	244.818	50.716	651.282
1992	236.143	27.082	102.932	255.657	52.437	674.421
1993	234.697	29.566	104.193	261.082	53.823	683.639
1994	236.843	31.692	106.186	269.289	55.380	699.745
1995	250.142	38.394	103.503	270.942	55.705	719.216
1996	261.169	42.950	103.052	266.708	57.136	731.870
1997	271.702	47.691	103.556	270.899	60.407	755.298
1998	280.055	54.938	102.563	271.633	62.472	772.801
1999	274.690	59.661	101.757	280.277	67.451	785.331
2000	274.445	61.103	101.520	283.066	71.158	793.771
2001	280.323	66.212	99.895	284.864	68.564	802.771
2002	294.780	74.144	95.693	286.001	68.207	822.011
2003	296.140	79.717	96.457	308.683	57.172	841.735
2004	308.935	87.201	94.331	320.658	48.121	863.667
2005	325.666	95.302	91.827	340.748	49.006	907.474
2006	349.721	107.506	96.380	356.109	52.247	964.994
2007	366.459	122.390	99.052	382.117	61.742	1,037.642
2008	390.226	138.364	103.588	406.533	67.776	1,112.712
2009	417.558	154.970	106.996	417.242	84.040	1,187.700
2010	455.642	161.645	105.966	448.793	91.163	1,270.526
2011	546.937	176.742	80.348	439.750	160.515	1,411.229
2012	623.457	189.170	77.323	454.141	175.669	1,527.343
2013	686.292	199.488	76.964	472.596	179.405	1,621.790
2014	729.920	209.967	74.367	481.355	182.840	1,684.672
2015	761.969	222.171	73.589	490.518	188.628	1,742.725
2016	779.285	238.806	74.364	504.908	197.760	1,800.137
2017	795.735	241.222	74.292	534.964	207.659	1,857.953
2018	818.379	249.562	73.370	560.544	214.269	1,919.175

Source: UNCTADSTAT, *World Seaborne Trade by Types of Cargo and by Group of Economies*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

World merchant fleet by type of ship is illustrated in Table 5. Accordingly, there is a dramatic increase in total fleet capacity in last four decades. Especially the capacity of bulk and container vessels have extremely increased compared with other segments. As of the end of 2018, total capacity of merchant fleet is around 2 billion dwt.

World merchant fleet capacity by flag state is shown in Table 6 for the period of 2014 and 2018. According to 2018 figures, Panama is the most preferred flag by ship operators around the world, followed by Marshall Islands and Liberia. Besides, top 20 registries constitute of 88% of world merchant fleet in the world.

Table 6: World Merchant Fleet by Flag State, Annual 2014-2018, by dwt in thousands

Country	2014	2015	2016	2017	%	2018	%
Panama	348.425	335.594	333.702	342.792	18,55%	335.313	17,56%
Marshall Islands	154.721	178.571	200.055	216.594	11,72%	237.807	12,45%
Liberia	203.173	201.879	206.332	219.379	11,87%	223.655	11,71%
China, Hong Kong SAR	141.570	150.262	161.720	173.257	9,38%	181.428	9,50%
Singapore	105.694	118.070	126.919	123.986	6,71%	127.644	6,68%
Malta	75.413	87.199	94.957	99.184	5,37%	108.729	5,69%
China	76.314	76.202	75.465	78.075	4,23%	83.852	4,39%
Bahamas	73.876	73.895	79.518	79.825	4,32%	76.643	4,01%
Greece	75.199	75.295	73.412	74.488	4,03%	72.196	3,78%
Cyprus	32.355	33.131	33.281	33.738	1,83%	34.822	1,82%
Japan	17.997	27.872	28.816	31.625	1,71%	34.648	1,81%
Isle of Man	23.536	24.587	22.530	24.905	1,35%	27.271	1,43%
Indonesia	14.242	16.302	16.809	18.428	1,00%	21.045	1,10%
India	0	0	0	17.038	0,92%	18.273	0,96%
Denmark	14.236	16.061	16.802	15.967	0,86%	18.139	0,95%
Norway	17.935	17.209	17.640	16.500	0,89%	18.054	0,95%
United Kingdom of Great Britain and Northern Ireland excluding Channel Islands and Isle of Man	17.041	14.001	15.071	18.851	1,02%	16.658	0,87%
Italy	19.615	16.678	16.310	15.783	0,85%	14.929	0,78%
Korea, Republic of	0	17.333	16.363	14.709	0,80%	13.974	0,73%
Total, top 20 registries	1.448.678	1.503.485	1.557.654	1.626.081	88,01%	1.684.185	88,18%
Other flags	264.220	263.969	263.621	263.970	12,28%	244.931	12,82%
Total all flags	1.675.562	1.732.520	1.791.584	1.847.631	100,00%	1.910.012	100,00%

Source: UNCTADSTAT, *World merchant fleet by flag of registration and by type of ship*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

World merchant fleet by flag state is also analyzed by considering the number of the ships as depicted in Table 7. According to the table, majority of world merchant fleet flies Panama flag. Panama is followed by China and Marshall Islands respectively. Furthermore, top 20 registries constitute of around 68% of world merchant fleet.

Table 7: World Merchant Fleet by Flag State, Annual 2014-2018, by number of ships

Country	2014	2015	2016	2017	%	2018	%
Panama	6.878	6.591	6.591	6.543	13,05%	6.444	12,70%
China	3.023	3.111	3.108	3.323	6,63%	3.513	6,92%
Marshall Islands	2.231	2.570	2.899	3.125	6,23%	3.342	6,59%
Liberia	3.112	3.085	3.145	3.251	6,48%	3.282	6,47%
Singapore	2.319	2.498	2.672	2.641	5,27%	2.641	5,21%
China, Hong Kong SAR	2.107	2.150	2.263	2.320	4,63%	2.360	4,65%
Malta	1.701	1.841	1.984	2.052	4,09%	2.080	4,10%
Indonesia	1.639	1.749	1.782	1.925	3,84%	2.042	4,03%
Bahamas	1.313	1.322	1.372	1.370	2,73%	1.346	2,65%
India	0	0	0	908	1,81%	931	1,84%
Cyprus	923	945	932	922	1,84%	928	1,83%
Japan	752	826	851	870	1,73%	890	1,75%
Korea, Republic of		813	816	807	1,61%	789	1,56%
Greece	852	815	791	776	1,55%	759	1,50%
Italy	702	639	628	622	1,24%	611	1,20%
United Kingdom of Great Britain and Northern Ireland excluding Channel Islands and Isle of Man	601	544	551	538	1,07%	544	1,07%
Norway	520	505	516	521	1,04%	514	1,01%
Isle of Man	403	398	376	392	0,78%	406	0,80%
Denmark	371	383	391	377	0,75%	376	0,74%
Total, top 20 registries	30.769	31.202	32.061	33.431	66,66%	34.218	67,45%
Other flags	18.350	17.443	17.421	17.176	34,25%	16.934	33,38%
Total all flags	47.797	48.240	49.223	50.155	100,00%	50.732	100,00%

Source: UNCTADSTAT, *World merchant fleet by flag of registration and by type of ship*, [https:// unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx](https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx), 09.05.2019

Considering the beneficial ownership, Table 8 gives us a picture on maritime nations in the world. According to the table, Greece is identified as the country with the largest merchant fleet. Greek ship investors have 17% of the total ship supply in the world. Greece is followed by Japan, China, Germany and Singapore respectively

based on 2018 figures. About half of the world merchant fleet in dwt is operated by these five countries.

Table 8: Top 20 Maritime Nations Based on Beneficial Ownership (dwt in thousands)

Rank	Country	2014	2015	2016	2017	2018	%
1	Greece	258.143	278.017	293.087	308.837	330.176	17,29%
2	Japan	225.607	228.515	228.980	223.856	223.615	11,71%
3	China	158.713	151.509	158.884	165.430	183.094	9,59%
4	Germany	126.656	123.491	119.181	112.028	107.119	5,61%
5	Singapore	79.581	86.163	95.312	104.414	103.583	5,42%
6	China, Hong Kong SAR	69.561	80.153	87.375	93.630	97.806	5,12%
7	Korea, Republic of	77.087	79.773	78.834	80.977	77.277	4,05%
8	United States	56.150	59.696	60.282	67.103	68.932	3,61%
9	Norway	42.795	46.539	48.188	51.824	59.380	3,11%
10	Bermuda	37.540	42.177	48.453	48.059	54.252	2,84%
11	France	28.227	34.539	42.084	43.561	51.464	2,69%
12	United Kingdom	45.819	49.322	51.614	51.648	50.553	2,65%
13	China, Taiwan Province of	48.094	43.533	46.141	46.865	50.422	2,64%
14	Denmark	39.091	36.656	38.315	36.356	39.212	2,05%
15	Turkey	28.717	27.843	27.951	27.733	27.241	1,43%
16	India	21.859	21.378	21.678	22.665	24.852	1,30%
17	Switzerland	17.644	18.099	20.482	23.690	24.806	1,30%
18	Belgium	14.264	21.016	22.098	23.550	23.630	1,24%
19	Russian Federation	18.657	18.310	18.144	22.050	22.219	1,16%
20	Indonesia	16.268	17.312	17.287	18.793	20.299	1,06%
	TOTAL	1.675.562	1.731.958	1.791.584	1.847.631	1.910.012	100,00%

Source: UNCTADSTAT, *World merchant fleet by country of beneficial ownership*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

1.2. SHIP INVESTMENT

1.2.1. Investment

Investment, as one of the most important economic activities that businesses, consumers and governments can fulfill, plays an important role in the increase of welfare (Baddaley, 2003: 4). In order for a company to grow and maintain its activities in a competitive environment, it is necessary to be open to ideas for the development

of new products and services and to carry out improvements in the products or services that it currently offers (Ehrhardt and Brigham, 2010: 382). In this context, companies make investments with different characteristics throughout their economic life and they need to evaluate the investment alternatives thoroughly since there is a strict relationship between maximization of firm value and correct investment choices (Bendall and Stent, 2003: 293; Bendall and Stent, 2007: 441). The mathematical explanation of investment is illustrated as follows:

$$I_t = K_t - K_{t-1}$$

where,

I_t : investments carried out at time t,

K_t : Capital stock at time t,

K_{t-1} : Capital stock at time t-1

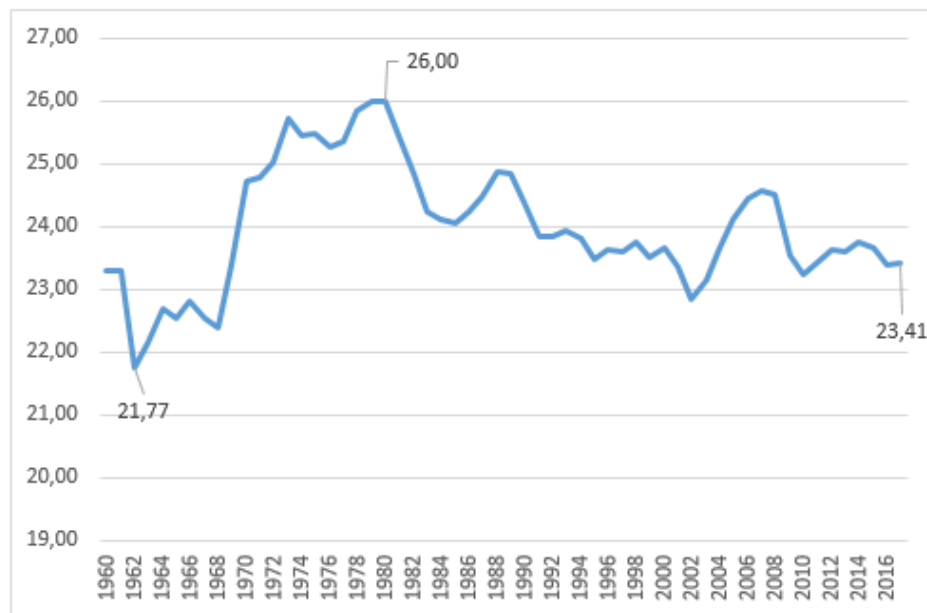
As it is seen from the equation above, investment is a dynamic process and represents the aggragation of capital stock over time, rather than instant changes in capital stock. Unlike investment, the capital is a stock variable. That is, when capital is measured at a certain time, investment can only be measured at a time period and the difference between these two concepts leads to the differentiation of capital and investment theories (Güven, 2010: 10).

According to Keynes (1964), the concept of investment, which can be defined as an increase in the existing capital stock in a certain period, can also be expressed as the expenditures having potential to generate income in the future, as suggested by Bailay (1962). The investment carried out today plays a role in determining the economic activities in the future. According to the demand for future potential goods and services to be needed in the future, capital resources for producing these goods and services will need to be increased today. Therefore, investment is an important determinant of future economic growth and it increases social welfare by positively affecting employment. If investment and growth in productive capacity is slow and stagnant, growth and employment will be adversely affected (Baddaley, 2003: 4).

From a macro perspective; investments can be divided into two groups as autonomous and induced investments. Investment decision is made by output and/or the rate of interest. For autonomous investments, investment does not depend on either output or rate of interest since this kind of investments are independent of the level of

income. In addition to investments made based on technological changes; investments such as schools, hospitals, roads are considered as autonomous investments. On the other hand, induced investments depends on the level of income or on the rate of interest (Ross, 1964: 97). From micro perspective, investments can be examined in two groups as fixed investments and stock investments for tangible fixed assets in order to grow or to increase efficiency of existing assets (Pinar, 1977: 1-2). Stock investments are mostly short-term investments, and fixed investments can be considered as long-term investments involving tangible fixed assets such as; property (land), facilities and equipment etc. (Gitman and Zutter, 2012: 390). As seen in Figure 15, by the end of 2017, the average of gross fixed capital formation worldwide corresponds to about 23% of world GDP. Gross fixed capital formation includes land improvements, plant, machinery, equipment purchases, the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, commercial and industrial buildings. In this sense, its contribution to the economy is remarkable.

Figure 15: Gross Fixed Capital Formation (% of GDP)



Source: The World Bank Databank, <https://data.worldbank.org/indicator/NE.GDI.FTOT.ZS>
14.05.2019

The management of current assets and fixed assets that constitute total assets in the balance sheet of the company should be examined separately and carefully considering asset size, divisibility, maturity, liquidity and risk factors (Akgüç, 2010: 317-318). Since the asset investments are relatively short-term investments, it is possible to determine whether the decisions are correct or not and to make necessary corrections in the short term. However, due to the long-term nature of fixed assets investments, the wrong decisions may reveal unexpected results or even cause bankruptcy (Bolak, 1998: 133). Although the tangible fixed assets, which are of great importance in conducting of the activities, vary from business to business or from sector to sector, they have an important share in the total assets of the company. The amount of investments in tangible fixed assets is considerably high, especially for firms operating in a capital-intensive sector, and the decision of whether the amount to be invest in a fixed asset for a long term period, stands out as an important strategic decision for the firm. Since these criteria are directly related to the future expected cash flows and the risk associated with these cash flows, they have a direct impact on the firm's value in the long term and affect its strategic position of the firm in the future (Dayananda et al., 2002: 1).

Investment in tangible assets can be considered as a function of demand in the market in which the firm operates. In cases where demand is lower, profitability is negatively affected, because excessive investments in fixed assets may expose high level of operational and financial fixed costs (Akgüç, 2010: 319). The objectives of investments in tangible fixed assets can be summarized as follows (Bolak, 1998: 134-135):

- Renewing the old factory and equipment to maintain the current production level
- To provide the necessary factory and equipment to increase the production of the current products
- To expand the capacity and to produce new products to provide the necessary factory and equipment
- Renewing existing equipment to improve production quality and / or reduce costs by applying more efficient production methods (modernization)

- Producing raw materials previously purchased, thus preventing future difficulties in supplying raw materials
- To change the location of the factory for the elimination of some problems that have arisen later (such as the exhaustion of raw materials or energy sources)
- To take necessary safety precautions in the workplace in accordance with the laws and collective bargaining requirements

The investment decision that has given based on the sudden increase in demand, may adversely affect the firm, given that the competitors will respond to this increase. As a result of the investment decision, there will be a capacity surplus, when the acquisition of tangible fixed assets is no longer met with demand (Akgüç, 2010: 320). Factors to be taken into account when making an investment decision in tangible fixed assets can be summarized as follows (Bolak, 1998: 135-136).

- Amount of initial investment
- Amount of working capital
- Investment life
- Cash flows from investment
- Scrap value of investment
- Discount rate

Although investment in tangible fixed assets vary in terms of the company and the sector, it is important how it will be financed as it includes high amount of capital. In cases where the company's internal resources are insufficient, capital can be obtained from external sources. The allocation of external resources to firm investments is only possible by planning the investment projects thoroughly. The better an investment project is planned, the easier funding will be provided (Akgüç 2010: 320-321). It is of course important to evaluate the alternatives of how the investments will be financed. From a macro perspective, the relationship between the interest rate and the marginal productivity of the investment is taken as the basis, from a micro perspective, the cost of the funds used in the financing of the investment is considered as a measure of evaluation instead of the interest rates. Because investments can be financed not only by debt, but also by equity or as a mixture of these two alternatives, and the alternative cost of equity may not be at the interest rate level. Many factors affect the cost of equity such as; the rate of income of alternative

investments, share value, the amount of dividends, the growth rate of the firm, so on (Pinar, 1977: 13). In the event that insufficient investment is made, the market share of the company also shrinks due to declining competitive power compared with rivals providing more quality services with more modern assets. To reach previous market shares may be possible with increase in sales and/or price discounts. This may require a higher cost compared to the cost to be undertaken in the case of investment in tangible fixed assets in the medium and long term (Akgüç, 2010: 319).

Table 9: Important Factors in Evaluating Investment Alternatives

Factor	Description
Investment Amount	Selecting investment alternatives with lower capital output ratio will increase the efficiency of the investment.
Income Rate	The income rate of the investment is expected to be higher than the capital cost.
Cost of Capital	The present value of the cash inflows to be discounted from the capital cost is expected to be preferred over the cost of the investment.
Urgency of Investment	It is expected to give priority to investments that will provide high added value in the industry as well as the compulsory services that the government must provide
Condition of Competition	Priority will be given to investments required to maintain or increase market share
Social Factors	Even if other factors make the investment profitable and necessary; social factors can provide resistance to investment. On the other hand, it may be necessary to prioritize socially necessary investments, although the preliminary results are not positive.
Legal Factors	The fact that the legal infrastructure of the underdeveloped countries is constantly changing, the existence of political uncertainties etc. are risk-increasing factors and directly affect investment decisions.
Natural Factors	The natural characteristics of the region, which is planned to be invested, are important criteria to be considered when making an investment decision.
Invested Business	While the branch of business, which is intended to be invested, is not of vital importance for companies with legal entities in the form of corporations, it is of great importance for individual businesses.
Contribution to the society	The results of the investment will have positive results especially in the long term when evaluated from a macro point of view.
Other Factors	In addition to the above factors; following factors can be considered as well; • Compliance with the same project • Technical cost of equipments • Capacity of factories • Date of realization of investment

Source: Pinar, C., 1977, *Yatırım Projelerinin Değerlendirilmesi ve Finansmanı*, İzmir: Ege Üniversitesi İktisadi ve Ticari Bilimler Fakültesi Yayınları, pp.43-49.

It is necessary to distinguish between the criteria to be considered in the selection of investments and the methods used in the evaluation of investments. It is

possible to summarize the factors to be considered during the evaluation of investment alternatives in Table 9.

In the following section, the main firm-level investment theories are discussed in detail. These theories which are accelerator, expected profit, liquidity, neoclassical and Q theories, are also be applicable to shipping industry.

1.2.1. Firm-level Investment Theories

Investment can be considered in terms of both macro and micro perspectives. From macroeconomic perspective, investments play a critical role in determining the long-term productive capacity of the economy and therefore, investments provide a significant contribution to the growth of the country. Besides, investments are at the center of the studies explaining the fluctuations in total demand due to their short-term variations. Although investment expenditures account for a smaller portion of GNP (Gross National Product) compared to consumption expenditures, it constitutes the main reason for the sharp fluctuations in business cycles. With these features, investments are an important element of economic stability. Investments are also of great importance from a micro point of view. Since investment decisions directly affect future cash inflows, it is considered to be one of the most important factors affecting the company value. On the other hand, the investments that are needed for the firms to enter a new market or the investments that are needed to prevent the threats of entrance of the new firms to the market by the existing firms are important issues from micro level investment perspective. Fisher's investment model, simple and flexible accelerator models, the neoclassical investment model of Jorgenson and Tobin's q theory are considered as traditional investment theories, because these theories were developed under limited assumptions such as complete knowledge and exact certainty. In these models, the investment generally depends on the relative price of capital goods, the tax rate, the real interest rate, the depreciation rate and the demand. On the other hand, since the uncertainty and irreversibility of investments has started to take place in investment models developed in recent years, the theories have changed accordingly and called modern investment theories that are more applicable to the reality (Güven, 2010: 9-10).

1.2.1.1. Traditional Investment Theories

It is useful to focus on the Discounted Cash Flow (DCF) method, which forms the basis of both traditional and modern investment theories. DCF is the conventional tool to evaluate projects and the underlying assumption of the method is that the cash flow to be generated in the future should be discounted to the present by applying discount factor, that is generally interest rate and inflation factor, to reveal the Net Present Value (NPV) of the project taking into consideration the time value of the money (Duru, 2016: 176). Although this is a traditional evaluation tool of a project, it is still used by the decision makers in the firms in modern world.

NPV is the difference between a project's initial investment (CF_0) and the present value of its cash inflows (CF_t) and discount rate (r) is equal to the firm's cost of capital as illustrated in the following equation (Gitman and Zutter, 2012: 397).

NPV = Present value of cash inflows – Initial investment

$$NPV = \sum_{t=1}^n \frac{CF_t}{(1+r)^t} - CF_0$$

When a decision maker should make accept–reject decision by using NPV, the criteria for the decision as follows:

- If the NPV is greater than 0, project is accepted.
- If the NPV is less than 0, project is rejected.

The firm will generate greater return than the initial cost of the investment. In this sense, the traditional finance claims that in case the positive cash inflows are generated, the market value of the firm should increase, so does the wealth of the firms' shareholders.

Although NPV is utmost importance for the firms as it constitutes the basis of investment theories, it has some weaknesses. Using NPV as an evaluation tool in the investment decision means that the future inflows will meet with the today's expectations. However, since the change in demand in stochastic process, the reality may differ compared with the expectations that reveal unexpected consequences for the firms. Accordingly, the behavior of the firms may become irrational.

1.2.1.1.1. Fisher's Theory of Investment Decision

The origins of modern theoretical ideas used in investment analysis are based on the approach of Irving Fisher suggested that investments could be made until the present value of the expected cash inflows to be generated by the investment in the future is equal to the cost of capital. In his book "The Theory of Interest", Fisher (1930), it is defined that the investment decision of the firms is a problem between periods, and investments are the riskless choice over time (Hirshleifer, 1965: 509-510). Fisher claims that interest rate determines the preferences of investment over time, and it is proposed that in order to encourage an investment, the rate of return should exceed not only the cost of investment but also the interest rate. Fisher's approach is based on the discounted cash flow perspective. According to Fisher's theory, optimal investment is possible in which interest rate is equal to the marginal rate of return and there is a negative relationship between these two variables (Hirshleifer, 1958: 346).

Although the relationship of interest rate-marginal rate of return is considered from a macro point of view, it is needed to consider the cost of funds used in the financing of the investment rather than interest rates in terms of micro-perspective. Because, the capital used by the firm for investment not only have a debt capital, but also the alternative cost of equity may not be at the interest rate level (Pinar, 1977: 2).

To sum up, Fisher (1930) propounds that the interest rate is the main determinant that shape investment decision. However, since demand, which have an effect on investments is not taken into consideration and assumption that there is no risk to future cash inflows are the main criticism to Fisher's theory.

1.2.1.1.2. Accelerator Theory

Clark (1917) introduced the simple accelerator theory emphasizing that the desired capital depends on the output, and current capital stock is instantly adjusted to the desired capital stock. The principle of accelerating the business cycle theories was then implemented by Samuelson (1939).

Accelerator effect is the relationship between demand and the growth of planned capital investment spending by the firms. In an environment where the

demand for consumers in a particular industry is expanding quickly, firms may initially respond by using more intensively their productive capacity or running down the stocks of the finished products they have. If demand is expected to be high, then there is probably an incentive driven by the profit motive to increase investment spending of the firms on new plant a machinery, new factories, new technologies etc. Because that investment will allow the firms to increase their supply-side capacity. In this respect, accelerator theory suggests that, when demand is high and grow in an economy oftentimes, a follow-on increase in capital investment is revealed (Baddaley, 2003: 49).

Accelerator model can be divided into two sub models as simple accelerator and flexible accelerator. The common features of these two models is that investments are explained as a function of changes in demand rather than interest rates. However, the simple accelerator model assumes that complete and instantaneous adjustment of the capital stock. However, the simple accelerator model was criticized in the literature and Chenery (1952) formulated flexible accelerator model to accommodate the shortcoming of the simple accelerator model by adding reaction lags by which delays between investment decision and investment expenditures are captured to avoid the assumption of instantaneous adjustment of the capital stock that is not meet with the reality in dynamic structure of investment. To be more precise, first, assuming net investment to adjust the capital stock to its desired level within one period of time seem to be irrelevant. Second, estimated ratio of desired capital to output is smaller than the observed ratio of capital stock to output. Third, wages, taxes, interest rates and the prices of capital equipment were neglected in the simple accelerator model (Celik Girgin et al., 2018: 5).

Riley (2016) exemplified the issue in his tutorial on accelerator effect. For instance, cloud computing services is one of the biggest fastest growing industries in the world and increase rate of demand for these services is high. However, these services are offered only if there is a proper infrastructure. Therefore, the firms need to ramp up investment spending in order to provide necessary supply-side capacity to meet growing demand. Other industries that might see positive accelerator effect as the demand for airline travel increases both short haul and long haul. Airline will invest more to expand their fleet sizes. That's particularly the case for short low-cost

destinations. For example, the rapid growth of short haul low-cost flying in Asia and also in Africa. These are examples of the positive accelerator effect. But, there can also be a negative accelerator effect and that can happen when the growth of demand in an industry either slows down or becomes negative. For instance, if there is a decline in the copper price in the markets worldwide, it is expected to see a decline in capital investment copper mining. Moreover, the steel industry is in the news nowadays. Steel price has been falling due to the excess capacity worldwide in which all kinds of protectionist issues being raised. Decline in steel prices as a result of overcapacity has led to the threats of significant plant closures

1.2.1.1.3. Neoclassical Theory

Neoclassical theory was developed by Jorgenson (1963) and Hall and Jorgenson (1967). The theory fills the gap of flexible accelerator model by considering price variables, especially the cost of capital, as an explanatory variables (Caballero, 1999: 817). This model is based on net revenue maximization. In this sense, the aim of the firm is to maximize the net present value of cash flows under the given production function and technology constraint (Güven, 2010: 20).

In this model, an additional unit capital goods return to the firm and the additional cost of capital is analyzed. Interest rate, taxes, expected increase on capital gains and prices of capital goods are the main factors affecting investments in neoclassical investment theory (Güven, 1999: 4).

There are advantages of neoclassical model compared with the prior attempts. First, maximisation of net revenue associates the investments and expected profits of firms. Second, user cost of capital that is primarily defined in this model. Third, since various variables such as tax, interest rate, output level are considered in the model, the effect of each variable on investments can easily be determined. There are also criticisms on the model. First, compared with user cost of capital whose effect on investment is modest, output substantially effect the investments in the model. Second, determining the optimal level of capital stock is considered as a static process (Celik Girgin et al.: 7).

1.2.1.1.4. Tobin-Q Theory

Tobin-q theory was developed by Brainard and Tobin (1968) and Tobin (1969) as an alternative to the accelerator model and Jorgenson's investment theory emphasizing the connection between investment and stock market. According to the theory, firms make investment decisions by using following ratio (Dornbusch et al.: 2011: 355-356).

$$q = \frac{\text{Market value of the installed capital}}{\text{Replacement cost of installed capital}}$$

Tobin-q theory claims that there is a strict relationship between stock prices and investment decisions. More precisely, stock prices have a tendency to increase when the profitable investment opportunities for the firm occur, and the price of a share is the price of a claim on the capital in the firm. Tobin argued that the investment rate can be predicted by looking at the q ratio. When the q ratio is greater than 1, it is profitable to obtain additional capital since the value of capital exceeds the cost of obtaining the capital. Conversely, if the ratio is smaller than 1, the cost of obtaining the capital exceeds the value of capital. Therefore, it is not profitable to invest in additional capital. If the ratio is equal to 1, then the company will only be satisfied with renewal investments (Abel et al., 2014: 133-134).

1.2.1.1.5. Keynes's Investment Theory

Another theory of investment within traditional theories is Keynes's investment theory. It is observed that uncertainty was not included in the traditional investment theories. The impact of uncertainty on investment decisions was first included in economic analysis together with J. M. Keynes (Serven and Solimano, 1992: 97).

In the general theory of Keynes, it is stated that the level of investment is determined by the marginal efficiency of the capital and the market interest rate. Keynes defines the marginal efficiency of the capital as the discount rate which makes the present value of the cash inflows expected from the investment equal to the cost of the investment. Investment can be made until the marginal efficiency of capital is equal to the market interest rate accordingly. In economics literature, this rate is also known as internal rate of return (Keynes, 1964: 135).

Analysis of Keynes on interest rate and the marginal efficiency of capital illustrates that these two ratios are dominated by uncertainty, and can change rapidly. The uncertainty in Keynes's model and the frequent changes in expectations prevent the generation of an investment function based on precise mathematical expressions (Tanyeri, 1994: 44-45). Although Keynes alleged the role of the uncertainty in investments, the perspective is similar with traditional investment theories, because underlying assumption of the marginal efficiency of the capital concept refers to Fisher's assumption of marginal rate of return referring discounted cash flow factor.

According to Keynesian approach, expectations of the entrepreneurs may change and as a result the volume of investment may change with the expectations (Sachs and Larrain, 1993: 524). To sum up, investment theory of Keynes supports the assumptions of traditional investment theories with the concept of marginal efficiency of capital. On the other hand, it also supports the assumptions of modern investment theories with the concept of uncertain expectations. Therefore, it can be alleged that Keynes's investment theory is a bridge between traditional and modern investment theories.

1.2.1.2. Modern Investment Theories

Investment decisions were shaped mainly considering net present value and other important criterion that substantially faced in the real world was ignored. Irreversible nature of investment spending was the first neglected issue in investment spending of which majority includes sunk costs in reality. That is, the initial cost of investment has included at least partial sunk cost that is not possible to recover. Moreover, timing is the second issue that was not paid attention in the prior attempts. Last but not least, the effects of uncertainty over the positive outcomes of investment were another important but neglected issue (Dixit and Pindyck, 1994: 3).

The difference between present value of future cash inflows and present value of initial cost of capital is the fundamental rule of investment decisions considering traditional models. In such models, investments are function of changes in interest rates, demand and tax rates. However, investment decisions are heavily depend on the

uncertainty and volatility in markets worldwide rather than the assumption of traditional models.

Pindyck (1991) criticizes the assumption of traditional investment theories that the irreversibility of fixed investments is ignored during investment decision making process. Specifically, according to the traditional investment theories, costs of investment are fully covered by selling the assets in case of failure. However, in reality any investment has partially sunk costs due to the transaction costs, adjustment costs, marketing and distribution costs etc. Therefore, investors need to pay more attention not to face unexpected results as a result of irreversibility of investments.

Due to their irreversible nature, investments become more sensitive to different types of risks, such as product prices, interest rates, cash flows, uncertainties over variables such as costs, and timing of investment. As a result of these characteristics of investments, stability and credibility can be more important than tax incentive and interest rate policy if the aim of macroeconomic policy is increase the investments (Pindyck, 1991: 1110).

Different perspectives exist in the modern investment theories on how uncertainty effect investment decisions. On the one side, it is asserted that there is a positive relationship between investments and uncertainty proposed by Hartman (1972) and Abel (1983). Hartman (1972) showed that current investment amount would be increased as a result of positive effect of uncertainty on demand of the firm and costs on the marginal value of capital. Later, Abel (1983) transformed the discrete-time model of Hartman (1972) into a continuous time model and reached the same findings. More specifically, Abel (1983) showed that marginal profitability of capital and investment level might be increased by the effect of increased uncertainty.

On the other hand, the view indicating negative relationship between uncertainty and investment decisions, highlights the irreversibility features of investments which is called the theory of real options. As indicated by Bernanke (1983) and McDonald and Siegel (1986), this theory proposes that firms can postpone their irrevocable investments in case of high uncertainty that lead a decline in investment levels.

1.2.1.2.1. Hartman-Abel Approach

Hartman (1972) investigated the effects of uncertainty on product prices, wage rates and costs of investment on the investment decision of a firm operating in a competitive market and bearing symmetrical costs of adjustment and no risk. Hartman (1972) concluded that there is a positive relationship between investments and uncertainty. More specifically, with a linearly homogeneous production function, competitive firm increase its investment in case increased output price uncertainty exist.

Capital input needs to be chosen for a period in an environment where price of output and wage rate is unknown. On the other hand, labor input, as capital input, is decided by the firm after knowing output price and wage rate. Besides, it was assumed that increasing marginal costs to investment exists in each period and these costs change interperiods. In this sense, it is possible to determine investment for each period directly in the optimization process allowing the firm to adjust the size (Hartman, 1972: 258).

Abel (1983) examined how the investment decision of a risk-neutral competitive firm that faces convex costs of adjustment is affected by the uncertainty of the effect of output price as a continuation of the studies of Hartman (1972) and Pindyck (1982). Abel (1983) emphasized that, price is random in each period including current period in Hartman's discrete-time model and on the other hand, the future evolution of prices is stochastic although the current price is known in Pindyck's continuous-time model. Abel (1983) illustrated the results of Hartman (1972) using the stochastic specifications of Pindyck (1982).

Abel (1983) criticized the impact of uncertainty on investments on the shape of the function of marginal adjustment costs as asserted by Pindyck (1982), and illustrated that current investment rate in current prices increase with the increase in uncertainty regardless of the shape of the function.

1.2.1.2.2. Real Options Theory

The irreversibility of investments is explained by the theory of real options, unlike the Hartman-Abel approach. The theory was modified from the theory of financial options to investment decisions. In the traditional approach, there are only two alternatives that to accept or reject the investment projects based on NPV approach. However, according to the theory of real options, it is suggested that firms can invest or postpone their investments considering the current economic conditions. In other words, when the conditions are suitable, firms can make an investment or have the option to postpone or cancel the investment when the conditions are not proper. Therefore, waiting should be considered as an economic value. However, this is not the case with the traditional approach (Neely and de Neufville, 2001: 30-31).

According to this approach, the actual value of an investment project is equal to the sum of the traditional NPV and the option value. For this reason, the option approach in the evaluation of investment decisions gives more realistic and accurate results compared to the NPV approach in case of uncertainty (Leslie and Michaels, 1997: 9).

The use of real options on investments dates back Myers (1977) and it was suggested that economic value of research and development (R&D) projects include an option value due to the opportunities expected to be revealed in the future since these investments bear high value but also high uncertainty. High uncertainty of these projects makes the economic valuation difficult.

Since NPV approach neglect the opportunity cost of investment project, the optimal timing of investment in an irreversible project where the benefits from the project and the investment cost follow continuous time stochastic processes was examined by McDonald and Siegel (1986). In this context, uncertainty was taken into account in both cost and benefit of investment and a trigger ratio between total cost and total revenue was developed. According to the findings of McDonald and Siegel (1986), increased uncertainty would increase the option value of waiting and this would reduce the amount of actual investments.

Another model related with the real options theory was developed by Dixit and Pindyck (1994). In this study past attempts was taken into consideration and a

framework on investment under uncertainty was developed. Investment decision of the firm was considered theoretically for both monopoly and competitive environment by applying real options approach and the models developed have since been applied to different fields such as investment on energy saving (Lin and Huang, 2011), innovation in technology (Grenadier and Weiss, 1997) and so on.

1.2.2. Ship Investments

The maritime transportation industry is a business that sometimes provides high returns to its investors, but it is also known as an industry with uncertainties and high risks (Bulut et al., 2010: 623). Because, the industry is exposed to more financial speculation compared to other asset-based sectors. Even expert and experienced credit analysts find it difficult to evaluate maritime transportation companies mainly because of capital intensity, asset mobility, volatility and business structure of the industry (Chiste and van Vuuren, 2014 3).

Decision makers should apply systematic judgement during ship investment decision making process mainly because of size, technical complexity and long life of a ship (Aspen et al., 2015: 323). Decision making in maritime transportation industry are divided into 6 steps by Kavussanos (1996):

- 1- To figure out whether to charter or purchase a ship
- 2- To determine which vessel to be secured by size, type, second hand or new building etc.
- 3- To decide when the ship is to be sold or purchased
- 4- To detect which type of funding alternative to be preferred under what conditions
- 5- To determine which rules to be applied and which contract to be selected
- 6- To decide what kind of financial strategies will be developed in order to avoid risks.

While making investment decision, ship investors should consider not only freight rate and volatility in asset prices, but also alternative uses of the ship in case the economical conditions vary than expected (Bendall and Stent, 2003: 294). In other words, trading strategies are adjusted in terms of ship prices to expand profit margins.

The owned ships represent the strength of the shipowner at times of peak market, while the owned ships are regarded as the weakness of the ship owners during recession. The principle of operating the ships based as an owner or charterer defines the structure of the company and reflects the risk and business perception of the ship owner (Scarsi, 2007: 582). For instance, purchasing and operating a ship is more profitable when the ship prices are undervalued compared with the future profitability. Conversely, ship chartering is more profitable compared with owning a ship when ship prices are overvalued in comparison to their expected future profitability (Alizadeh and Nomikos 2006: 120). Shipowners who have lower cost of capital have better performance than their competitor when the markets are in recession (Bae and Lee, 2013: 596).

Ship investors may form their fleet composition by focusing on a certain market or on a certain ship size by taking into account existing opportunities (Scarsi, 2007: 582). The technical complexity of maritime transportation, the commercial reputation of the ship investor and many other variables are taken into consideration in the negotiation process, so this process last very long to finalize. Therefore, shipping markets are not liquid markets such as stock exchanges in which stocks that are highly liquid assets, are easily traded.

Demand in the maritime industry is closely related to international trade activities. Any improvement in these activities could generate an unforeseeable change in the costs and revenues of shipowners (Bendall and Stent, 2007: 442). Cash flow in the industry is subject to; changes in international markets, geopolitical risks, foreign currency risk, movement in oil prices, changes in commodity prices, behavior of other competitors, and most importantly trade cycle (Bendall and Stent, 2003: 293).

World maritime transportation industry has undergone radical changes, especially in the period after World War II. There was growth and abundance during the first 30-year period up to the 1974/75. Until 1990s, the period had passed with recession and stagflation. While the most lucrative period of all time was experienced, started 2003 and lasted until the middle of 2008, there has been a deep, global recession, which is still in effect and unpredictable by the collapse of the Lehman Brother investment bank, also directly affects the maritime industry (Başer, 2013: 88).

As a result of cyclicity, high volatility in asset prices exists in the industry, since asset prices may significantly change in a short-term period that wipes out

earnings of a few years. As the global financial crisis increased its effect in 2008, ClarkSea index of freight rates dropped around 85% by April 2009 (Drobetz et al., 2016: 26). This sharp decline in freight rates directly affected the market values of the ships as well. For instance, historical data for 5-year secondhand ship prices illustrates sudden swings. A ship investor purchased a panamax vessel for \$89 million in July 2008, but its price suddenly fell to \$26 million just 4 months later that accounts for 70% deviation from its initial price. This example proves that the volatility in ship values may exceed millions of dollars in a few months (Chou and Chen, 2019: 223-224). Accordingly, financial sustainability and competitiveness of the company may be negatively affected in such circumstances (Bulut et al. 2013: 653-654). In this sense, analysis of the cycles in shipping markets is important in explaining the increase in freight rates, ship prices and scrap prices (Angelopoulos et al., 2016: 229). Because, the ability to read the market, and play the cycle provides considerable benefits to the ship investors. Therefore, maritime transportation has historically been drawn attention of investors (Chiste and van Vuuren, 2014: 2).

Due to the increase in economic activities, not only the demand for maritime transport, in particular bulk shipping services, but also the freight rates increase. Changes in the freight rates explicitly affect the decisions on fleet expansion. Consequently, the supply side of bulk shipping services is affected inevitably (Christe and van Vuuren, 2014: 1). In other words, in times of high growth and profit, ship owners tend to invest in ships to expand their fleet, depending on their positive cash flows. Accordingly, freight rates and second-hand ship prices respond immediately to changes in the supply and demand balance. However, the supply of capacity in new building vessels reacts more slowly (Hoffmann, 2010: 123-124). As indicated by Duru (2014), subject delay in supply side is explained with cobweb theory in economics literature. According to the theory, delayed supply may generate business cycles due to the volatility in asset values.

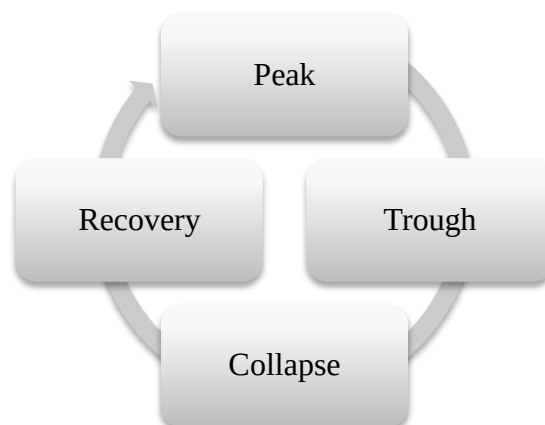
Because there is a delay of approximately 18 to 36 months between placing an order with a shipyard and putting a ship into service, the supply is stable in the short term and the profitability of the investment can significantly change in the industry (Bendall and Stent, 2003: 293). During the subject period, the demand for maritime transport may change. At the moment when the order is given, the expectations about

the future can be positive and in a short time, this situation can be reversed. Therefore, transient imbalances between the demand for global maritime transport and fleet supply can lead to unexpected changes in freight rates (Drobetz et al., 2016: 27; Scarsi, 2007: 580). While a virtuous cycle can be primed by sound investments, bad investments generally originate vicious cycle, and the length of recovery last so long than expected (Scarsi, 2007: 580).

To balance the supply in the sector against the decline in demand strategies such as terminating new build ship orders, scrapping the ships, cancelling or postponing existing new building ship orders, adjusting ship speed for the effective use of the existing fleet, and laying up some of the currently operating vessels (Hoffman, 2010: 129).

To sum up, shipping cycles can be summarized in four stages as shown in Figure 16, namely; trough, recovery, peak and collapse. Each cycle has different effect on both ship investment decisions and chartering preferences. Since the freight rates are not enough to cover operational expenditures, ship owners are forced to decrease their fleet capacity and also the orders in new building market declines inevitably in trough stage. In recovery process, a balance between supply and demand is achieved and freight rates increase to the peak levels and new building ship orders surge in peak stage. In the last stage, collapse, total supply exceeds total demand and freight rates declines again (Scarsi, 2007: 578; Christe and van Vuuren, 2014: 5).

Figure 16: Cycles in Maritime Transportation Industry



Source: Chiste, C., and van Vuuren, G., 2014, Investigating the cyclical behavior of the dry bulk shipping market, *Maritime Policy and Management*, 41(1): 1-19, p.5

Although it is known that the maritime industry has a cyclical structure, it is not possible to foresee the timing of this cycle and how long it can last. According to the rule of thumb in the industry, cycles in maritime transportation industry last around 7 years. 15 cycles have statistically identified for the period 1869-2002 with a peak-to-peak average length of 7.1 years, and the standard deviation is 2.3 years. Peaks generally lasted 2 years, but the longest peak by duration and intensity was over the period of 2003 and 2008, and this was the best boom period in 269 years (Chiste and van Vuuren, 2014: 1-2). Creditors comfortably extend loans to the industry during boom years because of increase in ship values. The required loan can easily be obtained from banks without the need for too much collateral. This situation is attractive for investors and encourages borrowing.

To sum up, ship investments that require high amounts of capital are of great importance in the long-term sustainability of the maritime transportation industry, where fluctuating earnings, volatile ship prices and close management approach exist (Stokes, 1996: 397-398; Gong et al., 2013:1). It is considered that the profitability of investors cannot be achieved not only from ship management activities but also capital gains derived from ship sale and purchase transactions at the right time (Kavussanos and Alizadeh, 2002: 325; Chou and Chen, 2019: 223). The basic rule in ship investments is to “buy low, sell high”. Therefore, timing is essential for maritime transportation industry in which there is an intense competition and cyclicity exists (Alizadeh and Nomikos, 2006: 119).

Instruments to fund a ship have been evolved to some extent to meet the market demand for years. There are various types of financing alternatives to expand fleet capacity and to provide working capital, including initial public offerings, bonds, shipping funds, leasing, venture capital, private equity and shipbuilding credit (Gong et al, 2013: 1). However, debt has traditionally been used as a primary source of external financing for the maritime industry despite the trend to resort to the public equity and bond markets in recent years. As a result, the leverage levels of shipping firms are quite high compared to firms in other sectors. In addition to the irregularity in the cash flows due to the excessive volatility in the revenues, the excessive decline of the asset prices in times of crisis makes this sector a rather risky sector as a consequence of high leverage (Drobetz et al., 2016: 28). Since loans provided to the

shipping industry have become more expensive for ship owners, the perception of the banks to the sector has changed negatively because the sector has not been profitable any more, because of; strict standards under the Basel III framework, volatility of vessel prices and having insufficient collateral of single-vessel companies (Albertijn et al., 2011: 70).

In terms of ownership structure, container vessels can be evaluated in two separate groups. First group contains the ships that are owned and operated by liner companies, and the second group consists of chartered ships owned by independent ship operators and operated by liner companies (Celik Girgin et al., 2018: 3).

In the bulk commodity transportation markets, especially in the tanker market, the ownership structure changed significantly after the 1950s. In the 1950s, oil companies controlled most of the tanker ships, and a large part of the tanker fleet began to be controlled by independent investors since the 2000s (Veenstra and De La Fosse, 2006: 63). In the dry bulk market, after the collapse of the former Soviet bloc and the disintegration of state-owned fleets, independent ownership has increased and the spot charter market has always played an important role (Celik Girgin et al., 2018: 3).

1.2.3. Literature Review on Ship Investments

1.2.3.1. Studies on Ship Investments

Both new and second-hand ship values are based on supply and demand characteristics of maritime transportation industry. While new building ship values are determined by labor, raw materials, equipment, classification etc., second hand ship values are mostly driven by demand factors (Tsoulakis et al., 2003: 350). Tsoulakis et al. (2003) suggested that new building ship values could not respond as quickly as second hand ship values to the changing market conditions. Therefore, it can be said that new building ship market is more insensitive compared to the second-hand ship market against speculative situations.

There are fundamental differences between pricing and cost. A shipyard targets shipbuilding projects that meet their costs in the long run and provide a satisfactory profit. Bertram et al. (2005) suggested that the shipyard has two different options in

terms of the cost approach and a market approach for ship pricing. The cost-based pricing option is based on the bottom-up pricing principle. Accordingly, the price is determined by taking into consideration the costs, while the top-down pricing principle is taken into consideration considering the market prices and keeping the production costs at the appropriate levels. This is also referred to as “target costing”.

The principle of the shipyards is based on the principle of pricing. In bottom-up pricing where costs are considered, there is a risk of termination of the contract due to over-pricing. On the other hand, if pricing is made according to the market, the costs are not met and there is a risk of loss. In practice, although market pricing is accepted as a general principle, cost estimation is also carried out in order to determine whether production in the appropriate cost range has been made. Market pricing is based on the information obtained from various intermediary institutions in the field, based on the last price level of another ship with similar characteristics in the market. When the market conditions are good, pricing is much higher than their costs, this situation is no longer valid in low market conditions. Therefore, shipyards need to apply these two principles in a balanced way in order not to lose existing contracts and to achieve a satisfactory profit margin (Caprace and Rigo, 2012: 217-218).

Tinbergen (1931) is the first attempt on cyclicity of the shipbuilding market (Haralambides et al., 2004: 67). Supply and demand approach based on cobweb theorem was considered to evaluate the newbuilding market. According to Tinbergen (1931), newbuilding market highly depend on the amount of freight offered. Accordingly, the freight rate changes in accordance with the current supply in the market. Specifically, since the ships ordered in peak time period are handed over to their owners in around a year later, total supply increase. In this context, endogenous new building market cycles occurs due to the time lag between demand for new building ships and current levels of the capacity.

Koopmans (1939) has been one of the first studies in maritime economics, examining the shipbuilding market and the behavior of tanker freight rates. According to Koopmans (1939) expectations on capacity of world fleet and aggregate demand for shipping services affect the ship building market due to the time lag between ordering and delivery of the new building ship (Haralambides et al., 2004: 67). Moreover, the sector supply (ton-mil) was taken as a function of fleet size and the sector demand as

a function of the freight rate, fuel prices and other operating expenses. Koopmans (1939) alleged that supply is extremely elastic when freight rates are at very low levels and the shape seems almost horizontal. On the other hand, when the freight rates are at high levels, the supply becomes very inelastic that corresponds to vertical shape. It is emphasized that at the elastic region where demand meets supply, the freight rates are not very sensitive to the changes in demand. On the other hand, it is suggested that the freight rates are more sensitive to the changes in demand in the region where the supply is inelastic, and small fluctuations in demand for maritime transportation or the size of the fleet can lead to huge volatility in freight rates (Vergottis, 1988: 91).

Beenstock (1985) indicated that price for newbuilding ship is steady while price for second hand ship is flexible. Furthermore, it was argued that there is a perfect correlation between new building and second-hand ship prices. Therefore, new and second hand ships are the same asset, and the only difference is the age. However, this finding is open to criticism since while the price for new ships is substantially cost driven, the price for second hand ships is mostly market driven.

Jin (1993) investigated the relationship between new building tanker orders and their prices and the determinants that effect the relationship by developing supply and demand models for the tanker market. The function of new building tanker demand consists of; prices of new building tankers, oil prices, freight rates, volume of tanker lay up, second hand tanker prices and dummy variable reflecting the change in distance of transportation in accordance with reopening of Suez Canal. On the other hand, the supply function was shown as inverse supply function by considering price of new tankers. While the dependent variable in the inverse supply function, the independent variables consist of; the quantity of new building tankers that is equal to the quantity of demand for new building tankers, capacity of shipbuilding, cost of new building ships, and technological change. According to the findings derived from the models developed, both oil prices and second-hand ship prices affect the amount of new-built tanker demand as much as the freight rates. Compared with the cost of new building tanker, capacity of shipbuilding has more effect on the quantity of new building tankers in the short run. Besides, both technological changes and important political developments such as reopening Suez Canal have substantial impact on the market.

The second hand ship market has an important role in the maritime transportation industry and allows ship investors to easily enter and exit the market. This is particularly important in terms of market competitiveness. In addition, in the industry, where there is high level of cyclicity, it is possible to obtain high profits through asset play, which means buying from low and selling from high levels. At this point, timing is very important. Although low freight rate means low profit margin, and thus low ship price for existing ship investors, it offers attractive opportunities for new investors seeking to buy from low and sell from high (Tsoulakis et al., 2003: 347).

Beenstock and Vergottis (1989a, 1989b) have investigated a new model that takes into account the rigorous assumption of the excellent correlation between new building and second-hand ships, taking into account the freight rates, new building and second-hand ship prices.

Charemza and Gronicki (1981) reported 35 equations to analyze supply and demand in the world shipping and shipbuilding markets and illustrated that ship prices are determined by freight and activity rates. However, Beenstock (1985) is considered as the first attempt to determine ship prices in the literature (Haralambides et al., 2004: 71). Beenstock (1985) indicated that, due to the fact that ships are long-lived capital assets, it is not appropriate to determine their prices by supply-demand analysis. In determining the price of second hand ships, the author generated a model by considering; the level of world welfare, the world fleet size, expected return, the expected second-hand ship price and the interest rate for the next year. This model is based on the assumption that total world wealth is a portfolio of well-diversified assets and that the share of ships in total wealth acts as a component of this portfolio. In other words, as the prices of ships increase, their relative returns will decrease and the demand for ships will be inversely correlated with their prices. Beenstock (1985) claimed that the share of vessels in total wealth worldwide differs directly with the expected return on vessels as capital assets and is negatively related to alternative investments.

Stranden (1984) and Straden (1986) considered the weighted average of short and long-term freight returns in second-hand ship valuation. It is argued that second-hand vessel prices are integrated with the new building market. It is emphasized that the second-hand vessel price was shaped according to the

expectations of future developments in other shipping markets. As a result, the ship's present value is calculated by considering the ship's value, expected cash flow and expected negotiation and transaction time.

Kavussanos and Alizadeh (2002), Glen (1997) and Hale and Vanags (1992) tested the validity of the Efficient Market Hypothesis (EMH) in the formation of the prices of second hand dry bulk carriers. According to these studies, the weakness of the Efficient Markets Hypothesis in shipping markets may be due to time based risk premium or arbitrage opportunities in the market. In addition, it has been suggested that trading strategies can be developed that will enable high rates of profit with the right timing in case of a consistent deviation from the rational values of ship prices. For example, it is appropriate to invest in ships with relatively low levels compared to their fundamental values and that are expected to provide high freight earnings in the future due to cyclicity, or instead of purchasing, it would be more appropriate to charter the ships traded at very high levels from their core values.

Tsolakis et al. (2003) examined the prices of second-hand ships econometrically. Previous models on pricing have been examined and a new model has been proposed by considering the weaknesses of these models. According to the findings, it was determined that the prices of second hand vessels of different types and tonnages gave different responses to the market variables that determine the price formation. Both in the short term and in the long term, new building ship prices and time charter freight rates were found to have the greatest impact compared to other variables on the determination of the second hand vessel price.

Wright (2005) examined the factors determining the prices of second hand vessels. In this context, ship prices were evaluated by considering two different approaches. The first is that ship prices respond to changes in the market fundamentals by which profitability is determined. The second approach is that ship prices are affected by market sentiment. The findings show that both approaches can play a role in determining the second hand ship prices. However, according to the short term test results, it has been determined that the data supports the approach to the market fundamentals in the second-hand ship market.

Adland et al. (2006) tested the hypothesis that excessive rise in freight rates in the dry cargo transportation market between 2003 and 2005 caused the deviation of

asset values from its fundamental values in the second hand market. According to the results obtained from the econometric analysis, it was found that the second hand ship market was closely related to the new building and freight markets and that the pricing behavior was in accordance with the maritime economics theory.

Adland and Koekebakker (2007) applied a nonparametric multivariate approach to investigate the ship pricing of bulk ships in the second hand ship market. According to the findings obtained from the data set which contains cross-sectional data for sales of more than 1,850 handysize bulk carriers between 1993-2003; It has been suggested that the total carrying capacity (dwt), the age of the ship and the time charter freight rate can be defined as a partially non-linear function of the second hand value of a ship.

Stopford (2009) stated that the price of new building vessel is determined by the available supply of berths for the particular ship type and the orders for new ships placed in the same period. Author asserted that the demand for ship building is affected by; freight rates, second-hand ship prices, market sentiment and future expectations market sentiment, liquidity stock and credit availability. Moreover, it is emphasized that the shipbuilding supply is affected by current capacity, shipyard unit costs, exchange rates and state subsidies.

Greenwood and Hanson (2015) studied how cycles in investment, charter rates and secondhand prices are connected to variation in the returns to ship owners, and explored behavioral explanations in which there is too much investment in booms because firms over-extrapolate abnormally high profits into the future by using monthly data on secondhand ship prices and ship charter rates between 1976 and 2011. Results show that returns to owning and operating a ship are predictable and closely related to industry-wide investment in capacity. High current ship earnings are associated with higher ship prices and higher industry investment, but predict low future returns on capital. Conversely, high levels of ship demolitions—a measure of industry disinvestment—forecast high returns.

As indicated in Vergottis (1988: 86-90), Tinbergen (1934) analyzed the sensitivity of freight rates to changes in demand for maritime transport on the one hand, and to the factors affecting supply as a function of freight rate, fleet size, and fuel prices on the other hand. According to the findings, it was suggested that the

demand is perfectly inelastic against the freight rate. Additionally, there is a positive relationship between total supply and freight rate and fleet size. Furthermore, it has been found that there is a negative relationship with fuel prices. It was stated that the increase in freight rates would increase the capacity of the fleet, so does the supply of the sector. On the other hand, an increase in fuel prices at a certain freight level is indicated that it will cause slow steaming or lay up for a certain period of time.

Zannetos (1966) is a continuation of Koopmans (1939), as expressed by the author himself (Veenstra and De La Fosse, 2006: 61). Zannetos (1966) has made a number of partial analyzes between tanker spot freight rates, ship orders, ship deliveries, scrap volumes, ship lay up rates, conversions and repairs. According to Koopmans (1939), freight cyclicity is the result of the ship replacement cycle in the tanker industry. This cyclicity is intensified by the fact that the building of a ship requires a certain amount of time. What Zannetos disagreed with was that the assumption of Koopmans (1939) was not based on expectations of future returns of investments. Zannetos (1966) also developed a model to investigate the determinants of time charter freight rates for the period of 1949-1959 in the study. In the model, Zannetos (1966) considered marginal costs, ship size, spot rate level at the time the contract is made, the length of charter contract and the time period between the date when the contract was made and the moment when the deliveries took place. Findings revealed that marginal costs are the most significant variable affecting time based freight rates compared to other variables, and the strength of the effect increased as the length of the contract extended.

Goss (1968) investigated the validity of the perfect competition market conditions due to the fact that rising political tension began to affect the freight market as of 1960s. Due to the pressure of the nations holding the supply power in the maritime sector on the economic independence of the freight markets, the traditional shipowners in the U.S. (United States) and Northern Europe experienced difficulties at that time. In this case, protectionism has emerged in the freight markets. Goss (1968) explored the effects of the concept of protectionism, which contradict with the perfect competition market. According to Goss (1968), as long as the maritime transportation industry is a market with full competition conditions, the freight rates will be greatly affected by macroeconomic factors and protectionism is not a valid tool for freight

markets in which open and competitive market rules are accepted. On the other hand, Goss (1968) emphasized that ownership structure leads the market to oligopolistic structure. In this case, in addition to the macroeconomic factors, behaviors of shipowners are also affect the freight rates (Grammenos, 2010: 183).

Hawdon (1978) analyzed determination of spot freight rates as a series of interactions between tanker market and the market for tanker services in the short and long run. Hawdon (1978) asserted that any fluctuations in both supply of and demand for tanker services are likely to generate significant freight rate changes in the short run. In other words, demand for and supply of tanker services are price inelastic. On the other hand, current and expected freight rate levels are likely to affect tanker supply in the long run. In addition to freight markets as examined in the short run, demolition and new building markets were also added to the models in the long run. The model for the freight market emphasizes the need to take into account the interaction of tanker and dry bulk shipping. The model includes dry bulk freight rates, new building tanker prices, average ship sizes and various dummy variables. It has been found that there is weak interaction between dry bulk and tanker transportation as a result of existence of combined transportation. Besides, determination of the long-term freight rate movements is linked to the new building and demolition markets. Hawdon (1978) investigated the relationship between demand for tanker and oil trade worldwide, freight rates in tanker market and new building tanker prices. Findings reveal that, while there is a positive relationship between new building tanker orders and world oil trade, no evidence was detected between new building tanker orders and freight rates and surprisingly, positive relationship was found between new building tanker prices and new building tanker orders. The reason of why freight rates was found inconsistent with new building tanker orders was explained that since the oil trade worldwide will lead tanker fleet expansion, supply surplus will emerge and accordingly, the freight rate will decrease.

Tvedt (1997) presented two alternatives, namely geometric mean reversion specification and Ornstein-Uhlenbeck process, for describing stochastic nature of the time charter equivalent spot rates in VLCC market, and found that former is more appropriate than the latter. Tvedt (1997) assert that properly defined freight rate process could be useful for estimating the ship value. Moreover, it is emphasized that

the future appreciation of shipowner affects the value of an asset for making changes in utilization or technical specs of the asset in response to uncertainty.

Tvedt (2003) claimed that valuation models in shipping mainly focus on freight rates and ignores the dynamics of supply of and demand for shipping services. Therefore, Tvedt (2003) intended to fill the gap between traditional equilibrium market model literature and the recent shipping asset valuation literature. Tvedt (2003) emphasized that the freight rates displays a return to the mean depending on the market cycle.

Evans (1994) analyzed the market efficiency of bulk shipping fleets in the short and long run. The findings suggest that there is a perfect competition in the bulk shipping market in the short run. Specifically, knowledge of the market is quite well as a result of intelligence exchange between ship brokers. More precisely, for each vessel, freight rates are equal to the marginal cost. In other words, increase in freight rates reflect an increase in demand or decline in supply and vice versa. On the other hand, it has been found that although shipowners follow rational patterns, they could not organize the necessary tonnage supply to meet the demand efficiently in the long run.

Adland and Koekebakker (2004) examined the performance of trading rules by testing the validity of Efficient Market Hypothesis (EMH) in the second hand market for bulk ships arguing that wealth should not be produced by considering trading rules in excess of what can be gained from buy and hold benchmark. It was asserted that trading rules do not generate excess returns that can indemnify transaction costs. Findings support the validity of the EMH in the market.

Kavussanos and Alizadeh (2002) tested the validity of the expectations hypothesis in determining the time charter freight rates in dry bulk shipping. According to the findings of the study, it was determined that the risk perception of the shipowners regarding spot and time charter markets changes constantly due to the volatility of the difference between spot freight rates and time charter freight rates. Therefore, the expectations hypothesis was found as invalid in the market.

Kavussanos (1996) investigated risks in spot and time charter freight rates for different size of ships and found that the risk in time charter freight rates is higher than the risk in spot freight rates. According to the findings, since time charter freight rates

are formed by the expectations of ship investors, it is more sensitive to changes in investors' perceptions. Besides, it is determined that the risk increases as the ship size increases for both spot and time charter freight rates. Because, while small size ships are flexible to operate in different routes and for carrying different type of goods, bigger ships are only employed in certain routes and for certain goods.

Kavussanos (2003) analyzed the relative risks in tanker spot and time charter markets for different size tankers in the world. According to the findings, in contrast to the dry bulk market, time charter freight rates are generally less risky compared to spot freight rates. On the other hand, the risk involved is similar to the dry bulk market considering the size of the ship and the freight rates of large tankers were found to be at higher risk than the freight rates of small tankers.

Dikos and Marcus (2003) examined the second hand ship valuation by considering charter rates and prices of new building ships in dry bulk market for 1976-2002 time period. The model they developed is based on real options approach and they emphasized the existence of asset play valuation in second hand prices.

Alizadeh and Nomikos (2007) developed a model on investment decisions in dry bulk ship sale and purchase market using price-earnings ratio for the period 1976 and 2004. It is asserted that understanding the relationship between second hand ship price and earnings can be considered as an important signal to estimate the future price of the second hand ships and to give the investment decision. This is preliminary study of Alizadeh and Nomikos (2006) where the same ratio can be considered as a reference whether to invest in tanker market. The authors showed that price of ship and freight income are the key factors in sale and purchase transactions.

Yin et al. (2018) evaluated investment decisions in dry bulk market in tough and peak times by developing a model based on real option approach. The authors asserted that the developed model has advantages over the traditional net present value method in uncertain investment environments, and it is more proper tool for investment evaluations in the current dry bulk shipping market.

Alizadeh and Nomikos (2003) examined price-volume relationship in dry bulk sale and purchase market. According to the findings, there is a positive relationship between price of second hand dry bulk ships and ship sale and purchase volume. In

this context, investors have a tendency to invest more depend on high capital gains obtained from ship investments.

Tsolakis, et al. (2003) analyzed prices of second hand dry bulk and tanker vessels for the period of 1960-2001. Error correction model was developed in the study and newbuilding price, time charter rates and interest rates were considered to comprehend price valuation. It is found that second-hand ship prices for the subject vessels are much more affected by new building prices rather than time charter rate on prices of second hand vessels.

Merikas, et al. (2008) examined investment decisions by taking into consideration freight rate, cost of new building ship, freight rate volatility, price of crude oil and interest rates. Investment decision is measured as the ratio of second hand ship price over new building ship price in tanker market. Findings reveal that, investing in second hand vessels is more logical in when the freight market at peak levels to meet demand. On the other hand, it is suitable to invest in new building vessels in bad market as a result of optimism for future of market.

Fan and Yin (2016) analyzed the relationship between prices of second hand and, new building container ships, and time charter rates in container market by applying Var Cointegration model and Bai-Perron test. According to the findings, new building ship price is more volatile than time charter rates and second hand prices when the freight rates are lower. On the other side, time charter rates are more volatile when freight rates reach high levels. Besides, when the freight market is stable, second hand prices increase.

Fan and Luo (2013) investigated ship investment behavior in liner shipping industry by analyzing actual capacity expansion and ship choice decisions of major global liner operators. Binary choice and nested logit models based on ship investment data from major liner shipping companies over the period 1999 to 2009 was applied as methodology. According to the results, most expansion decisions are found to be market-driven, and large companies expand to maintain their market shares. Companies which charter more to reduce financial risks expand less. Shipping companies decide whether to order a new ship or purchase a second-hand ship before selecting the ship size, due to the different purposes of ship investment in new orders and second-hand purchases, and new orders are preferable to second-hand purchases.

When it comes to new orders, large vessels are preferable to small vessels, reflecting the pursuit of economies of scale when investing in new ships. New orders are placed according to a long-term plan for capacity development, while second-hand ships are usually purchased to satisfy the immediate demand or take advantage of low prices when the demand is low. For new orders, the preference increases with ship size, and decreases with shipbuilding length and demand growth rate. For all ship types, the preference increases with a high and stable time-charter rate. For second-hand ships, handysize is the most preferable size. The substitution of new and second-hand ships of the same size displays opposite patterns. Substituting a new order for a large ship with a second-hand vessel is easier than that for a new order for a small vessel. However, it is harder to substitute a large second-hand vessel with a new order than to do that for a small second-hand vessel.

Volatility of demand for shipping services and time-to-build effect on investment were analyzed by Kalouptside (2014) by considering sales in both second hand and new building ships, fixtures and scrapping activities over the period 1998-2010. According to the findings, while investment volatility increases, time to build decreases.

The role of incentives in U.K. (United Kingdom) on ship investments were examined by Marlow (1991). In this sense, an empirical model was applied to test various variables to the shipping markets. Unexpectedly, it was found that there is a negative relationship between incentives and investment levels.

Xu and Yip (2012) determined the variables that can be regarded as important role in ship investment decision. In this respect, the motivation of the paper is to comprehend the role of incentives are appropriate option to save the shipbuilding industry and also the role of cluster effect in the industry excluding Japan, South Korea and China. By applying panel data analysis; world fleet size, world trade volume and spot freight rate are found as the key determinants for shipbuilding orders. Additionally, no relationship was found between the amount of ship building orders and price of new building and second hand vessels. Furthermore, the foreign direct investment volume in transport industry in host country does not lead to further investment in new building vessels. The study concluded that location advantage and cluster effect support the ship investments.

Bulut et al. (2013) investigated shipping assets and market entry decisions from the point of business cycles in the dry cargo shipping by analyzing Return on Equity (ROE) performance. According to the findings, new building or second hand ship investments are placed at the time of peaks of asset prices that generates huge loss of ROE in long period.

Chiste and van Vuuren (2014) investigated cyclical behavior of shipping markets by applying fourier analysis. According to the findings, although the rule of thumb for the duration of cycles in the maritime transportation industry is accepted as 7 years, this period was found to be 4 years based on the 21-day daily gains of dry bulk ships. It is suggested that, when timing is considered to be the most important component of decision making for investments, it will be possible to get higher returns from investments with a better understanding of cyclicity.

Celik et al. (2009) established decision support system for new ship investment decisions based on customer satisfaction levels in different markets by using quality function deployment (QFD) method. In this respect, a model of Ship of Quality (SoQ) is proposed based on decision making algorithms in fuzzy environment.

Goulielmos and Psifia (2006) examined whether there is a long-run memory or dependence in shipping time series. The authors also determined durations of shipping cycles by considering the historical data. Accordingly, “The Rescaled Range Analysis” was applied by examining the long-run dependence of the time-series using the trip dry cargo charter index from January 1971 to July 2002. The results show that the freight rate series display long-term dependence and memory, and past and present affects the future. The Hurst exponent is found 0.93 for short term, 0.74 for medium term and 0.59 for long term suggesting that random walk does not exist. Additionally, filtered and stationary freight rate series exhibit medium and long cycles of uneven duration of 4.5 years and 2.25 years.

Scarsi (2007) investigated roots of mistakes revealed in decisions of ship investors operating in the dry bulk market despite their knowledge and experience. Scarsi (2007) alleged that reading the market insufficiently and incorrect analysis of cycles in the market are the main reasons leading to the errors in ship investments.

There is a limited number of studies that directly or indirectly related to ship investments on the national scale. Arslan and Gurel (2008) aimed to emphasize that

firms can reach a solution by using fuzzy logic methodology if they face multi-criteria decision making problems. By doing so, authors exemplified ship investment alternatives in different type and tonnage for an investor having an intention to enter shipping market by using fuzzy logic method.

Arslan (2008) investigated a case on the process of a strategic investment decision of institutionalized Turkish shipping company in an environment where uncertainty exists. The company is a subsidiary of an institutionalized financial institution with a long history and managerial and investment decisions can be taken independently by the shipping company. In spite of the 2008 crisis, ship investment decision was taken mainly due to the optimistic expectations. Specifically, the demand for dry bulk freight in China, India and the Far East will continue; 31,3% of the world dry bulk fleet is over 20 years old; demand for dry bulk freight will be higher than the supply until 2012; daily spot freight rates will be at US \$ 20,000 in 2018 even using the most pessimistic approach in the financial analysis of the ship investment; and the assumption on keeping the libor rates of usd loans low in order not to further increase global recession.

Nemlioglu Koca (2018) examined the effects of 2008 global crisis on Turkish maritime industry. In this study changes in world trade volume, GDP growth rates of Turkey, Turkish foreign trade volume, import, export and cabotage shipments and also Turkish merchant fleet are investigated and interpreted in accordance with the effects of crisis.

Dursun and Erol (2012) analyzed the financial structure of the firms listed in the database, titled as “H-502 Sea and Coastal Waters Freight Transportation”, by applying ratio analysis. The results show that the profitability of the firms is quite low while the operational costs are extremely high.

Erol (2017) calculated the real freight revenues of the ships that arrive in and depart from Turkish ports. The volume of freight revenues are calculated and distributed between Turkish and foreign flag ships. By doing so, the author developed microsoft SQL-based algorithm. Findings reveal that, total freight revenue generated in Turkey is calculated \$5,8 billion. Additionally, while foreign flagged ships account for around 80% of revenue, the rest is generated by Turkish flagged ships.

Açık et al., (2017), investigate the efficiency of Turkish shipbuilding industry by using data envelopment analysis. While project capacity in dwt and number of employees are regarded as the inputs, the production level and repair and maintenance in dwt are the outputs of the study. According to the findings, after the financial crisis faced in 2008, repair-maintenance function of the shipyards has been utilized. However, the efficiency of production function was found insufficient mainly because of the sharp decline in new building orders and resources for production has become idle. Therefore, the shipyards substantially focus on the repair and maintenance of the ships currently in service with high efficiency levels.

Derindere-Köseoğlu and Adıgüzel-Mercangöz (2012) examined the effects of 2008 financial crisis on Istanbul Freight Index (ISTFIX) published in Turkey for small tonnage vessels operating in short distance maritime transportation and also Baltic Handysize Index (BHSI) for the handysize vessels operating worldwide. In this context, Zivot Andrews structural break test was used to detect whether the effect of crisis causes any changes in indices. Moreover, to what extent the changes have taken place for different tonnage segments were investigated. The findings reveal that freight revenues of all segments have structurally changed as of 2008 financial crisis.

Atar et al. (2013) compared road transport with short-distance maritime transport as an alternative. In this context variables that are emission, fuel consumption, transport costs and transport time were taken into consideration. According to the findings, short distance maritime transport and combined transport have great advantages in coastal regions. However, due to the high average age of the existing coaster fleet, possible risks, especially investment requirements, were emphasized.

Erol and Dursun (2015) investigated financial risks specific to maritime transport and examined what kind of results can be obtained by using financial derivative products to protect the market participants from risks. According to the findings, it is emphasized that the most appropriate derivative instruments in terms of tramp shipping are forward agreements and call options in terms of the ability of the parties to meet their special needs.

Erol et al. (2014) examined the effects of ship size and age of the ship on running costs that is a component of maritime transport costs. According to the

findings obtained by the regression analysis of the data, it was found that daily operating costs increased with increasing age of the ship. In addition, it was found that crew expenses decreased when the age of the ship was kept constant and ship size increased within certain constraints.

Keleş and Kum (2019) aimed to determine whether there is a significant difference between the performance of the ships using 3rd party ship management services and the ships whose management is undertaken through in-house organization. BIMCO Shipping KPI Standards 3.0 data was considered and data was analyzed through one-way anova. According to the findings, there is a significant difference between the performances of the vessels managed by two different management methods. Specifically, it has been determined that transfer of ship management business to professional managers will have positive results for coaster owners.

Tunalı and Akarçay (2018) have analyzed the effect of the industrial production in Turkey on maritime transport. According to the results of the regression analysis, a positive and significant relationship was found between industrial production and maritime transport. In addition, the increase in industrial production as well as other factors necessary for the development of maritime transport were emphasized.

1.2.3.2. Dissertations on Ship Investments in Turkey

An enquiry was made on 25 May 2019 in the database of Higher Education Council National Thesis Center. When querying, firstly, the keyword “ship investment” was entered in the screen, and 5 results were obtained. Then, the keyword “investment” was typed and 1.460 results were obtained. Afterward, these results were filtered by typing “gemi” and “deniz” to “title of the dissertation” section, respectively. As a result, 9 dissertations were reached as illustrated in Table 10.

Şentürk (1999) examined development of shipping financial markets from past to present in terms of periods and various inferences have been made in macro and micro scale for the future. While Şentürk (199) evaluated financing methods together with the incentive measures implemented in Turkey, the latest legislation in force was taken into consideration. In this study, the most used ship investment project

evaluation methods such as; net present value, internal rate of return, profitability index and payback methods are examined in detail with the examples. In the modern decision analysis which should be used together with financial evaluation methods especially in the multi criteria investment decision process, one of the most useful methods, “Target Programming Method” was introduced and applied on a simple ship investment problem.

Table 10: Dissertations on Ship Investments in Turkey

Keyword	Author	Year	Thesis Title	University	Language	Degree
Ship Investment	Özgür Umut Şentürk	1999	Financial analysis and mathematical modelling of ship investment	Istanbul Technical University	Turkish	Master
Investment + gemi	Görkem Övül	2003	Financial risk analysis in dry bulk cargo vessel investments	Dokuz Eylül University	Turkish	Master
Investment + gemi	Serdar Çolak	2007	Dry cargo and chemical tanker investment analysis in ship management sector	Istanbul Technical University	Turkish	Master
Ship Investment	Emrah Bulut	2008	To analysis the ship investment with multi-criteria decision making	Istanbul Technical University	Turkish	Master
Investment + gemi	Taylan Kalkavan	2008	Reviewing investment partnership system (KG) in marine in Germany as ship finance model and applications in Turkey	Istanbul University	Turkish	PhD
Ship Investment	Sinem Derindere Köseoğlu	2010	Analysis of risks in international maritime transportation industry and factors that affect ship investment decisions	Istanbul University	Turkish	PhD
Ship Investment	Umut Tolga Gümüş	2011	Financial evaluation of ship investments as a risky investment project: Simulation approach	Adnan Menderes University	Turkish	PhD
Investment + deniz	Onur Akdaş	2012	Applying financial evaluation techniques to the maritime investment projects: The case study on port business	Dokuz Eylül University	Turkish	Master
Ship Investment	Yusuf Ziya Şipal	2014	Maritime transport sector in turkey ship investment strategies and financing of companies; one application	Adnan Menderes University	Turkish	PhD

Source: Council of Higher Education, *Thesis Center*, <https://tez.yok.gov.tr/UlusalTezMerkezi/giris.jsp>, 25.05.2019

Övül (2003) aimed to investigate the concept of financial risk in dry bulk commodity, the importance of risk analysis for investments and the feasibility of the application of financial risk analysis in dry bulk ship investments. The other purpose of the study is to emphasize the importance of carrying out financial risk analysis in maritime transportation industry, in which there is a high cost of capital and sunk cost, in addition to financial reports and analyzes for foreign credit use in practice. For this

purpose, among risk analysis methods, probability analysis and sensitivity analysis were used with Monte Carlo simulation technique. Due to the necessity of risk analysis software program, industrial version of software program “@ Risk 4.5” was used. Investment risk analysis was carried out for three different ships belong to three different firms located in Turkey that both operates of and invest in dry bulk vessels as an application field. As a result, the risks of investments, comparative results of risk analysis on sensitivity points and recommendations for future studies were shared.

Çolak (2007) examined the problems of the agency and brokering sector, which are integral parts of ship management, by applying the scientific solutions such as "the costs and the establishment of the cost system in ship management", which is the main problem of the ship management companies and the deficiencies were shown by comparing with organizations in foreign countries. Additionally, in order to make these organizations work more efficiently, solution suggestions for implementation and development in agency sector such as, “Relationship Marketing Approach” which is necessary for establishing long-term and good relations with customers was proposed to be used in shipping agencies and other similar business fields. Besides, it is intended to compared two ship investment options to find which option is more profitable. In this sense, the daily operating costs of both 5.000 dwt, 5-year-old dry bulk ship and a chemical tanker with same features were calculated and compared one another. For this purpose, the initial investment costs, annual expenses, annual earnings and the income obtained by the sale of these vessels at the end of the 5th year were calculated by using the net present value method.

Bulut (2008) analyzed “Net Present Value” and “TOPSIS (Technique for Order Preference by Similarity to Ideal Solution)” methods comparatively in the evaluation of Panamax and Handymax dry bulk ship investments by considering various variables such as ship size, whether the ship is a new building or second hand, condition of the ship, fuel consumption and age. Results of net present value based on numerical data are different from TOPSIS method based on both numerical and judicial data. For example, in the actual scenario for Panamax and Handymax ships, the best investment decision to be made was found to be the new vessel with balloon payment by considering net present value method. However, TOPSIS method suggest that the best choice is the new building vessel without balloon payment. In the optimistic scenario,

the most appropriate investment decision is found as the second hand ships with balloon payment by considering net present value method, TOPSIS suggest the new building vessel without balloon payment. On the other hand, in the pessimistic scenario, while the decision to invest in the new building ship with balloon payment by considering net present value method is less costly, the investment in the new ship without balloon payment is less damaging.

Kalkavan (2008) examined ship investment partnership, KG (Kommanditgesellschaft), which is a macro-level system in Germany from the perspective of ship finance sources used in the world. The system is described in detail and its features are specified. Then, the system of the companies explained that will enter the system and the company structures to be established considering the way used by Turkon Holding which is the first Turkish company joined to the KG system with his own fleet. Additionally, the applicability of this system in Turkey was examined in this study.

Derindere-Köseoglu (2010) aimed to determine the factors affecting ship investment decisions by examining the risks and investments in maritime transportation industry, which has an important place among transportation modes, and specifically capesize sector were investigated. Freight risk that have an impact on ship investment decisions has been given a special importance. In view of the impact of external factors such as supply, demand and cost, the freight risk was measured and risk analysis was performed for different capesize routes. Then, the effects of the measured freight risks on the investment decision were investigated. In addition, the effects of many variables that are expected to affect ship investment decisions such as time charter freight rates, iron ore prices, oil prices, steel production volume, steel prices, many exchange rates, dollar libor interest rates were analyzed.

Derindere-Köseoglu (2010) determined that the prices of second-hand ships and the prices of new shipbuilding ships are highly correlated but the magnitude of the margin between them changes. This situation is explained by the fact that the prices of new building vessels are cost-based, while the second-hand ship prices are mostly based on supply-demand balance in the market. This structural difference causes the change in the margins between these two ships' prices from time to time. Thus, it was emphasized that the price of the second hand / new building ship price ratio will give

information about the investment decision if the movement of the variable is small or large. In the case of a low second-hand / new building vessel price ratio, it is stated that the important factor in determining the value of the vessel is the age of the ship. That is, a second-hand ship would be less valuable than new building ship since its age is older. This will give a signal that the freight market is weakening. On the other hand, while this ratio is high; it is an indication that the market ignores the age of the ship and value it high, and it will give the signals that the freight market is getting stronger.

The freight rates were found to be positive with fuel prices and negative with fleet size. According to the fuel prices, the degree of significance of the fleet size was found to be greater compared with the fuel prices. This situation emphasizes that the supply-demand balance in the freight market is of greater importance than costs. In addition, all of the freight risks measured for the four different capesize routes affect the average of the second hand / new building ship price, which is the investment decision variable, and the direction of the relationship is negative. In this case, it has been determined that investors in the capesize sector exhibit a risk aversion profile. Furthermore, it was determined that there is a significant and positive relationship between investment decisions and time charter freight rates, iron ore prices and Brent and Arablight oil prices.

Gümüş (2011) aimed to determine the financial risk in ship investments and the useful aspects of risk analysis, and to demonstrate the feasibility of financial risk analysis in ship investments. For this purpose, in a sample ship investment project, the data were analyzed using Monte Carlo Simulation method and the net present value of the project was calculated. The software used in the analysis was Arena Version 13 and Microsoft Excel. According to the findings, the risk of the ship investment project is not very low. Although the probability of providing a net present value of more than \$0 is 55% in the case of this project, the fact that the probability of providing net present value less than \$0 is still 45% indicates that the project is risky. According to the calculations made from the simulation samples, it was revealed that the project was feasible. However, in evaluating the project, if the discount rate determined by investors with the addition of inflation as a risk premium to the minimum credit interest rate is higher, the project's probability of providing positive net present value will decrease, and the feasibility of the investment will be adversely affected. According to

these results, while making this investment, it is necessary to reduce the discount rate in the estimations about the variables or to increase the earnings. Gümüş (2011) asserted that because the change in expenses is generally based on the inflation rate, the exact calculation of the cost estimates is both very difficult and waste of time since eliminating the uncertainties is related with the external factors.

Akdaş (2012) intended to explain the methods to be used in the evaluation of the investments to be made in the port business and to introduce the project valuation criteria. Besides, it was clarified how feasibility decisions would be affected in possible changes in project variables, threshold values of these variables, sensitivity indicators and activity stop values were determined. At this stage, the risk level of the project was also measured. According to the results obtained, Akdaş (2012) suggests that it is a necessity to perform such evaluation with dynamic methods in today's economic conditions to determine the risk of the project and to carry out the sensitivity analysis of the variables.

Şipal (2014) investigated the current situation on the resources allocated for financing ship investment strategies of the companies in Turkey and the problems that occurred at the process. In this study, qualitative research techniques was used. Data were collected by "Interview" method from qualitative research data collection techniques. These data were analyzed with the NVivo 10 program. According to the findings, there is not adequate resource allocation to the maritime transportation industry for the ship investments in Turkey. Furthermore, it is asserted that the expertise of the credit institutions and public support are not adequate.

CHAPTER TWO

BEHAVIORAL FINANCE

2.1. PARADIGM SHIFT IN ECONOMIC BEHAVIOR

2.1.1. Rational Economic Behavior

“Is man rational?”

“Yes, man is rational.”

Although the answer of the question seems very simple, it is actually the basis of the traditional economy. In other words, the science of economics argues that humankind is rational, and assumes that the option that will provide the maximum utility among different alternatives will be chosen in the decision-making process. Own interests of "rational man" are at the forefront. It is aimed to obtain the best in the most appropriate way. That is, rational man makes the right decision.

It is presumed that “homoeconomicus”, the economic human model proposed in 18th and 19th centuries, have full knowledge on economic activities such as production, change and consumption that is consistent in its decisions and behaviors and behaves reasonably considering utilities. This model constitutes the basic assumption of economics and defines the rational person who pursues maximization of utility and profit (Kıyılar and Akkaya, 2016: 23).

The assumptions of Adam Smith and Jeremy Bentham that human psychology directly affects decision-making processes were neglected by researchers such as Francis Edgeworth, Stanley Jevons, Vilfredo Pareto, and positivism was considered as the dominant view, and cognitive capacities of individuals have been ignored in decision-making processes (Kitapçı, 2017: 86-87). In addition to having a deductive structure, the traditional approach has also normative features. It provides explanations on not only how we behave, but also how we should behave considering rational man assumption (Furrebøe and Sandaker, 2017: 315).

According to Samuelson (1947), people should be informed about all available alternatives, should have the right expectations about the future results of the present decisions, and should be managed by personal interest and rationality through the

systematic and logical use of information. In this context, according to the traditional approach, human beings have clear and detailed information about the environment in which they live, and have the system of organized and stable preferences and the ability to calculate alternative actions that will provide the highest benefit according to these preferences system.

2.1.1.1. Expected Utility Theory

Traditional framework of finance is formed by two major components, which are Efficient Market Hypothesis of Fama (1970) and the Expected Utility Theory of Neumann and Morgenstern (1944). According to the foundations of the traditional framework, agents of the markets are fully rational, while attempting to maximize their financial utility, thus achieving efficient markets.

The assumptions are not only related to the concept of *homo economicus*, but are also related to Game Theory and Expected Utility Theory of Neumann and Morgenstern (1944) and Subjective Expected Utility Theory of Savage (1954). As the turning point of classical Rational Choice Theory, the Expected Utility Theory includes analyzing preferences among risky alternatives. In their model, von Neumann and Morgenstern (1944) referred rationality as a criterion that facilitates decision-making under uncertainty to maximize the expected benefit. It is stated that individuals act according to determined behavior patterns and always make choices that increase their welfare level according to their current situation. This theory asserts that individuals have consistent and unchanging choices and make their decisions based on maximizing subjective expected utility.

Expected Utility Theory states that individuals make decisions under uncertainty considering the outcomes and their probabilities. Neumann and Morgenstern (1944) assumed that a rational individual should choose outcome “a” to outcome “b” if $a, b \in [0,1]$ and $a > b$. For instance, if there is a 50% chance of you winning \$1.000 and a 50% chance of you winning \$100, then the expected utility will be \$550 ($0,5 \times \$1000 + 0,5 \times \$100$). The option whose expected utility is higher is expected to be chosen, because people are also considered as risk averse when making

decisions under uncertainty and they have a tendency to choose the less risky and/or more profitable option.

The Expected Utility Theory is generally accepted as a normative model within the scope of rational choice. According to this theory, if someone does not maximize the expected benefit, certain rational axiometric principles that are rationally binding in preferences, are violated. This theory is also considered as a model for explaining the traditional economic approach (Kahneman, 2003: 163).

Doesn't man ever make mistakes? Isn't it natural for a human being to make mistakes as a being with limited cognitive abilities, even when there are situations where machines fail? According to positivists, this is explained by the assumption that sooner or later the errors (or biases) will be tolerated by the market mechanism and evolved into the normal course of the process.

2.1.1.2. Efficient Market Hypothesis

In 1900, Louis Bachelier, a 30-year-old French mathematician, published his PhD thesis “The Theory of Speculation”, going down in history as the founder of the mathematical finance. The thesis is also accepted as the first document presenting Random Walk Theory and Efficient Market Hypothesis (Fama, 1970: 389). The theory gained publicity and functionality by Fama (1970). According to Efficient Market Hypothesis, asset prices fully reflect all available information, investors of the financial markets are rational and the prices are equivalent to their fundamental value. The Efficient Market Hypothesis argues that competition between investors seeking abnormal profits drives prices to their correct value.

Assumptions that relate to market activities and investor behavior and that determine the validity of the Efficient Market Hypothesis are as follows (Atakan, 2008: 99):

- The main purpose of the investor is to maximize the utility of wealth
- The investor makes choices based on risk and return,
- Investors' risk and return expectations are homogeneous,
- Investors have the same time horizon
- Information is freely available.

Fama (1970) introduced three forms of market efficiency and this classification has taken its place in financial literature since then. These levels are defined as market activities in weak form, semi-strong form and strong form of efficiency. Weak form of efficiency defines the prices as the reflection of the past prices and trading history of the asset. It will not be possible to estimate the future price of an asset using the historical price series for a given period, and random walk model exist in a weak form of efficiency. Semi strong form states that the price of the asset not only reflects historical information but also publicly available information. In strong form of efficiency, the price reflects all information that is not only publicly available, but also private information of limited number of investors or insiders (company employees and managers). Therefore, it is not possible to estimate prices or gain above average by using the special information in the strong form of efficiency (Fama, 1970: 383-384). To sum up, although prices can cause arbitrage opportunities occasionally, beating the market continuously would be utopia because the rational investors of the markets would be correcting the prices especially in the strong form of the efficient markets.

2.1.2. The Role of Psychology in Economic Behavior

In his seminal work titled “The Theory of Moral Sentiments” published in 1759, Adam Smith indicated the role of psychological factors and perceptions in economic life (Duru, 2013: 44). In the face of developments in economic factors due to changing environmental conditions, economic human model is inadequate in explaining or defining the processes that are important for economic factors (Simon, 1955: 99). In the neoclassical approach, the perfect rationality of individuals, effective access to information and information processing capacities, as well as the environment in which the individual live, lose their operability to a great extent. In particular, the interaction between behaviors and the mind affect the solution of problems and decision-making processes and reveals the undeniable effect of psychology. Therefore, as in the rational decision making model, the individual seeks the convincing point instead of searching for the optimum point. One of the most important factors in the inclusion of psychology that was ignored by positivism in

decision-making processes is the evolution of research methods in the field of psychology. More specifically, the fact that psychology began to take into account observable events and ignored the effect of unobservable variables such as mind, reason and intelligence on individuals' behavior was effective in this change (Ruben and Dumludağ, 2015: 7).

The relationship between psychology and economic decision making processes, which started with Adam Smith but ignored by positivists, has been reassessed by many researchers especially since the mid-20th century. Many scholars such as Irving Fisher, John Maynard Keynes, Herbert Simon and George Katona criticized the rational human assumption and studied the effects and consequences of human behavior in decision-making processes.

Some economists who have been conducting experimental studies since the early 1950s have started to question the validity of the classical rational decision model. Simon (1956) has shown that in order to meet the needs and keep the probability of survival for long periods of time, organisms have developed simple perception and selection mechanisms. Accordingly, it was emphasized that utility function has lost its operability for the organism and that current economic and statistical rational behavior theories are insufficient to explain individual behaviors.

Herbert Simon, in his book “Models of Man” published in 1957, proposed the concept of “Bounded Rationality”, which expresses the idea that perfect rationality cannot be practiced in reality. In an environment where the rule is to gain maximum benefit, any choice that does not maximize benefit is expressed as irrational (Furrebøe and Santaker 2017: 317). According to bounded rationality, individuals faces uncertainty about the future and information costs. Moreover, due to their limited capacity and resources, they are unable to produce optimal solutions, but instead implement their own rationality patterns by simplifying the existing options as much as possible. Therefore, the individual does not behave as required by perfect rationality. For this reason, Simon (1956) emphasized that satisficing decisions can make the individual happy enough, rather than making the best decisions. According to this; the limited cognitive capacity of the individual to discover alternatives, calculate results, and make comparisons can lead to the implementation of some satisficing strategies. Therefore, it was emphasized that in addition to the objective

environment, the subjective environment (cognitive boundaries) should also be taken into consideration in rationality and that information should be obtained on the perceptual and cognitive processes of the rational individual. Moreover, psychology was considered as an important element in decision-making processes and rationality was defined as a synonym for reasoning (Simon, 1956: 136-137; Simon, 1972: 170).

The capacity of the human mind to solve complex problems is very small compared to the size of the solutions to objective rationality required in daily life, or even a reasonable estimate of such objective rationality (Carter et al., 2007: 633). As indicated by Tversky and Kahneman (1974), the limitations of individuals to obtain information, their ability to compute and their memory capacity make it difficult to consider all possible alternatives in uncertain and complex decision processes. This leads to the development of simple decision strategies or the use of cognitive shortcuts by the decision maker. Since individual does not collect all the necessary information before taking action mainly due to urgency or other personal reasons, decision making process becomes truncated (Elster, 2007: 54).

Although the economic research on the effect of behavioral phenomena on individuals' decision-making processes increases in quality and quantity, there are also studies criticizing the findings. Fama (1970) described the deviation on the individual's decision making process as a random out of the rational patterns. It was argued that such findings would not have an impact that would necessitate a review and reinterpretation of existing economic models. Besides, List (2003) answered the question of "Is man rational in every situation?" from the traditional point of view stating that people learn from their irrational behavior and then avoid similar behavior in the future. However, according to Kahneman et al. (1982), the behavioral deviations seen in individuals' decisions are not random but systematic. In addition, although experiences reduce abnormal behavior in some cases, many deviations are constantly observed in individual behavior. In this case, in order to increase the level of explanation of the traditional approach, it is necessary to act in coordination with the behavioral approach.

In an environment where advances made for hundreds of years can now be accommodated for several years, the assumptions that are accepted correctly are no longer valid and new assumptions emerge. This situation has manifested itself in the

economy as in many other fields and the interaction of psychology with economics, which has been ignored for centuries, is now seen as a new normal. Behavioral economics has become a popular discipline with the use of different methods depending on the developing technology, many studies have been done, various research centers and lectures have been opened in many countries and various conferences have been held in this field with the participation of many researchers all around the world.

2.1.3. Emergence of Behavioral Finance

Studies on the psychological aspects of investments date back to Selden (1912) and it is seen that few studies have been carried out in this field until 1970s. However, with the developments in applied psychology, it is revealed that investors' decision making mechanisms may deviate from rationality. Especially the finding of Tversky and Kahneman (1974) in the study that individuals make intuitional mistakes and show differences from the existing statistical principles has made the impact of psychology on investments to be one of the main research topics of finance and economics studies (Özer, 2011: 2).

The main concerns of traditional finance are developing models on how investors should behave and testing whether it works in the market. However, behaviors of investors and their consequences faced in the reality are neglected, and it is assumed that investors always make rational decisions although cognitive and emotional weaknesses have an effect on decision making process of investors (Baker and Nofsinger, 2002: 97). As asserted by Thomas and Thaler (1985), observations or events that do not agree with the theory are described as "anomalies". Traditional finance models claim that investors take rationality as a single criterion in their investments, however these models have failed to explain many events in the market and have begun to be questioned over time. Occasionally, observations of asset price behavior in markets that do not comply with the predictions of the Effective Market Hypothesis can be detected. While these observations contradict the Random Walk Model advocated by the Efficient Market Hypothesis, they also contradict the rationality of investors, and these anomalies can be used to test of market efficiency

(Atakan, 2008: 99). The inadequacy of traditional finance in explaining some anomalies has made financial models evolve from “Efficient Market Hypothesis” to “Behavioral Finance” since the 1980s. As indicated in Barber and Odean (2000) studies in this field illustrate that investors sometimes do not act rationally, so many financial models do not fit the market in many cases. Behavioral finance that includes investor psychology and the determinants of human behaviors fills the gap accordingly.

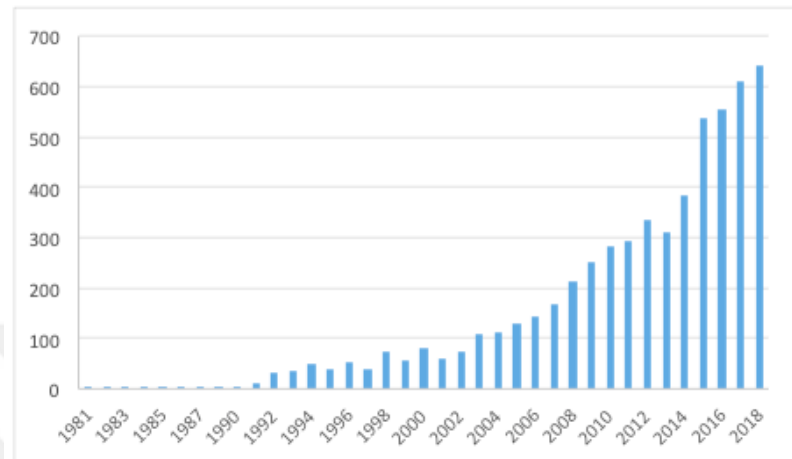
The definition of behavioral finance manifests in different ways in the literature. For instance, Shefrin (2000) defined behavioral finance as the study of how finance is affected by psychology, while it is an approach arguing that some financial events can be better understood by using models where market actors are not completely rational as asserted by Barberis and Thaler (2003). According to Belsky and Gilovich (1999), behavioral finance is the union of disciplines that bring together psychology and finance, and explain how people make decisions when investing, saving money, spending money, and making unreasonable and/or rational decisions. This definition is actually a manifest against the classical economy. Because people do not even question whether they are rational or not. Instead, they assume that people are not already rational and try to explain how and why they behave strangely. The fact from this definition is people are definitely abnormal. The question is why and how far.

Behavioral finance claims that the individual uses some shortcuts instead of performing high-level complex analyzes while making an investment decision. Sometimes the investor remains under the influence of ambition, courage, environment, social status, and a short decision is made neglecting the use of mental backgrounds (Gümüş et al., 2013: 73). In this sense, behavioral finance can be considered a guide to explain the inefficiency in financial markets, because the main consideration in this emerging field is to examine the facts behind behaviors that cannot be explained by rational patterns of decision makers on financial decisions.

Dynamics of economics, financial markets and financial decisions have been the popular research areas for scholars for decades and the theoretical foundation considered in the studies has begun to be questioned seriously by behavioral finance

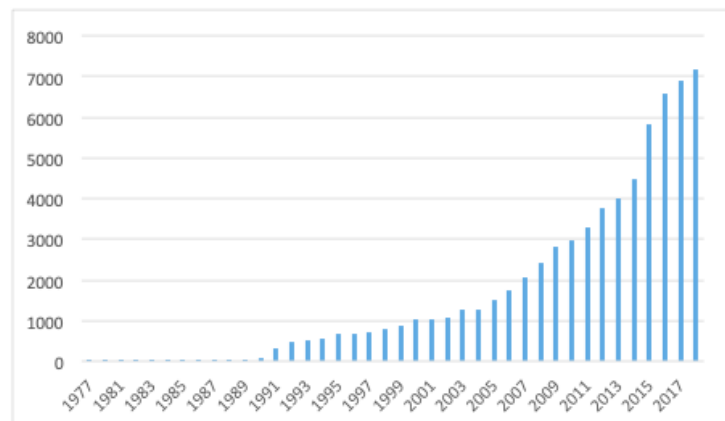
in recent years. Mainly the post-1980 period, hundreds of studies have been strongest evidence as depicted in Figure 17.

Figure 17: Number of studies on behavioral finance by years, Clarivate Analytics Web of Science



Source: Clarivate Analytics, *Web Of Science*, [https://Apps.Webofknowledge Com/WOS_Generalsearch_Input.Do?Product=WOS&Search_Mode=General Search &SID= C3v3Iq5cC Mycgl Mhgaj&Preferencessaved= 28.05.2019](https://Apps.Webofknowledge.Com/WOS_Generalsearch_Input.Do?Product=WOS&Search_Mode=General Search &SID= C3v3Iq5cC Mycgl Mhgaj&Preferencessaved= 28.05.2019)

Figure 18: Number of studies on behavioral economics by years



Source: Clarivate Analytics, *Web of Science*, https://apps. webofknowledge. com/ WOS_GeneralSearch_input.do?product=WOS&search_mode=GeneralSearch&SID=C3v3Iq5cCM YCgLMHGaj&preferencesSaved= 28.05.2019

Details of Web of Science query depicted in Figure 17 and Figure 18 is illustrated in Table 11.

Table 11: Details of Web of Science Query

	Figure 17	Figure 18
Keyword	Behavior* Finance	Behavior* Econ*
Search in	Topic	
Timespan	1975-2018	
Citation Indexes	• Science Citation Index Expanded (SCI-EXPANDED) 1980-present • Social Sciences Citation Index (SSCI) 1980-present • Arts & Humanities Citation Index (A&HCI) 1975-present • Conference Proceedings Citation Index- Science (CPCI-S) 1990-present • Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) 1990-present • Emerging Sources Citation Index (ESCI) 2015-present	

Source: Clarivate Analytics, *Web of Science*, https://apps.webofknowledge.com/WOS_GeneralSearch_input.do?product=WOS&search_mode=GeneralSearch&SID=C3v3Iq5cCMYCgLMHGaj&preferencesSaved=28.05.2019

2.1.4. Prospect Theory

Theories accepted by the traditional finance community are basically based on the expected utility theory, proposed in 1738 by Swiss Mathematician Daniel Bernoulli and that was used for over 300 years, and argues that people are risk seeking if the expected return is sufficient and they should also be consistent at the level of risk avoidance. Accordingly, investors just use their minds and are away from all kinds of sensuality and external influences. In this sense, traditional theories in finance have focused on creating rational solutions about how investors should act. That is, a model is developed and tested whether it fits in the market. However, investors' real life behavior and their results are not interested. Although cognitive and emotional weaknesses do not always affect people, traditional theories do not take these judgments into account and assumes that people will always make rational decisions, but individual investors violate these assumptions in reality (Baker and Nofsinger, 2002: 97).

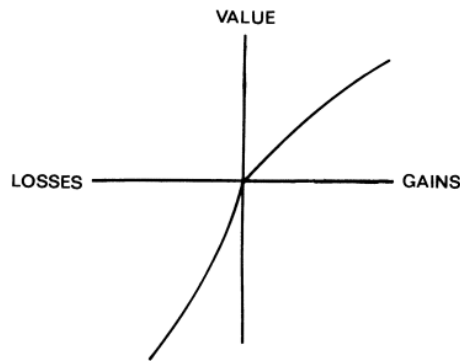
Many scholars such as Kahneman, Tversky, Thaler, Loewenstein, Prelec etc. asserted that cognitive psychology has been used to modernize traditional assumptions and models in terms of explaining human behavior. Of these, Kahneman and Tversky

(1979) is the most popular study explaining systematic deviations in traditional economic theories. Kahneman and Tversky (1979) developed “Prospect Theory” as an alternative model that emphasizes the shortcomings of the expected utility theory which is a descriptive model of decision-making in risky situations (Kahneman and Tversky, 1979: 263). Prospect Theory, which describes decision-making of individuals under risk, reveals that individuals adhere to a limited number of principles that simplify the difficulties experienced in predicting events and assessing possibilities.

According to the Prospect Theory, people determine their gains and losses according to a predetermined reference point rather than final outcomes and become risk averse in the case of gains, whereas risk seeker in the case of losses. This phenomenon occurs because of the cognitive biases that affect the judgement of these gains and losses. From this point of view, the Prospect Theory reorganizes the utility function defined in the Expected Utility Theory, taking into consideration the behavior of people in avoiding loss (Kumar and Goyal, 2015: 90).

There are situations that contradict the basic assumptions of Expected Utility Theory in the choices made among risky options according to Prospect Theory. In particular, people do not give the necessary weight to probable outcomes when compared to definite outcomes, that is called certainty effect. This effect leads to individuals avoiding risk in preferences that include certain gains, whereas seeking risk in preferences that include certain loss. On the other hand, isolation effect occurs when the same choice is presented to the individuals differently, leading to inconsistent preferences. That is, individuals have a tendency to interpret the same information to reduce cognitive difficulties and the conclusion will vary accordingly. Since the value of an option depends on the gain and losses rather than final outcomes, the value function is normally concave for gains and convex for losses as indicated in Figure 19. Additionally, the function is generally steeper for losses than for gains. Decision weights are generally lower than the corresponding probabilities, except for those in the low probability range. Excessive emphasis on low probability contributes to the attractiveness of risky investments (Doğan and Faikoğlu, 2016: 5).

Figure 19: A Hypothetical value function



Source: Kahneman, D., and Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*. 47(2): 263-292, p.279

In order to better understand Prospect Theory, three examples are given in Table 12.

Table 12: Examples on Prospect Theory

	Gamble 1	Gamble 2	Gamble 3
Option A	win \$240 with certainty	win \$1.000 with certainty	lose \$1.000 with certainty
Option B	50% chance to win \$400 with or 50% chance to win \$100	50% chance to win \$2.500 or 50% chance to win nothing	50% chance to lose \$2.500 or 50% chance to lose nothing
Expected Utility A	$\$240 \times 1 = \$240$	$\$1.000 \times 1 = \$1.000$	$-\$1.000 \times 1 = -\$1.000$
Expected Utility B	$(\$400 \times 0,5) + (\$100 \times 0,5) = \$250$	$(\$2500 \times 0,5) + (\$0 \times 0,5) = \$1.250$	$(-\$2500 \times 0,5) + (\$0 \times 0,5) = -\$1.250$
Rational Preference	Expected utility B > Expected Utility A => rational people should pick option B.	Expected utility B > Expected Utility A => rational people should pick option B.	Expected utility B < Expected Utility A => rational people should pick option A.
Result	However, the majority of the people picked option A.	However, most people pick A and prefer a certain gain over an uncertain gain of larger expected utility	However, most people pick B, which has the lower expected utility. More spesifically, when confronted with losses, people often choose the riskier alternative, and they become risk seeking.

Source: Compiled by the author based on the examples in Kahneman and Tversky (1979)

To sum up, people are “risk averse” when it comes to gains (they choose for the certain gain, even if its expected utility is less), which reveals “Certainty Effect” On the other hand, people are “risk seeking” when it comes to losses (they choose for the certain loss, even if its expected utility is less), which reveals “Reflection Effect” (Kahneman and Tversky, 1979: 268-269).

2.2. BEHAVIORAL BIASES OF INVESTORS

The focus of most of the research was on human mind and logic capacity. However, as of Kahneman and Tversky (1979), the mind was taken from a different point of view and intuition was found to play a much stronger role in the decisions. In each decision, there is a conflict between the logic and intuition of the decision-maker. Such a conflict is experienced in every aspect of our lives from what will be believed to where we will spend the money in our pockets. Considering the role of heuristics, shortcuts or rule of thumb for processing data to achieve results quickly without much effort (Baker and Nofsinger, 2010: 6), in shaping decisions, it is seen that intuitive thinking often steps forward. In order to understand how this conflict between logic and intuition shapes decisions, behavioral economics has emerged as an area frequently referred to in recent years.

Tversky and Kahneman (1974) emphasized that people often use heuristics when making decisions under uncertainty. According to this study, using heuristics relieve the decision maker from the workload for the detailed evaluation of the possibilities under uncertainty and accelerate the decision-making process. However, such heuristics may lead to systematic errors that are defined as behavioral biases. It is asserted that representability, availability and adjustment and anchoring, are the most common heuristics that most of the decision makers have.

Behavioral biases are defined as systematic errors that decision-makers have on their judgments on any subject (Kahneman and Riepe, 1998: 53). Numerous cognitive biases have been identified since the seminal study of Kahneman and Tversky (1979) on systematic errors in human decisions. These systematic errors are encountered in every kind of decision making process from daily routine decisions to strategic decisions and play an important role in shaping the decisions. Some biases

may overlap in some cases, or they may vary in terms of the scope. In order to prevent misunderstandings, it is necessary to classify and present biases that cause erroneous investment decisions of investors according to a certain systematic. However, this is not an easy task at all. The most well-known heuristics and biases in the behavioral finance and behavioral economics literature are presented in Table 14 in an organized manner according to different conceptual frameworks.

Hirshleifer (2001) made a classification of the judgment and decision making biases in the literature regarding the psychology of investors and asset pricing, and this approach is one of the most used classification in the literature. Kahneman and Riepe (1998) emphasized behavioral biases frequently exhibited by decision-makers and suggested how awareness can be formed and how to minimize the effects of these biases. Shefrin (2000) evaluated biases in the decision-making process in two different categories within the context of heuristics-driven biases and framing-dependence. Biases occurred from the use of heuristics, which enable the decision-making process to be made faster and more practically and free the decision maker from difficult probability calculations, are emphasized in the first category. It was emphasized that the way the data was presented also affected the decision-maker's judgments and caused behavioral biases, and common biases that were observed in this context were included in the second category. Goldberg and von Nitzsch (2001) examined the heuristics in two major groups. The first group is related with the heuristics used to overcome complex calculations and the second group is the judgment methods used to reach results quickly. Barberis and Thaler (2003) investigated literature on behavioral finance by considering aggregate stock market, the cross-section of average returns, trading behaviors of individual investors and corporate finance, and classified common biases based on the beliefs and preferences of the individuals. Rabin (1998) discussed a selection of psychological findings relevant to economics, and divided the biases into three categories based on preferences, biases in judgment and other biases of individuals.

Carter et al. (2007) intended to answer to the question of which judgment and decision biases come into prominence in the fields of economics, finance and psychology, and whether these biases can be structured logically or not to clarify the relationship between different influences of bias groups on decision-making and

consolidate knowledge in the area as much as possible. Accordingly, it was intended to accomplish the objectives through cluster analysis, which consists of the classification of biases by identifying similar characteristics of those biases. In this context, the literature was reviewed in detail and 76 biases or source of decision biases was identified and explained. Afterward, a taxonomy of nine decision biases, as depicted in Table 13, was developed through qualitative cluster analysis of which reliability and validity was provided with Q-sort methodology and investigation was conducted whether the biases clustered was applicable on supply chain management.

Table 13: Taxonomy of Behavioral Biases Proposed by Carter et al. (2007)

Behavioral Biases	Availability Cognition	occurs when the decision maker judges more easily remembered information, which has more space in memory.
	Base Rate	occurs when the mind ignores general information about a particular situation and focuses on specific information
	Commitment	tendency to proceed a previous and unsatisfactory course of action
	Confirmatory	giving priority to the information that confirms one's beliefs and ignoring the contrary
	Control Illusion	While independent events should not affect each other, it may occur that the random occurrence is the main feature of the process and may give a sense of control over the process.
	Output Evaluation	exaggerating the predictability of events and explaining the failures with bad luck and the success with the abilities of the decision maker.
	Persistence	an alternative is preferred just because it has been preferred in the past and decision maker is close to the new options and information
	Presentation	perceiving something of a different value depending on the way it is presented differently
	Reference Points	shaping decisions by considering a specific reference in an uncertain environment

Source: Carter, C., Kaufmann, L., and Michel, A., 2007, Behavioral supply management: a taxonomy of judgment and decision- making biases, *International Journal of Physical Distribution and Logistics Management*, 37(8): 631-669. pp.646-652

Compared to other studies, Carter et al. (2007) presents findings that are appropriate for the purpose of this dissertation because of the systematic methodology used in the classification of behavioral biases. Thus, definitions of biases depicted by Carter et al. (2007) were taken as a reference in defining the findings of this dissertation.

Table 14: Behavioral Biases in the Literature

Hirshleifer (2001)	Shefrin (2000)	Kahneman and Riepe (1998)
1) Heuristic Simplification a) Attention/Memory/Ease-of-processing effects b) Narrow framing/mental accounting/reference effects c) Representativeness heuristic d) Belief updating: Combining effects 2) Self-deception 3) Emotions and self-control a) Distaste for ambiguity b) Mood, feelings and decisions c) Time preference and self-control 4) Social interactions	1) Heuristic-driven bias a) Representativeness bias b) Gambler's fallacy c) Overconfidence d) Anchoring and adjustment / Conservatism e) Ambiguity aversion f) Emotion and cognition 2) Frame-dependence a) Loss aversion b) Concurrent decisions c) Hedonic editing d) Cognitive and emotional aspects e) Self-control f) Regret g) Money illusion	1) Judgment biases a) Overconfidence b) Optimism c) Hindsight d) Over-reaction to chance events 2) Errors of preference a) Non-linear weighting of probabilities b) People value changes, not states c) Value function d) The shape and attractiveness of gambles 3) The purchase price as a reference point a) Narrow framing b) Repeated gambles and risk policies c) Short and long views 4) Living with the consequences of decisions a) Regrets of omission and commission b) Regret and taking
Goldberg and von Nitzsch (2001)	Rabin (1998)	Barberis and Thaler (2003)
1) Heuristics for reducing complexity a) Simplifying the facts b) Mental accounting c) Availability d) Ignoring information i) Selective perception ii) Contrast effects iii) Primacy and priming effects 2) Quick judgments	1) Preferences a) Reference levels, adaptation and losses i) Loss aversion ii) Endowment effect iii) Status quo bias iv) Diminishing sensitivity b) Social preferences and fair allocations	1) Biases in beliefs a) Overconfidence b) Optimism and wishful thinking c) Representativeness d) Conservatism e) Belief perseverance f) Anchoring g) Availability bias 2) Biases in preferences

a) Anchoring b) Representativity i) Overestimating probability ii) Conjunction fallacy iii) Gambler's fallacy iv) Conditional probability fallacy v) Overestimating empirical relationships vi) Overestimating causal relationships	i) Equity, fairness, status-seeking ii) Altruism c) Reciprocity and attribution i) Reciprocal altruism ii) Volition 2) Biases in judgment 3) Other biases a) Hindsight bias b) Availability bias c) Overconfidence	a) Prospect theory (other non-EU) b) Ambiguity aversion
Carter et al. (2007)		
1) Availability cognition a) Availability b) Country of origin c) Cultural d) Familiarity e) Home f) Imaginability g) Recall 2) Commitment a) Aversion to regret b) Concorde fallacy c) Endowment d) Escalating commitment e) Escalation f) Loss aversion g) Sunk costs fallacy 3) Output evaluation a) Egocentric b) Hindsight c) Rosy retrospection	5) Presentation a) Contrast b) Framing c) Frequency/redundancy d) Issue valence e) Mere exposure effect f) Mode g) Order h) Primacy effect i) Scale j) Search k) Series position effect l) Von Restorff Effect 6) Reference point a) Anchoring and adjustment b) Conservatism c) First impression d) Non-linear extrapolation e) Reference f) Regression	8) Confirmatory a) Aversion to ambiguity b) Bandwagon effect c) Belief d) Confirmation e) Confirmation evidence f) Confirmatory g) Desire h) Fact-value confusion i) Halo effect j) Prior hypothesis bias k) Selectivity l) Self-fulfilling prophecy m) Wishful thinking 9) Control Illusion a) Attenuation b) Chance c) Completeness d) Complexity e) Conjunction

d) Self serving e) Success f) Testimony 4) Persistence a) Habit b) Persistence c) Status quo	7) Base Rate a) Base rate b) Recency effect c) Subset	f) Control g) Correlation h) Disjunction i) False consensus j) Gambler's fallacy k) Hot hand fallacy l) Impact m) Law of small numbers n) Magical thinking o) Overconfidence p) Planning fallacy q) Sample r) Similarity s) Test

Source: Adapted from Carter et al. (2007) and Lovric, M., 2011, *Behavioral finance and agent-based artificial markets*. Rotterdam: Erasmus Research Institute of Management University Rotterdam Erasmus. <https://repub.eur.nl/pub/22814> 10.03.2019

2.3. STUDIES ON BEHAVIORAL FINANCE IN TURKEY

Studies on behavioral finance has drawn attention in Turkey as same as the world in recent years. It has been determined that studies are mainly based on the analysis of investment behavior of individual investors in capital markets. Particularly, studies on periodical anomalies, price anomalies and firm anomalies consist of the majority. In addition to investigating the relationships between risk taking behaviors of investors and demographic and socio-economic characteristics, there are also studies aimed at determining the existence of certain behavioral biases. Previous studies illustrate that the findings may vary according to the period considered, and the data obtained from the market. Within the scope of periodical anomalies, it was determined that returns on Friday are higher compared to other weekdays, thus, the existence of day effect in capital markets has been proved (e.g. Balaban, 1995; Tunçel, 2008; Erdoğan and Elmas, 2010; Hamarat and Tufan, 2008). On the other hand, Aliyev and Gamarli (2018) investigated whether there is a weekdays anomaly in Borsa Istanbul (BIST) taking into account the data for the year of 2015 and could not detect any anomaly. Considering existence of month effect, January effect was found in Turkish stock exchange (e.g. Karan and Uygur, 2001; Erdoğan and Elmas, 2010; Ege ve diğ., 2012, Aytekin and Sakarya, 2014; Balaban 1995; Küçüksille 2012; Özer and Özcan 2002; Yiğiter and Ilgın 2014; Bilir 2018). On the other hand, studies (e.g. Atakan 2008; Çinko 2008; Horasan 2008; Özarı and Turan 2016; Yılcı 2013; Abdioğlu and Değirmenci, 2013) could not detect January effect in Turkey.

Considering firm anomalies, Akkoç et al. (2009) examined semi-strong form market efficiency in the Istanbul Stock Exchange (ISE) in the context of neglected firm effect for the period of 01/01/1999 and 31/12/2008 using monthly return data. The findings of the study illustrated that there is no neglected firm effect on the ISE with data examined for the subject period. On the other hand, Karan (2000) tested the presence of a neglected firm effect between January 1996 and December 1998 in ISE. As a result of the study, it was found that there was an inverse and weak relationship between the abnormal returns and firm size, a significant negative relationship between the amount of transactions and the abnormal returns and an inverse relationship between the abnormal returns and the firm size and the amount of transactions. These

results show the presence of neglected firms in ISE. Cihangir and Karaağaç (2016) also examined the neglected firm effect for the period of 02/01/2012 and 26/12/2014 in BIST, and findings did not support to confirm the existence of neglected firm effect in BIST.

Bildik and Gülay (2007) examined the contrarian and momentum strategies in the ISE for the period between 1991 and 2000 and found that the contrarian strategy, in other words "winners and losers effect" exists in the ISE and significant profits are provided. Alper and Aydoğan (2017) examined the existence of contrarian strategy in BIST and the findings confirms the existence of contrarian strategy in BIST.

Bektur and Atasaygın (2017) investigated individuals that are trading stocks in Marmara region by applying frequency analysis and overconfidence and representativeness were found as the common behavioral biases of investors. Korkmaz and Çevik (2007) analyzed the individuals investing in ISE in terms of overconfidence bias, and findings revealed that overconfident investors have a tendency to increase their trading activities in bull markets.

Overreaction hypothesis, which means an above-average return on the purchase of losing stocks and the sale of winning stocks, is valid in ISE as indicated by many studies covering different periods. For instance, Barak (2008) for January 1992 and December 2004, Gemici and Cihangir (2018) for January 2007-December 2017 investigated the stocks traded in ISE (As of 30 December 2012, ISE has been referred to as BIST, and the findings confirmed to support the existence of overreaction anomaly in ISE.

In the study conducted by Kahyaoğlu (2011) on the ISE between 01/01/2007 and 31/12/2009, real data was obtained from stock trading transactions of 31 individual investors. Statistically significant differences were found between male and female investors in terms of exposure to various psychological and emotional factors. In this study, it is concluded that the risk perception of female investors is higher than that of male investors. Yeşildağ and Özen (2015) tested the determination of the investor profile applying a survey to 122 stock market investors in Uşak province, to comprehend whether demographic and socio-economic factors affect the investment decisions. It was determined that stock market investors do not act rationally and are affected by demographic and socio-economic factors such as age, gender, occupation,

education level, family population and income. Demir et al. (2011) investigated the investment decisions of 270 individuals investing in stocks in ISE. Findings reveal that media, friend environment affects the investors and lead to herd behavior. Gümüş et al. (2013) applied a survey to 384 individuals live in Turkey and Azerbaijan to find psychological and demographic factors that affect their investment decisions. As a result, the level of income and education, marital status, age and gender were found to influence investment decisions. Cihangir et al. (2016) examined the demographic factors affecting risk and return preferences of the individual investors and found that the risk return preferences vary based on marital status and gender of the investors. Dizdarlar and Şener (2016) asserted that knowledge on the market and income level substantially affect risk preferences and investment decisions of investors.

Saraç and Kahyaoğlu (2011) examined the socioeconomic and demographic factors related to the risk levels of individual investors who invested in ISE in 2007-2009. In this context, whether there are differences between groups with various characteristics according to risk taking tendency, it is concluded that the investor's age, gender, marital status, profession, number of children, education level and income level are the most important factors determining the level of risk that investors wish to undertake.

As mentioned previously, behavioral finance has become a very popular topic in recent years, especially in the context of national studies. There has been an increase in dissertations on behavioral finance in recent years, and its distribution by years is depicted in Table 15 and Figure 20. As it is seen, especially in the last 2 years there has been a big increase.

Table 15: Distribution of Dissertations by years in Turkey

Years	Master			PhD			Grand Total
	English	Turkish	Total Master	English	Turkish	Total PhD	
2003		1	1				1
2005		1	1				1
2006					1	1	1
2007		4	4				4
2008		2	2		1	1	3
2009		3	3	1	1	2	5
2010		2	2		1	1	3
2011	2	1	3				3
2012		3	3		3	3	6
2013	1	4	5	1		1	6
2014	3	3	6				6
2015		4	4	1	2	3	7
2016		4	4		1	1	5
2017		4	4				4
2018	2	15	17		1	1	18
2019	1		1				1
Total	9	51	60	3	11	14	74

Source: Council of Higher Education, *Thesis Center*, [https://tez.yok.gov.tr/Ulusal TezMerkezi/giris.jsp](https://tez.yok.gov.tr/Ulusal_TezMerkezi/giris.jsp), 25.05.2019

Figure 20: Number of Dissertations by Years

Source: Council of Higher Education, *Thesis Center*, [https://tez.yok.gov.tr/Ulusal TezMerkezi/ giris.jsp](https://tez.yok.gov.tr/Ulusal_TezMerkezi/giris.jsp), 25.05.2019

When the dissertations are taken into consideration in terms of scope, it has been found that majority of the dissertations include investment decisions of individual investors that are comparatively analyzed according to various demographic variables within the context of behavioral finance (e.g. Özer, 2011; Tekçe 2015).

Studies on comparison of investors in Turkey and abroad (e.g. Aghalarova, 2013; Meşe, 2019) and preferences of foreign investors located in Turkey (e.g. Simsek, 2018) based on behavioral finance perspective was found. In addition to individual investors, behavioral finance studies on corporate scale were also found. The portfolio of corporate investors (e.g. Arslan, 2015), financial literacy of investment professionals (e.g. Kılınç, 2018), and financial decisions of company managers and owners (e.g. Tekin, 2015) were analyzed within the context of behavioral finance.

Furthermore, studies on whether there is overconfidence (e.g. Otluoğlu, 2009; Bolaman, 2011), overreaction (e.g. Yörükoğlu, 2007; Gürkan, 2009; Sönmez, 2010; Aydoğan, 2013) and herd behavior (e.g. Bülbül, 2008, Özsu, 2015) in Borsa Istanbul (BIST) were detected. Besides, it was also found studies on whether there are anomalies in the stocks listed on BIST (e.g. Barak, 2006; Yaşar, 2008). Furthermore, studies on whether there are investor sentiment in stocks listed on BIST (e.g. Ekim, 2018; Ergün, 2019) and yield of bonds issued by institutions in Turkey (e.g. Şenkesen, 2009) were reached. Studies on pension funds (e.g. Uçar, 2014; Okar, 2018), bond markets (e.g. Kesici, 2014) and foreign exchange market (e.g. Turan, 2010) were also detected. Apart from financial markets, the intention of individuals to buy insurance policy was examined (e.g. Alpdündar, 2016). Besides, investor behaviors were investigated based on behavioral finance in an environment where financial crisis exists (e.g. Yavuz, 2003; Bayar, 2012).

CHAPTER THREE

RESEARCH METHODOLOGY AND DESIGN

3.1. RESEARCH METHOD

Following the identification of the research questions of the study, a detailed analysis was conducted on how the investigation to be conducted and what methods could be applied. Although complex methods have been discussed, it is understood that simple thinking is needed to realize the purpose of the research. This perspective was asserted by the pioneering study of Makridakis and Hibon (2000). It was proposed that simple methods generates better results than the methods formed by complex algorithms (Duru, 2016: 168).

In line with the perspective of Makridakis and Hibon (2000), it was concluded that it would not be proper to determine a model that would limit the scope of this disstertation, which has an exploratory nature, to establish various hypotheses appropriate to the specified model and to test these hypotheses within certain limits. Therefore, instead of examining the numerical characteristics of the phenomenon, the existence and meaning of the phenomenon is the basis of this dissertation. If experiences, thoughts and emotions of individuals are comprehended in their particular conditions, more effective solutions to the problems in question can easily be generated. These problems may be related to the decisions, strategies, actions and policies of the institutions.

In the first stages of the dissertation, a questionnaire was considered as a data collection tool, therefore a scale was developed. Then, in order to test the validity of the statements in the scale, certain scholars and practitioners were consulted. The common point of feedbacks in this process was that the survey would not be an accurate data collection tool. More specifically, it was stated that it would be appropriate to conduct an interview since the dissertation has an exploratory nature and it would be more accurate to access objective, direct and in-depth views of the participants. As a matter of fact, since the interviews lasted for an average of 1-1.5 hours, it was possible to learn the participants' own experiences as well as to provide their views on the industry directly. In this sense, based on the need of carrying out a

preliminary study due to the lack of knowledge on the scope and the role of behavioral biases in ship investments in Turkey, it is chosen to adopt a qualitative approach with an explorative nature in this dissertation.

Although the majority of social scientists are inclined to pursue quantitative research methods, the power of qualitative research has become an accepted fact because it offers a new and alternative way of understanding behavior, attitudes and perceptions. In a social world where multidimensionality increases over time and context and processes become more important than results, qualitative research offers quite important opportunities (Berg and Lune, 2015: x1). Unlike the positivist approach that based on the deductive principle and investigates a particular theoretical structure, there is usually no predetermined theory or hypothesis to test for consistency of a theory, and the principle of induction is dominant in qualitative research. Since quantitative research processes are evident, the researcher usually conducts research free from uncertainties. However, for qualitative researchers, the research process is not clear. The main purpose of qualitative research is to present a descriptive and realistic picture to the reader about the subject under investigation, and as indicated by Glaser and Strauss (1967), the researcher tries to reveal the main themes related to the problem and express them in a meaningful manner based on the descriptive and detailed data collected (Yıldırım and Şimsek, 2016: 47-48).

Although the research questions of the study were identified and qualitative research method was employed to find answers to the questions, the structure formed at the beginning of the process has changed continuously because of the evolution of the research process into a cyclical structure.

After the determination of the research questions, studies dealing with the determinants which explicitly and/or implicitly affect ship investments both in global scale and in Turkey that were identified as research setting in this dissertation. Then, theoretical and empirical studies on behavioral economics in maritime industry are examined. The first stage of the field research was carried out in order to discuss the initial findings and to determine the reflections of ship investments in the field.

The question arose with whom can be interviewed to achieve this objective. In this context, it was concluded that participants who will make objective comments on what are the factors affecting the ship investments and what the systematic errors that

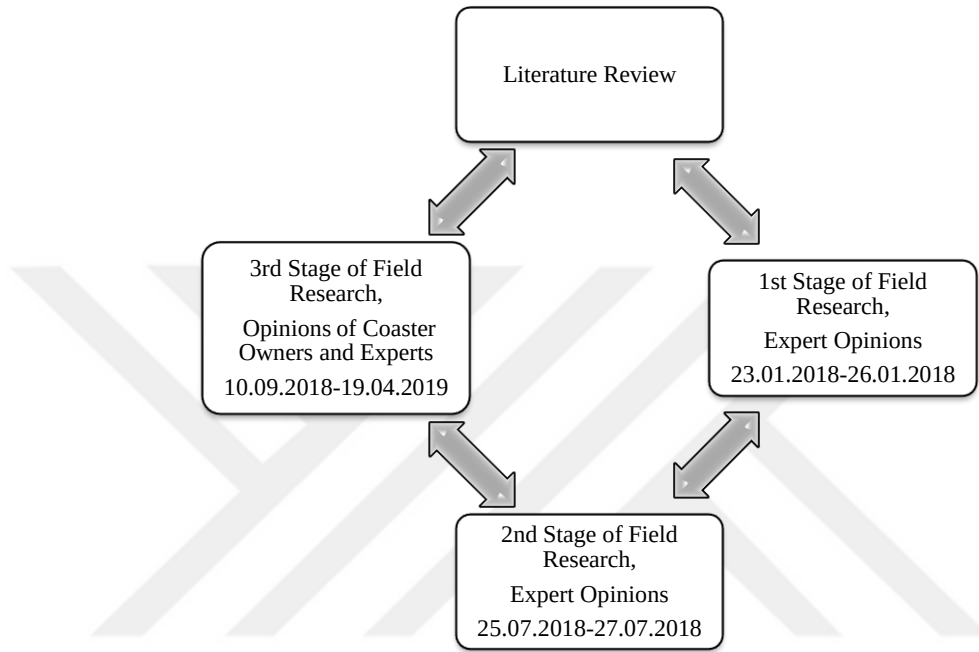
deviate from rational patterns might be in ship investments from the perspective of behavioral economics would be deemed appropriate. In this respect, sale and purchase brokers that offer intermediary services for coaster investments, senior representatives of non-governmental organizations in maritime industry in Turkey, and the consultants who are not the party of investment contracts, but provide consultancy services to the parties on various issues are designated as targets in the field researches. Accordingly, by considering purposeful sampling method, in-depth interviews were conducted with; SP-1, SP-2 and SP-3, senior representatives of three different sale and purchase brokering firms that offer services mainly in coaster market; A-1, the secretary-general of one of the leading Turkish non-governmental organization founded in 1939; C-1, head of research of a consultancy firm that provides services over the internet by compiling statistics and information from many different sources mainly for short-distance maritime transport business including Mediterranean and Black Sea regions.

The data obtained in each interview were analyzed and it was aimed to reach the themes with induction logic. Factors affecting ship investments and the systematic deviations from behavioral finance perspective are mainly focused on in this stage. The data, obtained within the scope of the circular research process shown in Figure 21, are compared with the literature and a framework for determining the themes is formed.

Second stage of field research was conducted to discuss the findings obtained in the first stage and to categorize ship investors in Turkey based on their profile and preferences. For this purpose, SP-2, SP-3 and C-1 interviewed in the first stage was interviewed again in the second stage. Additionally, representatives of the non-governmental organization that was established in 2014 to contribute to the development of the Turkish-owned coaster fleet, and to create a solidarity platform between coaster owners and operators were also included in this stage. In this context, in-depth interviews with representatives A-2a and A-2b, were conducted. The data obtained were analyzed again and a conceptual framework was established for the third stage of the field research. In the third stage of the field research, interviews were conducted with the participants that are substantially shipowners and consultants in the sector, and data were collected. C-2a and C-2b are the senior representatives of a consultancy company serving the maritime community in different areas in

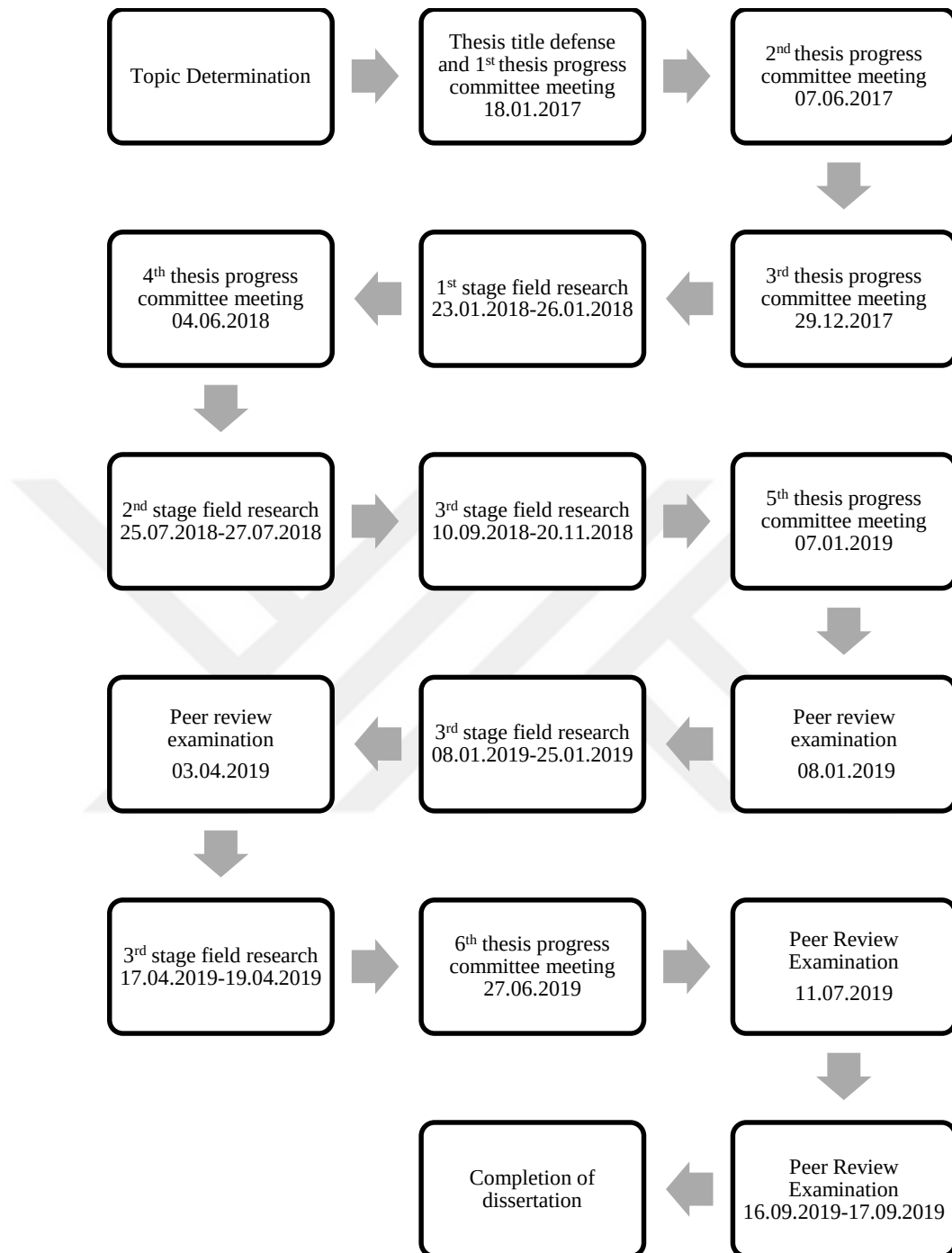
consultancy such as equipment for ships, various technical and quality based services, hull and machinery claim handling. C-3 is a scholar and consultant giving consultancy services to many different institutions and companies in maritime industry in Turkey for a long time.

Figure 21: Research Process



The data obtained were compiled and compared with the existing literature within the scope of the cyclical process and the answer to the research problem was sought. Within the scope of the dissertation, a diversified and iterative testing and questioning process was designed for systematic comparison. In this context, the research process consists of three stages was illustrated in Figure 21. The steps taken from topic determination to the final of the dissertation are illustrated in Figure 22 below.

Figure 22: Flow Diagram of Dissertation



3.2. RESEARCH SETTING

3.2.1. Analysis of Turkish-owned Merchant Fleet

Given the analysis of Turkish-owned merchant fleet, it was found that there were differences according to the reference sources. Although the maritime industry is an internationalized industry, maritime businesses have a closed structure by both operationally and financially. Especially, certain obstacles arise in the sharing of information with the external stakeholders in the maritime transportation industry. Therefore, the data becomes very valuable. When it comes to the provision of data on maritime transport, some organizations with widespread and effective information networks stand out. Clarksons Shipping Intelligence Network, IHS Markit Maritime & Trade Portal, Lloyd's List Maritime Intelligence are among these organizations. However, membership to such databases is possible only by paying high membership fees. International organizations such as UNCTAD are able to obtain data from such databases and share them free of charge from their own databases with certain categories. However, differences may occur at some points. It is found that there is a difference between the data of Turkish-owned ship fleet obtained from ISTFIX, which is a member of IHS Sea-web database and the data obtained from UNCTAD database under the same subject. The reasons for the differences are unknown. Therefore, the data obtained from both databases are shared below. However, when IHS Sea-web data were examined, it was found that more detailed information was shared according to ship types. Therefore, IHS Sea-web data will be given priority in this dissertation.

As of January 2018, data on Turkish-owned ship fleet is shown in Table 16. Accordingly, Turkish-owned ship fleet consists of 2.801 ships with 73 different types. The total carrying capacity of these vessels is approximately 33,5 million dwt. Details of these vessels can be found in Appendix 1. When offshore vessels, passenger ships, service vessels, tugboats and yachts are excluded, it is determined that Turkish-owned ship fleet with the purpose of cargo transport at sea consists of 2.008 ships with 37 different types. It is necessary to classify these 37 different types of ships in the main categories. Accordingly, a categorization has been made according to the ship classes

specified in the Equasis world maritime fleet report and details are given in Appendix 2.

Table 16: Turkish-owned Ship Fleet

Number of Ship Type	Total Fleet, by number	Total dwt	Total Gross Tonnage (grt)
73	2.801	33.567.676 dwt	21.620.230 grt
37 ¹	2.008	32.809.377 dwt	20.842.196 grt

Source: Adapted by author from IHS Seaweb, January 2018 via ISTFIX

Considering that the above-mentioned 2.008 ships with 37 different types of vessels are classified into 8 main categories as shown in Appendix 2, the distribution of these vessels in terms of their carrying capacity and number of ships are shown in Table 17.

Table 17: Breakdown of Turkish of Merchant Fleet

Ship Type (Main Category)	by numbers	by dwt
Bulk Carrier	309	15.648.955
Oil and Chemical Tankers	341	8.911.726
General Cargo Ships	857	4.111.463
Container Ships	92	2.293.013
Specialized Cargo Ships	91	575.598
Ro-Ro Cargo Ships	155	531.467
Other Tankers	145	525.027
Gas Tankers	18	212.128
TOTAL	2.008	32.809.377

Source: Adapted by author from IHS Seaweb, January 2018 via ISTFIX

According to the data above, while bulk carriers have the largest share in terms of the carrying capacity of the Turkish-owned merchant fleet, the majority of the Turkish-owned merchant fleet, which correspond to approximately 43% of total fleet, composed of general cargo ships. When UNCTAD database is considered as another

¹ Offshore vessels, passenger ships, service ships, tugs and yachts are excluded.

reference source, countries are listed based on beneficial ownership. According to the data given in the Table 18, Turkish-owned merchant fleet and world merchant fleet are given between 2014-2018 by dwt capacity.

Table 18: Beneficial Ownership by dwt in thousands

Years	Turkey	World	%	Rank	Total
2014	28.717	1.675.562	1,71%	14	156
2015	27.843	1.732.520	1,61%	15	156
2016	27.951	1.791.584	1,56%	15	154
2017	27.733	1.847.631	1,50%	15	160
2018	24.241	1.910.012	1,27%	15	157

Source: UNCTADSTAT, *World merchant fleet by country of beneficial ownership*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

According to the Table 19, Turkish-owned merchant fleet and world fleet are shown in terms of the number of ships between 2014-2018. Accordingly, development in Turkish-owned merchant fleet was not in line with the development in world fleet.

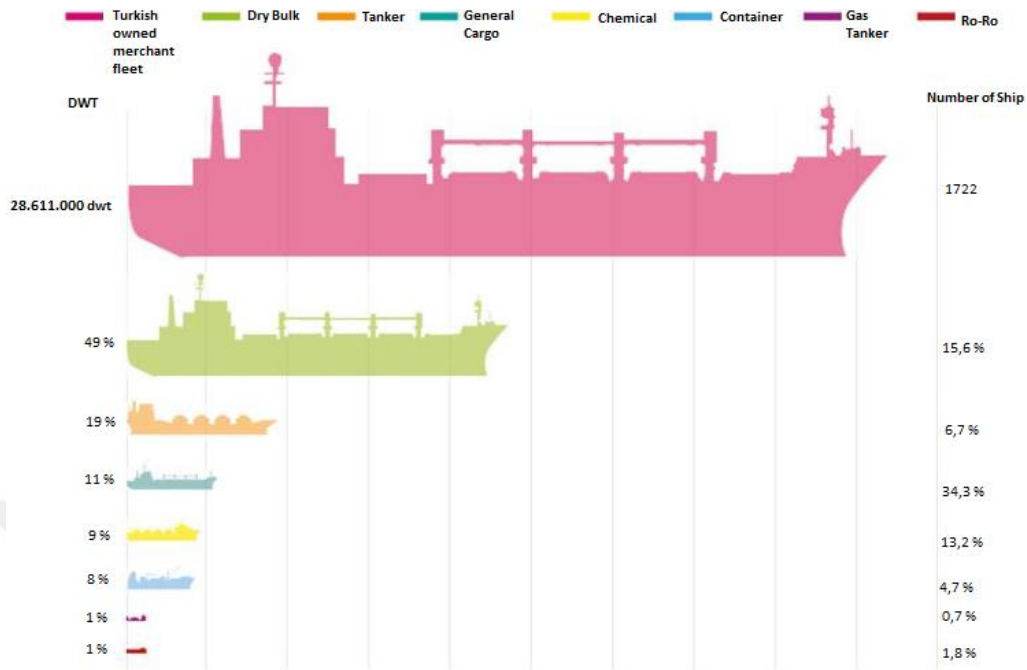
Table 19: Beneficial Ownership by number of ships

Years	Turkey	World	%	Rank	Total
2014	1.539	47.797	3,22%	11	158
2015	1.489	48.240	3,09%	11	156
2016	1.540	49.223	3,13%	11	154
2017	1.563	50.155	3,12%	11	160
2018	1.522	50.732	3,00%	12	157

Source: UNCTADSTAT, *World merchant fleet by country of beneficial ownership*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

According to the report prepared by the Turkish Shipowners Association taking into account the end-2017 data and shared with stakeholders in June 2018, Turkish-owned merchant fleet consists of 1.722 vessels and has a carrying capacity of approximately 28,6 million dwt.

Figure 23: Turkish-owned Merchant Ship Fleet, >300GRT, by the end of 2017



Source: Turkish Ship Owners Associations, 2018, *Maritime Transport Review*, http://www.armatorlerbirligi.org.tr/Sites/1/upload/Files/Tab_Deniz_Tasimaciligi_Gozden_Gecirme_Raporu_2018-837.Pdf, 30.06.2018

As shown in Figure 23, in terms of total carrying capacity; dry bulk, tanker and general cargo ships, in terms of number of ships; general cargo, dry cargo and chemical tanker ships compose of the majority of Turkish-owned merchant fleet.

Table 20: Distribution of Turkish-owned General Cargo Ships

Capacity Range in dwt	Number of Ships	Total Range Capacity
<1.000 dwt	61	35.935 dwt
1.000-2.000 dwt	99	148.567 dwt
2.000-4.000 dwt	295	929.083 dwt
4.000-6.000 dwt	194	942.698 dwt
6.000-8.000 dwt	95	642.591 dwt
8.000-10.000 dwt	56	492.350 dwt
10.000-12.000 dwt	26	283.036 dwt
>12.000 dwt	31	637.203 dwt
TOTAL	857	4.111.463 dwt

Source: Adapted by author from IHS Seaweb, January 2018 via ISTFIX

Common point emphasized in the different reference sources above is the fact that Turkish-owned merchant fleet consists mainly of general cargo ships in terms of the number of ships. In this context, distribution of general cargo ships is shown according to their capacity ranges in Table 20.

Approximately 43% by number, and 13% by total carrying capacity of Turkish-owned merchant fleet consists of general cargo ships compared with Table 17 and Table 20. Approximately 89% by number and 83% by capacity of the general cargo ships consist of the ships in the range 1.000-12.000 dwt carrying capacity, and these ships is also called “coaster”. Other types of vessels in this tonnage range are given in Table 21 in terms of number and capacity. Accordingly, the coasters account for 63% by number and 59% by carrying capacity of the vessels in this tonnage range.

Table 21: Breakdown of Turkish-owned Merchant Fleet in the range of 1.000-12.000 dwt

Ship Type (Main Category)	by numbers	by dwt
General Cargo Ships	765	3.438.325
Oil and Chemical Tankers	204	1.260.547
Other Tankers	79	289.585
Ro-Ro Cargo Ships	74	366.092
Specialized Cargo Ships	37	98.988
Bulk Carrier	19	155.415
Container Ships	19	133.436
Gas Tankers	13	71.585
TOTAL	1.210	5.813.973

Source: Adapted by authors from IHS Seaweb, January 2018 via ISTFIX

Ships that are in the range of 1.000-12.000 dwt and that are mainly operated in the Mediterranean, Black Sea and Continent regions, is considered as the coaster type general cargo ships and a detailed comparison on this type of ships is shown in Table 22.

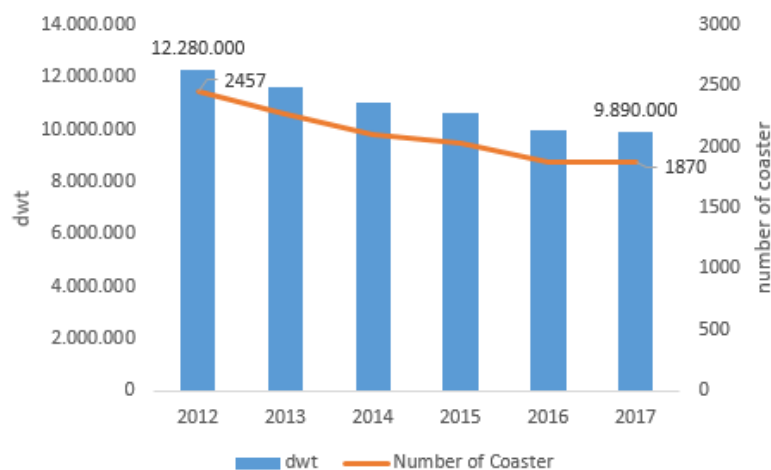
Table 22: Share of Turkish-owned Coaster Fleet

	Number of ships	Capacity in dwt
Turkish-owned Merchant Fleet	2.008	32.809.377 dwt
Turkish-owned General Cargo Fleet	857	4.111.463 dwt
Turkish-owned Coaster Fleet	765	3.438.325 dwt
Total Coaster Fleet in Mediterranean and Black Sea	1.870	9.890.000 dwt
Share of Turkish-owned General Cargo Fleet in Turkish-owned Merchant Fleet	42,68%	12,53%
Share of Turkish-owned Coaster Fleet in Turkish-owned General Cargo Fleet	89,26%	83,63%
Share of Turkish-owned Coaster Fleet in Turkish-owned Merchant Fleet	38,10%	10,48%
Share of Turkish-owned Coaster Fleet in Total Coaster Fleet in Mediterranean and Black Sea	40,91%	34,76%

Source: Adapted by author from IHS Seaweb, January 2018 via ISTFIX

3.2.1. Coaster Fleet in the Region

Maritime transport is substantially conducted with small tonnage vessels, which are called “coaster” considering the geographic structure of the Mediterranean basin and its surroundings. Since coaster ships have less operational and financial risk and more flexible structure compared to large tonnage vessels, they are the most preferred ship type in the region.

Figure 24: Total Coaster Fleet in the Mediterranean and the Black Sea

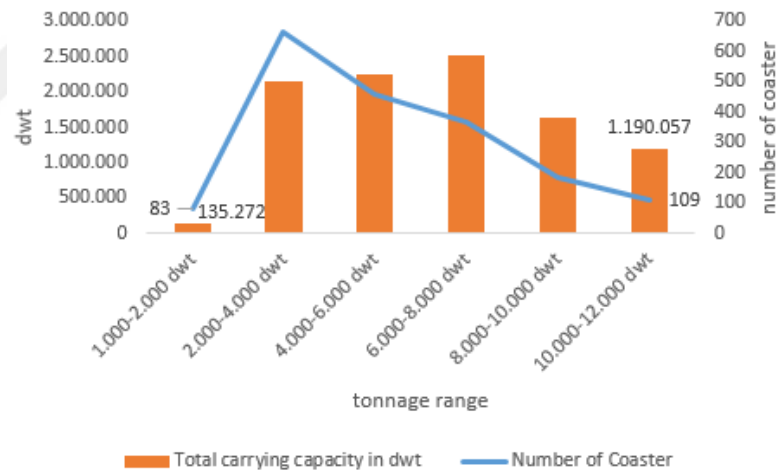
Source: Adapted by author from IHS Seaweb via ISTFIX

The development of the coasters, which has a carrying capacity of 1,000-12,000 dwt operating in the Mediterranean and Black Sea regions, is shown in Figure 24 in terms of number of coaster and total carrying capacity in dwt.

Looking at the development of coasters operating in the region over the years, it has been found that there is a decrease both in terms of number and carrying capacity as illustrated in Figure 25. Between the end of 2012 and 2017, there was a decrease of approximately 31% in terms of number of ships and a decrease of approximately 24% in terms of carrying capacity.

When the coaster fleet operating in the Mediterranean and Black Sea regions is analyzed as of January 2018, it is found that coasters operating mainly in the range of 2.000-4.000 dwt in terms of number and 6.000-8.000 dwt in terms of total carrying capacity are the most preferred tonnage range in the region.

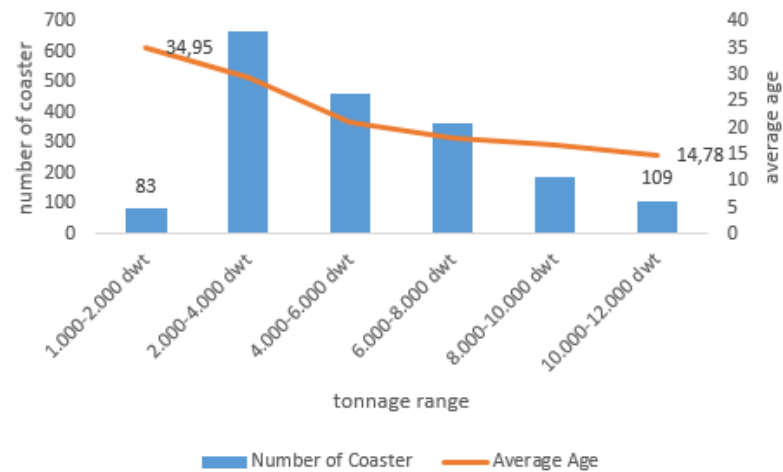
Figure 25: Distribution of the Total Coaster Fleet in the Mediterranean and the Black Sea by Number of Coaster and Total Carrying Capacity as of January 2018



Source: Adapted by author from IHS Seaweb via ISTFIX

When the average age of the coasters operating in the region is examined according to the tonnage ranges, the oldest tonnage range was found as 1.000-2.000 dwt and also it was found that average age decreases as the tonnage increases as depicted in Figure 26.

Figure 26: Distribution of the Total Coaster Fleet in the Mediterranean and the Black Sea by Number of Coaster and Average Age as of January 2018

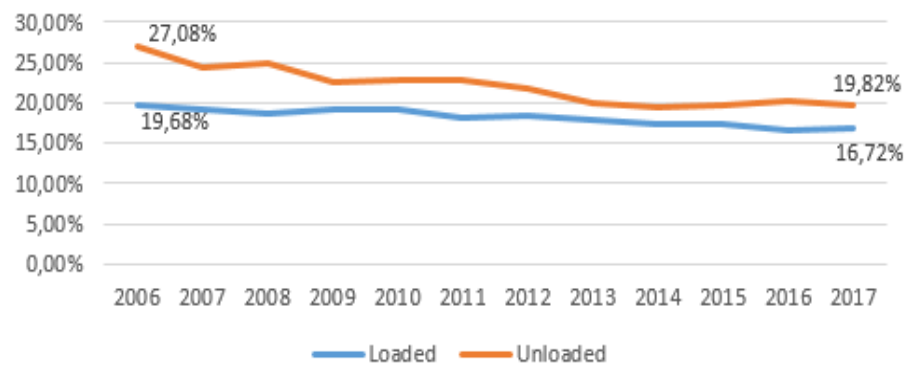


Source: Adapted by author from IHS Seaweb via ISTFIX

3.2.1. Importance of Coasters in Turkey

Turkey is located at the center of Black Sea, Mediterranean and Continental Europe where one of the most intense commercial activity is carried out worldwide, and Europe is the second most active region by maritime transport in the world, as illustrated in Figure 27.

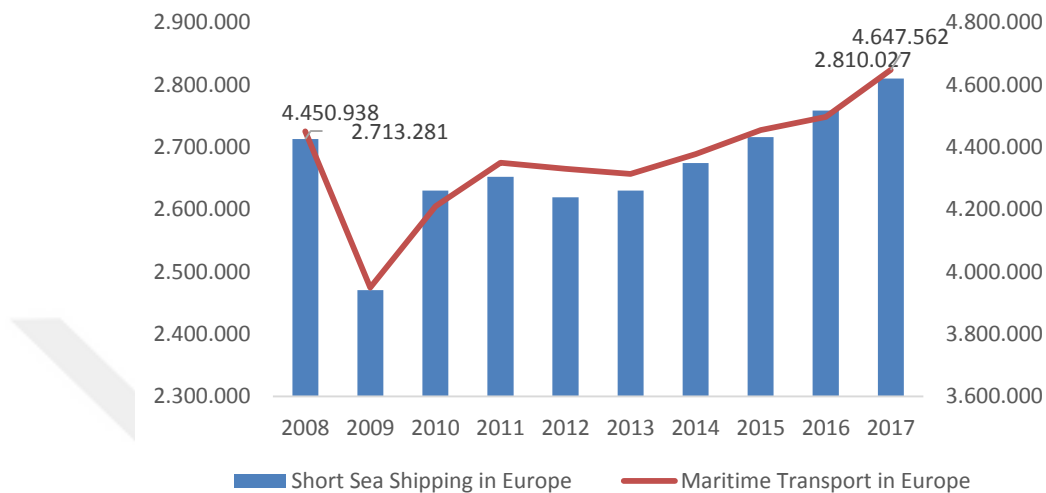
Figure 27: Share of Maritime Trade in Europe



Source: UNCTADSTAT, *World Seaborne Trade by Types of Cargo and by Group of Economies*, <https://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx>, 09.05.2019

Although the share of Europe in maritime transport has decreased in recent years, it still has an important share. The share of short distance maritime transport in total maritime transport is quite high as shown in Figure 28.

Figure 28: Share of Short Sea Shipping in Europe, in thousands tons



Source: Eurostat, *Maritime Transport Statistics*, <https://ec.europa.eu/Eurostat/web/transport/data/database> 05.07.2019

Turkey was also included in the analysis in which the gross weight of the goods transported to/from main ports were taken into consideration. As it is seen, short distance maritime transport accounts for approximately 61% of maritime transport across Europe. Therefore, it is concluded that short-distance maritime transport mainly conducted via small tonnage ships is essential for maritime transport in Europe and surroundings.

Dry goods are one of the most common type of cargo transported by sea in Europe and the shares of dry goods are illustrated in terms of not only whole dry cargo shipping but also short distance dry cargo shipping in Figure 29.

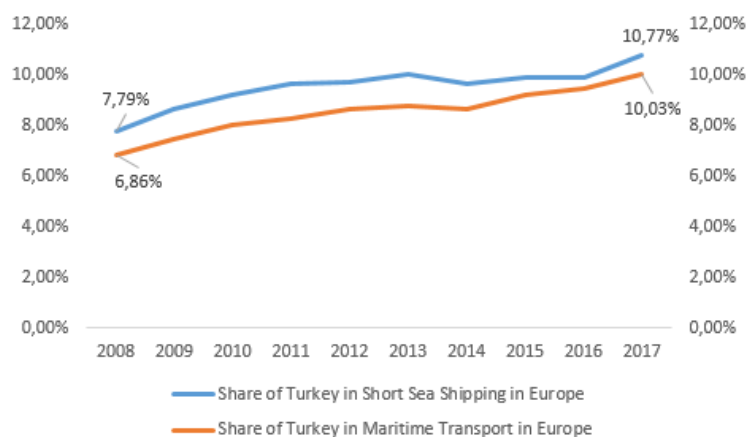
Figure 29: Share of Dry Cargo Shipping in Europe



Source: Eurostat, *Maritime Transport Statistics*, <https://ec.europa.eu/eurostat/web/transport/data/database> 05.07.2019

Share of dry goods in short sea shipping is 22,39% in Europe, while share of short distance dry cargo shipping in dry cargo shipping throughout Europe is 50,79% by the end of 2017. Accordingly, the dry goods can be considered as the main enabler of maritime transport in Europe. Share of Turkey in maritime transport and short sea shipping in Europe is illustrated in Figure 30.

Figure 30: Share of Turkey in maritime transport and short sea shipping in Europe



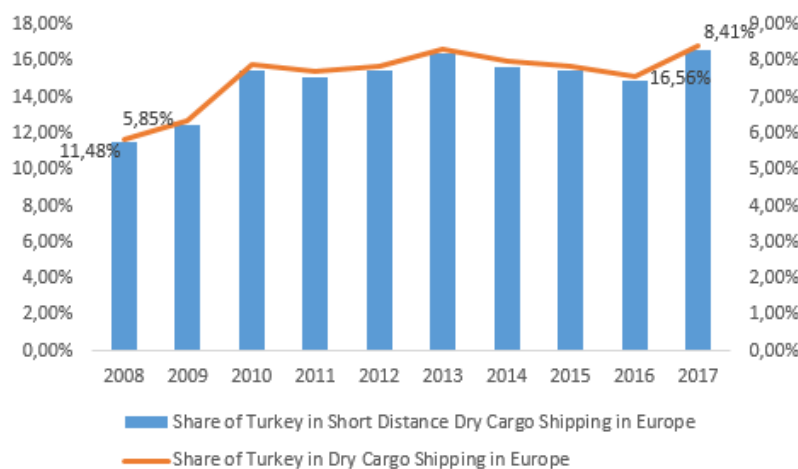
Source: Eurostat, *Maritime Transport Statistics*, <https://ec.europa.eu/eurostat/web/transport/data/database> 05.07.2019

Within the scope of both maritime transport and short sea shipping, it is seen that Turkey has a substantial share throughout Europe, and this share has been increasing over the recent years. Share of Turkey in terms of both short distance dry cargo shipping and dry cargo shipping in Europe are illustrated in Figure 31.

By the end of 2017, while the share of Turkey on dry goods transported by sea throughout Europe was 8,41%, and the share on dry goods transported in terms of short distance maritime transport was 16,56%.

Although ports in Turkey stand out as the point of arrival and departure of the goods transported by sea, it is an important matter who carries these goods. As a matter of fact, freight income is one of the most important revenue sources in foreign currency for countries especially for developing countries with a current account deficit, such as Turkey. Accordingly, maritime transport is a strategic issue for Turkey. For this reason, each component of ship management must be carried out in accordance with current standards and market conditions.

Figure 31: Share of Turkey in Dry Cargo Shipping in Europe



Source: Eurostat, *Maritime Transport Statistics*, <https://ec.europa.eu/eurostat/web/transport/data/database> 05.07.2019

As emphasized previously, the backbone of Turkish-owned merchant fleet is composed of general cargo ships and majority of them consist of the coasters in the range of 1.000-12.000 dwt. Thus, developments in coaster market directly affect the shipping markets in Turkey.

3.2.2. Profile of Ship Owners in Turkey

The seas have not only facilitated transportation throughout the history, but also offered their resources to the service of humanity, and when making comparisons between countries, the maritime power of countries is among the main reference sources. Turkey is a country at the crossroads of trade with its connection to Europe, Asia, the Caucasus, the Middle East, and Africa, and therefore has a strategic importance with this feature. Since a large part of the border of Turkey is surrounded by sea, maritime transport is one of the important industries for Turkey. However, looking at the historical process, it has not been given the value that maritime transportation industry deserves in Turkey.

As a result of the interviews conducted within the scope of this dissertation, views of participants, especially C-1 and SI-2, on how Turkish shipping industry has evolved, have been compiled and expressed in this section.

Until the 1980s, maritime trade was conducted via wooden barges up to 100 tons carrying capacity along the Black Sea coastline mainly by the families from Black Sea. Additionally, some there were few motor vessels made of metal sheets operated by specific state-supported traders.

At those times when it was difficult to build sheet metal vessels, the investment in as ship was to either expand the capacity of their existing vessels without any technical project or transform the ships with different characteristics for entrepreneurs with a little capital.

A new era for the transportation industry has began with the incentives given by Turkish government through Turkish Maritime Bank (Denizcilik Bankası Türk Anonim Ortaklığı) to the shipbuilding industry in Turkey since the beginning of the 1980s under the leadership of Bülent Ulusu, Prime Minister of Turkey. Families, who have been engaged in maritime trade for many years, began to build large tonnage ships, and 34 ships from the range of 1.800 dwt and 7.500 dwt were built with the incentives given in the subject period, and these families stepped into the world shipping markets, and have tried to adapt to the new era for many years. However, they have experienced many unexpected experiences in this process. Few of these families have been able to adapt, and today, companies of these families continue their

activities with the understanding of professional business management with the equipment and competence to conduct transportation in every region of the world. However, many family companies have not been able to adapt and institutionalize since then.

From the beginning of 2000s to the global financial crisis that emerged in the United States in 2008, the maritime industry, in which high revenues were generated, experienced structural changes. In addition to family businesses that have been doing this business for generations, individuals that affiliated in maritime industry as master, broker etc. began to invest in ships, and also entrepreneurs affected by dramatic increase in shipping freight revenues have begun to take part in this sector.

Demand for maritime trade sharply declined because of decrease in international trade activities in the post-2008 crisis period. On the other side, ship supply moved to opposite direction and reached its historical peak levels due to the delivery of orders placed before the crisis and the number of players have an intention to gain a share in the market increased, so did the competition among them. Inevitably, freight rates have decreased. In addition to the new technologies and changing regulations, the reduction of funding sources have been a threat to the current ship supply in recent years. Stakeholders in the sector including ship owners in Turkey have highly been affected by these developments. Specifically, high age average of the current fleet, low diversification, problems in the funding channels are the main issues of Turkish-owned merchant fleet.

As asserted previously, approximately 38% of Turkish-owned merchant fleet and approximately 13% of the total carrying capacity consist of general cargo vessels called “coaster” that is operated mainly in the Mediterranean, Black Sea and Continent Europe for the purpose of short distance maritime transport. Looking at the owners of coasters, it is observed that most of them are families with a specific origin or entrepreneurs who have become ship owners after a long time service in the field as masters or brokers. High freight revenues obtained before the 2008 crisis affected investors who had high amount of capital to invest in investment opportunities no matter what the sector was. However, many of them had to withdraw from the sector in the post-2008 crisis period. Nowadays, certain capital investors, who has adopted professional management principles, have turned to larger tonnage segments. Such

investors have presented a structural alternative to the maritime transportation industry in Turkey. Thus, the traditional ship management has gained a different perspective.

Apart from freight income from business activities, capital gains from sale and purchase transactions are greater source of profits than management of the ship owners (Chou and Chen, 2019: 223). Besides, given the intense trade activities in Mediterranean Basin and Black Sea region, demand needs to be met in the region by carrying out sound investments. Otherwise, not only loss could reveal, but also market share of the firm may diminish, and competitive power of the firm may be affected in the long run (Fan and Luo, 2013: 511). Despite all these facts, there are significant evidences that ship investments are conducted out of rational patterns as indicated many studies (e.g. Scarsi, 2007; Bulut et al., 2013; Greenwood and Hanson, 2013; Duru, 2013-2016; Papapostolou et al. 2017; Lee and Yip, 2018).

Coaster transport, which has played an important role in Europe, which has the second largest share in maritime trade worldwide and where most of goods are transported within the scope of short distance maritime transport, is considered as the main theme within the scope of this dissertation.

Based on the fact that investments are very important for maritime transport companies, coaster investments formed the basis of the research questions of this dissertation. As a research field, investments in coasters that are operated by the companies that do not have a sufficient institutional structure despite their market share in Europe are considered. Therefore, in addition to the factors that affect ship investments, what kind of behavioral biases come into prominence from the stakeholder perspective in ship investments in Turkey has been sought within the scope of this dissertation.

3.3. RESEARCH SAMPLING

It is very difficult to identify companies that have closed structure and operate independently from each other in the maritime transportation industry, where “one ship-one company” principle is adopted. Due to this organizational structure adopted to ensure that fleet is not affected as much as possible by the liabilities of one ship in the fleet, it is considered appropriate to consider this dissertation as the number of

ships rather than the companies. Therefore, the population of this dissertation constitutes Turkish-owned merchant fleet, and since the fleet is mainly composed of coasters by numbers, the sampling of this dissertation consists of coasters. In addition, consultants that give consultancy service in various fields to the investors, sale and purchase brokers that give intermediary services to the sellers and buyers, and senior representatives of associations established to gather stakeholders in maritime industry in Turkey were interviewed based on the qualitative research strategy.

The number of participants in qualitative research is quite low compared to quantitative research. The most important reason for this is that in-depth and detailed data is obtained from each participant and the data is subjected to a detailed analysis. Therefore, even if the number of participants is small, the amount and detail of the data obtained is high and the analysis takes a long time (Yıldırım and Şimsek, 2016: 46). The quality of the data obtained is determined by the data from whom it is obtained. For this reason, the persons to be included in the interviews should be experts in the scope of the research or be in a decision-making position on the subject (Baş and Akturan, 2017: 113). In this context, it is very important to involve right individuals to the research process and collect data in order to find answers.

Purposeful sampling methods, contrary to the probability-based sampling frequently used in quantitative research, is a sampling method that emerges according to the nature of qualitative research. To explore and explain cases and events, purposeful sampling methods allow in-depth analysis of data sources that are thought to be rich information (Yıldırım and Şimsek, 2016: 118). Purposeful sampling methods include different approaches according to the subject and scope of the research.

In some cases, it may be difficult to identify or access data sources. In such cases, snowball sampling is an effective sampling method used to identify people with rich information sources. The aim is to reach those who have the most valuable information or are in a decision-making position and who can value such research and participate voluntarily. In this sense, after the first research group has been identified, participants in each interview are asked to provide guidance on participants who may be involved in the next interview. As the snowball grows as it rolls, the sample is determined first with a small number and then expands with a growing acceleration (Erkuş, 2017: 140).

As noted above, purposeful sampling method was adopted in this dissertation to determine behavioral biases in ship investments in Turkey from the perspectives of stakeholders. Since it is very difficult to identify valuable data sources and generally reference is required in order to reach these sources, snowball sampling is preferred among purposeful sampling methods.

Although the word “stakeholder” expressed in the title has a very broad meaning, it is limited to experts serving in the sector and ship owners in line with the scope and purpose of the study. While experts were regarded as well-educated and experienced individuals who carry out joint works with ship owners in Turkey and who have the ability to evaluate them with objective observations, ship owners were regarded that own and operate coasters mainly in the range of 1.000-12.000 dwt carrying capacity. The descriptive details of the participants, who are determined in line with the purpose and scope of the dissertation and are contacted and interviewed, are shown in Appendix 4 and the details of the interviews are shown in Appendix 5.

Undoubtedly, maritime transport is a profession that requires many things to do. Considering that the ships operate according to the 7/24 principle and sail in very different regions of the world and in the territorial waters of the countries, unexpected developments may occur at any time. It is difficult to communicate and make interviews with the coaster owners due to the fact that coasters conduct short distance trips and their owners either want to be close to the ship or take care of the necessary operations by themselves in any development of the ship immediately. In this sense, many appointments were canceled. However, it is determined that sufficient number of participants has been reached and the data obtained has reached a certain saturation.

Table 23 shows the comparison of the total fleet of the participants with the Turkish-owned merchant fleet. Accordingly, it is determined that the sample constitutes 5,57% by number and 2,41% by carrying capacity of the total fleet. Within the scope of total coaster fleet, it is determined that the sample constitutes 14,64% by number and 22,99% by carrying capacity of total coaster fleet.

Table 23: Share of Fleet of Participants in Turkish-owned Merchant Fleet

	Number of ships	Capacity in dwt
Turkish-owned Merchant Fleet	2.008	32.809.377 dwt
Turkish-owned General Cargo Fleet	857	4.111.463 dwt
Turkish-owned Coaster Fleet	765	3.438.325 dwt
Total Number of Ships for Participants	112	790.481
Share of Turkish-owned General Cargo Fleet in Turkish-owned Merchant Fleet	42.68 %	12.53%
Share of Turkish-owned Coaster Fleet in Turkish-owned General Cargo Fleet	89.26 %	83.63%
Share of Turkish-owned Coaster Fleet in Turkish-owned Merchant Fleet	38.10 %	10.48 %
Share of Fleet of Participants in Turkish-owned Coaster Fleet	14.64%	22.99%
Share of Fleet of Participants in Turkish-owned General Cargo Fleet	13.07%	19.23%
Share of Fleet of Participants in Turkish-owned Merchant Fleet	5.57%	2.41%

Source: Adapted by author from IHS Seaweb, January 2018 via ISTFIX

3.4. DATA COLLECTION

Patton (2002) asserted three kinds of qualitative data collection technique as in-dept open-ended interviews, direct observations and written documents (Patton, 2002: 4). The most commonly used qualitative method is interview. Interviewing is a powerful method used to reveal perspectives of individuals, experiences, emotions and perceptions as indicated by Bogdan and Biklen (1992). The main method used in the interview is oral communication. The most common communication process used in daily life is “conversation”, and the data is collected through conversation. In this sense, interview can be defined as a conversation to gather information about experiences of individuals, thoughts, feelings and knowledge on a certain subject (Berg and Lune, 2015: 129). Interviews are one of the qualitative research stages that need to be well designed.

Data can be collected by three different approaches, namely; structured, semi-structured and unstructured during the interviews. While the interviews in which the questions are addressed to the participant in accordance with a specific plan are structured interviews, instead of fixed questions prepared on a subject the interviews in which emotions and thoughts are exchanged between participant and researcher are

regarded as unstructured interviews. In semi-structured interviews, the questions prepared by the researcher can be revised according to the participants' comments or the flow of the interview (Sönmez and Alacapınar, 2017: 185). Although questions have already been prepared, they can be reformatted during the research process. It is both possible and necessary for questions that have not been previously thought to arise and be included in the research process, or some of the existing questions can be omitted if necessary. In addition, the questions do not have to be asked in a certain order (Yıldırım and Şimşek, 2016: 48).

Interview technique, which is one of the most preferred data collection method was used in this dissertation. In this sense, a semi-structured interview was conducted in each interview, and the questions asked to the participants are shown in Appendix 3. The semi-structured interview technique is preferred because it is both standard and flexible to a certain extent; it can remove the limitations of the survey forms and can gather in-depth information on the subject (Lune and Berg, 2009: 70).

Individuals participating in this dissertation are considered important data sources and their answers cannot be limited to a limited number questions. Instead, a clear and flexible way is followed and as much detailed and in-depth data as possible are collected (Yıldırım and Şimşek, 2016: 45). Stewart and Cash (1985) defined the interview as a reciprocal and interactive communication process that is predetermined, conducted for a serious purpose, based on asking and responding style (Stewart and Cash, 2017: 1-2). According to Patton (2002), the intention of the interview is to gain information from an individual's inner world and to understand his point of view (Patton, 2002: 340-341).

Undoubtedly, the researcher plays a major role in collecting the data correctly. As indicated by Kvale (1996), the researcher can take on different roles according to the characteristics of the subject and resource, and these roles were described as “Miners” and “Travelers”. The researcher playing the role of “Miner” has a passive character. Assuming that the information is embedded, meaningful structures from the data is tried to be revealed. The researcher who plays the role of a “traveler” is more active in obtaining and making sense of information in a common way with the data source (Kvale, 1996: 3-4).

Within the scope of this dissertation, the researcher collected the data by assuming the role of “miner” defined by Kvale (1996). One of the points to be considered when collecting data is to obtain “correct” data. In particular, participants can manipulate data for some personal reasons. To prevent this, the format of the interview was designed as “chat” so that participants were able to share their real thoughts and experiences frankly. Assuming that the stakeholders are close, influence and follow each other in such small market, it is aimed to obtain the opinions of the participants mainly covering the whole industry. In this process, the shared facts were expected to be expressed by the participants with examples.

As mentioned above, the main focus was on providing the participants' thoughts and experiences without any manipulation. Therefore, during the interviews, the questions were addressed in terms of ship investments and behavioral biases arising from these investments, sometimes with different words and sometimes with examples according to the flow of the conversation in order to understand them correctly. By asking the questions in this way, it was seen that the participants responded to the questions more eagerly and comprehensively. The following is an example. Although one participant, who can hardly give an appointment with the reference of a few people, said before the interview: *“I can spare 15 minutes for the interview, I am very busy”*, the interview lasted for 50 minutes. In fact, the interview could have been further extended if there had not been another scheduled meeting. As an another example on this, one of the participants was interested in the topic, and despite his busy schedule the interview lasted for 5.5-hour. These examples prove that the data collection strategy is correct.

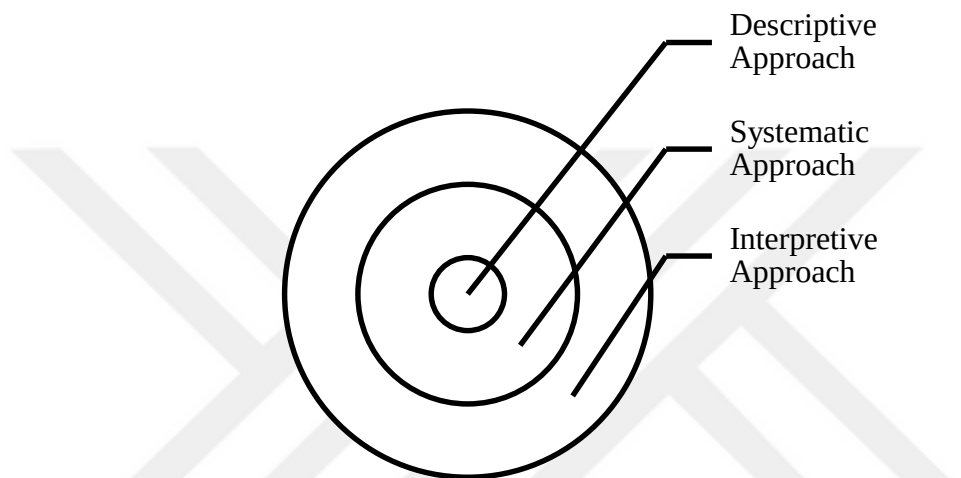
3.5. DATA ANALYSIS

Each qualitative research has its own set of characteristics. Therefore, the data collected within the scope of qualitative research may necessitate the development of different approaches to achieve the purpose of the research. Considering the current approaches in the literature on data analysis, it is useful to prepare the framework for data analysis according to the characteristics of the research and the data collected in a specific plan. As a matter of fact, if the data analysis methods in qualitative research

are standardized, the scope of the researcher and the research will be limited and it will not be possible to obtain rich and in-depth analysis results that are appropriate to the data obtained (Strauss, 1987: 7-9).

Although a specific data analysis process is not necessary, it is still useful to handle and analyze data with a specific approach. In this context, Wolcott (1994) proposes three ways of data analysis as shown in Figure 32.

Figure 32: Approaches on Qualitative Data Analysis

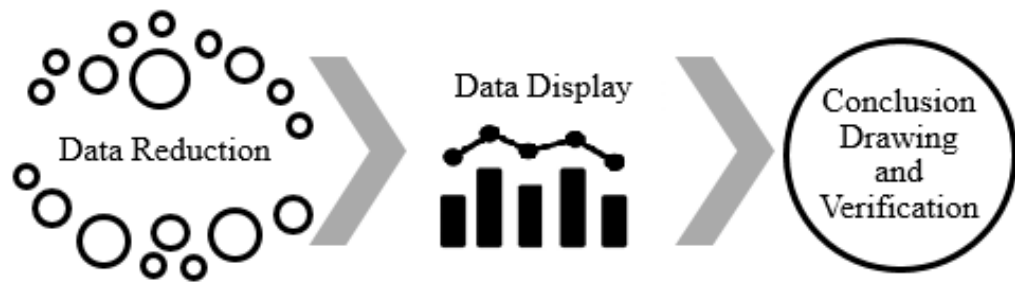


Source: Adapted from Wolcott, H., 1994, *Transforming Qualitative Data: Description, Analysis and Interpretation*, Thousand Oaks: Sage Publications.

The statements shared by the participants in the research can be presented as original as possible with a descriptive approach. In addition to this, systematic analysis can be done to reach some causal and explanatory results including the first approach. In other words, in addition to presenting the data in a descriptive approach, various themes are reached for the scope of the research. On the other hand, in the interpretive approach, the researcher includes his / her own comments in the data analysis process in addition to the first or second approach. Here, the researcher is involved in the process and has an active role (Wolcott, 1994: 46-52).

As visualized in Figure 33, Miles and Huberman (1994) emphasized another approach to how the data analysis process should be. Accordingly, the data analysis process consists of three stages: “Data Reduction”, “Data Display” and “Conclusion Drawing and Verification”.

Figure 33: Flow of Activities in Qualitative Data Analysis



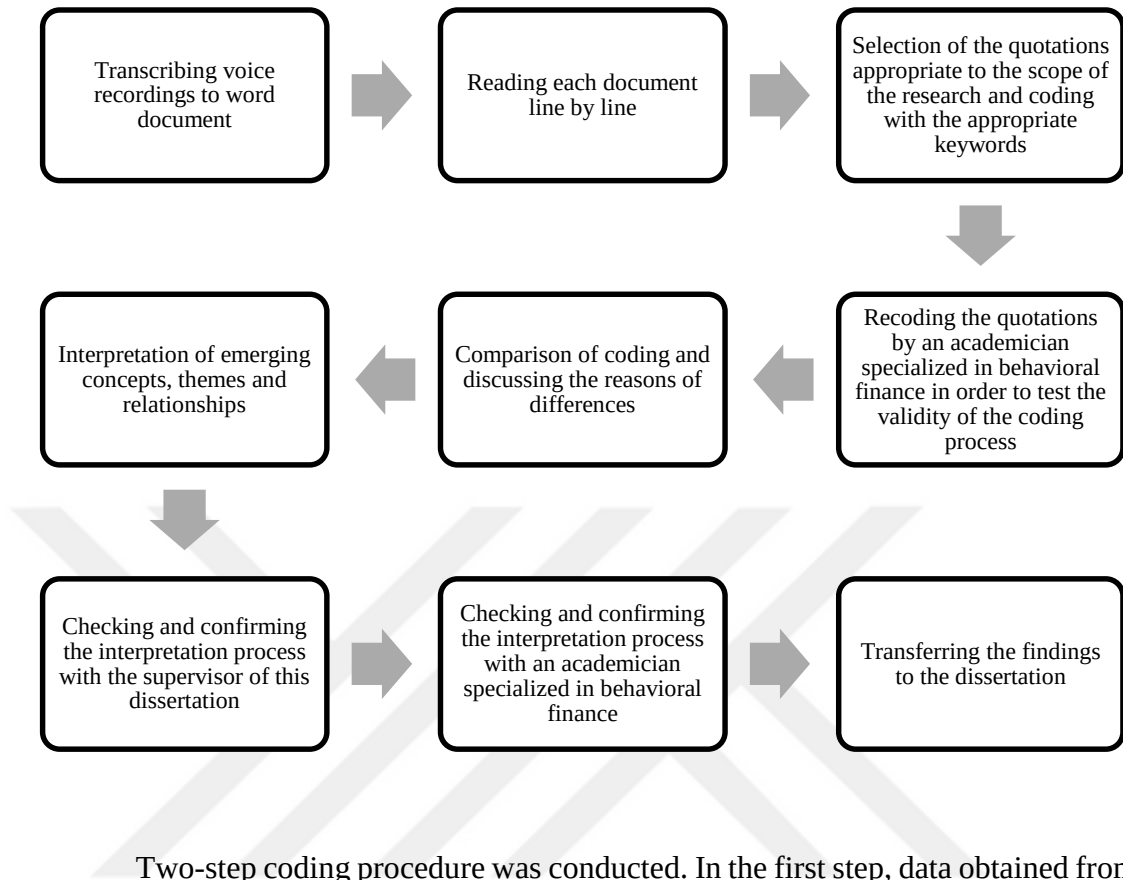
Source: Adapted from Miles, M.B., and Huberman, A.M., 1994, *Qualitative Data Analysis: An Expanded Sourcebook*, Thousand Oaks: Sage Publications.

The main objective of the researcher in data reduction process is to summarize the data and to select the important data. In this context, first, the data is examined in detail and then the selected data is coded. When coding the data, prominent concepts and themes are used according to the scope of the research. In the second stage, the simplified data set is visualized by means of various figures and tables. In the last stage, themes and relationships are interpreted and confirmed. It will be possible to make the findings obtained in this way meaningful and validate them (Miles and Huberman, 1994: 10-12).

The approaches proposed by Wolcott (1994) and Miles and Huberman (1994) were considered in the data analysis phase within the scope of this dissertation. To be more precise, the systematic approach of Wolcott (1994) was adopted to analyze the data collected from the participants. Therefore, the quotations of the participants that were included in the scope of the research were directly quoted with a descriptive approach and in addition, these quotations were characterized by certain themes and concepts in order to reach some causal and explanatory results.

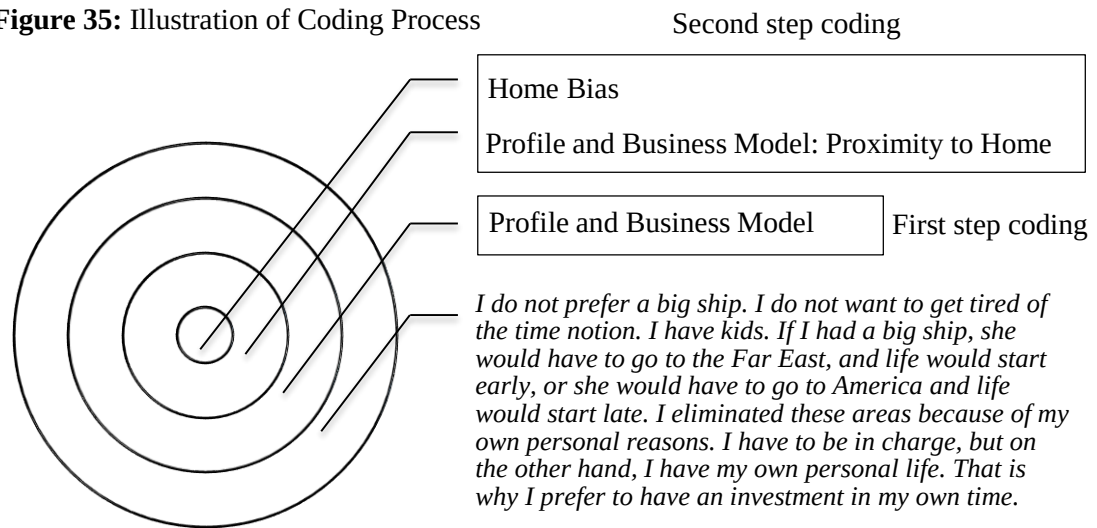
In order to implement the systematic approach adopted in the data analysis phase, the action flows proposed by Miles and Huberman (1994) were taken into consideration as depicted in Figure 34. The quotations for the purpose of the research were filtered and coded under certain themes to reach a simpler data set. The findings were visualized in order to clarify the emerging concepts and themes and to reach certain results. In the last stage, the findings were interpreted, compared and confirmed.

Figure 34: Actions Taken for Qualitative Data Analysis



Two-step coding procedure was conducted. In the first step, data obtained from the participants were coded with the relevant code. In the second step, themes were determined by classifying context-specific interpretations by evaluating the relevant codes, then constant comparisons between the themes were employed to avoid overlaps and finally definite themes were determined. An example of the process is illustrated in Figure 35 as follows.

Figure 35: Illustration of Coding Process



Source: Author's own composition

During the interviews, the findings shared by the participants and their examples based on their own experiences were taken into consideration. By doing that, the answer of the question what are the behavioral biases that could not be explained by rational patterns occur in ship investments in Turkey have been sought. In this context, the question of the extent, to which the data obtained from the participants will be evaluated, has gained importance. It has been frequently emphasized that many studies have been conducted on the heuristics and behavioral biases, and it has become one of the most popular topics in the literature of economics, finance and psychology. As a matter of fact, the behavioral biases stated within the scope of behavioral finance are increasing day by day and it is found that some biases overlap with each other in terms of the scope. Taking into account that new biases are detected and included in the literature as time goes by, it is useful to examine these biases with a certain systematic in terms of scope. There are different studies for categorization of biases considering the scope. In order to make an accurate analysis, the taxonomy and definitions of biases proposed by Carter et al. (2007) was considered in this dissertation. Based on the definitions shared within the scope of this study, it was determined which behavioral biases could be related to the quotations of the participant.

3.6. RIGOR OF THE STUDY

In quantitative research, the quantitative characteristics of the phenomenon are examined and in qualitative research, the existence and meaning of the phenomenon gains importance. In this context, validity in qualitative research is related to the direct observation of the phenomenon by the researcher as a data collection tool. If the collected information is valid, it is likely that similar information will be obtained even if it is not the same in another study. The basic condition of validity is about explaining how the results are achieved. Qualitative research is relatively weak in terms of external validity of research results. In qualitative research, it is often not possible to include as many individuals as possible in the sample to represent the universe concerned. Furthermore, it is difficult to generalize the results obtained due to the continuity and variability of the events. Generalizations are not in the form of principles and rules, but in the form of experiences and examples (Yıldırım ve Şimşek, 2016: 269-272). The elements of rigor in qualitative research rest on the dialogue of theory and method, critical awareness, honesty, validity and reliability. Continuous interpretation of the data in the context of theories and the continuous questioning of the way the researcher interprets the data saturates and strengthens the analysis at the end of the process (Ger, 2009: 4).

Just as a quantitative researcher designs his/her research in the context of external and internal validity, reliability and objectivity, the qualitative researcher should also design his/her research based on same criterion. However, as indicated by Agar (1986), the terms used in maintaining the quality of quantitative research do not fit the nature of qualitative research. As mentioned by Yin (1994), the quality of a research design can be judged by considering trustworthiness as a criterion. Trustworthiness is to maintain quality, authenticity and truthfulness of the research design and findings of qualitative research (Cypress, 2017: 254). According to Guba (1981), a qualitative study is trustworthy to the extent which truth value, applicability, consistency and neutrality is reached.

Table 24: Scientific and Naturalistic Terms and Four Criteria of Trustworthiness

Aspect	Scientific Term	Naturalistic Term
Truth Value	Internal Validity	Credibility
Applicability	External Validity Generalizability	Transferability
Consistency	Reliability	Dependability
Neutrality	Objectivity	Confirmability

Source: Guba, E., 1981, Criteria for assessing the trustworthiness of naturalistic inquiries, *Educational Communication and Technology Journal*, 29: 75-92, p.80

Guba (1981) proposed 4 terms related with the naturalistic paradigm to replace the terms as illustrated in Table 24, which are: credibility, transferability, dependability, and confirmability. In this respect, credibility is to establish confidence in the truth of the findings for the subjects, participants and the research setting. Transferability is to make sure how applicable is the findings to other people and to other time periods. Dependability illustrates the consistency of the data that is whether the findings would be consistent if the interview were repeated. Finally, confirmability reflects the neutrality of the researcher.

3.6.1. Credibility

Through interviews; reactions, such as experiences, attitudes, thoughts, intentions, interpretations, mental perceptions, that cannot be observed directly tried to be understood. In the stages of data collection and data analysis, the question of whether the data and findings related to the phenomena thought to be observed or the phenomena thought to be understood reflects the truth. The satisfactory answer to this question is one of the most important aspects in determining the quality of qualitative research. To do that, the main task of the interviewer is to ensure that the participant is comfortable, honest and correct against the questions asked in this process.

A qualitative researcher spends time in the field, talks directly to the people in the research, participates their experiences when necessary, and uses the perspective and experiences gained in the field during the process of the analysis of the data collected (Yıldırım and Simsek, 2016: 44).

It is important that the researcher has the ability to empathize and tries to understand the perspectives and perceptions of the interviewees. In this way, a more effective communication will be established between the researcher and the individual participating in the research and it will be possible for the interviewee to express his / her perceptions and experiences in a sincere manner.

One of the most important constraints in qualitative research is the fact that the analyzed individuals do not give sincere and intimate reactions and responses. Instead of natural behaviors and/or sincere thoughts of the person, participants exhibit the behaviors and share opinions they deem appropriate to leave a certain impression on the researcher. The task of the researcher is to minimize this risk and prevent it from being effective on the findings and analyzes (Ger, 2009: 9).

To ensure credibility of this dissertation, following strategies have been implemented. First, previous studies on behavioral economics, behavioral finance and maritime economics have been examined in order to understand the dynamics of the phenomenon and to determine initial scope. In order to improve the initial scope, the first field research was conducted. In the first field research, leading ship sale and purchase brokers who carry out joint works with Turkish ship owners and also executives of industrial associations who have the ability to evaluate them with objective observations were investigated.

After the first field research, the data were compared with the findings obtained from the literature before the field research, the scope of the research was expanded, the questions posed were revised. Then, the data obtained were grouped under certain themes and a second field research was conducted. The second field research aimed to both discuss the scope of the first field research and to collect data on the profile characteristics of the shipowners to be included in the third field research and to determine the sample of the research. After the second field research, the scope of the research was revised and the third field research was begun, as was done after the first field research. At this stage, interviews were conducted with the stakeholders, which are active in ship investments, mainly ship investors.

In order for the participants to feel comfortable and to answer questions frankly, the interviews were conducted at the addresses of each participant and almost all participants agreed to meet in their own offices.

The permissions of all participants were taken whether they were willing to participate in the study, and upon explanation of the study, an oral informed consent was obtained. Before starting each interview, the reasons leading to this study were shared with the participants. It was emphasized that it was the main motivation not to have seen such a study on factors revealed in ship investments and biases in ship investments in Turkey with systematic approach. It was also stated that it would be beneficial to identify such factors and biases in ship investments and to share these findings with all the stakeholders.

The theoretical explanations were given to the participants when it is necessary not to face any misunderstanding, and whenever the doubts on how to respond to the questions occurred, the questions were clarified and simplified by giving comprehensible examples. Some questions were asked differently to check if the participant gives the consistent responses. Since the data collected in the field research started to repeat each other, the interviews were terminated with the idea that the required saturation was reached and the analysis of the collected data was started.

3.6.2. Transferability

In qualitative research, which is interpretive, it is important to explain the events and phenomena that occur under certain conditions rather than finding objective and universal laws independent of time, human and culture. Therefore, qualitative research is weak in transferability. Considering that social facts change according to time and conditions, it is not possible to make direct generalizations, but indirect generalizations may be in question. What is essential in generalization is that the researcher informs in detail all stages of the research. Even if the reader cannot generalize directly in his/her environment by looking at the research findings, he/she can draw some lessons or experiences that may apply to his/her environment. This increases the transferability of qualitative research (Yıldırım and Simsek, 2016: 281-282).

In this study, it is aimed to describe the data sufficiently in order to increase the transferability. The raw data was presented to the reader in a reorganized manner according to the concepts and themes that emerged, without any comment and as

original as possible. It is aimed that the research results are understood correctly by the reader. Additionally, participants were recruited by purposeful sampling method to increase the transferability in order to reveal both the facts and events occurring and their variable characteristics.

3.6.3. Dependability

Reliability, which is associated with reproducibility in quantitative research, is expressed as “dependability” in qualitative research. The reproducibility of qualitative research under variable environment and time conditions is often not possible. From this point of view, reliability, which is a prerequisite of validity in quantitative research, is handled in different aspects in qualitative research. Considering that the qualitative research tool is the researcher himself/herself, it is important that the researcher adopt a consistent approach in data collection and data analysis processes.

In order to ensure dependability, all interviews were conducted by the researcher himself. In data collection phase, since the questions were aimed to be understood correctly by the participants, explanatory examples and definitions were shared in case the questions were not understood sufficiently by the participant. Once the interview was done, the audiotape of each interview was transcribed into word document in following two or three days taking into account the guidance proposed by Poland (1995). The points to be emphasized among the participants' views were highlighted and the important quotations were translated into English. As a code-recode procedure, the codes were reviewed again in a few days later to check whether there were inconsistencies. Data were collected until the theoretical saturation was reached. Both in coding and in interpretation phases, peer review examination was conducted.

3.6.4. Confirmability

In order to generate sound, important and interesting insights and explanations through the theory-data cycle, the researcher must collect and analyze data meticulously in the awareness that he/she is also a data collection and analysis tool. In

this sense, researchers need to be aware of their perceptions, views and emotions in qualitative studies, and critical awareness makes qualitative researchers more conscious producers of science. More precisely, what needs to be done is to be aware of expectations, prejudices and assumptions, and to be aware of how these will affect the research (Ger, 2009: 7-8).

It is very important for the objectivity of the research that the results reflect the truth and be away from the subjective judgments and assumptions of the researcher. However, “objectivity” is defined as “confirmability” in qualitative research, since the researcher sets the boundaries with relatively softer lines in terms of intervention in the process compared to quantitative research (Yıldırım and Şimşek, 2016: 283).

Due to the anonymity reasons, names of the participants and the institutions they work for are kept confidential in this dissertation. Additionally, the responses and examples on other companies that are not allowed to record of the participants were not quoted or transcribed in the study. Additionally, in order to obtain independent perspectives of each participant, responses collected from previous interviews were not shared with the existing participant.

In order to confirm the findings obtained, the peer review examinations were held during 3rd field research. The first peer review examination includes two face-to-face meetings that were held on 8 January 2019 and 3 April 2019 with an academician who is working as a professor at Yıldız Technical University Faculty of Economics and Administrative Sciences, has many academic studies in the field of behavioral finance worldwide and national scale, and has been an advisor of numerous doctoral and master dissertations on behavioral finance. In these meetings, data collection method and how to analyze the data were discussed. In addition, in order to test the validity of the coding made by the researcher during the analysis of the data, the relevant coding were also made by the academician and the reasons of the differences were discussed at a common point.

Two meetings were held as another peer review examination on 16 September 2019 with two different academicians who are working as associate professor and research assistant with PhD title at Dokuz Eylul University Maritime Faculty, have many academic studies in the field of management and maritime business

administration, and the scope of the dissertation and the findings were discussed in detail.

Another peer review examination was conducted with an academician who is working as a professor at Dokuz Eylül University, Faculty of Business Administration, has numerous academic studies in the field of behavioral finance, has been an advisor for many doctoral and master dissertations prepared in this field. Two different face-to-face interviews were conducted in order to discuss the scope of the dissertation and to test the validity of the coding as it was done in the first peer review examination. The interview held on 11 July 2019 lasted 2 hours and the meeting held on 17 September 2019 lasted 1.5 hours. In addition to these interviews, communication has been established with the academician via e-mail when necessary. The academician checked the data collected from the participants and the findings were compared with those of the researcher. After discussing the reasons for the differences, the codes and themes according to these codes were finalized.

CHAPTER FOUR

A QUALITATIVE INVESTIGATION ON SHIP INVESTMENTS IN TURKEY

Following the previous chapter in which the methodology and design of the research are explained in detail, the expressions of the participants on ship investments in Turkey were analyzed in a systematic flow under certain factors in this chapter. The findings in this chapter were supported by quotations of the participants. The selected quotations include the participants' arguments about the factors that stand out for ship investments in Turkey.

The findings are presented in accordance with the research questions of the dissertation. Specifically, the findings regarding the first research question on the factors driving ship investments in Turkey, are initially illustrated. While explaining the factors driving ship investments in Turkey, the behaviors that were highlighted by the participants and that could not be explained with rational patterns, were evaluated within the scope of behavioral biases in discussion of the findings under the relevant factor to answer the second research question.

4.1. CONTENT ANALYSIS FINDINGS

4.1.1. Market Timing

4.1.1.1. Investment Signals

Ships stand out as the most important element of maritime trade, and they are not only assets used in freight transport, which make earnings to their owners, but also investment instruments that offer high capital gains to their investors with the positive difference between purchase and sale prices. Shipping markets have a fluctuating structure between peak and trough many times throughout history. The importance of investing at the right time is stated by one participant as follows.

SI-15: *One of our elders had a metaphor for coaster shipowners. He said, "This is a craft business. You will process gold like a jeweler, you will earn money*

when you process, you will earn money when you sell, you will earn money when you buy back". If you really want to take a role in this business, you have to take the right step at the right time.

Considering the cyclical structure of the maritime transportation industry, significant profit is obtained when the ship is acquired at low levels and sold under high market conditions. This investment strategy, called "asset play", is a strategy that is used frequently by big players, especially those with high capital power. Although asset play is not a common investment strategy in Turkey, there are companies that have achieved higher earnings. This was stated by a participant as follows.

C-1: *One of the most successful examples of asset play is A Shipping². In 1992, they moved from a different line of business to shipping and 60 ships were resaled. In other words, upon giving new building order, the ship was sold to another buyer prior to delivery from appropriate prices. Now they are collecting ships in a similar way. We are talking about billions of dollars here. The amount was reached up to \$ 3.5 billion from resale of 60 pieces of ships, it is a serious amount.*

The best example of asset play is the Greek model, defined by a participant as follows.

C-3: *The Greek model can be considered as a rational pattern, which is investing in times of crisis, operating in the spot at the time of recovery, selling when it reaches the peak, then waiting for a while, and buying again after the market falls. Greek shipowners sold most of their ships before the crisis, and since the end of 2015 they have invested in a large number of second-hand ships. They were winner of the crisis, which is in their tradition.*

It is proved by the experience of the same participant that the ship investment made at the right time is a very profitable investment compared to other investment alternatives.

SI-20: *We bought our ships from the German bank 4 years ago. That is why I waited until I was 60. Before that, we had brokerage, operator and agency business. However, we have started operating these ships for the last four years. Our other businesses continue on one hand. We thought that the bank would want to sell the ships*

² Due to the anonymity reasons, the name of the company was kept confidential

in its portfolio because its main job is not transportation, but it tries to save the loan as much as possible. We bought three ships at a price of 30-40% below the market. I do not want to mention the amount of the investment, but the return of the investment was in 2.5-3 years. Today, as a small investor, if you buy a house and rent it to a third party, the payback of investment would be 20-25 years in current market conditions. Even the best scenario, the payback period was 12-13 years. On the other hand, the ships that we bought were paid back in 3 years even though they were 5-6 years old. This is an example of investing at the right time.

Decreasing ship prices in bad market conditions create attractive investment opportunities. One of the participants used the following statements in this sense.

SI-1: *A ship has value. This value does not fall more or less from a level. European shipowners, especially the Greeks, do not look at the market situation when prices approach these levels. The market was very bad, especially in 2016-2017, but the Greeks were in purchasing side. I was also in that side. Even if there was not enough cash, I bought a ship by borrowing. Because a ship that was €3 million fell to €1.5 million. Then I sat down, looked at past figures. In 2008, while these ships were sold at the level of €10-12 million, €1.5 million was a great opportunity. After all, the ship has a value whatsoever. How much more risk can you have? The ship earns \$350.000- \$400.000 per year under the worst scenerio. You risk working over a year. If you do not take that risk anyway, you cannot do business in shipping. Everyone takes a role where there is no risk. The important thing is to make difficult decisions.*

It is an important investment strategy not only buying but also selling the owned ships at the right time. Following participant associates that selling the ship at the right time is also an investment considering his own experience.

SI-20: *If there is a clutter in a field, you have to consider selling instead of buying. After purchasing three ships under favorable conditions, we committed to several ships for the fourth ship of the fleet, but they wanted 150% more than the price we bought the first three ships. Therefore, I said, "I will sell it now, if that's the price." We are not married to the ship. Not necessarily buying, selling is also an investment. Investing from low levels also generates positive cash flow into the country.*

In addition to purchasing at the right time, how important the sale of assets at the right time can be understood by examining the behavior of the Greek shipowners.

The signs that Greek shipowners began to dispose of ships when the market was reached to the peak levels, were seen from a shipowner as follows.

SI-5: *At the end of 2007, in the Tradewinds newsletter, I saw the Greek brothers begin to sell all their ships. I wrote down their names, so I could find out why later. They took the whole fleet out of their hands. I did not understand what they are doing. Maybe they purchased more after 2008. The ship owner who could sell his/her asset was the winner.*

A participant emphasizes that the success in maritime transport business will be achieved if the correct and necessary actions are taken at the right time and that the business can be hand over to the future generations.

SI-1: *If you have accepted this job as a profession, then the one who will come after you will continue this job. It is the logic even if you do farming, livestock raising etc. If you need to plant your crop, you will, you do pruning if necessary, or if your animal is old, you send it to the slaughterhouse. The ship can also be thought of in this way, it must be disposed of after a certain time. Because it is a commercial commodity. If you find value in a commercial commodity, you sell it.*

The experience of one of the shipowner participants on how important selling ships in the fleet at the right time is as follows.

SI-4: *In June 2008, I went to Poseidon fair in Greece. An S&P broker invited us to the beach party in Piraeus in the evening. I do not drink alcohol but there were people from all branches of the maritime industry, the party continues. So I stepped aside and watched people. A fisherman-type Greek man over 60 years old approached me. After I met him, he said he was an S&P broker. He said, "Sell whatever you have, this market will never appear again". "Why?" I asked. "How much did you build the ship?" he asked, I said, "\$8 million." "How much now?" he asked, I said, "\$16 million." "How long will you earn \$8 million?" he asked. I calculated it to be 8-10 years under normal circumstances, and seemed very logical. When I return to home, I met with my partners and sold the ship. Then the person we sold asked, "Will you take the ship back from us for half the price that we paid?" Three months later, he sold it to half of the amount he had suggested. You need to know when to withdraw in gambling. At the same time, my friends called me and scolded me indicating that the ship was sold from low price. They were right under the circumstances at the time, because my ship was*

of European design. Within a year they all erased the "1" next to the figure in their heads for their ships, then sold it to half of it.

Another participant exemplified by sharing his experience that a ship in the fleet could be disposed of if the ship had an alternative under favorable conditions and the fleet could be easily modernized.

SI-1: *I got a good offer. Nevertheless, I said, "what do we put in place if we sell it?" We found a ship with a capacity of 4.000 dwt, built in 1994 with a price of about \$900.000. Maybe I could drop the price a little more, but when I looked at what I put in place, I will upgrade from 1984 to 1994 and 3,000 dwt to 4,000 dwt. Look at the beauty of the ship. Now the ship has put \$1,5 million on its price and I have earned \$150.000 per year.*

Although it is necessary to dispose of the asset at the right time, many shipowners can establish an emotional connection with their ships by giving their ships the names of their mothers, spouses or people they care. The stronger the emotional connection between the ships and their owners, the greater the likelihood of exhibiting behaviors that do not conform to rational patterns. When the findings obtained in the interviews were examined, it was found that Turkish shipowners mostly marry their ships that they establish emotional attachment with their ships and cannot behave as required by asset management. This was stated by a participant with the following words.

C-3: *Asset management makes it necessary to invest in bad market and to quit in peak levels. However, there is no such tradition for Turkish shipowners. When the ship is being invested, it is not questioned whether the market is suitable or not. While running the vessel very good levels are achieved when the ship should be sold, but they do not. Because the shipowner married the ship. Names of beloved people, especially their mothers, daughters, spouses etc. are given to the ships, which makes a connection with the ship. However, the most profitable business is the asset management instead of ship management.*

Since it is difficult to sell the ships due to the emotional connection, a participant explained how the Greek shipowners found a solution to this situation by the following words.

SP-2: *We do not sell goods easily. We hardly sold the ship of V. Shipping to the Greek shipowner. Afterward, they said: “We give the names of our ex-girlfriend, so it would be easy to leave, but you give your mother's names, so it's hard to leave. The ship is loved, because of its name, because it is a very money-saving ship, and so on. It is difficult to leave for reasons.*

It is stated above how important it is to buy or sell the ships at the right time. However, the sudden ups and downs that are often seen in the market, can cause the owners to succumb to their feelings. The opposite of the required behavior can be exhibited. One participant stated that although the period of the global maritime crisis in 2016 was a good time to buy ships, the opposite behavior was observed in the market.

A-1: *In February 2016, the Baltic Dry Index (BDI) dropped to 291, and many shipowners scrapped their ships at the lowest market level. Almost all new ship investments have been ceased. But it was time to invest in the ships since the ship prices were historically low.*

In addition to the above example, at a time when the ship should be invested, opportunities are missed mainly due to uncertainty, risk perception and so on. In this regard, one of the participants gave an example of a case as follows.

SP-3: *A shipowner had the opportunity to buy ships for \$3,5 million. He hesitated despite he has adequate cash in his safe and gave up the ship with the thought of uncertainty. He preferred to wait. At that time the ship had \$4.500 freight earnings per day and its daily running cost was \$5.000. Therefore, \$500 per day had to bear as a loss. In fact, those levels were quite low, and if it fell further, at worst, the ship would have been laid up for a while. However, uncertainty and fear caused a great opportunity to be missed.*

4.1.1.2. Investment Literacy

4.1.1.2.1. Macro Perspective

Maritime transportation is an industry where the ship owners cannot determine the profits themselves and where the return on investment is expected according to market conditions. In this sense, it was asserted by a participant that the maritime transportation industry does an affected industry and therefore the factors that affect the industry should be followed well as follows.

SP-3: *Recently a shipowner stated that, “We are a sector affected by someone's work”. In the world, money increases, commodity increases, demand increases, and then reflects on the maritime industry. Otherwise, we are not a sector determining the price to carry a cargo from one point to another. Because of this, we are a sector that does not affect, but affected from the developments in the markets. Therefore, following the factors affecting the sector and behaving accordingly will lead to more rationality.*

This was also emphasized by a participant as follows.

SI-4: *Maritime transport is a sector where anyone cannot determine profits themselves. This is the point I want to emphasize most. The majority of the profit depends on the freight to be paid by the charterers. Even if anyone wants a very high freight when the market is low, no one gives above the market average. According to the conditions of the market, the return of the investment is expected. It is necessary to exclude charterers who have their own ships to carry their own commodity. In this case, while the ship is a vehicle, the ship is a purpose for coaster shipowners.*

In order to have the ability to take the right steps at the right time, the dynamics of the maritime transportation market must be well understood and all factors affecting the market should be followed well. In this sense, the impact of international trade on demand for maritime transportation needs to be well analyzed. One participant emphasized the issue as follows.

C-3: *Since 2012, the increase in world trade has not increased as much as the increase in GDP. However, due to the growth in developing countries with an average 7-8% growth rate, trade was increasing by 2,5-3 times of the world GDP. However, this was not a sustainable situation, and especially the developing countries led by*

China has started soft landing. The ratio between these two variables fell to 1, as services contributed more to world GDP rather than commodity trade. In fact, this ratio fell to 0,83 in 2016 and is now up to 1,3. As there was no significant increase in trade, the gap between supply and demand has expanded as the tonnage increased. Many companies, including the best companies in the world, such as Hanjin, went bankrupt, especially since the debts were not affordable with earnings any longer from the beginning of 2016.

As indicated above, maritime transportation is an industry that is directly affected by international trade activities and whose demand is shaped accordingly. The supply situation is important in meeting the demand. In case of insufficient supply, ship investments will accelerate in order to meet the demand. On the other hand, in case of insufficient demand, current merchant fleet will be negatively affected.

One participant stated that not only macroeconomic data of the countries and regions, but all markets related to each freight transported should be followed thoroughly.

C-1: *Vessels are securities, although they are not as liquid as stocks. When investors understand this, a balance will be achieved. Just as the stock markets are being followed, the shipping markets should be followed with the same sensitivity. Technical analysis can be made to indices such as BDI, ISTFIX. However, the basic analysis is certainly not different from the stock market. Company profitability, sector profitability and commodity markets should be examined thoroughly. Shipowners should follow all the markets of the cargoes they carry, dominate the economic structures of the countries, where they are transported, and supply-demand balances. In this respect, macroeconomic knowledge is important.*

Undoubtfully, different databases and methods can be used to monitor the market. In this context, one participant shared his strategy on how to follow and read markets as follows.

SI-20: *There are various ways of understanding where markets are going. Since we also provide brokerage service, we are not only receiving cargo but also ship positions. If ship positions are gradually increasing and the dates for which ships will be open are more “prompt”, it means that there is not enough cargo in the market. This situation can be accepted as an indicator that the cargo will decrease a little, the*

market will shrink and the freight rate will decline further. The second indicator is that the cargo flow decreases as the ship position increases. We follow these kind of indicators to the read market properly.

Another participant expressed how they, as well as many ship owners operating in the coaster market, followed the markets in the following words.

SI-7: *We try to read the market. We speak with friends who have good connections abroad. Saturday, for example, is the day for shipowners to go to the shipyard. Engineers, subcontractors, other shipowners speak word of mouth. Right or wrong, a big brainstorming occurs and everyone shares their thoughts and expectations with each other.*

Although it is important to read, monitor the markets and determine what the levels are, sustainability of these levels encourages investments. This was stated by one participant as follows.

SI-4: *One of the important issues for ship investments is the market conditions. I expect the market is good or to be good. Today, rather than the fluctuating in the indices, the fact that the last 2 years have been continuously rising at a certain power satisfies me for ship investment.*

Another participant stating that market conditions should be at a level to encourage ship investments also supported the importance of market sustainability on ship investments indicated as follows.

SP-2: *The current market situation directly affects ship investments. From this point of view, the upward movement in BDI gives the first light for investment, but it needs to be sustainable. The BDI index is predominantly determined by large tonnage vessels. However, coaster shipowners also follow this index closely. Increases are important at the first stage, but shipowners expect to see whether it is sustainable or not. Until July 2017, there was an upward trend in the market. This increase stagnated as of December 2017. Currently the shipowners are waiting for February 2018. Because the Far East holidays that affect the big tonnage begin during these periods. So everyone wants to see after February. Everybody wants to find the answer to the question of whether the market will recover or will there be a downward movement to review their investment decisions.*

The maritime transportation has cyclical nature considering the historical data. Particularly in the period after 2008, the market has become so volatile that it is now very difficult to read the market properly. Therefore, undoubtedly due to the uncertainties in the sector and the increase in risk perception, investments affect negatively. This was emphasized two different participants with the following words.

C-3: *I am currently writing a report. To find the answer to the question “Where is the world going?” there are huge differences between the data I looked at on 24 December 2018 and the data I looked at on 5 January 2019. All analysts have changed their views. It is not possible to predict and analyze in a changing market in 15 days.*

SI-20: *We made a voyage to Continent in December and when we returned back, we saw that freight dropped to half in 1-2 months. Shipping markets can be so volatile. Freight markets are the fastest reacting markets to possible financial movements in the world. Therefore, we have to follow it well. I follow 2.000 e-mails every day.*

It was stated by a participant that ship management is a purely professional business, and that even though they are performing the maritime profession very well, shipping is about being able to manage asset management well.

SI-19: *Shipping is entirely related with finance. Maritime industry is actually the field of application of financial management. A person can be a very good master. However, he can never be a good shipowner if he cannot carry out financial management well. I have seen this in my past experience. Very good masters, inspectors came together and got into this business. Especially after 2009, with the drop in ship prices, we heard that 4-5 partners bought ships with a capital of \$ 100.000-200.000 for each, but then they bankrupted. Each of them was very good broker, master, mechanic but business administration and financial management is a very separate business, a very distinct virtue.*

It was also stated by a participant that the shipowners operating in the sector should review their organizational structures and have a professional management understanding in order to keep up with the requirements of the age.

A-1: *Companies in Turkish coaster shipping industry need to improve themselves more in reaching the organizational structure of the era. It should be questioned on who to be more professional in business analysis and business*

processes. The management of financial risk is not fully known. This could be one of the mistakes. Particular attention should be given to the analysis of information and the creation of predictions based on analysis. I think these have an impact on the ship investments decision-making process.

One of the participants emphasized that shipowners should have financial literacy in order to do financial management correctly. It was stated that some prejudices must be overcome in order to receive the necessary trainings.

C-3: *There are many questions such as what investment theory is, how feasibility is made, how an investment decision is made, how to obtain the appropriate loan. From this perspective, a person who is considering investing should have basic financial literacy. However, there are not enough experts in Turkey in this regard. Therefore, if necessary, bringing in experts from abroad can be a solution. There are many Greek experts in this field. Everyone claims to speak English very well, but most do not. Even if translation is being performed, the headset is not used, but half of what is said is not understood. I would say: “You all know English, but the best language is one's own language. Therefore, wear the headphones and listen”. We need to give that courage. No matter how well you know English; there is no point in getting tired. As the age gets older, the perception of the brain weakens. I think that is one of the things we have to go through.*

By increasing financial literacy, it is aimed to base individual decisions on more rationality. But this, of course, alone will not be enough. It is also important that the steps to be included in the process are taken to a certain standard and that there is a professional advisory board when making an investment decision. This situation was associated with the ship investment process of DB Deniz Nakliyat, which was an official international maritime transport company in Turkey and does not exist today, by a participant. It is stated below how the investment process can be set to a standard and how the sound consultancy mechanism can be established.

C-3: *When the structure of “DB Deniz Nakliyat” as a state subsidiary was examined, there was a separate technical and investment departments. Research Planning Coordination department, technical department and commercial department was working together. The data obtained from trade department was analyzed by technical and investment departments, and investment decision was made. Then,*

decision was sent to the government and turned into an investment policy. “DB Deniz Nakliyat” works very rationally, but its return from the state and its realization would not be in the same rationality. Because the policies of the state were different in terms of resource allocation.

Within the scope of consultable authorities, A national investment department can be established for all tonnages within the Chamber of Shipping. This is a professional job. There are experts in the industry who can make recommendations through market research.

It is also necessary to analyze the demand for maritime transport in the region in order to make more rational planning. This was emphasized by a participant with the following statements.

SI-3: *It is not possible to invest in new building ships with existing freight levels. At present, maritime transport is more expensive than the road transport in cabotage. There is no economics of scale. Each voyage is calculated separately every time. There is no continuity and supply flow. We cannot solve this problem only by increasing supply. A good plan should be made, including producers. A manufacturing company ordered four sister ships with 5,150 dwt carrying capacity in Turkish star project. It would be more appropriate if the leading manufacturing companies of the industries such as iron steel, fertilizer, cement, citrus etc. participated such projects. However, it is not possible to come together. It is seen that it is only in certain sectors with the compulsion of the state, there are not many examples. A master plan for this subject has not yet been prepared. First, the potential and the value of this project on paper should be determined.*

Same participant also emphasized with the following statement that the synergy to be created by combining certain areas of expertise will not be sufficient, and that a master plan including producers should also formulate investment policies to determine the demand in the region.

SI-3: *Everything can be much more rational in coaster transportation, if the potential is calculated, long-term cargo flows are determined according to the tonnage, optimum tonnage, freight and cost studies are performed. But we do not have human resources to do these studies and to focus on this issue. This type of analysis is carried out individually, but it is not widely possible. The government should make a*

legal regulation on this issue. The ferry lines in Marmara region are operated with relatively more rational logic. Following the determination of the need, ferries with low standard and high age are being operated in the region. However, there is no similar situation in freight transport.

4.1.1.2.1. Micro Perspective

Investment decisions involve difficult processes and require a sound preliminary valuation study. In this context, what kind of methods are used in the evaluation of ship investment alternatives is important. Such a study will contribute positively to the process of access to financial resources. A participant stated that before investing in ships, it is necessary to take steps to determine the earnings of the ship under the worst conditions, to calculate the cash flows based on the worst scenario and to determine the financing alternatives accordingly.

SI-1: *At these times when global developments directly affect shipping markets, it is necessary to determine the levels at which the ship is operated, and to calculate returns based on the levels determined during the ship investment planning process. When the purchase of a ship is on the agenda, we first look at how much we have fixed a ship with this feature on certain routes and ports during the worst periods. In summary, the investment evaluations will be robust when the logic of "how much this ship will generate freight earnings in the worst conditions ". If the investor thinks of the good scenario, he will look for resources and make calculations at high levels. However, undesirable results may be encountered when the market conditions are bad. Shipowner must calculate cash flows according to the worst-case scenario. Otherwise, the cash flow will be adversely affected and the shipowner will have to pay from his/her own pocket.*

On the other hand, the participants' remarks on how ship investment alternatives are evaluated by the majority of Turkish shipowners are given below. In particular, it was stated by a participant that coaster shipowners act according to general patterns without requiring much academic research as follows.

SI-4: *It is extremely luxurious for the coaster owners to do an academic study and turn to investment. Such analyzes are seen as time consuming and financially*

troublesome. The traditional coaster owner, like me, thinks that if the ship is going to cost \$5 million, we have \$1 million in the safe, we can find \$1 million from someone else, and remaining \$3 million can be obtained as a loan from the bank. Financial analysis is not carried out. If the ship with same tonnage exists in the fleet, the earnings are approximately calculated.

It was stated that the traditional family firms operating in the maritime transportation industry in Turkey have a relatively closed structure and their investment policy is shaped accordingly indicated as follows.

C-3: *Other than maritime business is not known, investor logic does not exist for most of them. In a closed circle, there is a group that uses what they have earned in this business. The current conjuncture is not followed up adequately and it is not analyzed in detail which ship will be invested.*

However, a participant emphasized that access to information is very easy today if requested, but that many player in the sector do not require such an analysis to read markets.

SI-1: *Information is very easy to reach if requested. Your broker would immediately provide trade and other information for the last few years on ships with specific characteristics. After receiving these data, the scenario emerges when basic and technical analysis is done by looking at the market reports and BDI index levels in recent years. But we don't.*

4.1.1.2.1.1.Optimism on Market Condition

The upward movements in the markets can lead investors, especially investors with high-risk appetite, to investments with the desire to take shares from the cake. Investments made with the optimistic view that the upward trend will continue further often result in the investors' failure to achieve the expected financial performance. This applies to all investment instruments subject to investment as well as to ship investments corresponding to a large proportion of investments in the maritime transportation industry. Even though the investments made with the expectation that overvalued investment instruments will be valued further under high market conditions are contrary to the rational investment patterns, the findings obtained from

the interviews with the participants confirmed this situation. An event that occurred when the owner of the company, where the participant was the general manager of the fleet, was considering to make investments by being affected by the rising market conditions, was shared as follows.

C-2b: *At the end of 2006, the shipowner for whom I was working called me upstairs and spread the plans of the ship to the table in the meeting room. "We will build this ship, what do you think?" he said. I looked at the features. The ship had a capacity of carrying 310 reefer containers. "Is there any buyer?" I asked, "no" he said. "Is there any charterer?" I said, "No." he said. I said "Don't dare, otherwise you're going to bankrupt." He said, "You're always a pessimist." Then they built five sister ships for \$30 million each. The first ship, which had a daily \$13,500 TC rate, was launched and excluding \$10,000 debt payments daily freight earnings was \$3,500. I said, "Soon you will see that the market collapses." Indeed, in September 2008, the vessel's TC rate dropped to \$3,000 and was able to see a maximum of \$6,000, but the breakeven of these vessels was very high. Even the interest of the debt received from the bank could not be paid. Considering the loss, not even a calculator is enough. When the market collapsed, he came into my room and slammed his head to the wall. \$150 million was dumped. Each of the ships can be built in China at that time for \$15 million cost instead of \$30 million in Turkey.*

The situation mentioned above has put many shipowners in a difficult situation with the bottom of the market contrary to expectations. In this regard, one participant shared the following statement.

SI-2: *In 1998, I bought a ship built in 1980 in Turkey with 3.750 dwt carrying capacity in exchange for \$1,4 million. This ship collided with another ship in Darica territory and sank in September 2007. Fortunately, I had made a high level of insurance and the market justified me that the fair value of the ship was calculated as \$2 million and I was paid. At that time, the market was very active and it was almost impossible to find ships for sale. Nobody was selling their ship, and those who put it on sale wanted astronomical prices, even the ships to be scrapped were very valuable. After the accident, I searched for ships until March 2008 and bought a ship built in 1984 for \$3,1 million. Then I immediately wanted to fix the ship to subsidize the extra amount I spent with two additional freight gains. However, things did not work out as*

I expected. When the market fell, even the gains of three ships were not enough to pay off the debt of this ship.

A similar situation arises in the investments made by a company in which the partnership structure exists. As the following example, where one participant shares his experience, it was emphasized that if the cash, obtained from the transaction of the sale of fleet vessel, was held for a certain period of time, more than one vessel could be purchased for the same amount.

SI-15: *Our 1983-Turkish-built ship that was purchased in May 2005 for \$1,6 million, received a \$2 million offer in January 2008. At that time ship prices were too high. However, at the same time, machinery and sheet prices were also rising. Old ships were in demand, and ships that would pay off in 4-5 years were preferred. Our ship was the largest ship of its time in Turkey. They symbolically asked for a \$20.000-\$30.000 discount during the sale, but we did not accept it and the ship was sold. After selling the ship, we talked to the partners. I thought there was a balloon ready to explode at any moment in the market, so there should be no investment. We were four partners. We shared chartering, finance, technical and operation divisions. Everyone except me decided to invest. The market reached such a point that a ship built in 1983 for \$800.000 could find buyers for \$2 million in 2008 after 25 years. However, this was contrary to the nature of the goods. Indeed, my prediction was unfortunately realized. The partners bought two ships and we had very serious trouble. However, if we had waited 5 months with the cash we obtained after the sale, we could have bought more ships with the amount we paid to the ships we bought.*

The motivation behind the vast majority of shipowners investing in ships in high market conditions was to make the ships sail as soon as possible and take advantage of the high freight levels. However, some investors with the expectation that the demand for ships will rise further, especially in the new building market, was placing the order at the shipyard and selling this order to someone else after a certain period of time on paper. This investment strategy, called “asset play”, is highlighted as follows in one participant.

C-1: *Suppose I place an order of \$10 million and transfer \$2 million down payment to the shipyard. Then assume that I sold the contract to someone else for \$11 million because of the rise in the market. \$1 million gain is obtained from \$2 million*

worth investment, and the rate of return from this transaction equals 50%. This behavior is rational. However, in such a situation, there is a risk of being alone with the shipyard if the market crashes unpredictably. However, the more risk, the more returns.

Although few shipowner was able to sell the ship at the right time, most Turkish shipowners were not so brave. One participant emphasized her regret that she did not sell her ship at the right time with the following statement.

SI-5: *In 2007, I got \$8,5 million offer for my ship that I bought for \$2,5 million 2 years before. We decided to wait a little more, but could not sell it. Then the price went down to \$2 million. Now, I cannot dream of those prices. Those who saw these levels as an opportunity to sale and who could leave their assets won.*

Particularly before 2008, there was such a huge revenue that many shipowners did not have the courage to turn off the flowing tap. The example given below by an S&P broker reflects this fact.

SP-3: *Imagine that you purchased a ship for \$5 million, and the price of this ship is now \$15 million. If you think that you get \$6 million freight income per year if it is \$500.000 per month, the price/earnings ratio will be 2,5. The ship is old, but \$15 million, and you will not sell it, but it is time to sell it.*

For instance, 195.000 dwt 1985 built MV A. was purchased for \$11 million in 1998 when the market was too bad. The ship owner could not earn profit from this ship in a subsequent two years. However, the market began to rise in 2003 and the ship was generating \$2,5 million in a month and \$30 million in a year earnings. In 2007, this has reached to \$5 million in a month. In 2008, an S&P broker found a buyer who is seriously interested in the ship and ready to give \$100 million for this 23-year-old ship. In addition to \$150 million freight earnings, the owner could have expanded his wealth by adding this amount, but he did not accept. Afterward, the vessel demolished for \$10 million in 2012. In this case, \$150.000 per day, \$4-5 million in a month and \$50 million in a year was earned. The \$100 million offer for the ship is equal to the two-year freight income in the market conditions at that time. Since the ship does not have debt, has already gained enough freight earnings, there is a logic if the market collapses it does not harm the shipowner. He thinks it is worth to take the risk.

According to rational behavior patterns, it is necessary to sell the overvalued asset in the rising market conditions. This also applies to ships that were overvalued prior to 2008. Many shipowners did not choose to close the tap which provided high freight income under rising market conditions. Even though they sell their ships at a high price in some way, it is one of the common points highlighted by many participants that many of the shipowners use cash in their hands to re-invest in the high market environment where the ships are overvalued. One participant emphasized this with the following words.

SP-2: *Nobody was afraid to buy ships that had reached very high levels before 2008. However, when the markets fell, there were many shipowners left with many ships in their hands. The real point was that if a shipowner had sold their ship(s) from the high levels, he/she would have turned to a different ship investment with the cash in hand, and he/she would have bought the ship from high levels again.*

Another participant shared his experience that if he sold his ship, he would deposit the cash in hand to another ship from the higher level.

SI-10: *In August 2008, an investor made \$2,5 million offer for my 1987-built ship, since I did not want to sell my ship, I did not accept. Then, the offer was raised to \$2,75 million, but I gave the same answer. Last year, I sold the ship for \$600.000. If I had sold it, then I could have bought the same ship for \$4 million and also I had to wait for 6 months, because there were not any proper ships on the market at that time.*

Another participant shared her experience supporting the above statements as follows.

SI-5: *Before 2008, I received \$8,5 million offer for one of my ships in my fleet. On the one hand, I was looking at another ship where I could invest in if I sold my ship. We found a beautiful ship with a capacity of 12.000 dwt and met with the owner. We negotiated in China for three days. Little details were left. I avoided making a big mistake. I almost signed it. I returned to Istanbul because I had to get some confirmations. Then the seller gave up. During our negotiations, the seller also was negotiating with another Turkish shipowner. Then I pray to the seller that he gave up. If I had sold my ship and bought this ship of \$15 million, I would have borrowed \$7 million from the bank. The value of the ship has fallen too much and I would not afford to pay debt payments, and I would go bankrupt. God loves me, I am glad I did not sell.*

The huge gains in the maritime transportation industry have undoubtedly attracted anyone whether involved in maritime related business or not, and in order to gain a share of these gains, entry into the industry has increased rapidly, and the new building and second hand ship markets have been very active. One of the participants used the following statements.

SI-2: *For the last four years from the end of 2004 to mid-2008, not only me, but even my father had not seen such highest levels in the freight market. For example, at that time, 4.500 tonnes of wheat was transported from Ukraine to Greece with a freight of \$250.000, and today it is thought that a profitable business would be done if the average amount of freight was calculated as \$20 per ton that equals \$100.000. Therefore, when such high gains were achieved, the demand for the ship increased rapidly. Everyone wanted to enter maritime transport business. Prices of second hand ships have increased 3-4 times compared with their nominal values.*

A participant explained that the cash flows were calculated based on the levels and gains seen in high market conditions with the following example.

SI-20: *We were representative in Turkey of the one of world-famous Japanese firm. We still have good relationships. We used to charter ships together in 50-50 lost-profit share basis. For example, we have chartered a vessel with a capacity of 45.000 dwt, to be received at Port Said, to be loaded at Turkish Med and to be delivered and to delivered at Persian Gulf, Dubai. It was a 30-day voyage and we chartered the ship for \$102.000 daily. The market has seen these levels. Now, this market is at its highest, \$12.000. It also dropped to \$8.000. Seeing the levels of \$ 102.000, those who have an intention to invest in a ship considered these levels as reference point, and thought that there would be gains in these levels. Therefore, demand for the ships was high.*

An industry with high gains and very low P/E ratios attracted everyone's attention. However, with the deterioration in the supply and demand balance, the market started to decline. Another participant gave an example from the experience and expressed the situation as follows.

SI-12: *Before 2008, a ship that was financed with \$14 million debt had a monthly loan payment of \$263.000. We gained \$3 million freight income in 12 months with this ship at that time. I am talking about net profit not gross profit, and the ship paid off its debt. Such gains attracted everyone. At that time, for example, if there were*

100 shippers, there were only 10 ships in the market. Therefore, the ships were very valuable and we did not carry every cargo, we were selective. Subsequently, the number of shippers dropped to 5, but 10 ships were still operating in the market. In fact, when the ships ordered previously entered to the market, the number of ships increased to 15 and the market collapsed.

Even those who suffered from previous crises and quit the maritime transport business were affected by the rising market in the pre-2008 period and they turned to ship investment with the expectation of “this time is different”. However, the result was again disappointing. This is explained by the experience of one of the participants as follows.

SI-3: *We were highly affected by the 2001 crisis. In 2006, I sold my ship, I would never go back to shipping. Instead, I was going to enter the shipyard business. However, in 2008, we entered this business again with the order of 3.000 dwt ship. In May 2008, the ship was delivered, and the crisis began in August and then the ship was laid up. At that time we did a study and found that around 250 ships were laid up, and most of these ships were cold lay ups and some of them were hot lay ups. Most of the ships which have high fuel consumption and are still laid up and not working.*

In the pre-2008 period, the spot market was gaining so much that it started to attract the interest of shipowners that mainly conduct contract transportation. A shipowner mainly engaged in contract transportation stated his experiences as follows.

SI-14: *Prior to 2008, the market began to rise for the ships operating in tramp shipping. We had fixed income because of contract transportation, and when we looked from the outside, we had the idea that “We should take on the train”. After 2008, “I’m glad we did not make such a mistake,” I said. Ships purchased for \$ 10 million could not find buyers for \$ 2 million, and our current fixed earnings remain intact.*

It was stated by a participant that investors who were not related to maritime and who had heard that there are huge gains in shipping, paid very high prices to the ships that were about to be scrapped and affect the market negatively.

SI-4: *Many investors who do not know the shipping entered to the market by thinking “many shipowners earns a lot of money in maritime transport, no matter how we could”. The baklava shop owner from Gaziantep, those who have an intention to*

form legal status to their money obtained from money laundering, the son of the owner of the gas station on the Urfa highway, etc., entered this business by paying irrational sums. They gave \$30 million to a ship that was not worth \$10 million, and caused a non-real rise. They also tried to run their ships with a ridiculous team, and they lost tens of millions of usd and left a negative impact on the market.

Another participant gave an example from his experience that an investor transporting his commodity by sea has been affected by the high gains he has seen in maritime transport and he has turned to ship investment. However, in an environment where things did not go as expected, the investor could not carry his own cargo with his own ship, and he had to dispose of the ship for a very low sum.

SI-20: *Just before the 2008 crisis, there was a friend of mine who says “huge profits exist in shipping business”, and bought a 25.000 dwt ship. This person had no previous experience in maritime industry. He was a miner and had his own regular cargo. He bought a 25.000-dwt vessel over 20 years of age for \$20 million. After purchasing the ship, the 2008 Lehmann crisis occurred. With this crisis, he could not carry his own cargo with his own ship. In order to reach the TC rate, which was calculated prior to purchasing his own ship, he had to pay 5 times more from the current freight level. However, he could fix a ship of someone else to that line and carry his cargo. Therefore, the ship that was bought from \$20 million was given to be scrapped for \$2 million. I am a person who has seen this, so I did not invest in ships even though I had a certain opportunity. Such examples pushed to be cautious.*

Some participants also stated that the supply and demand balance had reached a relatively satisfactory point and that a correction was expected in the market after a certain period of time. However, it was stated by the participants that the expectation that the new levels will remain above the levels before the start of the investments but that such a sharp decrease is not expected is as follows.

SI-2: *We predicted that this upward trend would continue to a certain extent and then it would become stable and find support at a certain level. Wherever it falls, we think it will fall slightly above the point we started, and the market will stabilize at these levels. That is why we continued our investments with the idea that we could gain freight revenues from high levels until the market declined and absorb the loss with some of the high gains during the fall.*

SI-3: *Everyone knows that freight earnings were not sustainable, but even if the earnings fell by 50%, it would still be enough for us, but it fell by 90%. Nobody estimated that fall.*

Investors, especially those who were not related with the maritime industry before, entered this sector, experienced huge losses and had to pay these losses with the assets they own. Most of them bankrupted due to huge losses or continue in some way even though it is difficult. This was emphasized by a participant as follows.

SI-9: *There were significant gains in ship management before 2008. Jewelers, businessperson in textile industry etc. who saw these gains but did not know maritime industry also entered this business. However, many people suffered serious damage. There have been losses between \$10 million and \$200 million. This amount of loss was not easy to recover. Every company who does not have a sufficient capital power, finds cash from their acquaintances and puts everything into this business have bankrupted. Shipowners using foreign loans were also many, and they experienced the same difficulties. A ship bought for \$10 million fell to \$2 million. They were not able to pay the debts by running that ship, they had to pay with other sources. Those who has considered shipping as a long-term business, and have an intention to hand over the business to their children have still been doing this business, but everyone has suffered in some way.*

The same participant stated that he was also affected by the rising market conditions and that he made ship investments but things did not go as planned and that they dispose of the ships and continued their ship operator business.

SI-9: *We made a coaster investments in 2006 and 2007 but we caught the 2008 crisis. Huge financial losses occurred not only in Turkey but also in the entire world. In 2012, we quit the ship investments and sold our ships. We do not have a ship now. We were in the same industry before, but we were not shipowners, we worked as brokers and charterers. We charter and operate the ships, and still we do. After chartering the ship, you are kind of the owner of the ship. Consider renting a car, you have commercial rights after chartering. It is much more profitable now.*

One of the participants stated that the misreading of the market is not only the fault of the market participants but also the fault of the experts who make reports and comments about this market.

SI-5: *My husband suggested that I should sell a ship in December 2007 and said the data was unrealistic. But I did not listen him. In August 2008, the crisis arose. I may not have read the market and data properly, because I am not neither economist nor academic. So how were the experts wrong? They could not foresee. Maybe nobody wanted to see the truth, did not want to wake up from this dream. We all knew that the prices were not realistic. In April 2008, I attended the Marine Money conference as a speaker. There were banks. There were foreigners too. Before 2012, a crisis was not expected. Growth in world trade, supply in the market, quantity of orders, etc. were given and expectations were very optimistic.*

Since the sub-sectors of the maritime transportation industry have separate market structures and dynamics, there may be a vitality in one market and things may not go as desired in the other market. It was stated by a participant that the excess supply would adversely affect the market if the direction to which the business went well were high.

C-3: *When someone eagerly wants to skate on the ice, the ice cannot lift the weight after a certain time. If there is an active market, those who enter to the market in order to get a share can disrupt the market. For example, in 2015-2016 the dry bulk market was in a bad situation and the number of ships that were given to be scrapped were quite high. However, the tanker market was rising and there were many entrances to this market. In 2018, the dry bulk market was relatively good and the tanker market almost collapsed. Approximately 30 million tons of ships were scrapped in 2018, of which 4 million tons were bulk ships, while the remaining amount consisted entirely of tanker ships.*

It is explained by the same participant that the balloon in the market may be formed and the market dynamics may be adversely affected in an environment where everyone is turning to a certain side and everyone is showing the same behavior at the same time.

C-3: *There is an average of one year between the decision to make an investment and the delivery of the ship. Looking at today's market conditions, when the majority makes the same decision and the ships are delivered at the same time, a supply surplus occurs. Therefore, I think that the shipowners are each other's executioners. They hurt each other with their behavior.*

4.1.1.2.1.2. Payback Period

The most important consideration in the investment valuation studies in the ship investment decision-making process is to calculate how long the ship price can be amortized. Considering the gains collected in the previous periods, scenario analysis is made based on the bad, normal and good market conditions, and the freight income that the ship can earn in the worst conditions is calculated and investment decision is made accordingly. This was supported by a participant with the following statement.

SI-20: *With a sufficiently homogeneous fleet, the running cost of the new vessel to be purchased and how much daily freight income will be earned can be estimated. Calculating how much freight can be earned on the worst day, it can be predicted how long the ship can pay itself under the worst conditions. If the ship is purchased cheaply, the payback period will be shorter. However, this will be longer than expected when unexpected situations occur.*

In general, many participants stressed that ship owners pay attention to how long they can recover the amount they spend on ship investments. According to this criterion, which can be called as price/earnings ratio or payback period, one of the participants stated that the shipowners are focused on the alternatives with the lowest P/E ratio.

SP-3: *The math never works. The price/earnings ratio increases to 8-9, and it drops to 3-4 at peak times. In this sense, the most appropriate time to invest in ship is when p/e ratio is the lowest. For example, if there is a ship, which has \$2 million market value, and generates \$200.000 freight income per year, shipowner would not invest in any way because the return on investment would be 10 years. However, if the shipowner assumes payback period will be 6 years, even if the value of the ship is \$3 million, the ship is bought. Turkish shipowner generally prefers 15-20 year old ships and wants to take out the amount invested in 4-5 years. For the new ships, there are slightly higher p/e ratio.*

However, the P/E ratio may vary depending on the type and design of the ship to be invested. Even if the ships with suitable design for the region to be operated will be high in price, the ship will pay off in a shorter period as it will have higher freight

revenues compared to the ships of different types and designs. This is explained with an example given by a participant as follows.

SI-15: *A 3.000 dwt ship earns different levels of freight income whether it is river or sea type. On the other hand, the sea-river type ships is more profitable. A 15-year-old ship with a 3.000 dwt sea-river bulkhead, 4-4,5 mt draft, and an effective machine is worth \$2,5 million under today's market conditions. Running cost is around \$1.800 and TC equivalent freight income is between \$3.000-3.200. Accordingly, the ship generates a daily profit in the range of \$1.300-1.500. Daily profit of \$1.300 corresponds to \$30.000-40.000 per month and \$500.000 per year. If everything goes well, we calculate that the ship can pay off itself in 5 years. For ship types other than sea-river, this period increases to 6-7 years.*

In addition to the price/earnings ratio, considering that the majority of the ship investments are financed by bank loans, a participant stated that it is a sufficient condition for the investment that the ship can pay its debt in a period as long as the bank loan maturity.

SI-2: *Turkish shipowners generally evaluate the ship investments according to the maturity of the bank loan and the average maturity of the loans received from Turkish banks is 48 months. The ship's ability to repay its debt in the maturity period was sufficient to make a ship investment decision. Once the ship's debt is over, it is not possible to generate a loss. Each figure above running cost remains as profit.*

There are also shipowners who consider the business to be limited to their own life and can turn to investments accordingly. This was stated by one participant as follows.

SI-3: *Our people cannot make long-term plans due to the conditions of our country. Culture, education, and economic difficulties push us to think this way. We do not trust the future. The current government set goals for the years 2023, 2035, 2053, 2071, but community has not yet undergone any mental transformation. We always limit life to ourselves. Even 10 years in coaster shipping is considered a very long time. There is an unknown perception of "what will happen after 10 years", but the point that is important "what will happen to the company instead of the shipowner after 10 years". We do not believe in institutionalization, we think life is limited to ourselves. Therefore, we do not care to think beyond 10 years, and we want to realize*

the profit immediately. Not only the old shipowners, but also even the 40-50 year old shipowners think that. The lack of 50-100 years of firms depends on this reason.

A participant who previously worked as a ship owner but returned to the ship operator after the 2008 crisis confirms the above statements by expressing that he is trying to avoid investments in today's conditions.

SI-9: *New building cost of 5.000 dwt ship is estimated \$8 million today. I do not dare buy an \$8 million ship by mortgaging everything that I have. That money will not return with that ship. In today's conditions, a ship that costs \$8 million earns \$2.000 per day and \$660.000 per year if you take 330 days for one year. Accordingly, interest-free payback period would be 12-13 years. Additionally, if you put \$1-2 million interest to the total amount, the period would be 15 years. Before 2008, prices were very high, but earnings were also very good. At that time coasters was generating \$5.000-\$6.000 per day. If you consider \$5.000, freight income reaches \$1,5 million per year. The payback period will be 5-6 years, but now you say 15 years. I am 60 years old and I do not have an intention to work for 15 years. Besides, you cannot even see after 3 years. Even if markets continue in this way, it is not possible to return the investment before 15 years. At the end of this period, you will have a 15-year-old ship. The cost of these ships increases as they get older. Even if it does not cost you in the first 5 years, you will start spending money after 5 years. Even now the high interest rates on loans does not make it attractive to invest. That is why many of our friends do not invest in ships. If you have cash in your safe, the bank gives 4-5% interest today. If you do not satisfy from the interest rates and expect to 7-8% return on investment, you may invest in ships.*

4.1.1.2.1.3. Reference Points

One of the most commonly used methods to test whether a satisfactory benefit has been achieved or to make predictions in any decision-making process is, of course, to consider a reference. Decisions are made by considering a reference point in a way that reflects the following information and analysis, especially when it is necessary to foresee the future. Majority of the studies suggest that people tend to adjust these reference points inadequately and as a result make biased predictions. Comparing with

the current market conditions by anchoring at previously established price levels and making investment decisions accordingly does not always generate high performance. It was found that the findings obtained within the scope of this dissertation support this situation. One of the participants explained this situation as follows.

SP-2: *Some of the shipowners with high capital power prefer to buy series at a certain tonnage instead of dividing their fleet into different tonnages. This type of shipowners consider buying in series to lower the cost per ship and taking advantage of the fact that they have a relatively low break-even in case of selling the ship in bad market conditions. For example, in 2011-2012, Turkish shipowners invested a lot of ships with the expectation that the market would not fall below from the current levels. However, the shipowners, who used capital power, experienced the main problem at that time. In February 2016, the market reached its lowest level that the worst situation of the shipping markets was experienced at that time and, none of the calculations and expectations come true.*

An example of an investor who considered past price formations as a reference and the current price formations as an opportunity hit the bottom afterwards is stated by a participant with the following words.

SP-3: *L logistics bought 11-year-old ship with a capacity of 52.000 dwt in 2011 for \$22 million. The logic of the buyer was: "This ship was \$75 million in 2008, and I get \$22 million." The company went bankrupt in the following years, and the ship was bought by someone else for \$4 million.*

Especially those who missed the investment opportunity in the period before 2008, anchored to the pre-2008 price levels under low market conditions after 2008, and turned to ship investments with the anticipation that the market would rise again. This was stated by one participant as follows.

SP-2: *Many shipowners thought the period between 2004 and 2008 as if they lived for decades. When the markets fell, earnings were considered before 2008 and investments were made with the expectation that they would rise again. Additionally, in 2008, there was an idea of those who could not enter the market that "I missed the train before, at least this time, I do not want to catch the opportunity". Once the market is on the rise and the belief is formed, the same behavior will be observed.*

Some of the participants emphasized that freight income to be provided in the following years by the ship to be invested is calculated according to the current market conditions and if the ship pays herself in a short time according to the current market conditions, the investment is conducted regardless of the price of the ship.

SP-3: *Let the shipowner consider investing a ship with \$500.000 equity and \$1,5 million bank loan. If the ship can pay its debt in the current market, the shipowner buys the ship without much thought. However, the point is the shipowners considers the current market levels in this calculation, and this is the most important difference between the coaster shipowner and the large tonnage shipowner.*

Another participant exemplifies the fact that it is sufficient for the investment that the ship pay its own debt under the current market conditions without any detailed analysis.

C-3: *A certain group of Turkish shipowners approach to the ship investments as if running a waffle shop. They intend to open a shop elsewhere, without any market research in detail, with the expectation that the same result will be achieved when the shop earns enough income. The financing model here is based on the payment of the ship's own debt.*

The ability to pay the ship's debt is sufficient for the ship's investment, regardless of the conditions and the price of the ship, is associated with the experience of a participant as follows.

SI-4: *Let me share with you a memory that I never forget. In 2007, one of the participation banks will finance a \$19 million ship, I looked at the ship over the age of 20 and will be scrapped in 3 years. If the investor add another \$5 million on the total amount, he was able to order a new building ship in China. However, at that time, the ships were generating so much freight income and there were so many queue at the shipyards, and buying second hand ships would make more sense, and the ships were able to pay off their debt in only 1 year.*

Taking into consideration the following words of a participant, it is understood that the current market condition is an important reference point not only to invest in ships, but also whether the investment should be new building or second-hand.

SI-12: *I have a simple question to you? Would you prefer to build a brand new ship for \$7 million or buy second hand ship, which is ready to run, for \$4 million in*

the same tonnage? If you want to build a new one, you will wait, but the other one is profitable even if it is 10 years old.

4.1.1.2.1.4. Fleet Power

Although it is a rational behavior to buy ships in bad market conditions, it is no doubt that high freight revenues will not be obtained by operating the vessel purchased at reasonable prices when the market is bad. One of the prominent factor in order to invest in ships at the right time is to have a high capital power and a certain supply power. This was emphasized by a ship owner participant as follows.

SI-20: *Over the past 30 years, I have observed the ups and downs of dry cargo freight. Panamax type vessels, which have a daily freight income between \$6.000-\$12.000 in the years before 2000, have reached the daily time charter rate up to \$100.000 before 2008. Therefore, it is very important to watch the time when freight and ship prices are low to invest in ships. Naturally, the freight will be very low when you buy the ship at a cheap price. Sometimes it is possible to run ships for freight that does not even meet the daily running cost.*

The statement above was confirmed by the following participant. In this sense, current conditions in which the supply has increased to very high level, but that the demand is not at a level to meet the supply, provides suitable opportunities for investment only if there is a sufficient financing sources to fund the loss in a bad market condition.

SI-8: *Today is a good time for ship investment if there is a sufficient resource to finance the loss for 2-3 years. Payback period is 4-5 years, according to current earnings. I think the gains will not be lower than that.*

In this context, supply power gains importance in case the ship is planned to be invested with debt or if the fleet needs to be modernized. One of the participants stated that the investments are placed according to the supply power considering the worst scenario as indicated as follows.

SI-14: *We are willing to risk potential losses in ship investments, not by linking hope to the process. Taking into account the cash in our safe and debt obtained from*

the bank, the worst case scenario is considered whether the ship can pay its debt with the existing fleet even if it never generates any profit.

Another participant stressed that a ship investment to be financed by debt would be rational if the company had sufficient fleet power as follows.

SI-13: *We are trying to use the debt we can afford, but it is not possible for a ship to pay its own debt. It is not good behavior to buy a ship with the idea that the debt of the ship can be paid with its freight earnings in 3-5 years. To do so, you need to have enough ships in your fleet. A ship's debt must be supported by other ship's freight earnings. Otherwise, you work to pay only interest.*

Although it was emphasized that in order to invest in ships in bad market conditions, it would be necessary to have a fleet or capital power to subsidize the investment, one participant stated that many shipowners could eagerly invest in ships even if their positions are not suitable for any investment.

C-1: *Let's assume a shipowner, who has currently operated 2 vessels and whose capital power is not enough to invest in a ship, has an intention to expand its supply power by purchasing another ship in a bad market. If the shipowner mortgages not only the ship that will be purchased but also current two ships, it would not be rational if the cash flow of three ships leaves a value of only one ship. However, there are many Turkish coaster owners adopting this behavior.*

On the other hand, for those whose fleet power is not adequate, selling the ships will not be easy. Following participants explain with examples the importance of the shipowner's fleet power on making a strategic investment decision.

C-1: *If there are enough ships in the fleet, 1-2 of them can be sold from appropriate prices. However, it is difficult to do so if there are not enough ships in the fleet. In such a case, strategic decision cannot be made.*

Ships in the fleet are sold mainly because of to modernize the fleet. However, if the ships in the fleet are sold when the market is high, it will be possible to buy ships at high prices. This was stated by one participant as follows.

SP-2: *If the shipowner intends to continue to exist in the maritime transportation industry, the question arises what the alternative is for the ship to be sold. Therefore, many ship owners do not sell their ships since the alternatives are at high prices.*

One of the ship owner participants emphasized that each ship in his fleet provide an employment and added value just as a factory, and selling ships without any alternative would harm the company.

SI-1: *Let's assume that I bought a ship from \$1 million and sold it for \$2,5 million in high market. But I'm the shipowner. I have 25 employees here. This is my profession. I sold my factory. When will I establish the next factory? I expect to acquire the ship that has same specification or higher with the ship I sold from \$3 million, and may be I will have to wait longer.*

Considering that one of the reasons why the shipowners dispose of ships at high prices and re-invest in ships under high market conditions again is that they do not want to invest in any business other than maritime transportation, shipowners should be able to continue their current business with their remaining ships. This is possible with a fleet consisting of sufficient number of ships. This was stated by the same participant as follows.

SI-1: *If there are enough ships in my fleet and the ship I bought for \$2 million is \$7-8 million today, of course I will sell it. This market will fall anyway. Let's assume I have 5 ships today, each was bought for an average of \$2 million. Today, if I find a buyer from \$6 million, I will risk it and sell two of them. I will put \$12 million in my safe. There are three more ships in the fleet. If the market goes even higher, for example \$8 million for each, the amount I lost from what I sold was \$4 million, and I would have caught up high market again with the existing fleet. However, when you have one or two ships, it is hard to move like this. If you sell your ship from \$4 million and if the market goes up to \$5 million next year, it will be difficult to earn \$1 million in between.*

4.1.1.2.1.5. Recommendations and Behaviors of Others

In making investment decisions, besides the evaluation and valuation studies based on rational principles related to the investment instrument, following the behaviors and advice of others is one of the common behaviors. Considering the data obtained from the participants whose opinions were taken within the scope of this dissertation, it was found that the rumors in the sector and the recommendations of

reliable persons had an effect on the ship investment decisions. The fact that there is a high number of investors who have decided to invest in ships based on rumors and advice of contacts rather than receiving professional consultancy services is stated as follows by an S&P broker himself.

SP-2: *Around 70% of customers ask to us: "We are looking for ships in that tonnage range in the market, and will you send available ones?" However, it is difficult to predict whether they have done the research in the background, since they do not ask for advice from us. Most of them act taking into account the advice of their peers, close friends etc.*

This was confirmed by another participant as follows.

A-2b: *Many shipowners heavily rely on the directions of their close environment while making ship investment decisions. They do not follow the recommendations of the professionals and experts working in this field. As a matter of fact, providing such reports requires spending money. However, the amount of the bill of wrong decisions are more compared with the fee of the reports or consultancy.*

One participant gave the following example of the negative consequences of acting with emphasis on rumors, if recommendations were not received from an expert.

SP-3: *For example, for many years a shipowner suffered from the ship he bought at a high level at a time when the market was very high and the value of the ship fell too much. When the troubles he experienced in paying the bank loans were also added, this became a psychological obsession and he began to make wrong suggestions to the persons that have an intention to buy a ship that they would fall into the same situation. Therefore, the recommendations should be taken from the right person, especially from the expert. Misleadings trigger irrational decisions. Turkish shipowners who take the advice of friends etc. too much can make mistakes in this regard.*

Maritime transportation activities in Turkey are mainly fulfilled by families dealing with maritime business for several generations. It was stated by many participants that most of these families are from the same region and most of them are fellow townsman and even relatives because they closely follow each other's behaviors and are easily influenced by each other. One participant shared the following in this regard.

SI-20: *Most of the families in shipping business are close to each other. These families are either relatives or from the same city. Such families are easily influenced by one another. When one family makes a ship investment, the other family may turn to investment, regardless of ship prices. I do not want give a name, but I have actually witnessed such an incident. The main motivation here is "if t bought a ship, we could buy as well."*

Another group of people whose behavior is closely monitored and often referred to is the ship investors of maritime nations that are regarded as reference. In this regard, the behaviors of the European shipowners, especially Greek, German, Dutch and Danish shipowners, are taken as a reference and it is emphasized by many participants that these behaviors affect the investment decisions of Turkish shipowners. One of the participants stated that if the Greek shipowners are investing in ships and the Dutch are placing new building ship orders, a positive signal is perceived in the market as follows.

SI-10: *If a Greek shipowner buys and Dutch shipyards builds new building ships, it is understood that this market has positive prospects for the future. There is a general assumption that do the same what the Greek does. Greek shipowners know the this business very well and they are now buyer side.*

There are situations where even case-specific developments can be perceived as a signal and affect investment decisions. One participant shared the following example on this topic.

SP-1: *In 2014, several Greek shipowners began to buy ships with a certain tonnage, which was perceived as a signal and the information spread in the market very fast. However, ships could be acquired due to the several reasons such as contract obligations and so on. For example, a Greek firm signed a contract agreement with a cargo owner, and according to the contract obligations, the shipowner has to nominate 20 ships to the charterer. Therefore, every purchase report indicated certain tonnage segment at that time. This situation was perceived as a signal on the market. If three or four of them act like this, the market goes to a different point. On the contrary, when Greek shipowners lay up their ships, this might be perceived as a signal that the expectation is not good, and thus the tendency to exhibit the same behavior may occur.*

However, there may be different variables. Many of shipowners are ready to accept case-specific situations as signal.

Although it is important to follow the developments in order to be able to read the market, it may cause undesirable situations to be thought that all the behaviors of shipowners from maritime nations that are accepted as pioneers are correct.

SI-19: *It is important to follow the shipping markets and the world. Therefore, the type and tonnage in which the pioneers have invested is important. Before 2008, many European shipowners, especially Greek shipowners, sold their ships at high prices and then bought ships again at very cheap prices. In this way, for instance there were many European shipowners who sold three ships and then formed a fleet consisting of ten ships etc. They probably followed certain parameters and reached a positive outcome. However, the logic that follow what they do will not be rational. Every business has a unique style. We need to move within certain dimensions. "What Europeans do is right" is not the right approach, but it will also be wrong not to follow where the industry is going and where it evolves.*

4.1.2. Profile and Business Models of Turkish Ship Investors

4.1.2.1. Profile of Ship Investors

4.1.2.1.1. Family Firms

Although the structure of shipowners in Turkey has changed in recent years, though mainly family firms play important role in the sector. How the vision of family firms in maritime transportation industry in Turkey has changed for ship investments from past to present has been expressed by one participant with the following words.

SI-2: *I am the 3rd generation coaster owner. In 1965, there were 50-70-100 tons of wooden boats called “çekirme“. In Black Sea coastline, families mainly from Kastamonu, Cide, Samsun, Rize, Trabzon and Giresun were conducted maritime trade via barges. At that time, maritime trade was carried out by entrepreneurs through few ships built during the initial years of Republic of Turkey. The horizon was very narrow at that time. As the tonnage expands during the life of the ship, the necessity of doing*

business with international freight owners emerged. However, nobody knew enough foreign languages. This was one of the important factors in the evolution of shipowners. In this way, the transition from 150-200 tons of carrying capacity to 400-600-800 tons of reused boats and then to upgrading 3.000 dwt of ships was happened. While the Germans were building ships in 1984 that could still be used today, we were building conventional vessels that was not box-shaped. That was our vision. We did not have the capacity to have that kind of foresight. When we took the ships, we started to do business in European ports, and then we saw the change. Our masters also had the chance to visit European ports. Those who are second and third generations like me, who experienced these events in the 1980s, saw that the horizon had changed. They predicted that this business would not be limited to 2.000-3.000 dwt, but international trade would reach different dimensions and proceeded accordingly.

Although maritime transport has gained a strategic importance in order to carry out the international commodity trade in optimum conditions in a more integrated world where customs walls between countries have been lifted and international goods, money and human movement have become easier, it was not easy to keep up with the changing paradigm and take the necessary steps for some shipowners in Turkey. In this context, one participant used the following statements.

C-3: *There is a group among Turkish shipowners that knows shipping from the core but does not have any academic or rational thinking system about ship management and investment, and has a sociological structure acting with the feelings and instinct not to stay apart from the crowd. There is no solidarity among family members within this sociological structure. There is a father on the top and he is the master of everything. With the death of the father, the eldest brother undertakes the business for a while, but after a certain period of time, the ships are shared between the brothers, and they begin to compete with each other. Among these, few of them have sent their children to study abroad. Some of the children who go abroad came back with very good education and some of them came back with only developed foreign language. Some of these companies in which these children have taken a role, have expanded their fleets, especially through experienced, trained and specialized brokers in the market. In the following years, they have taken over the business and*

evolved one of the great shipowners of today in Turkey by establishing their own organizational structures.

Differences in generational perspectives in maritime transportation industry in Turkey that mainly consists of family owned companies, can also lead to investments from different perspectives. Although some participants suggested that the new generation made more rational investment decisions, some emphasized that the gains of the old generation in difficult conditions were not adequately valued by the new generation. One participant expressed the following regarding the new generation.

SI-20: *There was always a risk appetite in the old generation of shipowners. They did not do the math. On the other hand, new generation of shipowners differs from the old ones. New generation is the ones who have trained themselves more, follow the world conjuncture, can read financial markets and make money with arbitrage when necessary. Therefore, risk appetite is reduced compared with before.*

On the other hand, one participant stated that the new generation does not always make rational decisions.

C-2b: *No shipyard in the world would build a ship without a buyer. The logic of "Let's build a ship, if we can not sell, at least we operate" is nowhere in the world. Show me a shipyard that build a ship without a buyer in the world, and I will tear off all my licenses. All the shipowners who acted like that bankrupted. In 2004, 11 ships were sold and big amount of cash were earned. My previous boss wanted to invest in a shipyard with this cash, I said "don't buy it. I am the general manager of the company. You give my salary, but you don't listen to any idea.", "Let's go all over Greece, and ask the shipowners, they have 10 times more ships than us. If there is one shipowner that has also have a shipyard, I will kiss your hand." Are they stupid? However, most of our shipowners have shipyards. You have to build ships and operate by yourself. You can only build six ships, while you can buy 12 ships with the same amount in China. All the shipyards in the world are yours. I said, "Let's go to China, order 50 ships, pay 10% down payment, we have cash in our pocket. Then, we sell it on the paper after 6 months with extra premium." At that time, G. Shipping ordered 100 ships in this way, then sold half of it on the paper and earned \$2 billion. Our company has not seen this amount so far and will not see it for the rest of its life. They*

never listened to me. This is the brain structure of Turkish shipowners. Unfortunately, they are new generation boys. There are many examples like this in Turkey.

Another participant justified the thinking of the new generation with the following words.

C-2a: The problem in family business in shipping industry in Turkey is that all of the fathers reached to some levels to work very hard conditions by scratching with their fingernails. This is a very sensitive point. Most of the next generations are coming to a place that does not deserve. However, the training of this business should be taken and the start point should be the bottom of the business. When they have all responsibility and titles only because of being an heir, the business that grown by their fathers are ruined by their children. There are very few companies that do this properly.

4.1.2.1.2. Ship Investors from Different Backgrounds

In addition to the families operating in the sector, there are also shipowners who were previously working in the field as a broker, agency, master and so on. In addition, an investor group that was affected by the extraordinary revenues generated in the maritime transport sector between 2004 and 2008, although they had no previous experience in the field, emerged in the sector. One of the participants stated the following in relation to such shipowners.

A-2a: There is a relatively more institutional structure in the companies established by capital investors and former masters and brokers. At least they know the value of professionals, take their opinions into account.

On the contrary, one of the participants gave examples of some brokers who owned ships because of their good relations with the authorities of the state in the past, and who inevitably bankrupted later.

C-3: Some brokers who have good relations with the state and have a high level of education have also acquired ships after a certain period of time. They received state tenders by making use of protectionism laws concerning the transport of imported goods by Turkish flagged ships at that time. They undertook most of the national freight transport through state tenders. Loans were borrowed from abroad,

especially from British banks. There was no rationality in this group's investments. As a matter of fact, they sank and shrank.

One participant used the following statements especially on investors who have capital and want to get a share of the big gains in this sector.

C-3: *With the process started in 2004, Turkish shipownership structure was revised. Capital investors, especially holdings whose activities are substantially outside the maritime industry, emerged in this field. This investor group have the ability to know investment theory, make scientific investment analysis, read the market well, shape their behavior accordingly, and have a business model that is relatively close to western standards. In this way, they entered to the sector quickly with their strong capital power.*

An S&P broker, who makes sales to investors working in sectors that are very unrelated to maritime industry, has stated this situation with the following words.

SP-1: *Especially in coaster tonnage we can sell ships to irrelevant people. Jeweler, businessperson in textile industry etc. become the owner of the ship. They do this professionally because they are related to trade. They know how to generate income. Ship management is now more professional.*

One of the participants compared family firms and investors as follows.

C-3: *When the decision-making is considered as a pyramid according to rational patterns, it can be said that there are the investors who read the market well and act according to the rational thinking system at the top of the pyramid. On the other hand, it can be said that there are family companies that have reached a certain point especially with the incentives provided by the government. These families make investment decisions in part according to rational principles, although not as much as capital investors. In this respect, the sector is not homogeneous.*

However, investors with so many different profiles entered this sector and the dynamics of the sector deteriorated. This is stated by a participant as follows.

SI-14: *In general, they disrupted the dynamics of the industry. Their capital structures are very strong and they have entered this market to make very high profits. Therefore, their resistance points are too high. Traditional shipowners, who know maritime and add value in some way, have begun to be eliminated. If investors with*

different backgrounds lose one day, they will quit their business and leave the sector. Therefore, I do not see the benefit and they will not be continuous.

4.1.2.2. Business Models of Ship Investors

It is important what kind of business model is adopted in maritime transport, which is an international business. All kinds of policies will be shaped according to the business model to be adopted, from how the ship investments will be made and how the ships will be operated. One of the participants evaluated the business models that can be adopted in ship management in three different categories as follows.

C-1: *If you are a ship owner, you are only interested in the logic of being close to the ship. However, the ship is a vehicle. You are supposed to be a buddy with the owner of the cargo. You have to master the trade. Alternatively, you could consider the ship as an asset and dominate the ship sale and purchase market. Therefore, the important thing is to know who buys and sells and who builds the ship. You need to develop relationships with these people, order the new building at the right time, buy the second hand at the right time and sell it at the right time. In this model, maritime trade is secondary concern. In another model, you operate the ship based on time charter principle. In this case, you set up a very good technical team and the ship travels the world. Your charterer is satisfied with everything, but you do not care what they are transporting. The goal will be to generate freight income from the ship. On the other hand, you can be completely trade oriented. You give technical management to another company. You may add the penalty conditions to the contract in case the ship is off-hire. You work with the best professionals. They fulfill the technical requirements. They employ the best crew, if necessary, with higher salary, not to make your ship detained in Europe, and you do not leave Europe. If you are in Istanbul for 1 week of the month, you will be with the charterers for the remaining 3 weeks in Europe.*

Having a certain contractual obligation, as a result of conducting a contractual transportation, causes ship investments to be shaped within this contract. If a ship investment is required under the contract, investment needs to be conducted even if financial conditions are not appropriate and there may be no alternative to postpone

the investment. This is stated by a shipowner who mainly engaged in contract transportation as follows.

SI-14: *Since we have a commitment due to the contract we made with the cargo owners, we buy the ship considering the contract conditions. At that moment, financial issues are the secondary concerns, such as whether we have enough cash in our safe, or credit sources are accessible etc.*

Big players that conduct maritime transport business properly in the world adopted business and investment models that minimize the risk as much as possible, however, as expressed in the following statement of a participant, the vast majority of shipowners in Turkey take big risks because they operate in the spot market.

C-1: *Major players have now minimized the risk by searching a ship for the secured cargo. It is a win-win business. Ten years of ships are fixed by charterers, shipowners and creditors. After 10 years, if necessary, the ships can be operated in the spot market or the contract could be extended with an option for 2-3 years. Then, the ships are sold when they are 12-13 years old. On the other hand, we take the biggest risks by searching a cargo for our ships on the spot market. It is sort of opening a shop in the middle of the ocean for unknown customers.*

Another participant compared the business models of Turkish shipowners and European shipowners as shown below.

SI-3: *The Europeans do not run their ships on the spot market like us, either they have a project or they are going to run their ships in the big pool. On the other side, we have the logic of "I buy the ship, give it to a broker, operate it myself or my children somehow". We do not order new building or buy a second hand ship for a project.*

Especially when the business models of traditional family businesses are considered, it is seen that business models are adopted that each family member adds value in some way.

SI-15: *When the shipowner structure is examined, it will be seen that many of them participated in the industry with the ships remained from their fathers and the grandfathers. They are in the kitchen. The owner of the ship is sometimes at the shipyard in Tuzla for maintenance of the machine or the generator, at the lathe, or at the port for supplying ships and so on. They are always on the field. Several brothers*

come together and one of them is responsible from technic, and the others are financing and chartering etc. There is such a business model up to 20.000-25.000 dwt. The question arises of what these men will do if they will be participate in the pool system or something like that. Most of them do not want to lose control. We cannot integrate in social and commercial life. For example, until recently Turkish athletes have failed in almost all branches. When you look at the origins of the players in the national football team of Turkey who were the 3rd place winner in the 2002 world cup, it is seen that most of the players grew up in Europe. The situation is the same in volleyball and basketball. We are generally good at individual sports such as boxing, weightlifting and wrestling. However, unfortunately we are not good at in teamwork. In art, the situation is no different. For example, we are not a world famous country in the symphony.

4.1.2.2.1. Outsourcing

Ship management consists of comprehensive and complex processes. Therefore, ship investors can transfer their existing business processes to enterprises consisting of professionals who have theoretical and practical knowledge in this field. Although these types of business models are common worldwide, they have not yet adopted in Turkey. The motive behind this model rests on the rapid developments in the shipping markets, access to finance etc. Therefore, many ship management companies cannot compete in the market. In order to maintain and increase the competitive advantage in such an environment, companies can often transfer their existing business to a third-party companies providing professional services in this field. Alternatively, more than one market participant can come together to form a partnership, create a synergy and increase their competitiveness as a result of economies of scale. In this context, in recent years “Turkish Coaster Renewal Project” has been on the agenda of the maritime industry in Turkey as a new business model in coaster market. Especially in the pre-2008 period, the need to transport large tonnage commodities by sea increased the demand for large tonnage ships. Therefore, small tonnage ship orders remained at relatively low levels compared to large tonnage ship orders with high revenues. This was stated by a participant as follows.

SP-2: *While there is a large supply surplus, there is a risk that demand will meet supply in the future for larger ships. However, in the coaster tonnage situation is different. 10.000-20.000 dwt range were demanding tonnage range in Turkey, though the number of general cargo ships built between 2000-2015 does not exceed 100, which makes it a very narrow segment.*

It was stated by a participant that supply power in Turkey, particularly in the coaster segment, is not sufficient as follows.

C-1: *There are not any shipowners whose fleet consist of 50 and above coasters in Turkey. Even those who have more than 10 coasters in their fleet are very few. However, to reach the economies of scale and being a soft power, it is necessary to have more ships and operate the ship more economically.*

In addition to the insufficient number of vessels per company, especially in small tonnage ships, it has been asserted by a participant that the increase in the average age of the existing ships adversely affects the competitiveness.

SI-3: *Especially in small tonnage, the fleet of per company consist of 1,5 ships in average and such a structure is not sustainable. There is no market-making power, there is a system that constantly compete with each other, forcing it to accept the lowest freight. We need to get out of this. We need economies of scale both when building and operating ships. If we cannot establish this, although the companies gain periodically, the big companies do not emerge.*

If supply power in Turkish coaster merchant fleet is sufficient, it will become more competitive within the scope of economies of scale. Many Turkish shipowners are not able to do business in this context, especially due to the requirement of having sufficient supply power required for contract transportation where risk is minimized. This was stated by a participant with the following words.

SI-1: *The docks on Norwegian fjords are factory based. The entrepreneur, who set up his factory, also puts its quay. The annual tonnage of goods to be bought and sold is certain. After that, shipowners such as Wilson and Vertom offer freight for the monthly required cargo and contract agreement is made. However, when they commit, they rely on dozens of ships in their fleets. Nomination is made within a short time after the laycan is specified. On the other hand, how can I conduct such obligations with my small fleet? If one ship is late, I will have to pay penalty from my pocket.*

Another participant stated that a country has enough fleet power and that it is more than a strategic issue with the following statement.

SI-3: *The Bulgarian government does not let our trucks pass in Kapıkule, they have set a quota for themselves. Trucks have been waiting for more than a week. A serious commercial loss. Bulgarians harm your trade indicating that “I don't take more than 200 trucks a day”. This highlights the strategic point of the renewal of the coaster fleet. Just as the trade is affected when there are problems on the highways, the same is valid for the sea. If you do not have enough supply power, you are a dependent country. If you do not support your commodity with a fleet of a certain power, if you do not carry your cargo at least 50% with your own fleet, you are a dependent country. In this case, we fall into landlord.*

Another participant highlighted the strategic importance of having sufficient supply power for a country as follows.

SI-16: *From a geopolitical point of view, having a certain supply power is one of the most important factors affecting international relations. At the same time, the countries that export the products they produce or import the products to be made from other countries with their own fleet to a certain extent always stand one-step forward. Ship operations and freight revenues have a positive impact on the current account deficit when transferred to the country. Therefore, ships should be considered both as assets and strategically.*

Considering the fact that the decision makers are family members in traditional Turkish shipowners, which have predominantly coasters, there is resistance to any business model that may lead loss of control over the company and the vessels. In today's conditions where financial resources are relatively low, one participant stated that the greatest resistance under the Coaster Renewal Project, which was proposed to modernize the high-aged Turkish owned coaster merchant fleet, was the fear of losing control.

SP-3: *In the companies operating large tonnage ships, the decision maker is the fleet manager and the general manager. The shipowner generally does not get involved to the process. However, in the companies operating coasters, the decision maker is the shipowner, and this is important for him/her. He/she wants to dominate the ship. He/she wants to have a control on the ship. This is also the case with the*

coaster fleet renewal project. Being a shareholder is not very attractive for them, there is a fear of losing control.

The model, which is intended to make ship investments under favorable conditions through a cooperative company in which the state will be among its partners and which is expected to be managed more effectively, has been defended by one participant with the following words.

C-1: *To me, the model that needs to be adopted that everyone will be a partner to cooperative company instead of the ship. We think that we can create supply power from a single point and do business with the charterers on an allocation basis. We want the charterers to come to us and we can give tonnage to them, the ships should be fixed from a single point and not compete with each other. By providing tonnage power to the market, it is possible to give reasonable prices according to economies of scale. National interests could be protected with this model.*

On the other hand, a participant who had previously been in cooperative-like formations but failed to achieve the expected benefit declared that he opposed such business models with the following words.

SI-11: *I have been a member of 2-3 cooperatives before and there is always an abuse. It is not possible to create a transparency like stock market in our sector. When we quit from these cooperatives, we were weak compared with the beginning. Therefore, I would not prefer that. When you participate in, they melt you while you have a certain material power, then you weaken.*

Another participant stated that the roof company model would not fit the structure of Turkish shipowners with the following statement.

SI-14: *If you are going to bring 30 shipowners together, all of them is going to make a decision, the brokers of all of them are going to be placed in the office, the technical superintendents of all of them are going to run after the ship, then there's no point in getting together. To do this, the professionals who can manage the ships best should be selected. However, the added value that shipowners see in themselves will disappear, and the company partners will remain only capital owners. They will have to settle for what someone else does. Getting together is actually useful. There will be a difference between the operation of the best ones and them, but this is a bit difficult for now because it is such a traditional structure.*

As highlighted above, the reason of resistance on gathering is expressed by the same participant as follows.

SI-14: *My father was the owner and the captain of the ship. So I embarked on our ships, I have a bachelor degree on this field, but I have less connection with the ship than my father. I visit our ships with my technical superintendent. However, the others before us were dismantling the main engine themselves. The next generation of me may graduate from civil engineering, and will take over the business from me. He will have no connection with the ship, but will establish a professional team as a capital owner and decide to operate in a powerful manner if he will proceed this business. In other words, it seems that we will move towards rationality with the change of generations and the lack of connection of the shipowners with their ships. I think the less we bond with the ships, the more rational we will be. In summary, in order to carry out this business professionally, the essence and tradition of Turkish coaster shipping will have to be destroyed.*

One of the participants makes the following suggestion on how to break the existing resistance, emphasizing the benefits of establishing a roof company.

SI-19: *There is a big benefit in handing the business over to the professionals. We will increase the maritime competitiveness of our country. Charterers and crew would also be very pleased to increase quality from this situation. Shipowners are adversely affected by uncertain environment and unconsciously compete with each other and harm each other. However, Turkish coaster shipowners have never achieved a professional institutional structure. It is also very difficult to attain this logic. The desire to establish control makes people and the country lose wealth. However, if a professional business is established, operating costs will decrease and profits will increase. However, unfortunately we have no partnership culture, no desire of sharing things. Perhaps we can achieve this with tax advantages, premium advantages, and legal arrangements can be made to encourage companies to come together. People do not come together with their own will. A carrot needs to be shown, and the state can do it. There is a significant benefit in terms of economies of scale in the merger of companies with similar characteristics. Every business has a strong side. Some are more powerful in chartering, some in technic, some in finance, some in organization etc. I have always supported that it is always beneficial for shipowners working in*

certain tonnages and regions to combine them under a single structure by putting the strong sides in the foreground. For example, a few of the shipowners operating 3,000 dwt ships are able to create a structure by taking over the responsibility in which they are strong, and if everyone unites in the area of expertise, a more effective structure emerges. This is the only way to be a maritime nation.

4.1.2.2.2. Intermediary Services

Intermediaries in many business in the world plays an important role to bring the parties together, to advise on various issues and so on. Almost all of the business processes in the maritime industry include intermediaries, called “broker”, and it is one of the traditions of the maritime industry to pay commissions for these services. In particular, the role of brokers in bringing together and reconciling the parties for ship investments is explained by an example given by a participant below.

SP-2: *For instance, let's assume that Spain is the place where the ship is located and the buyer says, "I will receive the ship from Spain". The seller wants \$1,8 million, and the buyer can give this ship a maximum of \$1,6 million. This is where the broker's duty begins. Broker says, "Let's offer \$1,6 million again for this ship, but we want to deliver it in Tuzla in the first step of negotiation. Then we will propose that instead of Tuzla, the ship could be delivered in Spain that you are willing to accept. Thus, we continue to the negotiation as if we give something in favor of other side without increasing the price". This is a simple example. Price alone means nothing. At first glance in a \$1,8 million contract, even though the seller seems to have taken what he/she wants, I will put conditions on the contract that in fact that ship will be sold for \$1,4 million.*

The biggest expectation of brokers that give intermediary services is to receive the highest possible commission. Especially when commissions are calculated as a percentage of the freight or sales price, the higher these amounts, the more commission income will be obtained. Therefore, commission income will be high under high market conditions. One participant used the following statements regarding this issue.

SI-1: *Everyone was looking at the commission. There was no distinction of the nation. The ship was earning \$30.000 a day and \$ 1 million a month and \$24 million*

in two years. At that time, we could not find a place to put the cash we earned. The broker put the commission in his pocket because the cost of the ship could be paid off in two years. Even if you did not want to, he/she would have made this deal with someone else.

Most of the ships mortgaged against the debt of the shipowners who cannot pay their debts in low market conditions are confiscated by the banks. However, the S&P brokers who know that banks want to save the loan amount they have given for these ships as much as possible and that they will not do the maritime transport business in some way, can also play an important role care of shipowners they represent to purchase ships at low prices. In this regard, one of the participants used the following statements.

SI-8: *Today, banks offer an opportunity to the shipowner to sell the ship in their portfolio in exchange for debt relief to reduce their risk. This time, the sale and purchase brokers that banks work on are able to manipulate the business. The brokers can convince the bank to lower amounts so that the ship investor, who is their own client and intends to buy that ship, will buy it.*

Although brokers provide intermediary services in order to carry out trading transactions under appropriate conditions, it was emphasized by some participants that in some cases they also had an impact on shipowners' misguidance. It was stated by a participant that there were brokers misleading shipowners in the past years, especially when information was less accessible than today.

SI-7: *Between 1985-95, very bad things happened in the market. There were brokers who were not only representatives of several banks, but also acting as sale and purchase brokers. These brokers only looked at the commission they received, taking into account former shipowners' interest in the large tonnages.*

4.1.2.2.3. Proximity to Home

Centralized-decisions are made in the majority of small-scale companies, especially family-owned companies. The reasons underlying this phenomenon are mostly fear of losing control. In order to maintain control, it can be said that the enterprises with centralized decision-making mechanism avoid mostly from a certain

comfort area. According to the data compiled within the scope of this dissertation, it has been highlighted by many participants that Turkish shipowners are reluctant to fix their ships to long distances and focus on ship investment alternatives that they can operate within a specific voyage area.

C-1: *The keyword is "I don't know any other business". Even if the shipowner operates a large fleet, he/she wants to operate his/her ship near home. One of the shipowner chartered his coaster to the Far East recently, and he almost had a heart attack. This is happening because we are not a maritime nation, we come from land.*

In this context, one of the shipowners used the following statements, starting from herself.

SI-5: *I do not prefer a big ship. I do not want to get tired of the time notion. I have kids. If I had a big ship, she would have to go to the Far East, and life would start early, or she would have to go to America and life would start late. I eliminated these areas because of my own personal reasons. I have to be in charge, but on the other hand, I have my own personal life. That is why I prefer to have an investment in my own time. I do not like to take risks. I would like to sleep in the evening peacefully, and I would like to be near the ship, there is a fear of how to get my ship in the ocean in case of an emergency. I am not a sailor. The sailor-spirited man puts the world in front of him, and all is his own garden. However, I am coward.*

The fact that focusing on ship alternatives that could be operated in the regions close to home was explained by one of the participant as follows.

SP-2: *Turkish coaster owners usually want their work to be under control. Therefore, they avoid navigating in distance areas. To me, this situation is related to the financial situation. When upgrading to the large tonnage, many things need to change from equipment to crewing. In an environment where costs increase, freight earnings must be high. While the markets were at peak levels, everyone was taking risks; but today things are the opposite. Ship owners should act as economic as possible. There are also many problematic regions in the world. If you want to work in Asia, you must pass the Suez Canal. In addition to the channel costs, there is an additional insurance premium and protection costs for pirates in the Aden region. Most importantly, the question arises whether the ship will be fixed to transport cargo from there to here. Considering all of this, large tonnage involves a great risk. So many*

shipowners do business with the logic that "this is the tonnage I know, the ship is always under my control. I can do maintenance whenever I want. Therefore, the big tonnage is not for me".

Another participant explained the reason of the issue with the effect of human resources on business culture as follows.

C-1: *The effect of the human resources on business culture is very high in Turkey. The more the human resources have an intention to do business with abroad, the less the fear decreases. The more you do business with the charterers in the Gulf, the less fear to pass Suez. It is about getting to know the charterers. It is about chartering and brokering.*

The same participant stated that the effect of human resources on the business culture does not only facilitate doing business at far distances, but also that shipowners who invest in ships to operate in nearby regions have developed a business model with a different perspective.

C-1: *The reason why Turkish coaster shipowners did not break the shell and did not stand one-step further is the cultural difference, the language limit and the inability to adapt to the ways of doing business abroad. Even those who have vision in the Black Sea market opened offices in Rostov, Odessa. The one who has developed good relationship with the charterers works differently, while the one who has a logic that "I buy a river-type ship and give it to the broker, the rest is not my business" does the business differently. Additionally, there are also difference between the one who employs a staff in his/her office speaking Russian, and the one who does not. It is necessary to have this vision.*

4.1.3. Ship Specifications

The ship is a vehicle with very different technical details. The technical characteristics of the ship have been highlighted by many participants as one of the most important factors that come to the fore during the investment phase. It is found that factors, especially the tonnage, design, condition, fuel type, characteristics of machinery and auxiliaries, affect ship investment decisions. One participant

emphasized that the ship's technical characteristics are one of the most important factors in ship investments as follows.

SI-15: *The main strategy for me is the technical structure and then the design of the ship with respect to commercial matters. For example, a ship with 5.000 dwt and 4,5 m draft is a very effective tonnage for this region. The structure of the ship, its technical characteristics and the region you will operate are the most important factors. In order to compete with the market, your daily expenses must be low so that you can gain an advantage. In this sense, I invest and work according to the technical structure of the ship.*

While small tonnage vessels can respond directly to transport demand in the region, it was stated that they are more financially and operationally predictable than large tonnage ships as follows.

SP-2: *The gains of the small tonnage ship are more or less predictable. There is a perception that it can be invested even if it is operated at a loss. However, this perception is not valid for the big tonnage ships. There are too many new building ships in large tonnage segments, and more importantly eco-modern ships has become popular. While a 30.000 dwt vessel burns an average of 21-22 tonnes of IFO (Intermediate Fuel Oil), such modern vessels of up to 65.000 dwt can burn 13-14 tonnes of IFO due to their machine characteristics. Emission levels also remain low. There are also many other advantages such as the design that can work in the Arctic Ocean etc.*

As exemplified below, despite the large fluctuations in price of large-tonnage ships especially after the 2008 crisis, the volatility in the prices of small-tonnage ships such as coasters was not much more than the large-tonnage ships.

SI-4: *While large tonnage ships have much greater loss, smaller tonnage ships have relatively low losses. For example, a Dutch shipowner built a coaster with a carrying capacity of 4.000 dwt for € 9 million, and had to sell for €1,8 million in 2012. On the other hand, E. Shipping had given a 10% down payment for the new building ship order for \$160 million. However, when the market suddenly fell, the price of the ship fell to \$100 million. Therefore, the shipowner cancelled the order gave up \$16 million.*

4.1.3.1. Main Engine and Auxiliaries

It is important to prefer machinery and auxiliaries whose working condition, repair and maintenance process are known in an environment where any failure that may cause disruption of the ship's voyage affects the profitability. One of the participants shared the following statements regarding this issue.

SI-15: *One of our elders says, "I know the M. W. main engine." He looks at this especially on the ships he plans to buy. Because he knows how to use the machine effectively. These are the result of experiences. They never get into the machines that have bad reputation. I do not prefer either. I definitely prefer ships with Korean or Japanese machines with European design. Because these are long lived machines. I also prefer Yanmar or Cummins generators. High-cost machines damage your financial structure and disrupt the company's layout and plans during the year. The most important criterion is that the voyage starts and ends as soon as possible. The more the voyages, the greater the profitability. You are looking at the daily freight income when calculating TC equivalent. It is calculated how much earned per day, at the end of the month and at the end of the year. The malfunction of the main engine and/or auxiliaries always disturb the whole process.*

It is also emphasized by the following example that the ship should have the technical characteristics appropriate to the region where it is operated.

SI-15: *Imagine that you have loaded the goods from the port located in Baltic at a time when frosting has begun, and then you carry the goods to West Africa. The climate changes. Machine heating systems in the Baltic, and machine cooling systems in Africa must be available and work effectively. The vessel that will respond to both circumstances is a costly vessel.*

It has been determined that what kind of fuel is burned by the main engine and how much fuel it consumes is among the factors that direct ship investments. Fuel type stands out as a factor that directly affects fuel costs as well as maintenance and repair process. In this respect, it can be stated that the type of fuel burned by the ship is considered in investment decisions as stated below by a participant.

SI-1: *I bought a ship with 7.500 dwt carrying capacity. An 8.000 dwt vessel burns 9-10 tons of IFO, while the ship I bought burns 5 tons of MGO. MGO was about*

\$580, IFO was about \$ 280, 5-6 months ago. Now MGO is around \$520 and the IFO is \$720. IFO's era is ending in small tonnage. You have to burn Low Sulphur Fuel Oil (LSFO), which is almost the same price as MGO, in the SECA area. I prefer MGO burning ship. Because maintenance is simpler. You are not dealing with separation. You do not have to hire extra men. Machine parts do not wear out quickly. The more simple the more success. That is what you see in European design ships. If you look at a 3.000 dwt ship made by Germans and a 3.000 dwt ship made by Russians, you will realize. The ships of the Germans are very simple. There is a main engine in the middle and the auxiliaries surround it. The more complicated the ship, the more it costs.

Fuel costs are a very important cost for Turkish ship owners who work mainly in the spot market and ships with low fuel consumption and efficient operation are preferred. However, the importance of this factor, which has not been paid attention to date, was emphasized by a participant as follows.

SI-3: *Fuel is the most important item in ship investments. Many of the ships with large machines were sold to Turkish ship investors recently. For example, ships that do not sink and made her company bankrupt, are still working. Europeans put a cheap price to get rid of these ships. But even that price is expensive because the actual costs will be incurred afterward.*

The importance of the ship's fuel cost is explained by another participant in an example as follows.

SI-1: *If the ship burns too much fuel then profitability is affected. My 3.000 dwt ship burns 2,7-2,8 MGO all-inclusive. Another person bought a ship, burning 6-7 tons of MGO per day. Today, the price of MGO per ton is \$700. If 2 tons difference and duration of sea voyage around 15 days per month are considered, my ship would generate \$252.000 more freight income per year than the vessel that burns more fuel. The difference will reach \$1 million in four years. If life span of the ship is considered 10 years, assuming that 20-year-old ship is acquired, total amount will be \$2,5 million. At this price, you get a ship with an average return of \$400.000 per year. This is an example of being prudence.*

The same participant explained why he did not prefer a ship with a very good price but a larger machine than her counterparts.

SI-1: *For example, last year, a beautiful ship with a capacity of 4.000 dwt that was previously operated as a container ship was introduced to me. Since it has worked as a container vessel, its edges and base was in good condition in any way. The price dropped from \$1 million to \$650.000. Her counterparts were priced at \$1,3-1,4 million. My partner went and looked at the ship, and he liked the ship, but I refused. Since the ship had previously worked as a container ship, we had to pay \$300.000-400.000 for repair. But most importantly, the ship burns 11 tons of fuel. I have three sister ships that have similar design with this ship. The only thing is that the ship has bigger machine than my ships. When I fix my ships between certain points, I calculate that I earn 40-45% more at the end of the voyage. In any case, my ship has received freight income in the range of \$7.500-10.000 while this ship generates \$2.000-3.000 loss. Beside, bad weather, cargo damage from wetting, sweat or moisture, grounding, collision etc. are the possible events that might occur, and it is a great risk.*

4.1.3.2. Ship Design

A participant shared the following opinions regarding the fact that ships that are able to carry a wide range of cargoes and meet all technical requirements of the regions in which the vessel operated can be preferred under any circumstances.

SI-2: *Imagine a ship that is able to carry any types of commodity. So the ship does not choose cargo, which is very important. From GM (Metacentric Height) balance on the ship's hatch to draft and ease of operational processes, all factors are cumulative. When such factors are considered, the vessel with optimum values is a valuable ship in the coaster class. Ships capable of navigating both at the sea and on the river, making calls to low draft ports, conforming to current regulations, having the flexibility to carry different cargoes and providing cost advantages, do business in every way. I do not hesitate to buy any ship that I see as having such features even in an environment where credit sources are insufficient.*

Turkish coaster shipowners prefer ships designed and built in Europe. The reason for this is explained by a shipowner as follows.

SI-1: *40 years ago, the European predicted that a single hull vessel would no longer operate, and instead decided to build a double skin vessel, although it was not*

compulsory. These are German built, Dutch built ships. What did you foresee, who poked you and you needed a second skin? Furthermore, the double skin box-shaped vessel enables direct loading or discharging with a hook, and there is no need a second forklift in the hatch. When the ship gets water, the cargo will not damage and the vessel will not sink thanks to its side tanks. Today, Italy and Spain do not accept conventional ships. This is because it is necessary to pay very high labor for the cargo residues accumulated in the timbers of such ships. The port manager says "I don't clean it, I can get it with my forklift and the rest is none of my business". Therefore, after discharging the cargo with the bucket, a small bobcat sweep the corners quickly and the operation is finished. In every bulk cargo we discharge to Europe, 3-4 tons of cargo remains on board. These loads need to be swept out of the hatch. I am trying to do it with my own crew. Our 2005-2010 built ships were constructed conventional norms. The length of the hatch is longer than the length of the hatch cover. In this sense, I ask you how I am going to load or discharge the cargo efficiently. Where do I put the cargo, and there is not clear explanation on the reason. The mentality begins here. We are not a maritime nation. We have not adopt shipping logic. If we adopt, our engineers will not design this kind of ships.

The same participant also stated that there are some differences even in German and Dutch ships as follows.

SI-1: *For example, I try to stay away from the ships built in Spain, Turkey and China. If you buy a German, Dutch built ship, it works efficiently even if its age 30. There is even a difference between these two. For example, the Germans considered both commercially and accommodation of the crew. For instance, the total length of hatches of 89-mt 3.000 dwt vessel is 55 meters. The rest covers the accommodation. On the other hand, the Dutch have more commercial concerns. The ship with the same length has 62-mt hatch length. The accomocation is secondary issue for them. The Dutch built ship can be operated for 25 years, while the German built one can be operated for 35 years. When you get used to them, others begin to seem strange to you.*

The reasons why ships built in Turkey remained secondary compared with the ships built in Europe are described in detail in the following words by another participant.

SI-2: *With the breakthrough in the maritime transportation industry in the 1980s in Turkey, we, as Turkish shipowners, built ships just to own a ship. European shipowners, on the other hand, were making box shape ships and even installing the head propeller to the ship. In the same period, the vessels were produced by conventional approach. Single pull MacGregor type hatch cover and outdated main engines was used. The ships were built without reduction gear, controllable pitch propeller (CPP), and head propeller etc. The hatch of the ships produced were also disproportionate. For example, the ship's width was 13 mt and the hatch's was 7.7 mt. In other words, the deck spaces on the sides, called gangway, were over two and a half meters. In order for loading to be stacked all the way, someone else had to handle the cargo at the bottom of the hatch during operation. At that time there was no one who could design an optimal ship in Turkey. I am still operating a ship built in Germany in 1984, which is completely box-shaped, with a bow thruster. At that time, the Germans designed their ships according to the need of the market, whereas we built our ships just to have a ship. The analysis whether the ship is suitable for the goods to be transported available in the market was the secondary concern. Accordingly, we were looking for goods suitable to the ship. However, the vice versa was rational.*

One of the participants interpreted this situation from a different perspective as follows.

SI-1: *Looking at the other side of the coin, Turkish shipowner is very brave. He is taking the biggest risk. There is no plan, how many knots the ship will make, what consumption will be unclear. On the other side, the European is building his/her ship that suits the plan. With the water test the speed at which the ship can accelerate is determined and the necessary financial resources are provided afterward. On our side, it is not clear whether this shell will float or not.*

The fact that many ship built in Turkey use of the design of the ship built in Europe is interpreted by a participant as follows.

C-1: *Many shipowners in Turkey are imitating the ship designs in Europe. However, European shipowner did the design for his own project. For example, a ship has a single 63-meter length hatch. Why? Obviously, something long will be loaded there. Besides, why did they install two cranes of 180 tons. Did they find the crane very cheap? Obviously, he had that crane installed for a reason. While Europeans do*

business according to the market, we unfortunately hope that the market will adapt itself to us.

Another participant justifies the situation mentioned above with the following statements.

SI-1: *Unfortunately, primary concern for us is the budget. We think that: "I'm going to make a ship and I have a million in my pocket. On the other side, the European thinks: "I have an intention to build ship with certain specifications and how much does it cost, and how much money do I need?" That is the logic. We are looking for assembled ships. Speed, resistance, length, technical requirement, minimum safe manning etc. are all connected variables. The equipment and settlement on 1978-built European ship does not exist on a ship built in Turkey in 2010. This is all a loss of national wealth.*

While the European shipowners focused on ships of a certain design, it was stated by a participant that Turkish shipowners prefers ships with different designs and have to deal with each ship as a separate case.

SI-4: *The ship types of Europeans are not different from each other. Shipyards produce designs close to each other in certain tonnages. But we don't. Shipowners build ships according to their needs. We draw the project, but we build with personal demands. In buildings such as public housing, the hall of the house and the kitchen are certain. The couch and even its place is certain. Only the color of the couch is different. For example, if the Chinese police enter a house in that public housing, they know the settlement after the door is opened. Europeans are building their ships with this logic. In our case, the shipowner can make different demands from opening the door to the left instead of to the right, to where the porthole will be. One wants a pontoon type hatch cover while the other wants a folding type. You want to paint with "Jotun", the other want to paint with "international" because they have an agreement with them. After getting the project from Europeans, I wanted to open a porthole somewhere but could not convince them. Because according to them the stability will be affected in such case. Then I made the ship and I opened it myself afterward. We are looking for cargo suitable for our ships, whereas Europeans are looking ships suitable for the cargo they secure. He thinks that I am the owner of the 4.000 dwt ship, and finds a shipyard that handle and transport the cargo with the least fuel and the least expense,*

negotiates under certain conditions and builds the ship. Since the shipyard has an experience and expertise on the subject type of ship, there is little chance of encountering surprises. On the other side, we are dealing with each ship separately.

Another participant stated that even if the ship, which he intends to invest in, is not built in Europe, he can make a decision based on whom the ship was built for as follows.

SI-1: *As a shipowner, the place of built is an important criterion for me. As a coaster owner, I would like it to be built in Germany or the Netherlands. Apart from these, if the place of built is Romania, Russia, China etc, it is important who the ship was built for. In some times, European shipowners can determine the design of the ship themselves, put their own surveyors as inspectors and build ships to take advantage of the low production costs. Although the ship is built in China, main engine pumps, valves, separators, in other words all equipments may have come from Europe.*

In order to avoid some of the bad experiences of the past in the future, a shipowner stated that it should be taken into consideration especially during the construction of the new building ships. He shared his experience with the following words in this context.

SI-7: *As time goes on, the ship's characteristics can change as well as everything else. As a result of my observations while making three ships, I wrote 150 remarks to myself. I will consider these remarks one by one when I will build a new ship. Some are administrative, some are commercial, and some are purely technical. All of this is the result of all the experiences. Some are very funny. For example, the edges of the ship's galley floor should be 6-7 cm above the floor. This is a requirement to keep dirt off the workbenches and keep the area clean. Nobody cleans benches underneath, but over time, dirt accumulates. This may sound funny, but our experience makes it necessary. Another example is that the sheet of flying bridge above the bridge is to be slightly raised so that rainwater can flow aside. It is very simple to make it straight, but over time it can collapse by exposure to water, sun and sea salt. When the precipitation begins, the accumulated water causes decay. Water flows from the bowl to the bridge where there are equipments that hundreds of thousands of euros worth.*

4.1.3.3. Age and Condition of the Ship

The current condition of the ship is another important consideration in investments. One of the most important issues that investors who plan to invest in ships is paying attention to whether the ship is in good condition or that the condition of the ship can be made sufficient with little expense. One of the participants expressed the following in this regard.

SI-17: *We try to acquire the appropriate ship under favorable price levels and try to improve its condition afterward. After the ship's condition and operation is good, the chance of finding cargo on these ships increases. The ships of our competitors may be old, may not follow the flag state rules, and they may have encountered problems Port State Control etc. Therefore, our first goal is to be able to buy modern ships at an affordable price. Somehow, appropriate cargo could be found. Ships, which are able to load and unload the cargoes in a short time without any problems, are preferred primarily by the charterers. The main objective is to find a ship that do not damage cargo, have problems with PSC, crew and port. If there are such ships, the cargo finds you.*

One of the participants stated that the condition of the ship can be improved by repairing it in some way and emphasized that the design of the ship is important.

SI-19: *Some of the ships we purchased previously were made suitable for the purpose with minor revisions and repairs even if the condition was bad. What is important here is to make sure that the ship you purchase is essentially suitable for the cargo you carry.*

In some cases, even if there is a ship with a very reasonable price, the investment costs may be revised so that the condition of the ship is insufficient and the costs required to make it sufficient are considered to be quite high. In this regard, one of the participants stated his experience as follows.

SI-15: *There was a 4,000 dwt ship, we gave up during the sales phase. The price was very reasonable, but we looked at the insurance records and crank of the ship was changed 3 times. Then we went to visit the ship to see the condition of the ship with our experts whether the ship is operated with skilled crew. We finally gave up after checking the ship during the MOA phase.*

The fact why the ship is cheap needs to be taken into consideration. However, unfortunately, this situation is not questioned in the ships purchased. Investors with a low budget and trying to buy ships are dragged into unknown waters with subsequent repair and maintenance costs. Therefore, the logic that “we buy cheaply, we do the necessary repairs somehow” is wrong. This was highlighted by a participant as follows.

SI-14: *Since the main idea is to make money, the amount to be invested is important. Therefore, acquiring the ship at a lower price is the first goal. But such ships will be low-priced because of their condition, draft, machine size, etc. The further this is avoided, the better the investment efficiency is analyzed, the better the result will be. However, if you purchase cheap ship assuming that you will easily conduct the necessary repair and maintenance due to your experience, you may face unexpected problems. This is actually self-criticism.*

Another participant shared their experiences on the issue as follows.

SI-13: *Experiences in this business are of great importance as in every profession. There have been wrong decisions made by us or our family. In my youth, we had an old ship, and we spent a lot of money for repair. We spent our savings for that ship, the investment was a waste, and it was a big mistake. The condition of the ship is therefore very important.*

One of the participants stated that there is not detailed analysis when buying a ship and that the ship can be purchased if she looks good from outside.

SI-3: *Ships are not analyzed technically and commercially. Before the sale, the ship was painted beautifully by the European seller. The father, who had an intention to buy the ship, would walk around and buy the ship that looked beautiful from the outside. However, whether the spare parts at an affordable price, whether there are engineers who know the engine and auxiliaries, and most importantly, whether the economy of fuel was not deeply analyzed.*

Even the shipowners, who are familiar with the maritime profession, who have many years of experience in the sector and who upgraded to be shipowners, can exhibit the above mentioned mistakes. A participant explained the disappointing situation of a ship bought by many shareholders including experienced seafarers.

SI-6: 30 people who own the capital gathered. Among them, there were professionals, such as masters and chief engineers. They showed me three ships and I did not like all three. Then they got angry with me because I do not like anything. Then they showed another ship that was turned from tanker to dry bulk ship in the Far East. A master and a chief engineer went to the ship and liked it and the 24.000 dwt ship that was built in 2004 was bought for \$4,2 million. After delivery, the ship began to malfunction. We finished one voyage in 6 months. The money goes out of pocket. When the ship arrived in Serbia, me and two another partners went to visit to understand what was going on. The hull was good because the ship was turned from the tanker, but when I landed in the engine room, I plucked my hair. I said, "let's go back and scrap the ship, and it will sink us all". Everyone opposed it. The ship did not perform as expected and eventually was sent for scrapping. We spent extra \$3 million from our safe.

One of the highlights is the fact that European shipowners somehow sold their old ships to Turkish shipowners. While European shipowners are replacing their fleets consisting eco-modern ships with the cash they obtained, our shipowners are trying to buy and operate these ships which are in poor condition and do not comply with the current technology just because they are European design.

SI-4: One of the biggest mistakes that Turkish shipowners have made recently is to collect all ships aged 20 years and over that have been discarded by European shipowners. Europeans invest in significantly more high-tech ships with the cash they earn by selling their ships to Turkish shipowners who enter to the shipping sector after 2010.

One participant described his experience on the issue as follows.

SI-10: European shipowners bring their ships they want to sell and sell them here easily. A broker friend of mine recently called me and asked, "A European shipowner's ship is coming to Tuzla, would you like to see?" I wanted to at least look at a ship that came to here. The documents were sent, the audit was made 3 months ago but the validity of the document was determined as 21 January 2019. It is not possible to operate the ship unless it is re-inspected until that date. Naturally, it is understood that this shipowner wants to sell his ship to Turkish shipowners without any expense and one of the Turkish shipowners will unfortunately buy this ship.

Everybody knows this information and buys the ship on purpose. The buyer will try to figure out what he can spend and get it.

4.1.3.4. Ship Tonnage

In the regions where the ship is planned to be invested, it should address the commodities subject to trade and the tonnage of these commodities. It was emphasized by one participant that the tonnage of the ship is one of the important factors in this context and in which tonnage range the vessels included in the coaster class can work in the region.

SI-1: *Approximately 80% of the trade in Black Sea and Mediterranean markets is conducted via maritime transport, and coasters have an indispensable place in the region. Up to 20.000-30.000 tonnes are transported ones or twice from Black Sea to Libya, Algeria or Italy, while all remaining goods are transported through 3.000-12.000 dwt segment. Demand is shaped due to the large and small structure of importers-exporters in the region and supply needs arise accordingly. More precisely, 3.000-5.000 dwt and 10.000-12.000 dwt tonnage ranges generally work in the region. Other than these ranges are intermediate tonnage. Intermediate tonnages are quickly affected by small market ups and downs. You may earn well when the market is good, but you can also lose when the market is bad. But these tonnages do not fall below a certain limit.*

One of the participants explained the reasons for effective coaster tonnage demanded in the region with the following words.

SI-15: *The tonnage over 15.000 dwt is known as intermediate tonnage close to handysize ships, and when this tonnage is exceeded, the market and the trading area change. 10.000 dwt in the upper segment and 3.000-4.000 dwt in the lower segment are considered as effective coaster tonnage. In order to organize combined transport, the ship and the other mode must overlap. The other mode is usually train and truck. The train is generally used for combined transport in the developed countries as well as Russia and China, since they have established their infrastructure on the railway. Considering that the train wagon can carry up to 55 tons, the cargo carried by 60 wagons can be loaded on a 3.000-3.500 dwt ship. This tonnage is effective when the*

cargo is transported from the inner regions to the Russian ports by rail. That is why tonnage is an important criteria for coaster investment.

Even in the event of war, some commodities need to be transported for basic needs. It was emphasized by one of the participants with the following words that there would always be a demand for the ships capable of carrying these commodities.

SI-19: *A number of commodities have to be moved from one place to another. For example, Turkey is not a country self-sufficient in grain last 15-20 years. Even if there is a war, we have to buy this grain from Russia and Ukraine. On the other hand, Russia increases its grain exports every year, and these goods have to be transported somehow. Considering the goods coming from the Azov Sea, I always prefer the ships that can take these goods since the draft in the region is very low. If the market is appropriate for a ship that appeals to me at affordable prices, I will make that investment. There are certain goods and regions that will somehow be transported anywhere in the world. Therefore, I do not hesitate to buy it.*

One of the Turkish ship investors emphasized that they do not want to be stuck in a certain tonnage and that they like to test different tonnage ranges as follows.

SI-14: *Imagine that you run three ships of 3.000 dwt. It is more or less predictable what happens with certain expense and profit when the fourth ship is purchased with the same tonnage. This is a widely accepted business model. However, we like to test the tonnage ranges. It is nice to try. We were not very satisfied at 7.000 dwt, but we were satisfied at 10.000 dwt. While considering to proceed in this tonnage, we upgraded above 15.000 dwt. Now we have a thought of returning to around 5.000 dwt.*

On the contrary, some Turkish shipowners are afraid to move out of a certain tonnage even if they have capital power. They prefer to position themselves in a certain segment and grow in that segment. One of the participants indicated this situation with the following words.

SP-3: *For example, a shipowner operates ships in the tonnage range of 4.000-5.000 dwt and thinks that 8.000 dwt ship is too big for him. He does not have any interest in that range he does not know even if he has cash in his safe.*

While adherence to a particular tonnage may be considered as irrational, it may have different reasons. It was stated by a participant that the emphasis given to ships of a certain type and tonnage would contribute a great contribution to the organization.

SI-18: *When we look at the leading shipowners in the world, they always work in certain types, tonnages and certain regions. For example, if a European shipowner have 3.000 dwt ships, they usually specializes in that tonnage and orders 80-100 units of that tonnage. Different examples will be the vessels acquired under contract. If tramp shipping is to be carried out, switching to a different tonnage with a certain tonnage of ships in the fleet can be distructive for the company. The charterers and the shipowners of certain tonnage ships are known. Office structuring will be based on tonnage. The quality of the crew you work on these types of ships wil also be different. operational power increases, maintenance of ships with similar characteristics and familiarization of the crew with ships will be easier. In this sense, it is wrong to switch to different tonnages*

It was also emphasized by the participants that some Turkish shipowners buy or order ships considering the tonnage that the charterers with whom they have developed good relationship for years, can transport.

SP-1: *Turkish coaster shipowners considers regional demand in ship investments. Some shipowners are more active in the Mediterranean and Continent regions. They have close relations with the charterers here. They expect to serve the tonnage that is approximately 12.000 tons in this region. In some cases, they can be included in the mini handy class up to 20.000 tons. They want to stay between these limits as the charterer will vary when they go outside. In the tonnage, they give priority to the charterer factor. They think that they can do better business with the charterers with whom they have developed a good relationship for years. They also determine their segments accordingly.*

A-2a: *Turkish shipowners usually run their ships in the spot market. However, there are ships carrying goods of certain charterers, and sometimes ships can be operated like a liner. In fact, there are shipowners serving the same charterers in the spot market for 10-20 years. In this case, the tonnages that the charterers can carry affect the ship investments.*

Although small tonnage ships are more flexible and require less financial liabilities than large tonnage ships, the majority of Turkish shipowners have a desire to increase to big tonnage. According to the following statement, it is emphasized through an example that it should not be inferred that the revenues will grow if the tonnage is expanded.

SI-1: *One of our problems is the interest in large tonnage segments. I made a phone call to one of my ship owner friend who owns 4-5 large ships. I asked, "How much money do you make for your 8.000 dwt ship?" In response, "I fix the ship if TC freight rate is around \$2.800-3.000." Running cost of this ship is \$2.000. The remaining \$1.000 makes \$30.000 a month. I hung up. I turned to my partners and asked, "Friends, how much do we earn per month?", "\$30.000," they replied. The price of 8.000 dwt ship was \$2,5 million, and we bought it for \$800.000-1.000.000.*

In some cases, there may be different reasons why shipowners want to move to large tonnage. One of the shipowner participants who is considering ship investment at this time explained why they are considering big tonnage ship investment with the following words.

SI-12: *We have an intention to upgrade to larger tonnage segment in our next ship investment. Because it is easier to find qualified personnel in large tonnage ships. There are many problems occur in small tonnage ships mainly due to lack of knowledge of crew. During our conversation with one of my elders, he said: "When the astronaut goes into space, he tries to do something with the materials in his hand, he tries to repair what is needed with limited means. It is also the case with the ships." The situation is very different in small tonnage. There is not much difference between in operating costs of big tonnage and small tonnage ships. However, large tonnage ships generate relatively higher profits. It may be preferred in this respect. Office structure should also be taken into consideration. Otherwise, the company may go bankrupt after upgrading to the bigger tonnage. Growing with a professional team could be sustainable. From this point of view, we are looking for a ship with a minimum capacity of 10.000-15.000 dwt. The area where we operate the ship will also change. It will may be South America, Africa, Far East. However, when there are qualified crew, of course running cost will increase, but we will give the money to the crew, not repair teams and technicians.*

4.1.4. Ship Finance

In maritime transport industry, the abundant and varied funding sources is an important issue for market participants since the industry is capital-intensive. In addition to sustain the existing operations, the most important point in carrying out ship investments in order to maintain and increase competitiveness against dynamic environmental conditions is undoubtedly good financial conditions. However, the fact that access to finance in the current conditions is not easy as it was, is not a good situation for countries where there is not enough funding sources such as Turkey. In this sense, the role of ship finance in ship investments in Turkey has been highlighted often by respondents interviewed as part of this dissertation.

4.1.4.1. Equity Capital

The insufficiency of financial resources and the costly access to such resources were not only specific for today, but also posed a problem for Turkish shipowners in the past. A shipowner has described how to act in such an environment with his own experiences as follows.

SI-2: *We used to make voyages to Beirut, Libya and Egypt with our 1.000 dwt ship. The construction of this ship began in 1966 as 400 dwt, and the ship was launched at sea in 1968. After a certain time, the capacity was increased to 600 dwt and then to 900 dwt. Any shipowner who has a metal boats at the time was making such revisions. The original structures of the ships were changed either by cutting in the middle or by giving height. The main reason for this was the lack of sufficient financial power to build new buildings.*

Even though the above strategies were implemented at a time when access to financial resources was troublesome, it would not be reasonable to implement such practices in today's world where technology is developing and legal regulations are quite stringent. It was stated by a participant that there are very few Turkish shipowners who can meet the amount required to finance especially the new building ships in today's conditions.

SI-19: *Today, you cannot build a 3.000 dwt sea-river type ship in Europe for less than €8 million. Such a resource or credibility is now available in very few coaster owners. No bank in Turkey gives credit to shipping industry. There are also problems in credit channels abroad.*

One of the participants stated that the coaster owners, in particular, take actions to take advantage of short-term opportunities due to their lack of sufficient capital power and cannot act to the extent required by rational investment behavior.

C-1: *Coaster owner does not think: "There are suitable ships in the market, I have cash in my pocket, I can invest in ships from these levels". Instead, he has a ship, has accumulated a certain amount and then begins to look for a ship. If the market is good, he/she invest in a ship. He/she wants to earn freight as soon as he/she buys the ship. Because in the bad market, he/she does not want to waste the cash in his/her hand. From this perspective, short-term plans come to the fore since there is no capital power to make medium and long-term thinking possible.*

Due to the low capital requirement and flexible operational capability, coasters are predominantly preferred as indicated by participants as follows.

SP-2: *Due to the insufficient finance in Turkey, there are too many shipowners with low capital. Since ship prices are at low levels, particularly in coaster segment, coaster market is buoyant compared with the others.*

A-2b: *Since coasters are small tonnage vessels with low draft, they provide flexibility especially in low-draft areas in Europe and the Black Sea. Because the amount required is small, they have a relatively low risk compared to large tonnage ships. Compared to the large tonnage ship prices, which declined significantly after the 2008 crisis, the decrease in coaster prices remained relatively tolerable. They are among the priority preferences of Turkish ship investors due to their low capital requirements.*

Even financing coaster investments, which require low capital, often have difficulties, so investments can be postponed. It was emphasized in the following statements of the participants that the necessary steps could not be taken although there were opportunities for ship purchases in cases where capital strength was insufficient.

SI-17: *We had an opportunity. There was an en bloc sale of eight mortgaged ships of a bank under very favorable conditions. We only got three of these ships. I*

wish that our conditions were appropriate that day we could get all but not. Those three ships are still working in very good conditions. They satisfied us. At that time there was a shortage of finance, and the weather in shipping was more pessimistic. Still, we got three, we are on our way.

SI-1: In 2016-2017, large tonnage ships were available at very reasonable prices, and if I could find at least \$10 million at that time, I could buy 3-4 handy size ships. Even if I could not run it, I could lay it up, put two guards on it, and if I had to wait two years at anchor, I could sell it for very high amount today at an annual cost of \$30,000. But there was no finance. An asset has a certain value, and if the asset has fallen below this level, there will be a sunk cost. If you have the power, you can buy it and sell it when it is needed. Because most of the players in market bankrupted and withdrawn from the market. Therefore, you make a profitable sale by doing so. This is how profit is obtained.

SI-5: I am not such a big shipowner. However, when one ship's debt is over, I think of starting to pay another ship's debt. I do not have a rule about how long this time is going to be. We are currently a small company based on the number of ships. We have not earned enough freight earnings in the last 10 years, if we could, we could have bought two more ships. However, we tried to maintain our current business and obtain a reserve fund, so we did not attempt any investment. If I had a high amount of cash, I would invest. If the credit facilities were good, I would definitely invest. The loans are not attractive, but dissuasive. I think I can invest more ships with less credit so that I can accumulate more capital right now.

In today's conditions where access to finance is becoming increasingly difficult, Turkish shipowners are trying to overcome this difficulty by including foreign partners in their companies. The fact that a large number of Arab investors from countries in the Middle East have been shareholders in Turkish shipowners' companies is stated as follows by one participant.

SP-2: The profile of Turkish shipowners has changed recently. We see that Turkish shipowners are turning to larger tonnages due to the lower prices. The main reasons for this are financial support. Among the shipowners, companies that have Arab shareholders has emerged. Many Arab investors transfer their cash to Turkey due to problems in the Middle East, and incentives of Turkish government. These

investors has begun to buy ships by establishing partnerships with Turkish shipping companies. Looking at the records, the number of firms that seems Turkish but having Arab investors among their shareholders is increasing day by day. The market has also affected by that development. The government also supported the introduction of such money transfer. No tax deduction was applied to the incoming money transfer. For this reason, Turkey becoming a tax haven for foreigners. This led to an increase in the tonnage in the Turkish market.

Another participant stated that investors in many different fields can be encouraged to invest in ship investments as a shareholder and thus the financial shortage can be solved in a different way as follows.

SI-15: *Small pool structures that are well-supervised and have transparent incentive mechanisms might be reasonable. For instance, W. Shipping, which is currently operates 170 pieces of ships in Europe has many shareholders from many different segments including a church. Therefore, not only the investors holding high amount of cash but also small investors should be encouraged to invest in that business. However, structures such as the Ponzi scheme should not be allowed to do so.*

4.1.4.2. Debt Capital

The maritime transportation industry is one of the business where traditional practices are quite high and differentiates from many businesses especially due to its closed structure. The fact that it has a closed structure has an impact on many issues and directly affects the financing model to be used in investment projects. In this context, when a ship investment is on the agenda, if the financing with equity is not sufficient or if an additional financing alternative is considered, debt capital is mostly preferred among these alternatives.

Although debt capital is one of the main external sources of financing for ship investments, it is a resource that should be considered and used because of its various liabilities. In the context of inadequate external funding and uncertain expectations for commercial activities, it is useful to finance ship investments with equity as much as possible indicated by a participant as follows.

SI-20: *It is necessary to be patient and invest with the lowest possible debt ratio. Financing with 20% equity, and 80% debt is very risky and the ship could not pay its debt. In my opinion, ship investment conducted with a loan over 50% cannot easily repay its debt. During that time there will be ups and downs. If the fleet consist of ships that have not any debt and these vessels will support the new investment, the investment may be reasonable. But in a new investment, a capital of more than 50% must be included in the investment.*

Another participant stated that undertaking the debt obligation should be considered well that the maritime transport business includes a wide variety of risks and that not all things may go as planned.

SI-9: *If you consider to build a ship for \$10 million, a minimum of 30% of this amount should be financed as equity. The remaining is generally financed as a loan from the bank and it is calculated how much the ship will earn by taking into consideration today's conditions. However, when this calculation is made, it is assumed that the market will be as expected. However, there is no guarantee. Bad weather condition etc could occur. If the ship does not work for 15 days or 1 month due to such reasons, most of the freight revenues will be lost. Because whether or not the ship is operating, the ship has daily running costs.*

One participant emphasized that capital power is the most important strength of the company, otherwise the future of the company is not very bright.

SI-7: *We do not use credit for financial needs, we use 100% equity, we do what we can afford. This is our greatest strength. Because it is not something that can be bought. We had many friends and ships to form our civilian naval power. Many shipowners, who were also our friends, bankrupted due to investment disease and dependence on credit.*

Another participant emphasized that shipowners can make more comfortable and rational decisions in the absence of financial pressure as follows.

SP-3: *Turkish shipowner may be more comfortable and rational in making investment decisions unless there is financial pressure. However, in the case of having debt, the market is considered somehow pessimistic.*

Another participant stated in his own experience that in the purchasing process of the ship, if there is an additional cash as much as the price of the ship, the investment may have more positive results.

SI-19: *I never forget, one Greek shipowner told me one day: "If I bought a ship for \$1 million, there must be the same amount equal to the ship's worth to operate that ship, otherwise I would not attempt such an investment." In Europeans, especially for shipowners in Germany, this logic exists.*

During the construction of the new building ship, the currency from which the ship was financed and the region where the ship to be operated was determined as a factor affecting financial performance. One participant stated that not only the developments in the markets for international trade commodities but also developments in international money markets have an impact on the profitability of ship investments as follows.

SI-4: *There are many financial parameters. For example, if you build the ship with usd and operate the ship in Europe, the €/€ exchange rate will be important. If the €/€ rate, for example, is 1.1 when you build the ship, it will be possible to close the debt sooner. On the contrary, if this ratio increases to, for instance, 1.6 in a short time period after delivery of the ship, the debt will increase. Such volatilities can also generate profit or loss. For this reason, a "Pesimist", "Optimist" and "Realist" scenario needs to be determined and based on the bad scenario, financing modeling needs to be performed and appropriate credit is tried to be obtained accordingly.*

It will be easy for banks to direct shipowners who are known to be over-dependent on loans. As a matter of fact, under each credit, there are dozens of commitments that shipowners must comply with. When the findings obtained were examined, it was found that Turkish shipowners were also mostly guided by banks, but sometimes these guidance caused the investors to make wrong decisions. Particularly in high market conditions, there have been investors with very different profiles that are directed by the banks to the maritime market. In this context, following participants emphasized the issue as follows.

SI-15: *4-5 doctors came together and decided to open a hospital before 2008. However an expert in a bank says, "shipping is very good nowadays, you should try your chance". There has been such a misdirection, but these are individual events.*

You need to know your place. The simple rule of trade is that you need to do what you know or be in charge of. You do not have a chance being at sea. Therefore, if you do not know, the result will definitely be negative.

SI-11: *Banks brought many investors who were not involved in the maritime sector and played a major role in the bankruptcy of many of them. Car dealers, contractor etc. has invested in ships and many of them are currently bankrupted. Among these investors, there is a group that approached to the business professionally. This group gathered professionals, formed a team and then started to business. Even though they have a high break-even today, they somehow run their business. Banks tried to mislead me too. At the time, I was going to finance a \$10 million ship with 50% debt and 50% equity. However, one day they called me and said, "We have increased your limit, you can use 70% debt, and you can use 20% surplus for your other needs." However, I did not want to use this limit increase and I was right when the crisis came, I was not affected since my debt was low, but there were a lot of investors who couldn't do that.*

The reasons why banks direct investors with different profiles to the maritime transportation industry are explained by a participant as follows.

C-3: *Following the 2008 financial crisis, liquidity injections corresponds to \$12 trillion into the markets by FED (Federal Reserve System), ECB (European Central Bank), BOJ (Bank of Japan) and BOE (Bank of England) influenced asset prices, and triggered irrational investment decisions inevitably. Because this amount of money had to be sold somehow.*

A participant who previously worked in the bank and evaluated the loan demands of the sector explained the appetite of banks to give loans in times when the markets were good and the loan facilities were abundant with the following statements.

C-1: *I used to work in a foreign credit institution before and gave loans to the sector. You cannot expect the bank to act rationally. You will learn from the behavior of the bank and other stakeholders. In an environment where everyone gives credit, you will be able to sell at the high price what you have. Instead, Turkish shipowner tried to buy a ship, which the Europeans showed the same behavior. When the shipowner found cheap credit, he/she immediately began collecting ships.*

In the pre-2008 period, the market was so active that all market participants had an overly optimistic expectation of the future of the market. Due to the optimism that existed in banks, very large amounts of credit were used in financial conditions, especially in ship investments. If the expectations for the future of the market were not good, the fact that it would not be possible to find loans was expressed by one participant as follows.

SI-8: *No one could foresee this sharp decline, and if it had been foreseen, no shipowner would have found a loan. Foreign banks were calling us and proposing “we have approved a \$10 million loan for you and in which project would you like to use that amount?” Banks also encouraged mistakes. Of course, it would be attractive if someone lent you a favorable loan for your current business. That is why foreign banks are wiping out a lot of debt in their portfolio at this time.*

At the time when the loan was abundant, the banks were giving loans to everybody. However, one of the participants stated that it is not right for banks to close their credit taps and not to give credit to the people who need credit in this bad market condition.

SP-2: *The only external sources used for ship investments is bank loans for Turkish shipowners, but access to credit is very difficult today. However, even an ordinary person could buy a ship before 2008. I think the current attitude of the banks is wrong. Banks were so influenced because they do not know the business. First of all, the loan should be project-based. It is actually the best time for banks to give loans today. Of course, you will not give the loan to anyone who wants to invest in any ship. Loan can be given to those who secured a cargo, who have a contract, local projects etc. However, if a shipowner apply for a loan without any project, he/she is the one whom the banks should keep away.*

It is highlighted below by a participant that access to bank loans, which are frequently used to meet financing needs, is no longer as easy as before, and apart from ships, land assets are also required as mortgages by the banks.

SI-6: *Nowadays it is very difficult to invest in ships. Today, the most favorable interest rates of credits are around 7-8%. However, we could use credit with 2% interest rate before. However, banks in Turkey demand 10% interest rates for USD credits today and also they do not give this loan to everyone, they also want a mortgage*

on land. They all came to us when the market was good, but they do not give umbrellas in rainy weather. They have had a very bad experience, so today they are cautious. If you are going to get \$5 million credit, the banks want a \$15 million mortgage. It is wrong for me to pay that much interest to get another ship.

The reasons why banks want mortgage land assets in addition to the ship are explained by a participant with the example given below.

SI-1: Banks are smarter now. They are now asking for the lightship (the actual weight of the ship's iron components). Today, a 4.000-dwt 2000 model German or Dutch built, box-shaped double skin ship is worth €2,5-3 million today. Its lightship is up to 1300-1400 tons. Today the scrap value is \$400-420 per ton in India, while in Turkey is around \$280. If you deliver it to Aliğa, the ship will be 1400 tons x \$280 = \$392.000. The bank now accepts this value. That is the real value of the ship for the bank.

In an environment where obtaining credit from the bank is so difficult, a shipowner who follows a different strategy to finance ships with the loan from the bank shared his experience as follows.

SI-1: Before 2015, no bank gave us credit. We contacted with the participation bank and took over an existing loan of a shipowner who was about to bankrupt. At that time we bought two ships and the market value of those two ships at that time was around \$2,7-2,8 million. However, I took over a debt of \$3,47 million. My partner refused at first, and said “Why are we paying extra \$600.000 for two ships?” I told him that we did not buy ships, we bought doing business with the bank. The extra \$600.000 we paid can be thought as a fee to reach to the credits to be provided by the bank in the future. Although at first my partner was very violent, he later thanked me. There was no door we did not knock. All banks wanted a mortgage. But I would have done what I could if I had the chance. The debt was taken over from the bank on condition that the loan channel was kept open if the debt was paid. I paid the debt in 2 years, then kept the limit open and used another credit.

4.1.4.3. Government Incentives

Apart from equity capital and debt capital, government incentives are one of the main pillars of the maritime transportation industry. Since the countries consider the maritime transportation as a strategic issue, many different countries have supported the industry in many different ways so far. Of course, financial support under appropriate conditions is undoubtedly the leading one. A participant asserted that Turkish shipowner has limited ability to perform on his own due to the limited financial resources to compete with shipowners from countries where the strategic importance of the maritime sector is known and therefore incentives could be provided under favorable conditions as follows.

SI-1: *When we look at the other side of the coin, a ship owner has not been trained, no one has directed. The state has left unattended, and say, "Do whatever you do." On the other side, there are giants providing 10 years credit including 3-year nonrecourse loan to the project provider. There is no such opportunity here.*

Shipbuilding industry is one of the most important industries for Far East countries especially for China, Japan and South Korea. Therefore, there has been very different government incentives to support the industry. After the 2008 crisis, incentives given through the shipyards in order to keep the industry alive attracted the attention of everyone from any nationality. This was stated by a participant as follows.

C-3: *The attractiveness of loans and incentives brought the idea of a market revival and increased investments accordingly. There were also similar situations in the West. Contrary to the investment theory, the fact that some shipyards were able to build ships in favorable conditions with the support of the government increased the risk appetite. Western shipowners also participated in this trend, thereby deforming the debt-to-equity ratio.*

Turkey has also given incentives in many areas until today in maritime transport, though, most of the time these incentives was either inadequate or could be used by only a certain segment. One of the past incentives was the loans granted by the government at that time in favorable conditions in the 1980s. One participant used the following statements regarding this issue.

SI-2: *At that time, our shipowners, who were transporting with small metal boats, were trying to generate revenue from the ships converted from ships of different characteristics due to insufficient sources. When incentives began to be granted, everyone applied. These credits began to be granted in 1982, and ended in 1984. For example, total building cost, including credit costs, of our ship M/V K.I. was 604 million TL, that is, about \$2 million. It could have been cheaper if we did not use credit. At that time, it was enough to have 10-15% equity. The remaining amount was given by the Turkish Maritime Bank as a loan. However, the loan would not be given at once. Credits were released piece by piece in exchange for the collateral of the part of the ship built so far with the expertise audits conducted in 3-5 months periods.*

Similarly, although an incentive program for renewing the aged coaster fleet called "Coaster Renewal Project" is on the agenda today, many participants have stated that this project is not the expected type. A participant involved in this project emphasized the details and importance of this project as follows.

SI-19: *The contract signed in the time of the last Prime Minister did not come into force. This may have political reasons. I think our culture has not developed yet to come together and produce something. 51% of the company is owned by the state and the remaining 49% is owned by the shipowners. This company has 18 partners and I am one of them. The fact that it has not been activated so far does not mean it will not. I think that the coaster renewal project can be revived with a joint working group of experts. It can be started by interviewing the state again. This is a project that requires serious financial power. On one side, it is impossible to achieve success without our domestic industrialists and our state. Everyone has to do their part. It is necessary to put aside daily political or conflicts of interest and see this as a national project. The sector and society need it.*

A participant, one of the partners of this project, which was prepared on the basis that the state is a shareholder with majority shares, tried to explain the benefits of this project as an example as follows.

SI-2: *In this project, majority want to use the incentive system in the 1980s, but the ministry approved the partnership structure. The partnership structure needs to be understood well. We can explain this with an example. Imagine a ship that cost \$8,5 million. 49% of the amount required for the construction of this ship will be provided*

by the state and the remaining 51% by the investor. Therefore, the amount to be paid as an investor is \$4,3 million. 10-15% of this amount will be financed by the company's equity and the remaining 35-40% will be financed by bank loan. Even the interest of this loan will be paid by the state. From this point of view, is it more logical to finance a ship with a cost of \$8,5 million with 10% equity capital, 90% bank loan, or the model given above? Of course, the above alternative would be more rational. Let's say the bank gives a 6-year term loan. In 6 years it will be necessary to answer the question whether this ship can pay back \$3,87 million. When the market is analyzed under different conditions, it will be seen that this amount can be paid. After this payment is completed, the government's share of the remaining \$4,2 million will be repaid. Taking into account that this partnership will not last forever and the value of the ship will be relatively lower after 6 years in comparison today's condition, the government's share can be repaid in a longer term (e.g. 10 years) and without interest. The government should approach it positively because it is not for profit. Since the payment will be made in usd, it is enough for the government to take back the amount paid. In this model, a certain amount can be considered as a grant. Since the aim is to support the sector, it is natural to have such grants. As a result, this can be terminated with a projection of 15-16 years.

Although the model mentioned seems logical, it has not been able to meet the expectations of the market participants. In this respect, it can be said that there is resistance against the partnership of the state. One participant stated what kind of model is expected with the following statement.

SI-7: *The Netherlands returns to the coaster segment. This is a big threat for us. They will be able to operate their ships in the areas where we substantially work. 30% of the shipbuilding price can be provided in addition to the state grants over grt and equity capital, and scrap revenue to be obtained from the existing old ship. The remaining 70% can be financed with long-term debt, which includes facilities compared with the current market conditions. This is how it works. The Dutch do better in better conditions. It is a strategic issue.*

The reason of resistance was linked to the lack of partnership logic in the sector. It was claimed that majority reject this model because of the fear of losing control on their ship.

SI-2: *There is a large group of shipowners who do not adopt partnership with the state and think, "Why do I do this job if I will not be the owner of the ship?" Unfortunately, we could not capture the spirit of acting together. We do not have the idea of putting capital like European shipowners and looking at the profit yet. We have the ego, and that ego is control-oriented. When it is "I" focused, it reaches different points. Everyone has the logic of saying "my ship".*

Another participant proposed a different model for improving and increasing the coaster supply power as follows.

C-3: *If the main objective is the renewal of an aging fleet, the government would purchase ships, with the option of establishing a controlling company and buying them on a bareboat basis, that these ships could be chartered to the shipowners, that they could generate a fleet in this way and dispose of the ships with at least 50% profit within 1 year. Today when the asset fund was established, I stated that this model could work. I said that the shipowner would buy the ship from the state when the market rises and starts making money. As a state, the main purpose is not to make money, but to develop the fleet. For this reason, instead of providing support to a certain segment, it is more beneficial and sustainable to present it under one controlling company. In fact, such a model can be created so that the established company can go public and investors from the public can be involved. This motivation will make maritime transportation industry ready to receive funds from the capital markets. But this is not easy, as capital markets require transparency.*

4.1.5. External Environment

4.1.5.1. Political Developments

Political developments around the world can directly affect global business activities. The outlook for global commercial activities can also directly affect the supply-demand balance in maritime trade. One participant used the following statements regarding this issue.

A-1: *Following the election of US President Donald Trump in November 2016, a positive atmosphere has emerged in maritime transport following the promise on*

increasing infrastructure investments. This positive weather can spread to the entire sector instantly. Therefore, it can be said that there is a reflection of world trade to maritime trade, and if this reflection is accepted positively in the market, it is a row for shipowners to update their ship investment decisions and turn to investment.

Considering that coaster transport is mainly carried out in the Black Sea, Mediterranean and Continent region, political developments in this region may also directly affect the coaster market. For example, the developments on Arab Spring as well as the political tensions between Russia-Turkey and the Russia-Ukraine are examples in this regard. This was stated by a participant with the following words.

A-2a: *Ship investments are directly affected by global developments. Coaster ships can also be directly affected by regional developments. Even if the global maritime markets are good, the Russian-Ukrainian tension and the political developments in the Arab countries directly affect the coaster market. This situation may affect the coaster investments negatively if it is continuous. The opposite is also possible. While everything in the world is bad, the coaster market can be positively affected if there is a positive weather in the region.*

Due to political tensions, the impact of national economies in the region can also directly affect trade and demand for ships in the region. This was stated by a participant as follows.

C-1: *As usd/try and usd/rub exchange rates rose abnormally, trade in the region was also negatively affected and freight revenues hit the bottom. The decline has continued since April 2018. As a matter of fact, many shipowners have reduced their ship prices by \$300.000-400.000.*

The war environment on our southern border has recently been tried to be solved through diplomatic means. One participant emphasized that one way or another peace will be ensured and then restructuring will be required. It was stated that maritime trade will revive and coaster investments will increase in the restructuring process with the following words.

C-3: *The tension in the region will also end with a compromise. The most important obstacle is political uncertainty. The important thing is when the compromise will take place. Then the commercial life will resume in some way. It looks like small states will be formed in the region and spending will be doubled. All*

necessities will have to be carried in small size ships. This may have an encouraging effect on coaster ship investments.

However, it was stated by a participant that the investors do not have enough motivation to move towards ship investments in an environment where political uncertainties are quite high and uncertainty is so high.

SP-2: *I do not think anyone can read and take risks in a market where uncertainty prevails. Political developments reach different dimensions every day, so nobody can predict anything.*

4.1.5.2. Legal Developments

IMO (International Maritime Organization), specialized agency of the United Nations, is responsible for increasing the safety and security of international maritime transport and preventing marine pollution from ships. In order to fulfill its responsibility, it has made important decisions in the evolution of maritime transport throughout history and has put into effect numerous conventions for the implementation of these decisions. While such conventions are undoubtedly necessary for sustainable maritime trade, they can be harsh for shipowners who earn profit from this business. In order to comply with such rules that directly affect the current supply, investments are required either in the modernization of existing ships or in the form of new building ship orders. Although it is not possible to directly control the entry to the maritime transport sector where free market conditions apply, it is possible to try to control the supply through regulatory measures such as IMO conventions. As regards IMO conventions, one participant used the following statements.

C-3: *In the maritime sector where free market conditions apply, it is not possible to control market entrances. Therefore, IMO began to increase regulatory measures to reduce the amount of supply available. In doing so, however, the applicability of the changes has not been tested, but rather hastily put into effect. There will probably be a large number of ships that will not be able to comply with the regulations starting as of 2020. If expensive fuel is consumed for the ship with a market value of \$1 million, it does not seem possible to compete in the market. When the difference between MGO and IFO is calculated to be \$100 per day, an additional cost*

of \$500 per day arises for a 3.000 dwt vessel with a daily fuel consumption of 5 tonnes. For a ship with a daily RC of \$1.800, an additional \$500 cost increase is an important factor. In this case, the cargo in the secondary category will have to be taken into consideration.

The eco-modern ships, which will become a legal necessity, can be a threat to Turkish shipowners who have difficulty in keeping up with the changing paradigm and finding financial resources. This was stated by a participant with the following words.

A-2b: *In addition to political developments, technological developments directly affect the supply. Due to the advancement of technology, eco-design ships become a legal necessity rather than a preference and require adaptation to these developments. For this purpose, either existing vessels should be equipped with the necessary equipment or new building vessels with such equipment should be preferred. However, both situations present problems for Turkish ship investors in today's conditions where financing opportunities are limited. Ships that fail to fulfill the requirements will be obliged to be scrapped and this will negatively affect the Turkish-owned merchant fleet.*

4.1.5.3. Technological Developments

Rapidly developing technology has caused the change of existing paradigms in almost all businesses. The maritime transportation has also received its share from the developments in technology. One participant expressed the reflections of technological developments on maritime transport as follows.

SI-4: *Just as technology is advancing on cars, so does the ships. Twenty years ago, 80-90 HP was obtained from a car with a 1.600 cc engine, and today up to 200 HP is available from a car with the same size engine. Moreover, fuel costs also began to fall. Operating costs of high-tech vessels can also be high. However, it is also beneficial to focus on cumulative gains and values.*

Technology is moving so fast that today's top technology can become obsolete tomorrow. This was stated by one participant as follows.

SI-19: *Technology is moving so fast that it is not possible to predict what will happen from today to tomorrow. 10 years ago, there was no scrubber problem on ships*

built at very high amounts. A vessel equipped according to the technology at that time will fall to scrap value in 2020 if the necessary revisions are not made. This was not predictable 10 years ago. Therefore, it is not possible to predict 10 years from now. Nevertheless, we know that ships that are more sensitive to the environment, economic and leave little work to the operator will always be preferred.

It was stated by a participant that the technological developments had a greater effect on large tonnage ships compared to the small tonnage ships as follows.

SP-2: *The shipowner is more or less able to estimate earnings on small tonnage ships. Therefore, ships with a carrying capacity of 2.000 dwt and above have the perception that they can be operated even if they generate a loss. However, there is not the same perception for the big tonnage ships. There are many new building ships of big tonnage segments, and more than that, eco-design ships are accessible. While the average fuel consumption of the 30.000 dwt conventional ship is 21-22 tonnes of IFO, eco-design vessels up to 65.000 dwt can burn 13-14 tonnes of IFO at economical speed due to machine characteristics. Therefore, emission levels remain low. In addition, these ships have many pros, for instance they are able to work in the Arctic Ocean and so on.*

As a result of technological breakthroughs such as Industry 4.0, it is emphasized that coasters will come to the fore in transporting such products in a short distance when Europe will be able to produce the products it needs cheaper.

SI-17: *As a result of developments such as Industry 4.0, Europe will no longer need countries such as China to supply their needs, as it can now produce its own goods cheaper. Therefore, the coasters are expected to be preferred more in order to make short-distance transports.*

It was emphasized by the same participant that the European shipowners sold their old ships and turned to eco-modern ships, which are able to transport all kinds of cargo.

SI-17: *According to the information we received from S&P brokers, European shipowners have sold their ships and began to order new buildings that are small tonnage, more modern, better responding to the conditions of the day, faster and economical in terms of fuel consumption. Not only in Turkey, there is a slowdown in*

the world economy. As the economy in the region is shrinking, it will be possible to transport cargo with smaller tonnage ships instead of large tonnage ships.

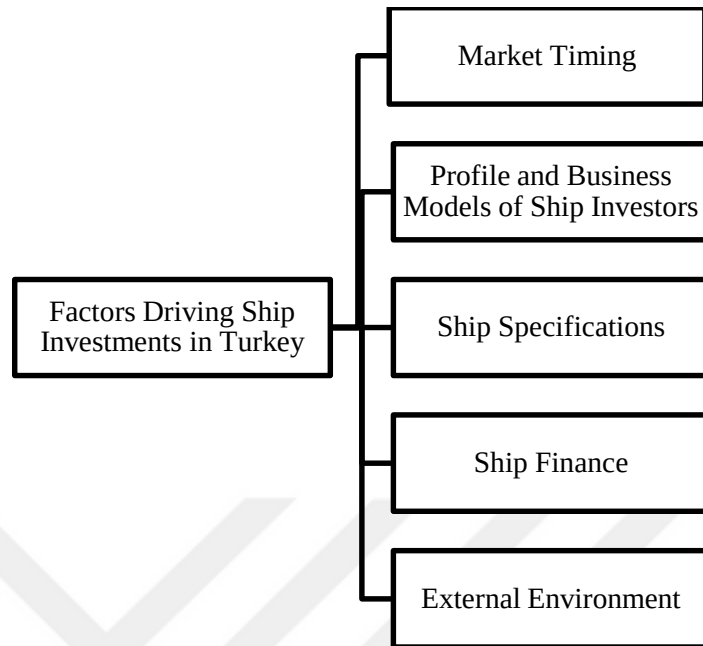
Another participant expressed what kind of ships could come to the fore in the future.

SI-2: *Ships with a design that can be integrated into the possible regulations will be in the foreground in the future. We even expect autonomous ships to be on the agenda more often. Maybe the type of fuel consumed by the ships will change in the future, and all will return to LNG. According to these predictions, it is necessary to take measures today.*

4.2. DISCUSSION OF THE FINDINGS

Participants' views related to the factors that drive the ship investments in Turkey were descriptively analyzed and examined under specific themes in the previous section. In data analysis process, the factors that cannot be explained by rational patterns were classified by the behavioral biases in the behavioral finance literature. Factors affecting ship investments in Turkey in terms of the findings of this dissertation were illustrated in Figure 36. These factors are “Market Timing”, “Profile and Business Models of Ship Investors”, “Ship Specifications”, “Ship Finance”, and “External Environment”.

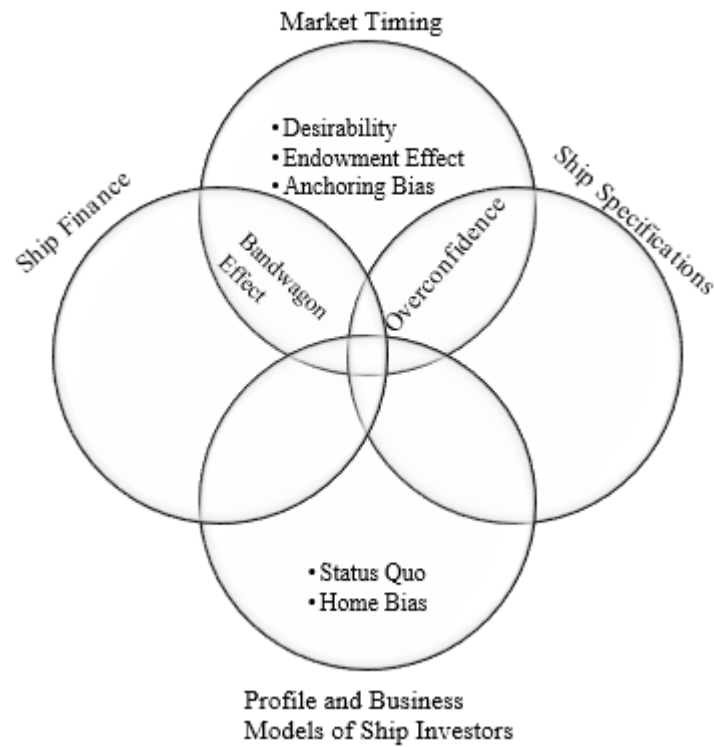
Figure 36: Factors Driving Ship Investments in Turkey



Source: Author's own illustration

Each of the factors that were found to drive the ship investments in Turkey are divided into sub-themes in itself. The second research question of this research was also searched with these sub-themes. When the factors illustrated above are examined in detail, some behavioral biases that cannot be explained by rational investment patterns and which can be explained within the context of behavioral finance have been determined in accordance with the factors driving ship investments in Turkey in this dissertation. Overconfidence and bandwagon effect emerged among the detected biases and when the roots of these biases were examined, it was found that multiple factors came to the fore. Accordingly, Figure 37 has been prepared for a better understanding of the situation.

Figure 37: Behavioral Biases in Ship Investments in Turkey

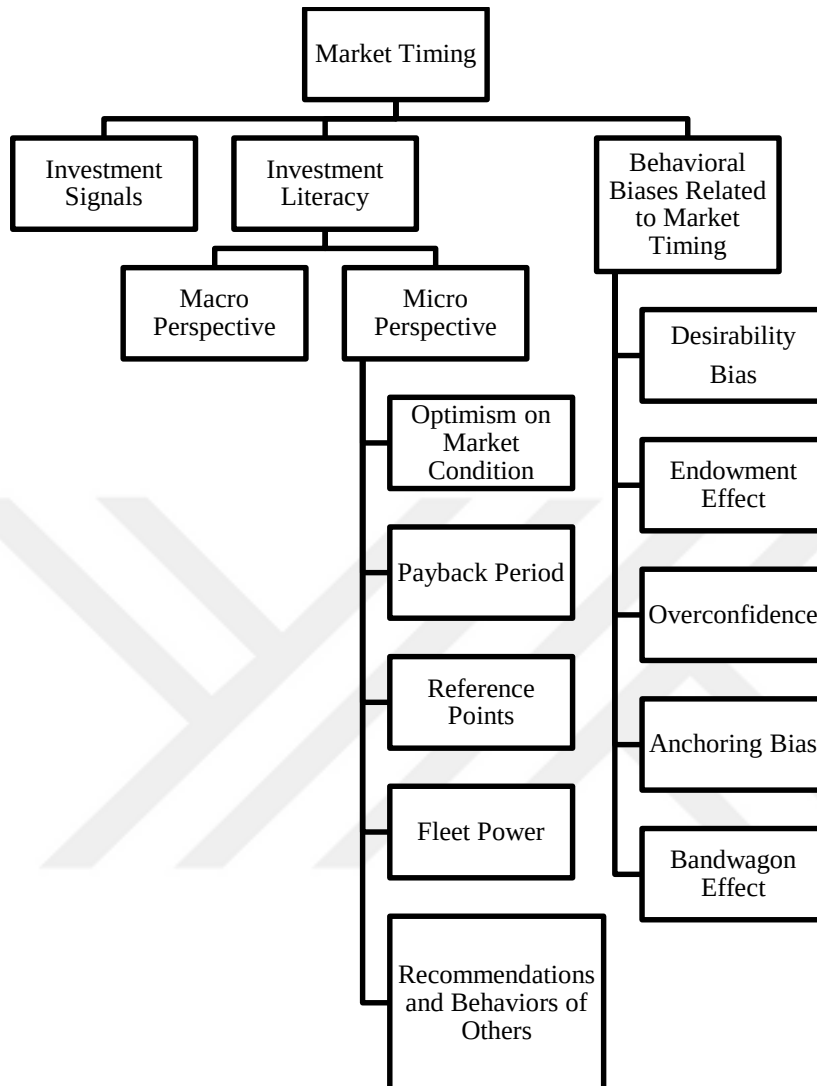


Source: Author's own illustration

4.2.1. Market Timing

Market timing, among the factors found, is explained with three sub-themes as “Investment Signals”, “Investment Literacy” and “Behavioral Biases” as shown in Figure 38. Among these themes, investment literacy is explained from macro and micro perspective. Investment literacy from micro perspective is described under five sub-themes as “Optimism on Market Condition”, “Payback Period”, “Reference Points”, Fleet Power” and “Recommendations and Behaviors of Others”. On the other hand, behavioral biases based on market timing are found as “Desirability Bias”, “Endowment Effect”, “Overconfidence”, “Anchoring Bias” and “Bandwagon Effect”

Figure 38: Market Timing in Ship Investments in Turkey



Source: Author's own illustration

The findings of this dissertation on the importance of ability to read the market and taking necessary actions at the right times in ship investments is consistent with the previous studies. As emphasized by Alizadeh and Nomikos (2006), timing is vital in maritime transportation industry in which cyclicity and competition are high. Chiste and van Vuuren (2014) also emphasized that it is possible to obtain high returns from investments should cyclicity of the shipping markets is comprehended thoroughly. As a matter of fact, when the results of the model developed and tested by Alizadeh and Nomikos (2007) are considered, it is emphasized that it is necessary to understand the relationship between second hand ship prices and freight earnings by estimating price formations of second hand ships and making investment decisions at

the right time. Scarsi (2007) also emphasized the importance of timing indicating that ship investors with lower break-even points collect higher earnings in peak market condition and survive longer in bad market condition than the competitors with high break-even points. In summary, market timing that is the ability to read the market and to collect high-level commercial and technical up-to-date data is essential for achieving effectiveness of ship investments.

It is important to invest in considering certain price formations. Many studies found a weak form of efficiency in the dry bulk maritime transportation industry (e.g. Kavussanos and Alizadeh, 2002; Glen, 1997; Hale and Vanags, 1992). Therefore, since there are time-based risk premiums and arbitrage opportunities in the market, where ship prices consistently deviate from their fundamental values, huge profits could be collected by implementing trading strategies based on market timing.

Although many participants emphasized the importance of market timing in ship investment decisions in Turkey, they argued that the current situation of the market and developments in the market directly affected the psychology of the investors and accordingly their perceptions. Therefore, ships may be sold at the time of purchase or may be purchased at the time of sale. Such behaviors may adversely affect asset pricing in the market. In this context, De Bondt and Thaler (1985) suggested that market developments could trigger short-term thinking. The positive developments may lead to an increase in investments due to excessive optimism and consequently excessive pricing of assets. On the contrary, unexpected developments may cause asset prices to fall well below normal in the short term.

On the other hand, Wright (2005) emphasized that both the market fundamentals and market sentiment affect the prices of second-hand ships, but that the price formations of second-hand ships are explained by market fundamentals in the short term. This is consistent with Evans (1994). According to Evans (1994), there is a perfect competition in the bulk market in the short term due to the excellent flow of information between the parties. In other words, the increase in freight rates directly reflects the increase in demand or the decrease in supply, and vice versa in the short term.

As indicated by Evans (1984), DCF analysis is traditionally used for the evaluation of maritime investment alternatives for a long time. Recently, ship

investment alternatives have been evaluated from different perspectives, such as Multi-Criteria Decision-Making (Rousos and Lee, 2012; Clintwoth et al., 2018) and Real Option Analysis (ROA) in which the uncertainty is taken into account steps forward in this regard (e.g. Dikos and Markus, 2003; Bendall and Stent, 2003; 2005). It is found that ROA is more robust and has advantages over traditional DCF analysis (Yin et al., 2018; Bendall and Stent, 2003). On the other hand, the findings of this dissertation reveal that price/earnings ratio is used to determine payback period of investment. The fact that ship investors generally consider price/earnings ratio while evaluating ship investment alternatives is also asserted by Alizadeh and Nomikos (2006, 2007). Therefore, the findings are consistent with the current literature.

Coaster investment valuation in Turkey was determined to take into account the payback period mainly as highlighted above. In this context, in cases where the ship is to be financed by debt, the maturity of the debt is considered as a benchmark and compared with the expected payback period and the decisions are shaped accordingly. In the current literature, any study that addresses this situation has not been reached and this finding can be tested and discussed by considering both qualitative and quantitative approaches in different scopes.

Although ship investments are rational in cases where the market is bad, it was emphasized by the participants that negative cash flow should be subsidized if part of the investment is financed by debt, as revenues will be low in such market conditions. Accordingly, the losses to be incurred should be estimated in advance and investment should be carried out in accordance with the existing fleet power. Regardless of how good the conditions are, it is difficult to make a strategic decision such as ship investment for shipowners whose fleet power is not sufficient. In addition, demand for ships will increase in high market conditions, so does the ship prices. Although the sale of an asset is a rational behavior in high price formations, the number of ships in the fleet must be sufficient to ensure that the current business is not damaged. However, as emphasized by the participants, Turkish coaster fleet per company is approximately 1,5 and investments are postponed due to the possibility of disrupting the existing business even if the appropriate price levels are achieved. When the current literature is examined, no studies emphasizing the effect of fleet power in ship investments have been reached. Therefore, this finding can be tested under different

conditions, either quantitatively or qualitatively, and contribution could be provided to the literature.

4.2.1.1. Behavioral Biases Related to Market Timing

4.2.1.1.1. Desirability Bias

In the case of high market conditions, market participants have extreme earnings and consequently there is an optimistic atmosphere. As asserted by Shiller (2000), a particular period of peak market is driven by irrational exuberance of the market participants. One of the findings on market timing is the optimism, which emerges because of high market conditions, generates expectations that demand for maritime transport is higher than it is, and that the markets will remain the same or rise further and this accelerates ship investments. This is consistent with the findings of Bulut et al. (2013) that new building or second hand ship investments are conducted during booms in which the ship prices are extremely high; Greenwood and Hanson (2015) that firms overestimate demand for shipping services and invest more in high market conditions and the actions of the competitors are undervalued; and Scarsi (2007) that investors in maritime transportation industry substantially ignore or undervalue market trends by taking into account their intuition.

In addition to the high freight earnings, high capital gains obtained from the sale and purchase of the ships within the scope of “asset play” also attract investors. Although the ship investments in Turkey based on asset play strategy is not common, the findings of Alizadeh and Nomikos (2003) support the case that the investors have a tendency to invest more in case of high capital gains in ship sale and purchase market.

Increases in ship investments due to over optimistic expectations in the high market environment have been observed not only in the new entrants in the maritime transportation industry, but also in experienced shipowners operating in the industry for many years. This can be explained by the “Zero Memory” phenomenon proposed by Zannetos (1966). As a matter of fact, no matter how experienced the investors are, it is observed that the fact that the market is cyclical has been ignored and that ship investments have increased or the overvalued assets have not been sold.

When the commercial activities shaped according to global and regional developments are taken into consideration, it is seen that the demand for maritime transport has derived demand structure. Therefore, it is highly probable to see sudden ups and downs in the maritime transport market where cyclicity prevails. As emphasized by Chiste and van Vuuren (2014), the period of 1869-2002 was examined in the maritime industry, and found that there were 15 cycles and the duration of peak to peak cycles were 7,1 years with a standard deviation of 2,3 years (Chiste and van Vuuren, 2014: 1-2). Given this fact, the assumption that high markets will remain high in excess of optimistic expectations cannot be explained by rational behavior patterns. However, when the findings were taken into consideration, the following facts were emphasized by the participants (e.g. C-2b: 143, SI-2: 143-144, SI-15: 144, SP-3: 145, SI-20: 149, SI-5:151) due to the extreme optimism that high market conditions would continue.

- Ships are purchased from high prices
- Assets are not sold despite high prices in the market
- Both relevant and irrelevant investors with maritime business to enter the sector with the idea of receiving shares from high earnings

This may be explained by the over-optimistic approach of the decision-maker to events or results according to the desires and wishes, and this can be explained by the behavioral bias expressed in the literature as “desirability bias”. Desirability bias, which is defined as the tendency to be over-optimistic in evaluating the probability of desired outcomes, also known in the literature as wishful thinking (Hogarth, 1987) or outcome bias (Cohen and Wallsten, 1992), first came forward as a bias emphasized by McGregor (1938) (Olsen, 1997: 65-66).

4.2.1.1.2. Endowment Effect

Asset management requires that assets be purchased at a lower price when the conditions in the market are appropriate and sold when the asset reaches a higher price level. In addition, if the required working capital is high in order to operate the asset in accordance with its purpose, it must also be sold in suitable conditions. In this respect, one of the points emphasized by the participants is that since Turkish coaster

owners are directly involved in the operation activities and their ships carry the names of the people they care, an emotional connection between the owner and the ship exists (e.g. SI-1: 132, C-3: 133, SP-2: 134, SI-14: 173). From this point of view, there is great resistance to the sale of ships, even under favorable conditions. Especially the ships operated by the old generation shipowners, the emotional connection may occur between the owner and the ship that has the names of mother, sister, spouse etc. Accordingly, it will be difficult to sell the ship. This can be explained by the behavioral bias known as “endowment effect” in the literature. The endowment effect is a bias in which people value their assets more than those that are equivalent or better options (Kahneman et al. 1991: 194). In this case, the opportunity cost is considerably low (Thaler, 1980: 39). The reason why the asset is valued more than it is, that it might be acquired from someone who is valued, be obtained at the end of a laborable process etc. However, holding an asset that is over-valued can cause great harm to its owner. As indicated by Duru (2016), opportunity costs are undervalued by the ship investors, and the reason behind endowment effect in ship investments in Turkey could be explained in this context.

4.2.1.1.3. Anchoring Bias

Individuals need a reference point in order to make a decision in case of uncertainty. A reference point is a basic position that is anchored in order to evaluate a position or change (Tversky and Kahreman, 1974:1128-1129). The reference point and anchoring process is a cognitive rule considering the basic elements of prospect theory of Kahneman and Tversky (1979). Tversky and Kahneman (1974) defined “anchoring bias” as a situation in which the known previous value of a variable is considered as a reference for estimation future value of the same variable. Wright and Anderson (1989) emphasized that the anchoring has a major role on investors' decision-making processes. Past experiences and present observations are often used to determine the reference. When people are asked to make any predictions, often imaginable figures are the mainstay and a downward or upward prediction is made accordingly (Baker and Nofsinger, 2002: 106-107). One of the most common phenomena in investments is shaping their investments by considering certain levels

of investors as a reference and comparing them with current price formations. The highest price is also a reference point for the investor (Baker and Wurgler, 2011: 64).

According to the statements of the participants, there is evidence that anchoring bias in ship investments in Turkey have been identified. Especially after the 2008 global financial crisis, prices of new building and second hand ships have decreased sharply. It was emphasized by many participants that there were many investors, who anchored the extreme freight levels and ship prices before 2008, tend to invest in ships with an opportunity perception when they consider the previous price formations as a reference and compare them with the current price levels (e.g. SP-3: 156, SI-4:156). However, the market has not reached to the desired levels due to the lack of improvement in demand side and the excess supply due to the delivery of many pre-crisis ship orders. Ship prices have fallen further.

The anchoring bias arises in the comparison of the current prices of second hand and new building ships as well as in the comparison of past and present price formations of the ships. It has been emphasized by many participants that the present price of a second-hand ship is taken as a reference and compared with the current cost of a new building ship and the second-hand ships are preferred as a result of the comparison (e.g. SI-9: 154, SI-12: 156-157). Although it is perceived as an advantageous situation in the short term, technological advances reveals and new IMO conventions come into force as time goes by. Considering these factors, investing in a ship with relatively old technology can have consequences that will adversely affect financial and operational performance in the medium and long term. Therefore, profitability can be directly affected.

As is now the case, the finding that investing in second-hand ships rather than new building ships in bad market conditions would be more logical decision, contradicts with the literature. More specifically, Merikas et al. (2008) examined the optimal time of investing new building and second hand ships, and according to the findings, second hand ship investment is more logical during boom times to meet demand, whereas new building ship investments would be more logical in bad market conditions as a result of optimistic expectations on the future. In summary, the anchoring bias in ship investments in Turkey has been found in following situations.

- Anchoring to the highest ship price formations in the past and comparison with current ship prices
- Anchoring to second hand ship prices under current market conditions and comparison with the cost of new building ship

4.2.1.1.4. Overconfidence

Studies show that investors are overconfident on their ability to invest (e.g. Daniel et al., 1998; Barber and Odean, 2000; Gervais and Odean, 2001; Statman et al., 2006). Basically, overconfidence can be defined as overvaluation in one's intuitive reasoning, judgment and cognitive abilities (Pompian, 2006: 51). Investment is a challenging process that includes collecting information, analyzing the information obtained and making decisions based on this information. However, overconfidence causes to misinterpret the accuracy of the information and exaggerate the ability of decision maker to analyze information.

Coaster market is situated in the center of maritime transport in Turkey. Considering that there is a centralized decision-making mechanism in the market, one of the main issues emphasized by the participants is that the decision makers assume their ability to read the market and invest more than they actually do and shape the investments according to their cognitive capacity (e.g. SI-19: 138, SI-3: 168). This is consistent with Duru (2013), suggesting that investors behave impatiently with overconfidence and optimistic expectations about the timing of investment, especially in the high liquidity environment, and that historical evidence requires otherwise.

It was emphasized that ship investments made without any feasibility studies were quite high especially in terms of investment literacy from micro and macro perspective. It is not possible to explain this behavior of the coaster owners, who are searching for cargo to be carried with the purchased ship instead of investing in ships according to the secured cargo, with rational patterns (e.g. SI-4: 141-142). From this point of view, overconfidence stands out in explaining such behaviors.

The facts emerged in ship investments in Turkey and could be explained through overconfidence bias are found as follows.

- Investing in ships without necessary feasibility examinations before ship investment and rely on knowledge and experience of investor.
- Instead of buying ships according to secured cargo, investing in ships according to a certain budget and then looking for cargo as if opening a shop in the middle of the sea for unknown customers.

4.2.1.1.5. Bandwagon Effect

Bandwagon effect can be defined as a tendency to exhibit similar behaviors or to believe in similar thoughts just because a majority make or believe it (McAllister and Studlar, 1991: 721; Winkler and Moser, 2016: 69). “Bandwagon” is a term that often used in political sciences, and it refers to the fact that people vote for a candidate who appears to have more popular support (Morton et al., 2015: 76). The 19th century U.S. political election campaigns was often based on a wagon on which the candidate's followers are involved to drum up support and voters who are affected by increasing participation could hop on the wagon regardless of their opinion (Marsh, 1985: 51).

The adoption of a particular behavior or thought without any questioning process just because others are making or thinking is also a prominent factor in shaping investment decisions. It is especially one of the most popular topics in behavioral finance literature, known as “herding”. An investor who is devoted to the herding ignores their knowledge, experience and beliefs and shapes their decisions by taking into consideration the behavior of other participants in the market (Christie and Huang, 1995: 31). Nofsinger and Sias (1999) defined herding as a certain group of investors in the same direction for a certain period of time. In other words, following investors who are similar in terms of investment alternatives and information sets (Nofsinger and Sias 1999: 2263). As an asset gains value, it attracts the attention of other investors and demand for the asset increases. The higher the demand, the higher the price of the asset, and inevitably the market bubble will occur (Ljungqvist and Wilhelm, 2003: 723; Stone and Ziemba, 1993: 161-163).

Hampton (1991) asserted that behaviors of investors towards change in prices cause up and down trends in shipping business since the decision makers follow the others instead of considering objective facts. Existence of herding is emphasized by

Duru (2013) in shipping business indicating that majority of the ship investors have a tendency to be in line with the preferences of other participants, in their ship investments.

The fundamentals underlying herding could be the use of homogeneous information (Bikhchandani et al. 1992), avoiding information collection and analysis or avoiding the risks related to deviant behaviors (Clark and Oswald, 1998). Papapostolou et al. (2017) associated the unintentional herding in ship ordering and scrapping decisions with the common characteristics, such as their analytical skills and academic background of ship owners.

The fact that a behavior or thinking is adopted just because it is believed or applied by the majority, have been identified as an emerging phenomenon in ship investments in Turkey (e.g. SI-7: 137, SI-4: 148-149, SI-20: 161, SI-10: 161). Bandwagon effect stands out among other behavioral biases in explaining such behaviors.

- Shaping ship investment decisions according to people's views and behaviors
- Shaping ship investment decisions according to the behavior of shipowners of maritime nations such as Greece, the Netherlands, Denmark, Germany etc.

Herding can be observed for various reasons and not every herding can be defined as irrational (Frömmel, 2013: 427, Özsu, 2015: 8). That is, as a result of rational investor behavior, herding may occur. Devenow and Welch (1996) have divided the forces that lead to herding into three types which are information-based, reputational-based, and compensation-based herding.

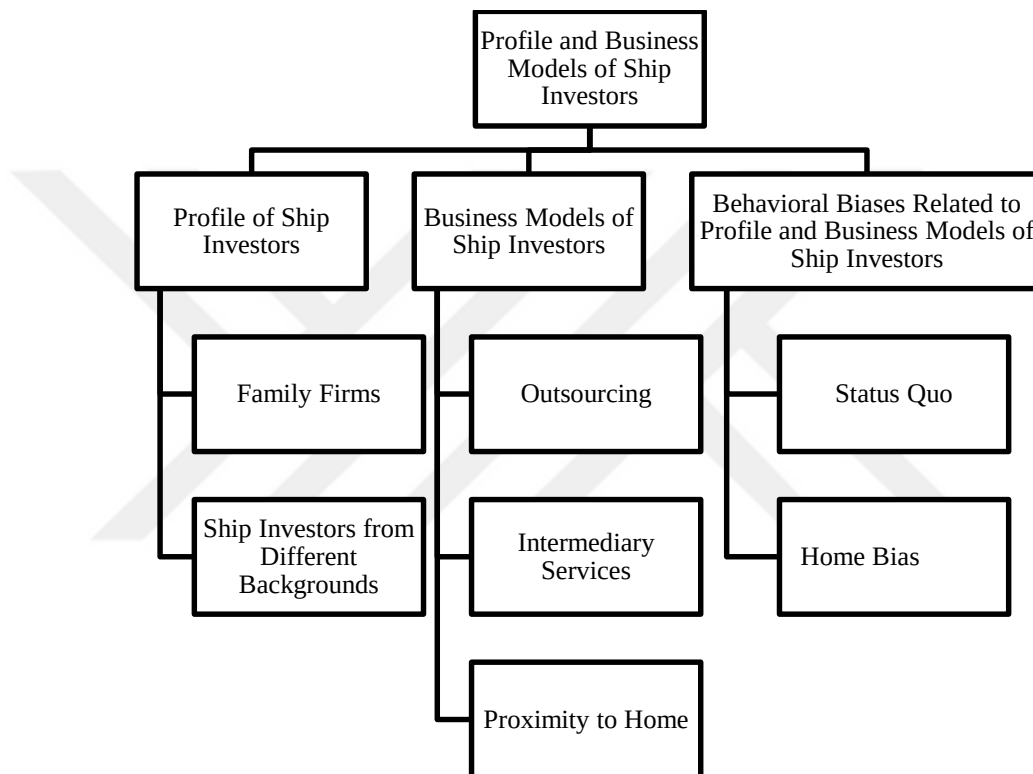
It is stated that some shipowners could make ship investments in order to protect their reputation. Although this may not be explained by rational patterns, taking into account Devenow and Welch (1996) approach, it can be considered within the scope of reputational-based herding. Therefore, it can be said that it is irrational behavior based on rational reasoning.

4.2.2. Profile and Business Models of Ship Investors

Profile and Business Models of Ship Investors is explained in three sub-themes as “Profile of Ship Investors”, “Business Models of Ship Investors” and “Behavioral

Biases” as illustrated in Figure 39. The theme of profile of ship investors is expressed in two sub-themes as “Family Firms” and “Ship Investors from Different Backgrounds”. On the other hand, the theme of business models of ship investors is explained with three sub-themes as “Outsourcing”, “Intermediary Services” and “Proximity to Home”. Finally, the behavioral biases detected in this context were identified as “Status Quo” and “Home Bias”.

Figure 39: Profile and Business Models of Ship Investors



Source: Author’s own illustration

It has been identified that shipowner structure in Turkey mainly consist of family owned companies. However, this situation has begun to change especially when the ship investors with different profiles entered the maritime transportation market since the 2000s. Many professionals working previously in the field as masters, brokers etc. became the owners of the ship. In addition, investors whose portfolios have diversified including investments from different industries, have begun to enter to the maritime transportation business recently. However, as asserted by Bulut et al. (2013), most of them entered the sector by purchasing ships from very high prices as a result of high freight earnings. The shipping markets were also adversely affected

due to the decline in international trade after the 2008 crisis, and such investors entered to the sector at high levels faced huge losses.

Many participants stressed how Turkish shipowners evolved with government incentives given in the 1980s, how the paradigm shift has taken place and the differences between generations in family businesses. In particular, the findings of the central decision-making mechanism in family businesses and the fact that majority of family owned shipping companies have a tendency to invest in ships by using poor analytical decision-making methods are consistent with the implications put forward by Scarsi (2007). This can be considered as an indication that family businesses could not be institutionalized. As a matter of fact, Arslan (2008) states that institutionalized shipping enterprises take advantage of rational decision models and shape ship investment decisions using financial analysis methods. However, it has been determined that the investments of those who have come from the field and who have entered to maritime transportation industry while running businesses in different fields have made more professional investments compared to family companies.

Among the participants, it was emphasized that investments were shaped according to business models to be adopted in shipping. In other words, it was stated that shipowners with good access channels to commodities subject to maritime trade give importance to ship alternatives suitable for these commodities. On the other hand, it is emphasized that, if there is a specific contractual commitment, the vessels capable of fulfilling such commitment are provided regardless of the circumstances. It is emphasized that, albeit to a limited extent, some investors classified as speculators (Alizadeh et al., 2017: 98) have adopted asset play approach and shape their investments accordingly. Although it contradicts to the findings of Kavussanos (1996), one of the most notable issues emphasized by the participants was the fact that Turkish shipowners could minimize the risk by focusing on ship investments suitable for contract transportation as Europeans do, rather than operating in a high-risk spot market. Kavussanos (1996) proposed that risk in time charter freight rates is higher than the risk in spot freight rates. Because, time charter freight rates is determined by the expectations of ship investors, and thus, is more sensitive to changes in perceptions of the investors.

Maritime industry include a large number of participants from many different fields and in any part of the world. Additionally, there are many micro and macro parameters that need to be taken into account in the industry. Hence, maritime industry have traditionally been based on intermediary services. Brokers who provide services such as bringing the seller and the buyer together and advising on various issues to represented institution or individual, receive a commission fee for the services they perform. Within the scope of this dissertation, what kind of role that the brokers play during ship investment processes and how they affect ship investments were among the issues emphasized by the participants. It has been stated that brokers are effective especially from providing conditions that may be in favor of represented institution or individual to misdirection of investors. However, it is stated that progress in information technologies and access to information more easily than in the past reduces the possibility of misguided investors.

4.2.2.1. Behavioral Biases Related to Profile and Business Models of Ship Investors

4.2.2.1.1. Status Quo

One of the issues discussed in relation to business models is the fact that each of the family members is head of any unit of the enterprise and generate added value. Most of the family members are involved in finance, technical management, operations, chartering etc. and they are in charge. There is resistance to any model that could cause them to lose control. As a matter of fact, one of the reasons for the resistance to the Turkish coaster renewal project was identified as fear of losing control.

Between 2003 and 2008, freight revenues increased to dramatic levels due to the high demand for maritime transport. Demand for small-tonnage vessels remained relatively limited, especially due to higher revenue from large-tonnage vessels, and supply in small-tonnage vessels remained low. Coasters, as one of the small tonnage ship type, are operated mainly by Turkish ship owners, and it has been stated by many

participants that the low level of supply and the high average age of the existing fleet pose a threat to Turkish maritime industry.

In an environment in which access to credit is not as easy as before, it is difficult to finance a ship investment for investors whose capital power is not good enough. Therefore, a model called “Turkish Coaster Renewal Project” has been developed with the participation of government of Republic of Turkey and industry stakeholders to modernize Turkish coaster merchant fleet. The business model of this project is based on the principle that shipowners become shareholders under a parent company of which the state is one of the partners, and the aim is to make coaster investments and modernize the fleet with the fund source to be provided. The strategic importance of having a specific fleet power for Turkey is also emphasized. As stated by Cafruny (1987), the fact that a country has a certain maritime power plays a triggering role in being a political power in the world and in the development of the country's economy (Keleş and Kum, 2019: 74).

However, due to the resistance of many stakeholders to the business model of this project and inactive position of the state in the process, the project could not come into force. One of the most important reasons for the resistance is the fear of losing control of companies if such business model based on partnership structure is adopted. It was emphasized by Keleş and Kum (2019) and Sletmo (1989) that outsourcing ship management activities to professionals would have positive results for the shipowner. However, it has been determined in this dissertation that strategic decisions regarding ship management, especially coaster investments, are made mainly by the shipowner himself and/or another member of the family rather than professionals. This is consistent with Çetin and Cerit (2014). Cariou and Wolff (2011) explained that ship owners do not hand over the decision-making mechanism to professionals, due to the age of the ship, the small tonnage, and the small number of ships in the fleet. As emphasized in this dissertation, the fact that coaster owners do not want to hand over the decision mechanism to professionals can be explained by the fear of losing control.

To sum up, traditional shipowners are found to be consistent what they are doing according to the participants in this dissertation (e.g. C-3: 142; SP-3: 171-172, SI-2: 205). They tend to maintain the current situation, because the disadvantages of different models are perceived to be higher than to maintain the current situation

(Samuelson and Zeckhauser, 1988:8). In explaining the status quo bias, Prospect Theory of Kahneman and Tversky (1979) is the most widely accepted theory. According to this theory, losses and disadvantages have greater impact on preferences than gains and advantages. In other words, Kahneman and Tversky (1979) depicted in the value function, investors give more weight to losses than gains. Therefore, people tend to maintain the current situation to avoid loss. Therefore, exhibited behavior of traditional shipping companies in Turkey is defined with the status quo bias in this dissertation.

4.2.2.1.2. Home Bias

Investors take place in the markets close to their home country, and ignore alternatives other than those markets. This is explained by the lack of information about foreign markets, difficulties in monitoring the market, and poor qualified and/or low credible information as asserted by Kang and Stulz (1997) and Ahearne et al. (2004).

Investors who hesitate about getting out of their comfort area, do not prefer investments outside the countries they live in, although there are alternatives with high return opportunities. Graham et al. (2009) explained this with the competencies of investors. Graham et al. (2009) found that investors who consider themselves competent in investment have carried out a large number of transactions and that they have more international diversified portfolios.

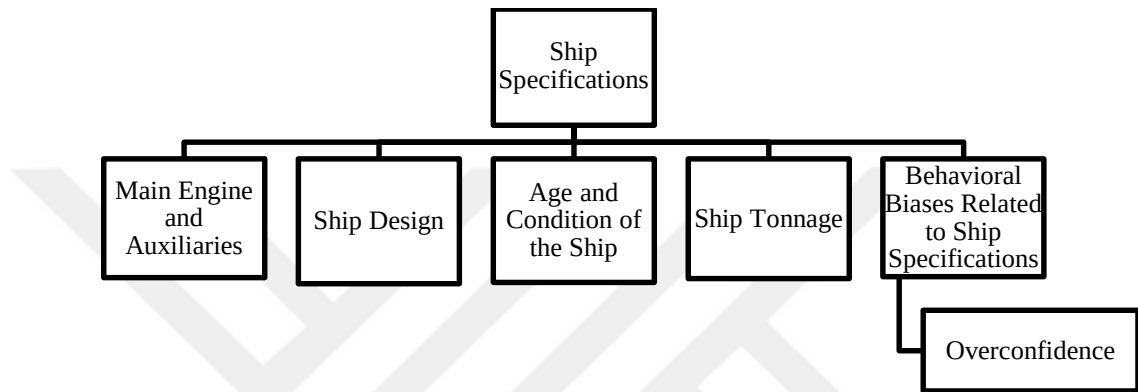
Another irrational behavior emphasized by the participants in the study is that Turkish coaster shipowners focus on investment alternatives that they can run as close to home as possible and ignore the other alternatives (e.g. C-1: 176, SI-5: 176, C-1: 177). The reason for this are the desire to reach the ship easily and without any problems in case of emergency and the reasons of proximity to home was explained by the participants as:

- Lack of knowledge and experience
- Lack of working capital
- Lack of business culture with foreigners located distant areas

4.2.3. Ship Specifications

Ship specifications found as the third factor driving ship investments in Turkey within the scope of this dissertation is explained with five sub-themes as “Main Engine and Auxiliaries”, “Ship Design”, “Age and Condition of the Ship”, “Ship Tonnage”, and “Behavioral Biases” as shown in Figure 40.

Figure 40: Ship Specifications in Ship Investments in Turkey



Source: Author's own illustration

One of the points emphasized by many participants is that the ship specifications are one of the factors driving ship investments. In this context, main engine and auxiliaries stands forward. It is found that ship investors tend to prefer ships with well-known machines and auxiliaries since office staff and crew on board are familiar with their working principles, maintenance, repair conditions etc. Moreover, it is important that the ship alternatives, which are considered to be invested, should have machinery and auxiliaries that can work smoothly in the regions where transportation is mainly carried out. Last but not least, the fuel used by the main machine and the fuel consumption depending on the size of the machine have been identified as one of the points considered in the ship investments. As a matter of fact, fuel cost is an important expenditure that has a direct impact on profitability for Turkish shipowners who mainly operate their ships in the spot market. In summary, within the scope of this dissertation it has been determined that ship investors avoid from ship alternatives whose main engine and auxiliaries reduce financial and operational performance.

Ship design has been determined as another technical feature that is considered in ship investments in Turkey. In particular, it has been stated that ships capable of carrying all types of cargo can be invested regardless of the circumstances. In this context, it is emphasized that while European designed ships, built in 40 years ago, are still operable and carry all types of cargo due to its smooth design, ships built in Turkey in 2000s are selective on commodity types. Therefore, it is stated that Turkish shipowners prefer European design ships. In addition, it is emphasized that European shipowners determine the ship design they need and then form the budget, while the majority of Turkish shipowners are looking for ships to be purchased in terms of the budget.

The other technical issues emphasized by the participants in the ship investments were determined as the age and condition of the ship. It was stated by some participants that the investors were inclined to buy the ship at an affordable price and then carry out the necessary repair and maintenance. However, one of the things that stands out here is the neglect of why the ship is cheap. It will be a risky choice to buy and repair the ship without much detailed inspection and analysis. As a matter of fact, unexpected results may be encountered. Even many experienced investors in the field made this mistake and subsequently suffered great losses.

Another prominent technical issues in ship investments in Turkey is found as ship tonnage. It is stated that ship tonnage gains importance in investments since the ships preferred by the shippers in the region are mainly load the cargo in the range of 3.000-4.000 dwt and 10.000-12,000 dwt. Another point that stands out is that some investors do not want to get out of a certain tonnage. The reasons for this can be explained by the fact that the charterers with whom the shipowners have developed a good relationship for many years, want to be loyal to the tonnage they can transport. Although this compromises status quo bias, the tendency to maintain the current situation, depicted in Prospect Theory of Kahneman and Tversky (1979), it is not considered as a behavioral bias in this dissertation because it has a rational reason. Although investors remained loyal to a certain tonnage segments, it was highlighted that majority of the shipowners have a tendency to grow in tonnage. One of the main reasons for desire to upgrade to larger ships has been identified as the desire to employ more qualified crew onboard. It was stated that the crew quality working in coasters is

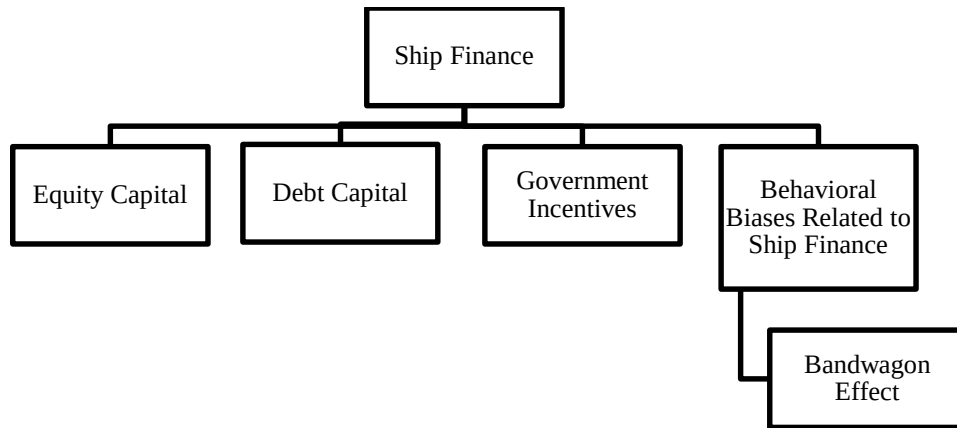
lower than the quality of crew working in large tonnage ships and thus profitability is adversely affected since it is encountered more frequently in undesirable situations. Although it is emphasized that the increase in crew expenses will be increased if more qualified crew are employed, it is suggested that financial losses will be prevented with the expectation that the crew related failures will decrease relatively. This is in contradiction with the finding put forward by Erol et al. (2014) that crew expenses decrease as ship size increases.

Apart from those described above, some findings that cannot be explained by the rational behavior patterns emerge and how it is shaped depending on the ship specifications have been identified in ship investments in Turkey. In particular, it was stated by many participants that ship investors in Turkey prefer ships with designs that are suitable for their budgets, and the cargo that can be carried with that ship is searched after the ship is purchased (e.g. C-1: 183-184, SI-1: 184). In addition, it was stated by many participants that there were many ship investors who were disappointed due to purchase of European shipowners' aged and low-condition ships at low prices for the expectation that would be easily repaired at affordable costs (e.g. SI-14: 187, SI-3: 187, SI-4: 188). Although these vessels are suitable for the technological conditions of their time, it is very difficult to operate such ships efficiently and profitably considering the developing technology, the changing legal regulations and the depreciation of the material. However, it is often emphasized that many ship investors in Turkey exhibit such behavior. It has been found that these behaviors can be explained by “overconfidence” bias in the literature.

4.2.4. Ship Finance

Ship finance as the fourth factor that guide ship investments is explained with three sub-themes within the scope of this dissertation as “Equity Capital”, “Debt Capital” and “Incentives” as depicted in Figure 41.

Figure 41: Ship Finance in Ship Investments in Turkey



Source: Author's own illustration

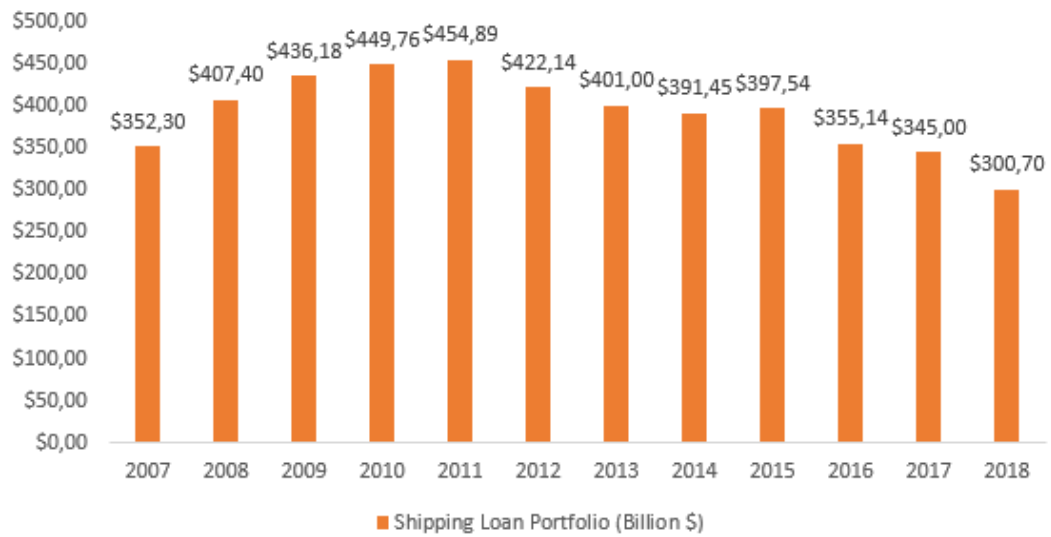
In the maritime transportation industry that has a capital-intensive structure, issues related to financial management decisions such as source of funds and optimal capital structure are very important (Alexandridis et al., 2018: 169). The way in which high-capital ship investments are financed was expressed by many participants as one of the most important issues shaping ship investment decisions. It was also stated that ship investors in Turkey substantially prefer coasters, which require low capital, since they have not sufficient financing sources. Although investment opportunities arise sometimes in the maritime industry where cyclicity exists, most investment opportunities are missed due to weak capital power in Turkey. In this context, Drobetz et al. (2016) asserted that firms with weak financial structure underinvest, since they are not able to raise external funds even in good liquidity environment. In order to strengthen the capital structure of the company, it is useful to keep equity as strong as possible in periods when financial conditions are not good enough. Therefore, the shipping companies in Turkey include shareholders with different profiles, substantially investors from Arab countries, to increase their capital power and finance ship investments in this regard.

During boom periods, increase in asset values gives courage to the banks to extend credit conditions and for fueling further investments, and this is attractive for the borrowers since the cost of capital will be lower as indicated by Chiste and van Vuuren (2014). However, earnings will be negatively affected in bad market conditions. Therefore, it will be quite difficult to pay the debt obligations. The participants emphasized that under such market conditions, investment should be made

with as much equity as possible. Another factor that emerges when ship investments are financed by debt is the relationship between the currency borrowed as credit and the currency collected as freight earnings. More specifically, if the freight earnings of a ship financed by debt in USD to a certain extent, is in Euro, the debt payments will be directly affected by the movement in the €/€ exchange rate. According to this example, if the rate rises, the amount of debt will decrease relatively, and vice versa, the amount of debt to be paid will increase. This situation has been determined as a factor to be considered in ship investments.

One of the points highlighted by many participants was that many investors turned to ship investments as a result of the misleading of banks and faced huge losses afterwards. As the central banks of developed economies increased the liquidity supply in the market in order to stimulate the economy, the banks offered low-cost funds to the maritime industry as well as many other industries. Many investors, who perceived these favorable conditions as opportunities, turned to ship investment whether they needed a ship or not. In this context, many investors who are not related to maritime industry have been misled by banks and invested in ships from very high prices. Many of the investors suffered great losses when the expected revenues could not be obtained and debts could not be paid from these vessels, which were mostly financed by debt under very favorable conditions (e.g. SI-15: 198-199, SI-11: 199, C-3: 199, C-1: 199). In addition, the dramatic decline in ship prices, made it impossible to consider the ships as collateral. Duru (2016) and Bulut et al. (2013) emphasized that in an environment where the financing conditions are quite good and almost everyone invests, it is difficult to resist to buy ships and that many market participants are investing in compliance with majority. This is consistent with the findings of this dissertation. In summary, it can be said that bandwagon effect, or herd behavior, occurs in an environment where liquidity is high. In an environment where expectations for the future were positive and the liquidity was high, banks opened the credit tap and caused many investors to invest in ships, whether they are relevant with maritime industry or not. The volume of the loans granted to the maritime industry is shown in Figure 42 over the years. Accordingly, while credit expansion was in effect until 2011, it was observed that credit supply decreased considerably since then.

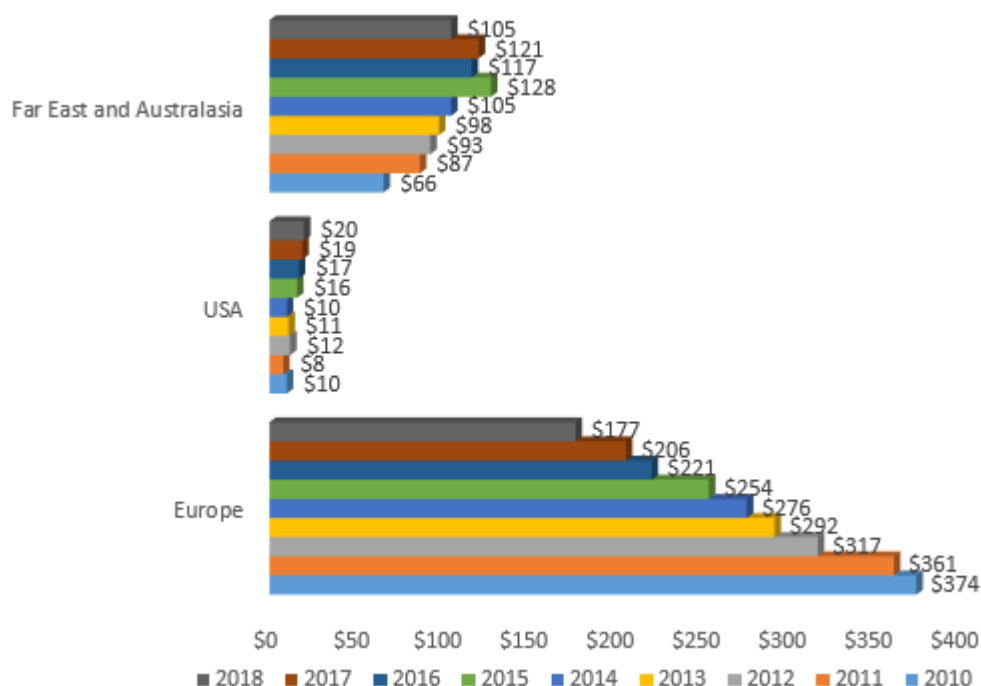
Figure 42: Shipping Loan Portfolio of Top 40 banks Between 2007 and 2016



Source: Petrofin Global Bank Research, 2019, *Key Developments and Growth in Global Ship-Finance*, <https://www.petrofin.gr/wp-content/uploads/2019/10/Petrofin-Global-Bank-Research-and-Petrofin-Index-of-Global-Ship-Finance-end2018.pdf>, 21.10.2019

Contrary to expectations, the market declined sharply and the market dynamics deteriorated, firms with high financial leverage faced high losses, many bankruptcy cases occurred and banks suffered from this situation. The banks that took lessons from this situation, especially European banks, considerably reduced the loans to the maritime industry as shown in Figure 43. Accordingly, while European banks reduced their credit supply, there was an expansion in loans to support the shipbuilding industries of the Far Eastern countries. However, total credit volume decreased compared to the past years. As emphasized by Xu and Yip (2012), countries, mainly Japan, South Korea and China, where a significant part of the GDP are based on the shipbuilding industry, have given a large amount of government incentives to keep the new building market active. Most of these incentives were in the form of loans with attractive conditions. In this respect, it can be explained that the amount of loans extended by the banks in the Far East is higher than other regions.

Figure 43: Breakdown of Global shipfinance portfolios according to geographical area, in US\$bn



Source: Petrofin Global Bank Research, 2019, *Key Developments and Growth in Global Ship-Finance*, <https://www.petrofin.gr/wp-content/uploads/2019/10/Petrofin-Global-Bank-Research-and-Petrofin-Index-of-Global-Ship-Finance-end2018.pdf>, 21.10.2019

Particularly under conditions where equity and debt capital is insufficient, applications for alternative ship finance increase. Such resources are bond issue, initial public offerings (IPO), private equity, government incentives etc. Given the strategic importance of the maritime industry for countries, government incentives can be given to stimulate the industry, and these incentives can be given through banks or shipyards, as well as in different ways. Although there has been government incentives provided to the maritime industry in Turkey in different ways, many participants stated that these incentives have been quite inadequate when compared with incentives of other countries.

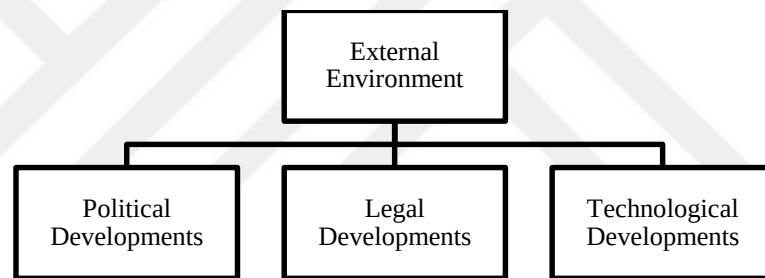
As mentioned above, in an environment in which there is insufficient equity power of ship investors in Turkey and it is difficult to access to the debt capital, an alternative financing model has been developed by Turkish government and relevant stakeholders in order to renew the old coaster fleet. Ship investors have not accepted

this model, which aims at gathering ship investors within the parent company of which the state is one of the partners in order to create a supply power with economies of scale, in reality although it seems to provide various advantages on paper. Moreover, considering the current political and economic conjuncture, the financial resources expected from the state have not been allocated yet and therefore the project could not be implemented so far.

4.2.5. External Environment

External Environment, identified as the last factor shaping ship investments in Turkey, is explained with three sub-themes as “Political Developments”, “Legal Developments” and “Technological Developments” as illustrated in Figure 44.

Figure 44: External Environment in Ship Investments in Turkey



Source: Author's own illustration

In line with Jin (1993) emphasized that both changes in technology and political developments had a direct impact on the market, it has been determined that political, legal and technological developments have direct or indirect effects on shaping ship investments and these factors are expressed as external factors in this dissertation. As highlighted by many participants, expectations for international trade directly affect the demand for maritime transport, which is mainly used for the fulfillment of this trade, and consequently the demand for ships. In addition, coaster market, where mainly regional maritime transport is carried out, can be directly affected by regional developments as well as global developments. Developments in Black Sea and the Middle East are the most obvious examples. The uncertainties based on such developments have been emphasized by many participants that the motivation of ship investors is negatively affected.

Regulations adopted and implemented by IMO may also directly affect ship supply. In particular, regulations aiming to require the use of eco-modern vessels that provide fuel savings, efficient operations and have many technological equipments are increasing day by day. Such regulations in an environment in which the equity capital power of investors is not enough and there is a limited access to credit resources are expressed as a threat in Turkey by many participants that could affect the industry directly.

It is useful to consider the advances in technology and IMO regulations together. As a matter of fact, there are technological developments at the basis of IMO regulations. Today, technology is advancing rapidly and although ships built with the latest technology, they can become outdated after a while.

Technological developments are more effective in large tonnage ships than in small tonnage ships. However, it has been emphasized by many participants that the demand for coaster ships will increase as European countries become able to produce the products they need at a reasonable cost as a result of developments such as industry 4.0. Participants emphasized that the vessels that will perform operations more efficiently, safely and securely, and that will be more sensitive to the environment will always stand out and the technology will develop in order to achieve this.

CONCLUSION

Ship investment decision can be evaluated as a large-scale capital evaluation problem consisting many volatile parameters. However, it may be possible to minimize the risk if the prominent factors as discussed in this dissertation are taken into consideration in the evaluation of ship investment alternatives.

There is a limited number of scientific studies on coasters, which has an important role in the evolution of Turkish maritime industry. However, the role of scientific studies is very important for the policy makers to produce policies and provide the necessary incentives. In this context, this dissertation is expected to be a source especially for practitioners and policy makers.

Implications based on the findings of this dissertation are evaluated in theoretical and managerial aspects.

Theoretical Implications

Coaster market that consists of a large part of the maritime transportation industry in Turkey, are taken into consideration in this dissertation, and the key drivers of ship investment decisions are discussed. In this sense, behavioral biases that could not be explained within the rational patterns are intended to reveal by considering qualitative approach. It has been detected that the behavioral biases in ship investments in Turkey emerge based on market timing, profile and business models of ship investors, ship specifications and also ship finance. Accordingly, the findings of this dissertation is consistent with theory of irrational shipping markets proposed by Duru (2013). According to the theory, it is suggested that market anomalies arise due to insufficient awareness of participants in the shipping markets, cognitive and emotional biases, and lack of know-why for assessing developments. In this context, it is expected that findings will provide a contribution to the theory of Duru (2013).

The investment decision can be made if the difference between the expected profitability and the capital cost of the investment exceeds a certain threshold value considering the irreversibility of investments, and the negative impact of uncertainty on investments. According to the Hartman-Abel approach in cases where uncertainty

increases, it is suggested that investments will increase in order to prevent future price formations to rise in an environment where uncertainty is intense. Otherwise, according to Real Options Theory, it is emphasized that uncertainty will lead to postponement of investments. In this dissertation, it is determined that uncertain market conditions have negative effects on ship investments. Although it has been emphasized by many participants that the market participants' capital power is insufficient and access to debt capital is relatively low, the uncertainty plays an important role in postponing ship investments by anchoring certain levels. Therefore, it can be argued that the findings partially support Real Option Theory.

In particular, when the business models of the shipping companies managed with the traditional business approach were examined, it was found that each of the family members are responsible for a certain department of the company, have direct access to the ship and the required work is carried out in person. In addition, it is stated that the investors prefer to stay in the area they know they are afraid to go out of their comfort areas. Last but not least, the prospect of selling or losing the owned asset has a stronger influence on coaster owners' decision-making than purchasing, or gaining the asset since there is an emotional connection between the owner and the ship.

The most prominent basis lies in the idea of loss aversion, the tendency to evaluate losses much more strongly than gains that are equal in magnitude. Therefore, the preferences are shaped according to alternatives to avoid loss. This is consistent with Prospect Theory of Kahneman and Tversky (1979).

Managerial Implications

Being an actor in maritime transportation industry requires courage due to capital-intensive structure and direct response to the volatility in the global markets since the industry has many financial obstacles and uncertainties. It should be made more careful decisions in this industry considering that the earnings of investors are not limited to ship management alone, the majority is derived from ship sale and purchase transactions. Therefore, investment decision is a critical action for a shipping company in its business life.

Although if this dissertation contains certain limitations, it is expected that the findings will provide insights on ship investments in Turkey to the practitioners and policy makers in Turkey. The managerial implications obtained from the findings are listed below.

- While ship prices depend on the available freight rates, they are also shaped by future freight estimations. Market forecasts depend on current market information and how market players read the information. Due to the transparency in the market, market players' expectations are moving in the same direction. In an environment where information technologies are developed, the possibility of information asymmetry for the assets that are considered to be invested is reduced due to the fact that market participants can easily access all the necessary information about the markets. The answer to the question why some of the market participants face huge losses, while some of them can make huge gains in such an environment where everyone has or able to access homogeneous information, is related to how the information is read and interpreted rather than the scope of information.
- Investments due to inadequate reading of market signals can lead to significant decline in ROE rates in long term. Capital of ship investors may be eroded just by impairments as a result of bad decisions, and this may also affect lenders through deferred liabilities since the asset value sharply decreases as it is seen after the 2008 crisis.
- Decisions taken by market participants in contradiction to the "homoeconomicus" assumption cause imbalances on the supply and demand sides and cause price formations to be contrary to rational foundations. However, in a market with a weak form efficiency, it is possible to achieve very high profits by analyzing the market cycles well and applying the sound trading strategies at the right time.
- In a market where high freight revenues are generated, investors tend to invest in ships based on their optimistic expectations that the current situation will continue or increase, and may invest most of their capital in high-priced ships. This will lead to high break-even in investments and problems in the fulfillment of liabilities in case of income decreases due to bad market conditions. If a large portion of the capital is used in investments made during boom times, future investment opportunities (opportunity risk) will be missed.

- Due to the overoptimistic expectations of market participants, ship orders to increase supply may lead to anomalies in the market, and cause loss of value and imbalanced utilisation of ships. However, a lower freight income is sufficient for a fleet with a low break-even point to be able to make a profit compared to a fleet with a high break-even point. Consequently, higher profits can be made during market booms, while the firm can survive longer in bad market condition.
- Analysis of ship investment alternatives based on short-term expectations may have a detrimental effect on sustainable business structure. Especially when the capital-intensive structure of ship investments is taken into consideration and in the case of purchasing in bad market, investment may create negative cash flow in the initial years. However, in a market where cyclicalities have existed throughout the history, it is beneficial to keep the expectations for the future optimistic and to shape the investments accordingly.
- Beyond the ability to read market signals correctly, it is important to remember how financial power can give the decision-maker a great advantage in both good and bad times. In this sense, access to funding sources should be easy and it is beneficial to have a variety of these funding sources since investment is a must in order to grow and maintain operations in maritime transportation industry. However, due to the closed structure of the industry, financing needs are covered substantially through equity capital and debt capital, and it is difficult to invest in today's conditions where funds are limited compared to previous years.
- Because the maritime industry in Turkey has a closed structure, market participants do not participate in capital markets. However, the industry should also become attractive for investors with different profiles. Adoption of corporate governance principles is one of the priorities for this purpose. One of the priority steps that can be taken in this context is to involve professionals as much as possible in the processes. However, the most important reason for not being able to implement this is the fear of ship owners losing control. In order to eliminate this perception, new generation business models, especially the coaster fleet renewal project, should be explained to the market participants well and drawbacks should be correctly identified and necessary revisions made. This is so important that a fleet that does not offer economies of scale and that operated by a company which

could not reach certain institutional standards is destined to disappear in such a changing economic, technological and geopolitical environment. This is the most important threat to the Turkish owned merchant fleet.

- In maritime transportation industry, although business models are adopted according to traditional practices, it is useful to consider sustainable business models in the face of changing paradigms. Due to the perceived loss probability more than the probability of gain, professionals are not included in the processes sufficiently and the decision-making process is carried out by the owner of the capital, and this can create negative effects not only on micro but also on macro scale. In terms of operational, technical, commercial management and especially asset management, which is one of the most important strategic decisions in ship management, it is of great benefit to give more voice to professionals, to involve them in the processes.

- For shipowners who are familiar with a particular ship specifications such as main engine, auxiliaries, carrying capacity, ship design etc., maintenance procedures are easier and unexpected malfunctions are less likely to occur, or repair is easier in case of malfunction. In this sense, ships generating problems due to technical errors, can create huge costs. This can directly affect profitability. For this reason, when considering ship investment alternatives, the ship specifications should be taken into consideration.

- Although more than 11 years has passed, the impact of the 2008 economic crisis on the maritime industry continues. In particular, the shift of the effect of the crisis from developed countries to developing economies, as well as the necessity to adapt to technological developments and new regulations, stand out among current problems for shipowners. This situation is one of the important criteria to be taken into consideration in making investment decisions.

- Uncertainties regarding the future do not allow the use of the normative decision models, of which the rules is certain, in ship investments. Instead, decision model that relies upon the experience and intuition of decision makers steps forward. Existing normative econometric models is undoubtedly one of the most important tools in market analysis. However, as suggested in this dissertation, the importance

of the mental orientations of decision makers and market participants in shaping decisions should not be ignored and should be included in the models.

- The first step that should be taken into consideration in ship investments is that the owners and investors should admit that they may exhibit irrational behaviors and that this is human nature as emphasized within the scope of this dissertation. Otherwise, investing would be purchasing a dream instead of a ship. It should not be forgotten that, regardless of market conditions, investors who know their limits will be able to survive. Comprehending the dynamics of the market, particularly coaster investments in such a market where the consequences of a simple decision may be severe, may create an awareness and lead Turkey to one of the maritime nations.

- Regardless of national or international conjuncture, whether economic or political, the need to transport by sea will continue as long as human beings exist. It is not a fate to buy ships at a very high break-even point and generally dispose of them at very low values. The vision of maritime industry in Turkey can be gained by getting rid of biases and acting on the basis of rational and scientific norms, if the goal is to obtain high earnings. Otherwise, market participants could not go further than looking for the appropriate herd.

Limitations and Suggestions for Future Research

Environment, conditions and time are important factors in explaining a phenomenon. In this context, making a prediction for the future can only have a relative value and meaning. Furthermore, the factors affecting the phenomenon in question may be too complex and numerous to be distinguished in a single study. Therefore, it is not adopted in qualitative research to provide an explanation by reducing all relationships to a certain number of variables and to use the findings as a prediction tool. In qualitative research, instead of making an estimation, it is aimed to explain and interpret the relations network that dominates a phenomenon with a certain systematic approach. Whether it is qualitative or quantitative, a research is conducted to learn something new and produce a new explanation. The methods also work to the

extent that they provide a solution, or if the methods are used to learn something new, the goal will eventually be achieved.

Rather than making a prediction for ship investments, the facts revealed in the ship investments in Turkey were subjected to detailed analysis of the scope of research questions in this dissertation. In this sense, this dissertation is subject to various limitations associated with the qualitative research strategy. In this context, the main limitation of this dissertation is that it focuses on coaster investments in Turkey. Therefore, the weakness of external validity of the findings can also be regarded as another limitation of the study.

Ship investments are one of the most important strategic decisions in order for the shipping companies to survive and grow. Therefore, ship investments in the coaster market in Turkey were examined in detail. It is aimed to determine not only the key drivers affecting ship investments but also behavioral biases occur in these investments. Investments of shipowners operating in different markets can be analyzed and compared with the findings of this study. In addition, the findings can be subjected to quantitative analysis.

Another limitation of this study is related to the data analyzed. The data were obtained from 33 different interviews with 30 participants. Although the interviews were conducted in three different stages in order to determine the scope and to confirm the data obtained, the number of participants was open to criticism. The main reason why the research has been carried out in approximately 16 months is that it takes a certain period of time for the process of contacting the relevant stakeholders, making an appointment and visiting the stakeholder's office on a suitable date. No doubt, it is possible to reach all stakeholders. However, considering the fact that the maritime transportation industry is an industry in which rapid changes can be experienced in a very short period of time, the validity of previously collected data can be questioned if the data collection process takes too long. Therefore, since the theoretical saturation was considered to be reached, the data collected from 30 participants were found to be sufficient for analysis. In this context, studies with a wider and more diverse sample can be done in future studies.

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APPENDICES

Appendix 1: Distribution of Turkish-owned Merchant Fleet by Ship Type

Ship Type	Total Deadweight	Total GRT	Number of Ships
Bulk Carrier	15.648.955	8.939.119	309
Crude Oil Tanker	4.820.053	2.553.796	34
General Cargo Ship	4.111.463	2.879.323	857
Chemical/Products Tanker	3.658.334	2.317.090	262
Container Ship (Fully Cellular)	2.293.013	1.840.947	92
Power Station Vessel	593.956	386.526	10
Products Tanker	447.844	291.608	113
Ro-Ro Cargo Ship	417.523	824.134	52
Crude/Oil Products Tanker	368.258	205.482	7
Bulk/Oil Carrier (OBO)	219.664	127.030	2
LPG Tanker	212.128	177.433	18
Wood Chips Carrier	139.659	118.189	3
Passenger/Ro-Ro Ship (Vehicles)	86.800	238.989	93
Open Hatch Cargo Ship	86.474	57.639	3
Asphalt/Bitumen Tanker	47.156	35.876	4
Chemical Tanker	42.857	27.429	11
Livestock Carrier	42.150	66.865	12
Drilling Ship	34.256	51.283	1
Platform Supply Ship	29.429	20.166	11
Hopper, Motor	27.013	14.203	32
Bunkering Tanker	22.224	13.368	27
Anchor Handling Tug Supply	17.727	18.047	10
Rail Vehicles Carrier	14.696	20.504	2
Tug	14.649	66.410	228
Heavy Load Carrier, semi submersible	14.138	10.224	1
Passenger Ship	13.526	81.530	203
Vegetable Oil Tanker	11.217	6.594	4
Heavy Load Carrier	10.018	12.324	2
Deck Cargo Ship	9.552	7.213	5
Crane Vessel, non propelled	9.400	6.244	2
Passenger/Ro-Ro Ship (Vehicles/Rail)	9.022	11.389	4
Tanker (unspecified)	8.360	5.453	18
Bulk Carrier, Self-discharging	8.140	6.355	1
Research Survey Vessel	8.003	13.450	8
General Cargo/Tanker	7.721	5.795	1

Fish Carrier	5.784	6.492	19
Fishing Vessel	5.780	69.552	252
Suction Dredger	5.360	3.476	1
Cable Layer	4.688	3.017	1
Cement Carrier	4.660	3.221	2
Trailing Suction Hopper Dredger	4.048	4.007	1
Yacht	3.962	13.093	24
Bucket Ladder Dredger	3.469	4.132	5
Offshore Construction Vessel, jack up	3.095	3.422	1
Water Tanker	2.729	1.409	5
Vehicles Carrier	2.674	7.314	1
Offshore Tug/Supply Ship	2.578	2.128	3
Search & Rescue Vessel	2.388	4.291	1
Refrigerated Cargo Ship	1.877	1.600	1
Deck Cargo Pontoon, non propelled	1.523	648	1
Cruise Ship, Inland Waterways	1.110	16.694	3
Aggregates Carrier	908	489	1
General Cargo/Passenger Ship	825	2.964	1
Landing Craft	752	1.629	3
Pollution Control Vessel	701	1.259	3
Fish Factory Ship	569	891	1
Crane Vessel	468	594	1
Training Ship	353	667	1
Yacht (Sailing)	311	1.278	5
Standby Safety Vessel	307	489	1
Utility Vessel	276	421	3
Accommodation Ship	274	1.699	2
Towing/Pushing, Inland Waterways	216	726	1
Passenger/Cruise	182	1.465	2
Diving Support Vessel	160	204	1
Crew/Supply Vessel	81	179	1
Work/Repair Vessel	75	112	1
Fishery Research Vessel	65	828	3
Crew Boat	50	236	1
Dredger (unspecified)	0	161	1
Floating Dock	0	0	1
Pipe Layer	0	625	2
Salvage Ship	0	791	2
TOTAL	33.567.676	21.620.230	2.801

Appendix 2: Categorization of Turkish-owned Merchant Fleet with the Purpose of Cargo Transport at Sea as of January 2018

Main Category	Sub Category	Number of ships	Dwt
Bulk Carrier	Bulk Carrier	309	15.648.955
Container Ship (Fully Cellular)	Container Ships	92	2.293.013
LPG Tanker	Gas Tankers	18	212.128
General Cargo Ship	General Cargo Ships	857	4.111.463
Crude Oil Tanker	Oil and Chemical Tankers	34	4.820.053
Chemical Tanker	Oil and Chemical Tankers	11	42.857
Bunkering Tanker	Oil and Chemical Tankers	27	22.224
Chemical/Products Tanker	Oil and Chemical Tankers	262	3.658.334
Crude/Oil Products Tanker	Oil and Chemical Tankers	7	368.258
Products Tanker	Other Tankers	113	447.844
Asphalt/Bitumen Tanker	Other Tankers	4	47.156
Vegetable Oil Tanker	Other Tankers	4	11.217
Tanker (unspecified)	Other Tankers	18	8.360
General Cargo/Tanker	Other Tankers	1	7.721
Water Tanker	Other Tankers	5	2.729
Ro-Ro Cargo Ship	Ro-Ro Cargo Ships	52	417.523
Passenger/Ro-Ro Ship (Vehicles)	Ro-Ro Cargo Ships	93	86.800
Rail Vehicles Carrier	Ro-Ro Cargo Ships	2	14.696
Passenger/Ro-Ro Ship (Vehicles/Rail)	Ro-Ro Cargo Ships	4	9.022
Vehicles Carrier	Ro-Ro Cargo Ships	1	2.674
Landing Craft	Ro-Ro Cargo Ships	3	752
Bulk Carrier, Self-discharging	Specialized Cargo Ships	1	8.140
Bulk/Oil Carrier (OBO)	Specialized Cargo Ships	2	219.664
Wood Chips Carrier	Specialized Cargo Ships	3	139.659
Open Hatch Cargo Ship	Specialized Cargo Ships	3	86.474
Livestock Carrier	Specialized Cargo Ships	12	42.150
Hopper, Motor	Specialized Cargo Ships	32	27.013
Heavy Load Carrier, semi submersible	Specialized Cargo Ships	1	14.138
Heavy Load Carrier	Specialized Cargo Ships	2	10.018
Deck Cargo Ship	Specialized Cargo Ships	5	9.552
Fish Carrier	Specialized Cargo Ships	19	5.784
Cement Carrier	Specialized Cargo Ships	2	4.660
Bucket Ladder Dredger	Specialized Cargo Ships	5	3.469

Refrigerated Cargo Ship	Specialized Cargo Ships	1	1.877
Deck Cargo Pontoon, non propelled	Specialized Cargo Ships	1	1.523
Aggregates Carrier	Specialized Cargo Ships	1	908
Fish Factory Ship	Specialized Cargo Ships	1	569
TOTAL		2.008	32.809.377



Appendix 3: Semi-Structured Interview Questions

1. What are your thoughts regarding the factors that affect ship investments?
2. What are your thoughts regarding techniques employed for the evaluation of ship investment alternatives in Turkey?
3. What are your thoughts regarding sources for financing ship investments in Turkey?
4. What are your thoughts regarding the data sources that ship investors in Turkey use to monitor the market?
5. What are your thoughts regarding the effect of the market conditions in ship investments in Turkey?
6. What are your thoughts regarding the ability of ship investors in Turkey to read the market correctly and invest timely in ship investments?
7. What are your thoughts regarding ship investment behavior of ship investors in Turkey when you take into account the market conditions that emerged before and after the global financial crisis in 2008?
8. What are your thoughts regarding the effect of profile of ship investors in Turkey in ship investments?
9. What are your thoughts regarding the effect of the business models adopted by shipping companies in Turkey in ship investments?
10. What are your thoughts regarding the effect of instincts and experiences of ship investors in ship investments in Turkey?
11. What are your thoughts regarding the effect of the behavior and advice of other market participants to the investors in ship investments in Turkey?
12. What are your thoughts regarding the effect of the behavior of ship investors in countries that have a rich history and traditions on maritime, in ship investments in Turkey?
13. What are your thoughts regarding the effect of intermediaries such as banks, brokers, etc. in ship investments in Turkey?
14. What are your thoughts regarding the effect of charterers in ship investments in Turkey?
15. What are your thoughts regarding the effect of ship specifications in the ship investments in Turkey?
16. What are your thoughts regarding the effects of external developments such as political, economic, technological, etc. abroad in the ship investments in Turkey?
17. What are your thoughts regarding incentives in ship investments in Turkey?

Appendix 4: Profile of Participants

	Name and Surname	Title / Position	Interviewee Code	Age	Sector Experience (Years)	Education
1	Sale & Purch. Broker 1	Managing Director	SP-1	37	16	College
2	Sale & Purch. Broker 2	Sale and Purchase Broker	SP-2	36	15	College
3	Sale & Purch. Broker 3	Sale and Purchase Broker	SP-3	36	11	College
4	Association 1	Secretary General	A-1	51	15	Master
5	Consultant 1	Head of Research	C-1	36	15	Master
6	Association 2	Director	A-2a	50	28	College
7	Association 2	Research Specialist	A-2b	35	10	College
8	Ship Investor 1	Owner	SI-1	43	19	College
9	Ship Investor 2	Owner	SI-2	53	36	College
10	Ship Investor 3	Owner	SI-3	62	40	College
11	Ship Investor 4	Owner	SI-4	49	25	College
12	Ship Investor 5	Owner	SI-5	43	20	College
13	Ship Investor 6	Owner	SI-6	60	45	Middle School
14	Ship Investor 7	Owner	SI-7	49	32	High School
15	Consultant 2	Founder	C-2a	48	31	College
16	Consultant 2	Consultant	C-2b	75	55	College
17	Ship Investor 8	CEO	SI-8	43	18	Master
18	Ship Investor 9	Owner	SI-9	65	39	College
19	Ship Investor 10	Owner	SI-10	50	35	High School
20	Ship Investor 11	Owner	SI-11	48	24	College
21	Consultant 3	Scholar-Consultant	C-3	69	41	Master
22	Ship Investor 12	Owner	SI-12	34	11	College

23	Ship Investor 13	Owner	SI-13	49	32	High School
24	Ship Investor 14	Owner	SI-14	36	18	College
25	Ship Investor 15	Owner	SI-15	48	30	Master
26	Ship Investor 16	Owner	SI-16	60	36	College
27	Ship Investor 17	Owner	SI-17	46	28	College
28	Ship Investor 18	General Manager	SI-18	45	20	College
29	Ship Investor 19	Owner	SI-19	46	10	College
30	Ship Investor 20	Owner	SI-20	63	43	College

Appendix 5: Details of Interviews

	Inteeviewee	Interviewee Code	Date of Interview	Duration	Place of Interview	Voice Recording
1	Sale & Purch. Broker 1	SP-1	23.01.2018	1h 35m	Maltepe, Istanbul	Allowed
2	Sale & Purch. Broker 2	SP-2	23.01.2018	1h 20m	Kartal, Istanbul	Allowed
3	Sale & Purch. Broker 3	SP-3	23.01.2018	1h 15m	Etiler, Istanbul	Allowed
4	Association 1	A-1	25.01.2018	1h 10m	Fındıklı, Istanbul	Allowed
5	Consultant 1	C-1	26.01.2018	1h 45m	Ümraniye, Istanbul	Allowed
6	Sale & Purch. Broker 3	SP-3	27.07.2018	1h 05m	Ümraniye, Istanbul	Allowed
7	Consultant 1	C-1	25.07.2018	1h 03m	Ümraniye, Istanbul	Allowed
8	Association 2	A-2a	26.07.2018	1h 55m	Ümraniye, Istanbul	Not Allowed
9	Association 2	A-2b	26.07.2018	1h 55m	Ümraniye, Istanbul	Not Allowed
10	Sale & Purch. Broker 2	SP-2	27.07.2018	1h 25m	Kartal, Istanbul	Allowed
11	Ship Investor 1	SI-1	10.09.2018	1h 20 m	Kartal-Güzelyalı, Istanbul	Allowed
12	Ship Investor 2	SI-2	19.11.2018	1h 22 m	Ümraniye,Istanbul	Allowed
13	Ship Investor 3	SI-3	19.11.2018	42m	Ümraniye,Istanbul	Allowed
14	Ship Investor 4	SI-4	20.11.2018	5h 30m	Kartal, Istanbul	Allowed
15	Ship Investor 5	SI-5	08.01.2019	33m	Koşuyolu, Istanbul	Allowed
16	Ship Investor 6	SI-6	09.01.2019	1h 05m	Tuzla, Istanbul	Allowed
17	Ship Investor 7	SI-7	09.01.2019	2h 15m	Koşuyolu, Istanbul	Allowed
18	Consultant 2	C-2a	10.01.2019	1h 05m	Ataşehir, Istanbul	Allowed
19	Consultant 2	C-2b	21.01.2019	53m	Ataşehir, Istanbul	Allowed
20	Ship Investor 8	SI-8	21.01.2019	34m	Koşuyolu, Istanbul	Allowed
21	Ship Investor 9	SI-9	21.01.2019	38m	Koşuyolu, Istanbul	Allowed
22	Ship Investor 10	SI-10	21.01.2019	35m	Koşuyolu, Istanbul	Allowed
23	Ship Investor 11	SI-11	21.01.2019	38m	Koşuyolu, Istanbul	Allowed

24	Consultant 3	C-3	22.01.2019	1h 40m	Kadıköy-Moda, Istanbul	Allowed
25	Ship Investor 12	SI-12	22.01.2019	1h 16m	Karaköy, Istanbul	Allowed
26	Ship Investor 13	SI-13	22.01.2019	18m	Karaköy, Istanbul	Allowed
27	Ship Investor 14	SI-14	22.01.2019	57m	Tophane, Istanbul	Allowed
28	Ship Investor 15	SI-15	23.01.2019	1h 10m	Kavacık, Istanbul	Allowed
29	Ship Investor 16	SI-16	23.01.2019	50m	Salacak, Istanbul	Not Allowed
30	Ship Investor 17	SI-17	24.01.2019	50m	Koşuyolu, Istanbul	Allowed
31	Ship Investor 18	SI-18	24.01.2019	1h 10m	Koşuyolu, Istanbul	Not Allowed
32	Ship Investor 19	SI-19	24.01.2019	2h	Kadıköy-Uzunçayır, Istanbul	Allowed
33	Ship Investor 20	SI-20	18.04.2019	1h	Kozyatağı, Istanbul	Allowed