T.C.
DOKUZ EYLÜL UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF MARITIME BUSINESS ADMINISTRATION
MARITIME BUSINESS ADMINISTRATION PROGRAM
MASTER'S THESIS

POST-IPO STOCK PERFORMANCES: EVIDENCE FROM GLOBAL SHIPPING COMPANIES

Erhan DEMİRBAŞ

Supervisor
Assoc. Prof. Dr. Seçil SİGALI

İZMİR-2018

THESIS APPROVAL PAGE

DECLARATION

I hereby declare that this master's thesis titled as "Post-IPO Stock Performances: Evidence From Global Shipping Companies" 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 resourses in the reference list. I verify all these with my honour.

…/…/…….

Erhan DEMİRBAŞ

ÖZET

Yüksek Lisans Tezi

Halka Arz Sonrası Hisse Senedi Fiyat Performansı: Küresel Denizcilik Şirketleri Üzerine Bir İnceleme

Erhan DEMİRBAŞ

Dokuz Eylül Üniversitesi
Sosyal Bilimler Enstitüsü
Denizcilik İşletmeleri Yönetimi Anabilim Dalı
Denizcilik İşletmeleri Yönetimi Programı

Bu çalışmanın amacı, küresel denizcilik şirketlerinin halka arz sonrası kısa dönem hisse senedi fiyat performanslarını araştırmaktır. Küresel ticaretinin çoğunu denizcilik sektörü taşımaktadır ve onun dalgalı yapısı yatırımcılara kısa dönemde anormal getiri sağlayabilir.

Bu çalışmada, 2000 ve 2018 yılları arasında halka açılmış küresel denizcilik şirketlerinin arz sonrası 21 günlük fiyat performansları incelenmiştir. 4 borsadan 46 şirket seçilmiştir. Bu borsalar; NASDAQ, NASDAQ Kopenhag, New York Borsası ve Oslo Borsasıdır. Çalışmada kullanılan yöntem olay çalışmasıdır ve anormal getirileri hesaplamak için kümülatif anormal getiri yöntemi kullanılmıştır. Her borsa için, marketin getirilere olan etkisini getirilere yansıtmak için birer endeks belirlenmiştir. Hesaplanan anormal getirilerin önem dereceleri tek örneklem t-testi ile ölçülmüştür.

Oslo Borsası, bu çalışmada en çok istatistiksel olarak anlamlı sonuçları veren borsa olmuştur. New York Borsasının en düşük ortalama anormal getirisi %-1,19dur. Oslo Borsasının en düşük ve en yüksek ortalama anormal getirileri sırasıyla %-2,21 ve %3,67dir. 21 günlük kısa dönem sonunda Oslo Borsası %6,49 kümülatif ortalama anormal getiri sağlamıştır. Diğer borsalardaki kümülatif ortalama anormal getiriler ise; New York Borsasında %3,77, NASDAQ'ta %-11,5 ve NASDAQ Kopenhag'da %-3,45 olarak gerçekleşmiştir. 46 firmadan oluşan örneklemin en düşük ortalama anormal getirisi %-1,24 olup istatistiksel olarak anlamlıdır. Sonuç olarak

bulgular, Oslo Borsasının 2000-2018 döneminde kümülatif ortalama anormal getiriler bazında, diğer borsalara göre daha fazla getiri sağladığı görülmüştür. Tüm örneklemin 21. gün sonu kümülatif ortalama anormal getirisi ise %0,35tir.

Bu çalışma, denizcilik firmalarının halka arz sonrası performansları hakkında daha güncel kanıt sunarak daha önceki çalışmalara katkıda bulunmuştur.

Anahtar Kelimeler: Halka Arz Sonrası Performans, Olay Çalışması, Halka Arz, Kısa Dönem Hisse Senedi Performansı, Anormal Getiri

ABSTRACT

Master's Thesis

Post-IPO Stock Performances: Evidence From Global Shipping Companies

Erhan DEMİRBAŞ

Dokuz Eylül University

Graduate School of Social Sciences

Department of Maritime Business Administration

Maritime Business Administration Program

The purpose of this study is to analyze post-IPO stock performances of global shipping companies. The shipping sector carries most of the volume of global trade and its volatile nature may enable investors to gain abnormal returns in short-term.

In this study, 21-day short-term post-IPO stock performance of global shipping companies that went public between 2000 and 2018 are examined. 46 shipping companies from four stock exchanges are selected as sample: NASDAQ, NASDAQ Copenhagen, New York Stock Exchange and Oslo Stock Exchange. Methodology used is event study and in order to calculate abnormal returns, cumulative abnormal return method is used. For each stock exchange, an index is defined in order to show market effect on returns. Then calculated abnormal returns are tested by one-sample t-test and their significance levels are measured.

Stock exchange that provided the most statistically significant results is Oslo Stock Exchange. The lowest average abnormal return of New York Stock Exchange is -1,19%. The highest and lowest average abnormal returns of Oslo Stock Exchange are 3,67% and -2,21% respectively. At the end of 21-day period, Oslo Stock Exchange provided cumulative average abnormal return of 6,49%. Cumulative average abnormal returns of other stock exchanges are; 3,77% on NYSE, -11,5% on NASDAQ and -3,45% on NASDAQ Copenhagen. The lowest average abnormal return of the sample is -1,24%. As a result, the findings show that Oslo Stock Exchange had more gains in terms of cumulative average

abnormal returns during 2000-2018 period compared to the other stock exchanges covered in data. CAAR of the sample is 0,35% at 21st day.

This study contributes to the existing literature by providing recent empirical evidence of post-IPO short-term performances of global shipping companies from different stock exchanges.

Keywords: Post-IPO Performance, Event Study, Initial Public Offering, Short-term Stock Performance, Abnormal Return

POST-IPO STOCK PERFORMANCES: EVIDENCE FROM GLOBAL SHIPPING COMPANIES

CONTENTS

CHAPTER TWO

LITERATURE REVIEW ON POST-IPO PERFORMANCE

CHAPTER THREE
POST-IPO STOCK PRICE PERFORMANCE

ABBREVIATIONS

AAR	Average Abnormal Return
AR	Abnormal Return
BHAR	Buy and Hold Abnormal Return
CAPM	Capital Asset Pricing Model
CAAR	Cumulative Average Abnormal Return
CAR	Cumulative Abnormal Return
CFO	Chief Financial Officer
CSI	Commodity Sistems, Inc.
IMKB	İstanbul Menkul Kıymetler Borsası
IPO	Initial Public Offering
LSE	London Stock Exchange
N/A	Not Available
NYSE	New York Stock Exchange
OSE	Oslo Stock Exchange
R&D	Research and Development
SEC	Securities and Exchange Commission
S&P500	Standard and Poor's Index for 500 Common Stocks
SME	Small and Medium Enterprises
SPK	Serbest Piyasalar Kurulu
UK	United Kingdom
US	United States
USA	United States of America
VC	Venture Capital

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

One of the main financing methods for the companies is public offering. This method first requires the initial sale of companies' stocks in an exchange. Initial public offering allows companies to be able to gather high amounts of finance and expand their business activities through investment. However, initial public offering has advantages and disadvantages. Main advantages may be listed as visibility, prestige and liquidity. On the other hand, main disadvantages of going public can be more disclosure requirements, loss of control and costs incurred both on the process and after.

Post-IPO performance gives insight to investors that how firms perform in the market and enables investors to compare. The purpose of this study is to analyze post-IPO stock performances of global shipping companies. Shipping sector carries most of the volume of global trade and it has unique characteristics. Its volatile nature may enable investors to gain abnormal returns in the short-term.

In the first chapter of the study, definition of initial public offering and regarding historical development are explained. Also, in the chapter, reasons for going public, advantages and disadvantages of going public are explained in more detail. In the second chapter, studies focused on post-IPO performance around the world and in Turkey are summarized and also they are presented in tables. Post-IPO performance is mostly measured as post-offering stock performance and post-IPO operating performance. Stock performance studies focused mainly short and long-term performance and underpricing. Operating performance mostly focuses on factors affecting post-IPO operating performance. Two terms, "post-IPO performance" and "post-IPO stock performance", are searched in the following databases: Google Scholar, Science Direct, Jstor, Emerald Insight, Web of Science and EBSCOhost and results are presented in a table.

In the third chapter of the study, aim of the study, data and methodology are explained. Data is gathered from stock exchanges' respective websites and close price data of companies and indices is retrieved from Yahoo! Finance. The study contains 46 shipping initial public offerings in 2000-2018 from New York Stock Exchange, Oslo Bors and NASDAQ including NASDAQ Copenhagen. Methodology

of the study is event study and as a method, cumulative abnormal return is used on calculations. Firstly, abnormal returns of each companies are calculated by using their respective stock exchange indices. In the study, composite indices are used in order to reflect market performance. Then average abnormal returns and cumulative abnormal returns are calculated for each company. Portfolios from stock exchanges are tested by using one-sample t test in order to see their significance level. Findings are presented with tables and charts and discussed.

In the conclusion, the results are discussed and limitations and suggestions for the future studies are presented.

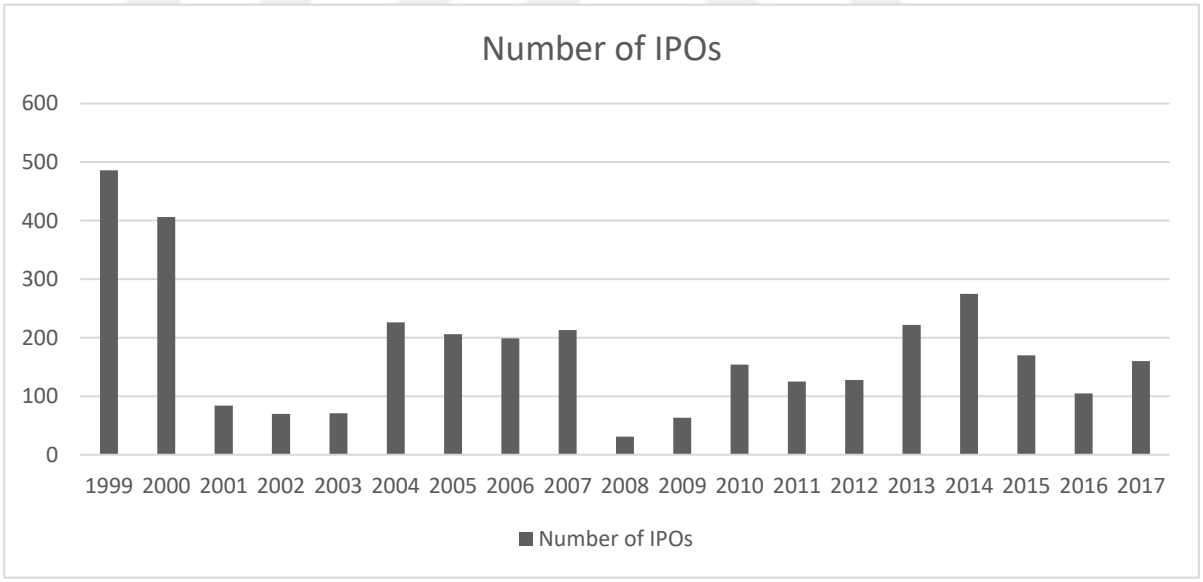
CHAPTER ONE
INITIAL PUBLIC OFFERING

1.1. DEFINITION

The more companies easily raise capital from financial markets, the higher they are able to acquire assets. This will provide businesses with a great advantage over their competitors on the market (Sayar, 2003).

In today's economy, capital can be obtained in various ways. Firms can use their retained earnings, loan money from banks, use venture capital (Mateiciuc, 2009). Some companies may prefer to issue equity securities, which are also known as stocks (Madura, 2013). Among those ways, one that has gained popularity over the years (Hartog, 2016) and is one of the most tried and tested ways (Geddes, 2003) is to become a publicly-traded company by initial public offering (Hartog, 2016).

Figure 1: Number of IPOs in the U.S.



Source: Statista, 20.08.2018.

Figure 1 shows number of IPOs in the US from 1999 to 2017. It indicates that firms still decide to go public in order to meet their need of financing.

The initial public offering can be defined as the initial sale of a company's stocks to the public, listing of the company on an exchange (Geddes, 2003) and letting the trade of stocks in public markets (Ehrhardt, and Brigham, 2011).

When a firm engages in an IPO, it becomes available to be invested in by the public. In this way, the firm can obtain a large amount of capital and this enables faster growth and expansion (Hartog, 2016).

IPO can be considered as one of the most important in the evolution of a company for its related parties such as owners, management and employees (Mayer Brown JSM, 2016).

1.2. MAIN PARTIES IN AN INITIAL PUBLIC OFFERING

There are three main parties in an initial public offering and their objectives complete each other. These parties are; *the company*, *the vendor* and *the investors* (Geddes, 2003).

1.2.1. The Company

Objectives of company could be both finance related and non-finance related. The company creates value for its investors and tries to maintain its value in secondary market. Valuations are preferred to be sustainable by the main long-term shareholders. They keep their shares however mostly want to see continual trading in the shares of the firm. Thus investors know they are able to sell when they see as necessary. Companies' another objective is to increase company's image and enabling company to raise funds for the future and acquisitions. (Geddes, 2003).

1.2.2. The Vendor

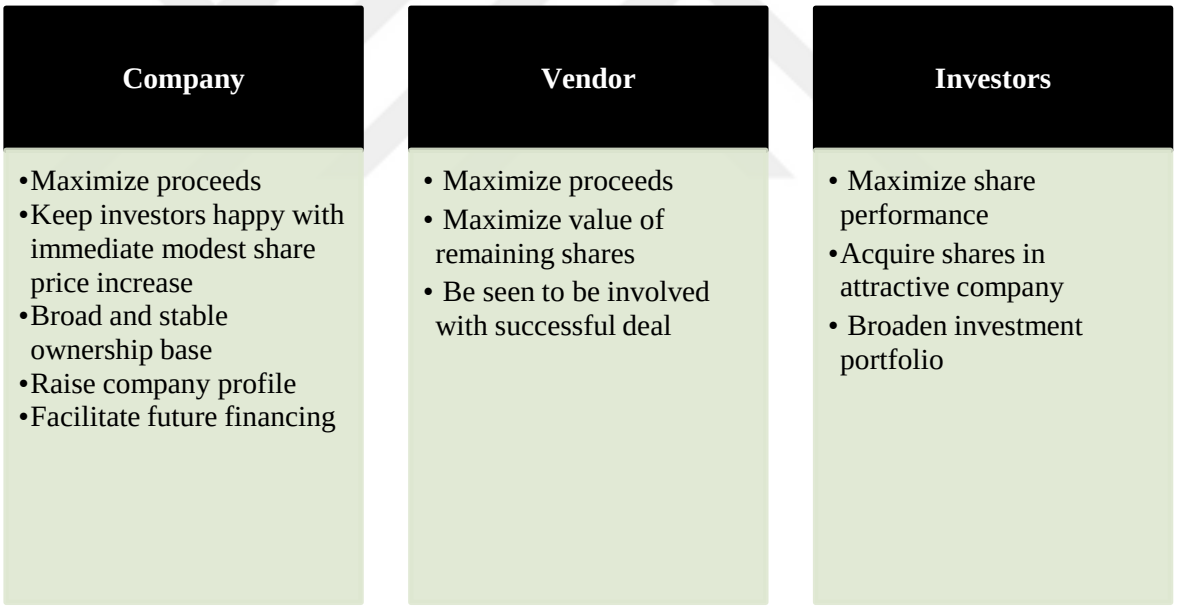
Existing shareholders also can sell their share when it is included and registered as a part of the offering. Most large initial IPOs include only new shares but in some cases existing shareholders are included (SEC, 2013).

Vendor, also known as selling shareholder, desire to maximize their worth of shareholding. Vendor may accept low price at the time of offering but keep the shares. Most of vendors do not sell their shares at the time of offering (Geddes, 2003). Selling shareholder obtains the proceeds obtained by the sale of their shares (SEC, 2013).

1.2.3. The Investors

Investors want to maximize share price performance. Earning on the opening day and strong market performance of company are what is desired. Investors have opportunity to obtain a considerable portion from the company. That opportunity may not be found in secondary market (Geddes, 2003).

Figure 2: IPO Objectives of Main Parties



Source: Geddes, 2003.

1.3. HISTORICAL DEVELOPMENT

First examples of company issuing shares, the *publicani* is appeared in the Roman Republic. The Roman State pulled back itself from many of its functions such as temple building to tax collecting, to a capitalist society, known as

"*publicani*". Like modern joint-stock companies, the *publicani* were legal bodies and they are unattached from their members who holds ownership and the ownership was divided into "*partes*", considered as shares. They also had executive management, "*tabulae*" which is public accounts, and held meetings of shareholders. Shares sorted into two groups: large shares called "*socii*" and smaller shares "*particulae*". There is an evidence that not only politicians and large capitalists but also whole country, "all over Italy" described by Polybius, the Greek chronicler, are interested in buying shares but the Roman "*publicani*" faded with the Roman Empire (Chancellor, 1999).

Merchants in the Mediterranean area, are inventors of many basics of financial markets. Genoa and Venice played in important role in 14th and 15th century on this subject but Northern Europe improved and innovated in the late 16th century (Atack, and Neal, 2009).

Modern stock exchanges that specialize in secondary markets in corporate securities starts with formation of the Dutch East India Company, whose name is originally *Verenigde Nederlandsche Geoctroyeerde Oostindische Compaigne* and abbreviated as VOC, in 1602 (Goetzmann, and Rouwenhorst, 2005).

In the Netherlands, 1602, the United East India Company which was the first company to receive official government charter, was founded. Then 19 years later, the Dutch West India Company was founded. Europe's first central bank, the Amsterdam Wisselbank was founded in 1609. By the early seventeenth century, capital from all over Europe was invested in Dutch financial assets such as annuities. All varieties of financial products and services were traded on Amsterdam Exchange. Later, shares of the East India Company became available (Chancellor, 1999).

Additionally, the first initial public offering in the US is the offering of the Bank of North America around eighteen century (Museum Of American Finance, 21.08.2018).

1.4. PROCESS OF GOING PUBLIC

In order to explain the process of initial public offering, steps of an offering in the United States of America is explained as an example. The USA has two of major stock exchanges in the world (Forbes, 17.07.2018).

1.4.1. Introduction

From decision of going public to listing in a stock exchange requires lots of preparation from a firm and it usually takes 3 to 12 months until it becomes a publicly-traded company. Thus, it is a time consuming process (Mateiciuc, 2009).

When shareholders of the company approve the decision to go public, the process begins. Then, the documents of the company must be certified. This certification is made by company's auditors and lawyers (Gitman and Zutter, 2010). Then, the company interviews a number of different investment banks (Ehrhardt and Brigham, 2011).

1.4.2. Investment Bank

The role of investment bank is that an investment bank serves as assistant for other entities in order to obtain and finance their business activities through the issuance of stocks in the company (Zimmer, 2015).

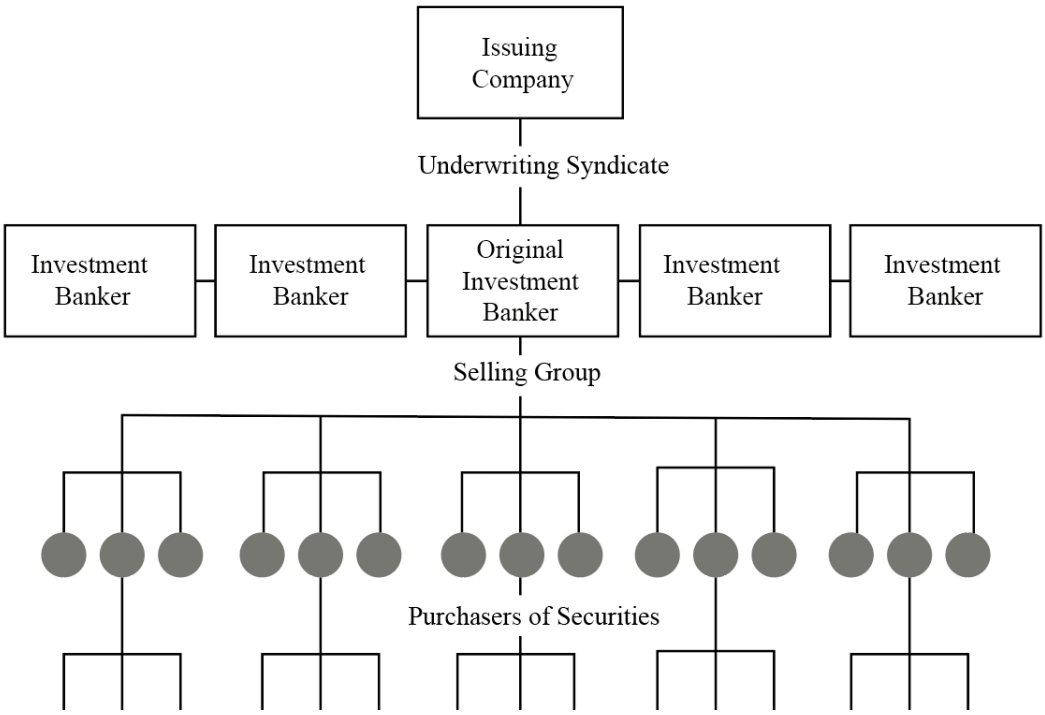
An investment bank which is keen to underwrite the offering is found by the company (Gitman and Zutter, 2010). An investment bank is also called "underwriter" (Ehrhardt and Brigham, 2011). This underwriter is in charge of promoting the stock and allowing of the sale of the company's shares. Generally, other investment banks are brought as participants by the investment bank.

When there is a very large security issues, investment banker gathers other investment bankers to create a group named underwriting syndicate. The underwriting syndicate divides the risks related to the issue. The original investment banker and syndicate members create a selling group which contains themselves and many brokerage firms. Group members accept that they are responsible for selling a part of the issue and they gain commission when they sell out (Gitman and Zutter, 2010).

The company files a registration statement with the Securities Exchange Commission (SEC). On this statement, there is a portion called the prospectus. Main aspects of the issue, the issuer, and its management and financial position is described on the prospectus (Ehrhardt, and Brigham, 2011).

Firms consider a number of factors that influence on their choice of investment bank. Reputation and expertise are factors firm mainly seeks for an investment bank. A firm may ask questions such as “Did the investment bank perform as an underwriter?” and “If they perform then how other initial public offerings perform?” (Mateiciuc, 2009).

Figure 3: Selling Process For Large Security issues



Source: Gitman and Zutter, 2010.

1.4.3. Underwriting

Underwriting has two types: *firm commitment* and *best effort basis.* Between them, firm commitment is the most used. Firm commitment stands for that investment bank buys all the securities at a discounted price, usually at 7% and they try to sell them back.

Difference between these prices is the investment banks gross spread. In this type of underwriting, underwriter gives guarantee that investors will buy certain amount of securities. Thus they will bear the risk.

However, in the best effort basis, securities may be sold or not, underwriter does not guarantee the sale. Firm and underwriter agree about the offer price, minimum and maximum shares to be sold. In this type of underwriting, the underwriter plays a role of agent (Mateiciuc, 2009).

1.4.4. Marketing of the Offering

After the registration statement has been filed, investment banker, company's senior management team and company's lawyers go on a roadshow (Ehrhardt and Brigham, 2011). A roadshow is generally considered as the most important opportunity for the company to sell shares (Cifrino, et al., 2014). Management team makes a presentation to possible investors who are typically clients of the underwriters. Not only a roadshow tries to measure the demand for the offering, it also helps investment bank to set an expected price range. The standard roadshow may continue 10 to 14 days. It stops in 10 to 20 different cities (Ehrhardt and Brigham, 2011). After terms and price of the issue are set by the underwriter, the SEC must confirm the offering (Gitman and Zutter, 2010).

A preliminary prospectus can be received by investors during the waiting period between statement's filing and its approval. This preliminary prospectus contains all the main information that will appear in the final prospectus but the final price is not included (Ehrhardt and Brigham, 2011). The preliminary prospectus is also called *red herring* because notice in red color exists on the front cover and it notice indicates it is subject to change (Gitman and Zutter, 2010). The waiting period is given to make sure that all possible investors have access to the same information about the company and not to publish any data that has potential to give them an unfair advantage (Gitman and Zutter, 2010) and that period lasts 20 days (Ehrhardt and Brigham, 2011).

1.4.5. First Day of Trading

Price and amount of securities are discussed by underwriter and the issuer the day before. According to Ritter (1987), initial public offerings are mostly

underpriced. Thus it is expected price of securities to rise on the first day. Securities are underpriced in order to make sure that public offering is going successful (Mateiciuc, 2009).

When stocks are valued more than their actual value, it is called overpricing (Ünlü, 2006). When investors notice that price is too high, it may cause decrease in demand and interest on securities may be low (Mateiciuc, 2009).

On the first day, some stocks may end the day with high returns and others may have sharp increase and then decrease in price by the end (Brigham and Ehrhardt, 2011).

Underpricing of IPO in the first day is seen most of the markets all around the world (Engelen and Essen, 2010). Engelen and Essen (2010), outlined a broad range of underpricing for 2,290 firms, in more than 21 countries, such as 2.11% for Argentina, 12.12% for France and 21.14% in the US.

There are several reasons of underpricing issue on initial public offerings. Amount of capital expected on public offering, time period between decision to go public and the public offering, cost of going public and trend of market may be some of the reasons why the firm is underpriced (Cihangir and Kandil, 2009).

There are studies about underpricing across the world. Underpricing is one the most studied topics about initial public offerings (Wagner, 2006).

Dell'Aqua, Etro, Teti and Murri (2015) have examined 129 IPOs on the Italian Stock Exchange from 2001 to 2012. Results show that there is an underpricing in two thirds of sample offerings and an average underpricing level is 6.75%.

There are also studies about underpricing conducted in Turkey. One of these studies is conducted by Demetoğlu (2016). He has studied underpricing in Borsa İstanbul between 1993-2014 and found that 209 companies in a sample of 280 have experienced underpricing.

Table 1: Highest First-Day IPO Returns in the USA in 2009

Symbol	Company	Offer Price	1st-Day Closing Price	Gain
OPEN	OpenTable	$20,00	$31,89	59,50%
RST	Rosetta Stone	$18,00	$25,12	39,60%
CYOU	ChangYou.com	16,00	20,02	25,10
ERII	Energy Recovery	8,50	9,83	15,60
DGI	DigitalGlobe	19,00	21,50	31,20
MJN	Mead Johnson Nutrition	24,00	26,43	10,10%
SWI	SolarWinds	12,50	13,75	10%
BPI	BridgePoint Education	10,50	11,10	5,70%
CACAU	Chardan 2008 China Acqu	8,00	8,12	1,50
NNA-U	Navios Maritime Acqu	10,00	10,05	0,50%

Source**:** Brigham and Ehrhardt, 2011.

1.5. REASONS FOR GOING PUBLIC

There are several reasons why a company wants to go public. Those reasons can be listed as follows:

Risk sharing and diversification: Ownership dispersion can share risk among investors. About 50-70% of risk is able to be diversified (Brealy and Myers, 1991).

Liquidity: A family business or a small family owned company's shares are not liquid and there is no ready market. If one of the stockholders wants to sell out some of the shares to get cash, it may not be easy to find a buyer. Even if stockholder finds a buyer who is ready, there is no price that is set up. Public companies do not have that kind of problem (Altın, 2010).

Also Bancel and Mittoo (2007) has studied about reasons of going public for European firms. They surveyed 78 Chief Financial Officers (CFOs) in 12 countries of Europe. The results show that visibility, prestige and financing for growth are the main reasons for going public. For large companies, outside monitoring is an important benefit and for small firms, they see public offering as a source of financing. Family-controlled firms, on the other hand, sees it as a bargaining power with creditors without giving up on control.

Röell (1996) concludes the subject that the real reasons of going public are stock price, stocks that are easily convertible into cash and competition among finance providers.

Additionally, Mayer Brown JSM, which is among the leading law firms in the world (Mayer Brown JSM, 13.06.2018) has listed why firms go public:

- The need to provide additional capital in order to fund growth of the company
- The need to give existing shareholders in the company an option to leave the company all or part of their investment
- The need to convert an owner-managed company to a more widely-held company with a non-owner management team
- The desire to enhance the profile of the company in the eye of related parties such as customers, suppliers, investors and lenders
- The desire to create spin-off a particular division or line of business in order to provide value to shareholders (Mayer Brown JSM, 2016).

Also capital structure theories could explain why a firm chooses to go public:

Market Timing Theory: Market timing theory is that firms issue new equities when prices of the equity is high and when prices are low, firms buy back their shares (Baker and Wurgler, 2002). Thus, companies' capital structure is affected by fluctuation of prices (Popescu and Visinescu, 2009).

Pecking Order Theory: Pecking order theory suggests that a company prefer to use internal financing as first choice rather than other financing methods. Theory explains that firms prefer to invest with internal financing first then, by using debt capital and lastly they would go for issuing equity (Al-Tally, 2014). Pecking order theory highlights an hypothesis that if firms issue equity, it must have used all retained earning and debt capacity. Thus it need more financing (Brau, 2010).

The Signalling Theory: This theory arises from information asymmetry between management and stockholders. If firm is believed to be undervalued by managers, they will issue debt as first choice then issue equity. On the other hand, if they believe that firms is overvalued then they choose to issue equity first (Naidu, 2011).

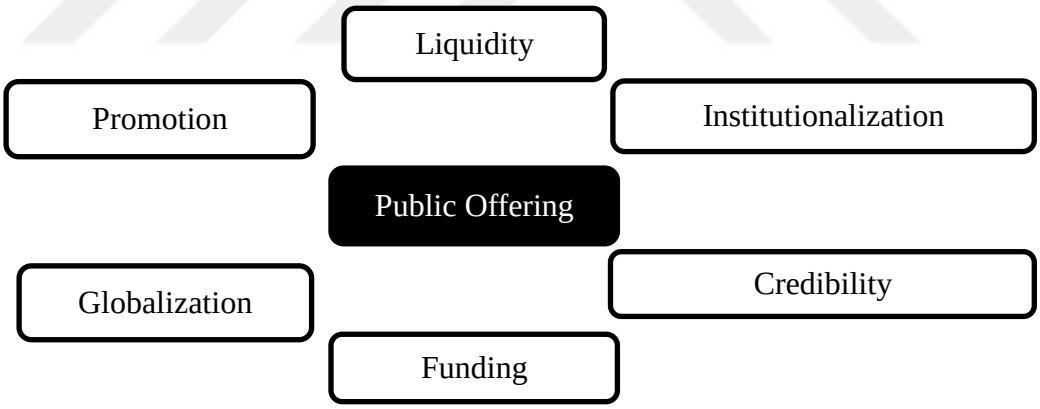
1.6. ADVANTAGES AND DISADVANTAGES OF GOING PUBLIC

A public offering has advantages as well as disadvantages when a firm goes to public. In order to understand, both advantages and disadvantages have to be known by firm. In the following, literature is summarized, advantages and disadvantages are discussed.

1.6.1. Advantages of Going Public

By considering following advantages, companies may decide to go public. Aside from all, it may be enough for owner to go public and open a new way for future growth when they consider the prestige company gains and acceptance by the industry (Laiakis, 2010). Also, Ellingsen and Rydqvist (1997) argues that market valuation rather than infusion of cash is the main benefit of initial public offering.

Figure 4: Main Advantages of Going Public



Source: Borsa İstanbul, 2017.

1.6.1.1. Access to Public Capital Market

Public capital markets provide a way to obtain capital than private markets. It lowers the cost and adds value to the company. Capital markets maximize purchasers of securities. On the other hand, private companies are limited. They may choose

either debt or private equity. That is generally made by counting assets as collateral (Cifrino, et al., 2014).

1.6.1.2. Overcoming Borrowing Constraints

It is difficult for banks to calculate credit for companies which is not publicly-traded. When compared to publicly-traded companies, banks take more risks if they provide credit for a private company. Public offering gives bargaining power to firms (Akkılıç and Yıldırım, 2017).

Going public is an alternative to the banks and it is a new way of finance source. If a company with a large external funding deals with information asymmetries, it may face high interest rates or even credit rationing (Pagano, et al., 1995).

1.6.1.3. Liquidity and Harvesting the Wealth

The stock of the private corporation is not easy to convert into cash. If an owner wants to sell some shares and find a buyer who is ready, price of the stock is not set up (Ehrhardt and Brigham, 2011).

After an initial public offering, shares offered to the public provide an opportunity to be bought and sold at price formed according to the supply and demand of the market at the desired time in a stock exchange. This way makes shares of existing shareholders easy to convert into cash (Serbest Piyasa Kurulu, 2010). When stock is traded freely, it will provide public company an advantage of liquidity and market valuation over privately-held company (Newman, 2001). When interest in stocks exists in market, publicly traded company could raise more capital (Zozan, 2007).

For a company, a successful IPO can mean generating of important amount of proceeds and it also means that it can hire more people, invest new infrastructure, conduct more research and development and provide more products and services for customers (Schultheis, et al., 2008).

Table 2: Largest IPOs in the US

Company	Year	Exchange	Industry	Deal Size ($M)
Alibaba	2014	NYSE	Technology	$21,767
NTT Mobile	1998	Tokyo Stock Exchange	Telecom	$18,099
Visa	2008	NYSE	Technology	$17,864
AIA	2010	Hong Kong Stock Exchange	Financials	$17,783
ENEL SpA	1999	NYSE	Utilities	$16,452
Facebook	2012	NASDAQ	Technology	$16,007
General Motors	2010	NYSE	Consumer Discretionary	$15,774
ICBC – H	2006	Hong Kong Stock Exchange	Financials	$13,958
Deutsche Telekom	1996	NYSE	Telecom	$13,034
Dai-ichi Mutual Life	2010	Tokyo Stock Exchange	Financials	$10,986

Source: Renaissance Capital, 12.06.2018.

1.6.1.4. More Dispersed Share Ownership

The scope of diversification is increased by going public (Pagano, et al., 1995). Selling stocks in a public offering, allows the company to diversify owners and thus reduces the riskiness of owners' portfolio when compared to a privately held company (Ehrhardt and Brigham, 2011).

Public firms can obtain required capital from large number of investors. However, in private firms, mostly venture capitalists or investors called angel provide most of the financing. Thus shareholders of publicly-traded firms are more diverse than private firms. Also, it should be noted that, in private firms, large investor or a small group of investors have more bargaining power on the firm than the ones on the publicly-traded firms (Chemmanur and Fulghieri, 1999).

1.6.1.5. Institutionalization

Public offering and being traded in a stock exchange, helps fasten institutionalization process by control mechanism of the capital market (Çavuşoğlu, 2008).

Companies are required financial statements to be controlled and they are obliged to inform their shareholders as well as the public. Independent audit companies control firms' financial statements after IPO (Zozan, 2007). Thus because of the control mechanism of stock exchanges, modern management technics could be obtained by the company (Başpınar, 2008).

1.6.1.6. Opportunity to Obtain New Corporate Cash

When a private firm wants to obtain cash by selling new stock, either existing owners or wealthy investors is an option for it. The existing owner may not want to put more money on the company or may be insufficient to provide any cash. When outside investors do not have any right to vote, inside stockholders can make use of it. Public offering opens information of firm to the public and firms are regulated by the Securities and Exchange Commission. Thus, raising capital becomes easier for the firm (Ehrhardt and Brigham, 2011).

The amount collected by selling shares to the public, is not a sum which is obligatory to be repaid after a certain period and is not included as a liability on the balance sheet. Funds collected in this way are included in the shareholders' equity (Ayoğlu, 2008).

1.6.1.7. Lower Debt-to-Equity Ratio

For a firm, having too much debt causes negative consequences. One of these consequences is the interest rate that banks demand for the loan. In a public offering, firm adds loan and lowers its debt-to-equity ratio. Thus firm could have better conditions before going public when it is about to take a loan (Mateiciuc, 2009).

1.6.1.8. Increased Employee Motivation and Retention

A company may choose to give stock as an incentive to employees firm sees as valuable. Due to that it is beneficial to know the worth of those options (Ehrhardt and Brigham, 2011). A stock-based compensation plan to attract and retain key employees and managers give the opportunity to share in the financial success of the firm (KPMG, 2015).

1.6.1.9. Prestige and Higher Visibility

An IPO has the opportunity to create more diverse investor base. Distribution of shares to the wider area can create awareness for what company provides. This visibility may provide the company competitive advantage over privately held companies in the same industry (KPMG, 2015). Customers have knowledge that the company has made a lot of steps in order to be recognized in the industry (Laiakis, 2010). Also public companies have prestige and glamour over privately-held companies. This may produce publicity for that company and may help it benefits its product and business (Newman, 2001).

1.6.1.10. The Use of Stocks as Collateral

Initial public offering allows stocks of the firm to be bought and sold in a stock exchange and stocks become liquid (Çavuşoğlu, 2008). After initial public offering, firms gain ability to export debt securities or get credit from banks and by using their stocks as collateral (Sayar, 2003).

1.6.1.11. Self-Dealings and Consumption of Perks

In a private company, when owners do not involve in the day-to-day operations of the firm, then manager may have opportunities such as unethical self-dealings, and personal transactions. When this situation occurs, manager gains full

control and cost is distributed by all owners. If the company is publicly owned, such transactions become much harder to arrange (Ehrhardt and Brigham, 2011).

1.6.1.12. Opportunity to Second Public Offering

After initial public offering, companies can go second public offering in order to raise capital (Serbest Piyasalar Kurulu, 2016). Second public offering is made by firms whose stocks are already publicly traded (Madura, 2014).

1.6.1.13. Other Advantages of Going Public

Stock Market Discipline: Additional ways to discipline management are added when company goes public. Thus agency problems between shareholders and managers can decrease (Pagano, et al., 1995).

Facilitates merger negotiations: Acquiring a company or being acquired by a company becomes easier when having an established market price (Ehrhardt and Brigham, 2011).

Increases potential markets: According to many companies which report, their products and services are sold easily to possible customers after becoming a public company (Ehrhardt and Brigham, 2011).

Publicly Observable Share Price: When a firm goes public, investors inside and outside can observe the share price of the firm. Observable share price provides outside investors to take action (Chemmanur and Fulghieri, 1999).

1.6.2. Disadvantages of Going Public

Although initial public offering has many advantages, companies also face disadvantages of going public. Main disadvantages are disclosure and costs incurring on the process and thereafter.

1.6.2.1. Cost of Going Public

In a study of Ritter (1987), two cost components of going public are presented: fixed costs and expenses. Registration fees, auditing fees, printing costs are examples of fixed costs.

Even after the public offering, firm still has expenses. Examples are stock exchange fees, accounting fees, and legal fees (Mateiciuc, 2009). Also a public company must prepare reports in frequent periods. These can be costly (Ehrhardt and Brigham, 2011).

1.6.2.2. Adverse Selection and Moral Hazard

When there is information asymmetry between investors and the issuing company, investors may be willing to pay less for a stock of company (Mateiciuc, 2009). Thus this may result reduce in demand and underpricing of shares in the IPO process (Marinkovic, et al., 2012). The situation is the result of adverse selection problem (Mateiciuc, 2009). Listing aggregates information of investors thus reduces adverse selection (Ellingsen, and Rydqvist, 1997).

1.6.2.3. Disclosure/Loss of Confidentiality

Stock exchanges require companies to apply their rules and reveal information which may be significant for their advantage such as R&D or strategies for marketing (Pagano, et al., 1995). This may cause management to devote a lot of time in complying with the requirements of being public (Laiakis, 2010). Publicly owned companies report operating data. The idea of being available of these data may not be a wanted situation for managers and they may want others not to know their net value (Ehrhardt and Brigham, 2011).

Campbell (1979) described why specific companies choose not to go public. Because they might lose their confidentiality. They might lose their competitive advantage and this information may be a knowledge that competitors do not have.

1.6.2.4. Less Incentive for Management

Ownership structure of firm, changes after the firm goes public (Mateiciuc, 2009). Portion of managers shrinks and more dispersed ownership might make management less incentive. Thus it may result in lower performance according to Jensen and Meckling (1976).

1.6.2.5. Focusing on Short-term Earnings

New investors often consider short-term profit. Thus, they may affect the company become focused on their short-term earnings rather than focusing on long-term growth. Even managers may make some decisions to increase short-term earnings which might not be best interest in the long run (Mateiciuc, 2009).

1.6.2.6. Other Disadvantages of Going Public

Investor relations: Firms that went public, must inform investors on current developments (Ehrhardt and Brigham, 2011).

Loss of control: Managers of public companies may have pressure on generating earnings and they may be concerned about maintaining control (Ehrhardt and Brigham, 2010).

Inactive market and/or low price: When the firm is small-scale, if its shares are not traded regularly, the price of shares may not reflect the stock's true worth (Ehrhardt and Brigham, 2011).

Table 3: The Costs and Benefits of Going Public

Author	Costs	Benefits
Ritter (1987)	Direct costs including registration and underwriting costs, etc. Indirect costs including underpricing	Outside finance Diversification
Holmstrom and Tirole (1993)	Not explicitly identified	Increased liquidity and outside monitoring
Booth and Chua (1996)	Underpricing	Improve liquidity
Brennan and Franks (1997)	Underpricing	Dispersed outside shareholding
Zingales (1995)	Not explicitly identified	Lower cost of debt

Source: Pagano, et al., 1998.

CHAPTER TWO
LITERATURE REVIEW ON POST-IPO PERFORMANCE

In this section, studies and articles about post-IPO performance and post-IPO operating performance are reviewed.

Stock performance highlights that how well company perform and also gives related parties a sense of movement after going public. It provides a way which companies can be compared (Laiakis, 2010). Thus, alongside to the purpose of this study, literature review of price performance and post-IPO operating performance is made and studies are summarized.

The table shows number of papers that includes keyword "Post-IPO Stock Performance" and "Post-IPO Performance" in databases.

Table 4: Number of Papers Available in "Post-IPO Stock Performance" and "Post-IPO Performance" Related Publications from Different Electronic Databases

Databases	**Post-IPO Stock Performance**	**Post-IPO Performance**
Google Scholar	8,420	9,340
Science Direct	2,699	3,538
Jstor	2,466	3,177
Emerald Insight	685	838
Web of Science	76	171
EBSCOhost	19	130

Source: Author

Çelik (2016) states that performances of initial public offerings are evaluated in two ways, namely the price performance of the stock and the operational or financial performance of the firms. Firstly, studies on the price performance of stocks can be given as examples of Ritter (1991), Kıymaz (1997 and 2000), Kurtaran (2013), Dağlı and Kurtaran (2008).

2.1. LITERATURE REVIEW ON PRICE PERFORMANCE

When the literature is examined, it is seen that the first studies on public offerings focus on issues such as the reasons for public offering, short and long-term performance after post-IPO, public opening time and underpricing, (Wagner, 2006).

2.1.1. Literature Review on Short-term Stock Performance

When international studies of underpricing and long-term performance of stocks are examined, it seems that the underpricing is generally accepted, but there is not yet a consensus on whether the underpricing advantage of long-term profitability is maintained. Although most of the literature suggests that abnormal return is reversing from positive to negative in the long-run (Ritter, 1991), there is also evidence that positive return continues in the long-term (Dawson, 1987).

Stoll and Curley (1970) found that short-term performance of the first publicly offered stocks was considerably greater than the index.

In a study conducted by Goergena, Khurshed and Renneborg (2009), underpricing issue has been investigated in Germany and France. 325 IPOs between 1997 and 2000 in Germany and 158 companies offered to the public in France between 1996 and 2000 have included. It is found that first-day average return is 52,89% in Germany and 21,06% in France.

Beccalli, Casu and Girardone (2006) studied relationship between stock prices and efficiency. The sample of the study contains all banks that publicly traded in France, Germany, Italy, Spain and the UK. Results of the study suggest that stock prices seem to reflect efficiency.

Levis (1993) has examined returns of 712 initial public offerings in the period between 1980 and 1988 in London Stock Exchange. In the study, it is found that first-day average return of 712 companies is 14,30%.

How analysts' recommendations have an effect on stock returns is studied by Panchenko (2007). Sample of the study consists of 36 large cap stocks from the US stock market in period of 1997-2003. Findings suggest that there is a significant effect of analysts' recommendations on the market.

Chalk and Peavy (1987) studied 649 firms that went public between 1975 and 1982. Mean return of their sample is 21,65%.

How Standard and Poor's ranking changes affect stock performance is examined by Mulugetta, Movassaghi and Zaman (2002). In this short-term performance analysis, the study shows announcement day and surrounding dates show statistically significant results.

Aggarwal and Rivoli (1990) studied 1598 initial public offerings in the period between 1977 and 1987 in New York Stock Exchange. It is found that short-term price performance of stocks is average 10,7%. According to the study, price performance of stocks are positive until the first year but after it begins to decline.

Güldiken, Tupper, Nair and Yu (2016) studied how media coverage affects stock performance of IPOs. 93 firms from NYSE and NASDAQ are included in the sample. Results of the study show that stock price of IPO is significantly impacted by coverage in credible financial media. Also it is found that uncertainty tone of the media negatively affects stock price of IPO.

343 initial public offering in Chinese market is examined by Yu and Tse (2006). They found that first day average abnormal return is 123,59%.

Studies focused on Turkey are summarized as follows:

In a study conducted by Güzelhan and Ağar (1991), stock price performance of 36 publicly-traded companies in 1989-1991 have been investigated. In the study, abnormal returns are 2,6% in the first day, 9,5% in the first week, and 9,5% in the first month and they conclude that underpricing issue exists in Turkey.

Erdem (1993), has investigated 64 companies in 1989-1992. Results show that first day abnormal return is 57,11% and there are abnormal returns statistically significant until following 30 days.

Ünlü and Ersoy (2006) have studied short-term performance of stocks of 141 initial public offerings in 1995-2005. Results of the study show that underpricing has been spotted at 91 stocks (64,54%) and 39 stocks (27,66%) had been overpriced. 11 stocks (7,8%) is priced at the same level with market. The average initial return of the portfolio consisting of all stocks is 5,7% and cumulative market-adjusted return is 14,2%.

Savaşkan (2005) examined 19 initial public offerings in İMKB in 2004-2005 and found that investors purchase stocks for the aim of speculation and if they fail on the first day, they are willing to sell even if it is a loss.

Ünlü and Ersoy (2008) have studied short-term performance of 112 initial public offerings in 1995-2008. According to results of the study, 37 companies are overpriced. Average first-day return is 6,52%.

Kıymaz (1996) has examined price performance of 88 IPOs in industrial sector. In the study, it is found that first-day average abnormal return is 12,2%.

Kıymaz (1997) have studied stock performance of 39 companies of financial sector and found that first-day return of all companies is 15,3%. For sub-sectors, he has identified 20,9% for banks, 10% for insurance, 5,5% for leasing/factoring and 18,5% for investment/holdings. When performance of stocks after first day is observed, it is seen that first-day returns is replaced by negative returns.

Yalçıner (2006), has studied underpricing by examining 93 initial public offerings between 1997-2004. According to the study, first-day average abnormal return is 7,2%.

Rhoades, Önder and Güner (2004) studied how underwriter reputation affects stock performance of 191 initial public offerings in 1993-2000 in İstanbul Stock Exchange. Findings show that initial day IPO returns are not affected by underwriter reputation but they also state that there is a complex relationship between underwriter reputation and IPO returns after factors determining price of IPO, are controlled.

Teker and Ekit (2003) have examined performance of 34 initial public offerings in 2000 in Istanbul Stock Exchange and they found that first 3-day cumulative average abnormal return is 9,78% and in -7,21% at the end of 30th day but they state that average abnormal return at the end of 30th day is not statistically significant.

In Küçükkocaoğlu's study (2008), 217 initial public offering in 1993-2005 have been examined. Results show that in Turkey, underpricing issue exists at an important level.

In a study conducted by Aydoğan and Yıldırım (1991), first-day, twenty-day and 100-day returns of 33 companies that went public in 1989-1991 are calculated. First-day return is 1,2%, 20. day return is -0,81% and 100. day return is -18%. But they states that results are not statistically significant.

A short-term price performance study is conducted by Altan and Hotamış (2008). In the study, 67 initial public offerings in 2000-2006 has been examined and results show that average abnormal returns are 6,78% for the first day, 1,49% for the first week, 6,64% for the first month and 15,65% for three-month period.

In a study of Ertaş (2012), first day minimum raw return of 113 initial public offerings in 1998-2007 is -18,2% and maximum raw return is 47,5%. Average raw return is 9,2%. Also he states that minimum abnormal return is -18,9%, maximum abnormal return is 44,7% and average abnormal return is 9% in the same time period.

In a study of Kıymaz (2000), 163 initial public offerings in 1990-96 have been investigated. Average abnormal return of first day is 13,1%. Industrial sector, financial sector and others are underpriced at 11,7%, 15% and 17,6% respectively. Kıymaz also states that underpricing lasts for 4 weeks and then declines into -15,1% at the end of third month.

Açıkgöz and Gökkaya (2017) studied initial returns and volatility by using initial public offerings in Turkey in 1998-2013. Results show underpricing exists in IPOs. Also they state that on the month firm went public, a positive relation exists between their volatility and initial returns.

Akkılıç and Yıldırım (2017) studied 19 initial public offerings in İstanbul Stock Exchange in 2014-2016. Results of the study show that underpricing exists in initial public offerings in İstanbul Stock Exchange.

2.1.2. Literature Review on Long-term Stock Performance

In the study conducted by Agathee, Sannassee and Brooks (2014), 44 listed companies in the period between 1989 and 2010 have been examined. Results show that, 3-year cumulative average-adjusted return is -16,5%.

In the study conducted by Buser and Chan (1987), the two-year performances of 1078 stocks belonging to the companies publicly offered for the first time between 1981 and 1985 were evaluated and it was determined that the first-day performance was 6.2% higher than the index results.

Ritter (1991) found in his study of 1,526 companies in the period between 1975 and 1984 in United States of America that the cumulative adjusted abnormal return was positive in the first 4 months after the public offering, but after returning to the second month, it tended to decrease and returned negativity at the 5^{th} month, and in the 36^{th} month eventually reaching -29.13% of the cumulative adjusted abnormal returns.

Ljungqvist (1997) has found that stock returns that were offered to the public after 15 months fell in his study consisting of 189 companies publicly traded in Germany in 1970-1993.

Lyn and Zychowicz (2003) examined the performance of stocks of IPOs, 103 in Poland and 33 in Hungary in the period between 1991 and 1998. The market adjusted returns were -3,32%, 1,18%, -4,92% in Hungary, -4.11%, 3.40% and -24.44% in Poland in one, two and three years respectively.

Peng (2008) examined the long-term performance of 166 initial public offerings in China in 2000-2002. The results of study show that market-adjusted cumulative abnormal returns for the three-year period following the initial public offering are -32.02%.

Dawson (1987) has studied short and long-term stock performance of initial public offerings between 1978-1983 in stock exchanges of Hong Kong, Singapore and Malaysia and found that stocks in Hong Kong and Singapore have experienced abnormal returns in first-day but in after that, it turned negative. On the other hand, in Malaysia, abnormal returns continued to exist after first-day abnormal returns. For stock performance in the long-term, returns recorded in the study are 9,3% for Hong Kong, 18,2% for Malaysia and -2,7% for Singapore.

Ritter and Welch (2002) has studied initial public offerings in the USA. According to this study containing 6,249 companies, average first-day return is 22,6%. In long-term, when the return is market-adjusted, it goes far negative value which is -23,4%.

In the study of Chen, et. al. (2000), 277 A shares and 65 B shares have been evaluated by using BHAR. Results show that, at the end of third year, average abnormal return of A shares is -21,20% and average returns of B shares is -44,28%.

Houge and Loughran (1999) have studied 393 initial public offerings of banking sector in 1983-1991. They have examined 5-year performance and found that first day average return is 6,4%. Along with that, if stocks are hold by investors for 5-year period, return is experienced as -21,4%.

Dhamija and Arora (2017) studied 377 Indian companies that went public during the period 2005-2015. Both BHAR and CAR methods are used in the study. The results of the study show that Indian IPOs outperform broad market but in the

long-run there is a significant underperformance. The IPOs have -57,33% buy-and-hold abnormal return over 36 months after the offering. 10% of the sample outperformed the index used as benchmark.

Özdemir and Kızıldağ (2017) studied francising and post-IPO performance. The main purpose is to examine whether franchising activity is priced in the financial market and how franchising firms differ from non-franchising firms at the time of offering and these two firms are compared. The results show that franchising affects post-IPO benchmark adjusted cumulative abnormal returns in a positive way over three-year period.

Gompers and Lerner (2003) studied 3,661 U.S. IPOs from 1935 to 1972. They state that the sample showed underperformance when buy-and-hold abnormal returns are used. When cumulative abnormal returns are used, underperformance disappears. Calendar-time analysis shows that IPOs have returns as much as market. In the study, Fama-French regressions are used but results are insignificantly different from zero. Thus they suggest no abnormal performance.

Espenlaub, Gregory and Tonks (2000) examined IPOs in the UK. The study consists of IPOs in the period 1985-1992 and they examined long-term returns. In the study, a number of methods are compared. Results of the study show that, after the first 3 year, there are negative abnormal returns. However, over the 5 years after IPO, negativity of returns are less than the first 3 year. Also, significance of underperformance is less marked when calender-time approach is used on measuring returns.

Chinese small and medium enterprises are studied by Gao, Cong and Evans (2015). Relationship between earnings management and IPO performance is examined in the study. The sample consists of 464 IPOs from Shenzen Stock Exchange SME board during 2006 and 2010. Findings of article show that higher level of total discretionary accruals before IPO is related to higher underpricing level and weaker long-run performance. Also, Chinese small and medium enterprises have positive 3-year long-term stock returns. They state that Chinese SME IPOs show different behavior when compared to main board firms.

Relationship between directors' dealing and post-IPO performance is studied by Hoque and Lasfer (2015). The sample consists of 1117 IPOs from London Stock

Exchange. Their study show that, when directors are net seller, positive long-term returns are more likely to be obtained. However, when directors are net buyers, IPOs underperform significantly.

Dong and Michel (2012) examined short and long-run IPO retuns and their relationship with IPO growth prospects. The sample consists of 7,570 IPOs from 1982 to 2007. Industry-level growth measure is used in the study. Their findings show that, before Internet bubble period (1999-2000), IPOs in industries that have high growth prospects gain high first-day and long-term returns lasting three-years following the offering. However, the effect of industry-growth reverses during the Internet bubble period.

Zaremba and Szyszka (2016) studied post-IPO underperformance on Central and Eastern European markets. They examined long-term performance of 1100 stocks from 11 countries for the period 2002-2014. Their results show that old companies perform better than young companies.

Anderloni and Tanda (2016) studied green energy companies. They examined long-term performance. All energy companies that went public between 2000 and 2014 are included. The study shows that there is a lower underpricing on green energy companies. In the long-term performance of green energy companies is similar to non-green ones.

Stock performances of America's corporate citizens considered as best are examined by Brammer, Brooks and Pavelin (2009). Short and long-term performances are measured in the study. Results show that, firms in Top 100 create little but positive cumulative abnormal return.in 21-trading day but mostly not statistically significant. Also study study suggests that companies that are newly listed as good citizens and companies in the list but not included in S&P500 tend to provide considerable positive abnormal returns.

Liu, Uchida and Gao (2012) studied how political connections affect long-term stock performance of IPOs in China. The sample consists of initial public offerings between 2000 and 2007. Results of the study show that firms that have political connections are likely to have better performance.

How Six Sigma affects on stock performance is examined by Goh, Low, Tsui and Xie (2003). Two issues is examined. Time that Six Sigma implementation is

announced and long-term performance of those companies. Results of the study show that on the event day, abnormal returns are not significant and Six Sigma companies did not outperform S&P500 significantly.

Guo and Zhou (2014) studied innovation capability and post-offering performance of biotech companies. Sample of the study consists of 151 biotech companies from 1991 to 2009. Findings show that innovation capability is crucial to stock performance. If biotech firms are able to expand their research and make progress, they are likely to succeed in the long-term.

In the study of Zhang, Jiang and Guo (2017), how haze pollution affects stock performance is examined. Results of the study indicate that haze pollution affects negatively on stock performance.

Drobetz, Kammermann and Wälchli (2005) examined long-term performance of IPOs in Switzerland from 1983 to 2000. Results of the study show that average market adjusted initial return is 34,97%. Also their findings on long-term underpricing is due to that IPO firms tend to be small firms.

Huang and Zong (2017) examined stock performance of socially responsible companies that ranked in Corporate Responsibility Magazine. 100 companies in the US are included. Monthly stock returns of these companies are calculated and evaluated with S&P500 which is selected as market index. The results show that these companies performed better than market in terms of monthly stock returns. In the study, selected companies is narrowed down to Top 75, 50, 25 and 10 firms. As they narrowed, the difference between firms' return and market return also shrank.

Table 5: Studies on Initial Public Offerings around the World

Country	Author(s)	Years	IPOs
USA	Ibbotson, Sindelar and Ritter	1960-96	13308
Germany	Ljungqvist	1978-92	170
Australia	Lee, Taylor and Walter	1976-89	266
Austria	Aussenegg	1964-96	67
	Rogiers, Manigart and Ooghe	1984-90	28
Brazil	Aggarwal, Leal and Hernandez	1979-90	62
China	Datar and Mao	1990-96	226
Denmark	Bisgard	1989-97	32
Finland	Keloharju	1984-92	85
France	Husson and Jacquillat; Leleux and Muzyka	1983-92	187

The Netherlands	Wessels; Eijgenhuijsen and Buijs	1982-91	72
India	Krishnamurti and Kumar	1992-93	98
Hong Kong	McGuinness; Zhao and Wu	1980-96	334
England	Dimson; Levis	1959-90	2133
Spain	Rahnema, Fernandez and Martinez	1985-90	71
Israel	Kandel, Sarig and Wohl	1993-94	28
Sweden	Rydqvist	1980-94	251
Switzerland	Kunz and Aggarwal	1983-89	42
Italy	Cherubini and Ratti	1985-91	75
Japan	Fukuda; Dawson and Hiraki; Hebner and Hiraki	1970-96	975
Canada	Jog and Riding; Jog and Srivastava	1971-92	258
Korea	Dhatt, Kim and Lim	1980-90	347
Malaysia	Isa	1980-91	132
Mexico	Aggrawal, Leal and Hernandez	1987-90	37
Norway	Emilsen, Pedersen and Saettern	1984-96	68
Portugal	Alpalhao	1986-87	62
Singapore	Lee, Taylor and Walter	1973-92	128
Chile	Aggarwal, Leal and Hernandez	1982-90	19
Taiwan	Chen	1971-90	168
Tailand	Wethyavivorn and Koo-smith	1988-89	32
New Zealand	Vos and Cheung	1979-91	149
Greece	Kazantzis and Levis	1987-91	79
Indonesia*	Hanafi	1989-94	106
Nigeria*	Ikoku	1989-93	63
Philippines*	Sullivan, and Unite	1987-97	104
Belgium*	Rogiers, et al.	1984-90	28
Poland*	Aussenegg	1991-98	149

Source: Ritter, 1998 and *Ritter, 2000.

Studies focused on Turkey are as follows:

In these studies conducted in Turkey, some of them examined both short and long-term stock performance of IPOs.

In a study conducted by Kurtaran (2013), she investigated initial public offerings in Turkey in 1994-2009. Results show that underpricing level is high and due to that investors gain high returns on the first day. Also in the study, she has classified returns by sectors and noticed that the manufacturing sector has the highest abnormal return. Sector that favors its investor in the short-run is other organizations sector according to the cumulative returns method. On the other hand, according to the buy-and-hold return method, the same sector has experienced low performance. In the long-run, according to cumulative return method, the highest return belongs to wholesale and retail trade, restaurants and hotels sector, and according to buy-and-

hold return method, financial sector has the highest return. The lowest return is experienced by technology sector.

In his study, Özer (1999) has studied the long-term performance of 89 IPOs between 1989 and 1994. According to long-run performance results of this study, returns followed by a decreasing trend within 500 days after the IPO and then followed by an increasing trend. However, the return at the end of the 500-day period, he found that the return at the end of 500-day period was under the return at the end of second week.

Ünlü (2006) examined the 3-year performance of stocks of publicly offered banks between 1990-1995. According to the results, banking sector shares have a negative return in one and two year periods. In the three year period, it has a performance over market performance.

Kırkulak (2010) has studied 5-year long-run performance of initial public offerings in İstanbul Menkul Kıymetler Borsası (IMKB) in 1995-2004. The study shows positive return at short-run and negative return at long-run. Average first day return is 8,26% and he revealed that there is an underpricing issue on first-day returns at IMKB. He also used buy-and-hold return in order to calculate long-run performance. Results show that stocks which have high return at first-day, also have high returns at long-run and large companies make investors earn more than small companies.

Düzakın (1998) conducted a study containing 92 publicly-traded companies in 1994-1997. She examined short and long-term price performance. Results show that first day average abnormal return is 6%, average abnormal return at the end of third year is -37,2% but daily, weekly, monthly and yearly returns are not found as statistically significant.

Performance of 70 IPOs in long-term in 1992-1995 is examined by Karan and Ayden (2000). Results show that in terms of long-term investment of stocks, there is no statistically significant result.

Durukan (2002) investigated 173 initial public offerings in 1990-1997 and found that initial public offerings are underpriced at 14,61%. In the study, also 12, 24 and 36-month performance of initial public offerings is examined. Abnormal returns of IPOs declines at the end of first year, but on the second year, it begans to

rise and on the third year, it declines. In the study, only abnormal return at the end of 24th month is found statistically significant.

In the study of Erdem and Erdem (2008), relationship between efficiency and stock performance of Turkish banking sector during the crisis period is examined. Data envelopment analysis is used for the time period 1998 to 2004 in the study. Average efficiency of banks decreased in 2001 and started to increase after 2001 except 2003 when the financial crises affected banks. During the time period, six banks at least happened to be technically efficient.

In a study conducted by Bildik and Yılmaz (2008), 234 initial public offerings in 1990-2000 are examined. In the study, findings show that abnormal return of the first day is 5,94% and long-term cumulative abnormal return is -84,5%.

Kaya (2017) evaluated companies on Borsa İstanbul. In the study, IPOs' performance in the long-term in 2002-2006 is examined whether abnormal return is obtained or not. These stocks are examined for 1, 3 and 5-year period by using buy-and-hold abnormal return method. Findings show that, average abnormal return of portfolios for 1, 3 and 5-year period is -13,2%, 19,4% and 79,2% respectively. In the study, 5-year abnormal return is found statistically significant.

Table 6: Studies on Stock Performance Focused on Turkey

Author	IPOs	Years
Kıymaz (1996)	88	1990-95
Özer (1999)	89	1989-94
Kıymaz (2000)	163	1990-96
Durukan (2002)	173	1990-97
Sevim, and Akkoç (2006)	185	1990-99
Küçükkocaoğlu (2008)	217	1993-2005
Ünlü, and Ersoy (2008)	112	1995-2008
Ünlü, et al. (2009)	136	1992-2005
Kırkulak (2010)	150	1995-2004
Altan, and Hotamış (2008)*	67	2000-06
Kaya (2017)*	38	2002-06
Taş, and Menemencioğlu (2004)*	136	1990-2002

Source: Tükel (2010), *added by Author

2.1.2.1. Long-Term Performance Studies Focused on Shipping

In this section, number of studies focused on shipping companies' initial offering is summarized:

For the first time, shipping IPOs' performance is studied by Grammenos and Arkoulis (1999). Sample of the study consists of 27 companies from 1987 to 1995 and they are examined for 2 years. Findings show that portfolio underperforms the index chosen for the study by 36,79% by the end of second year.

Klova (2017) has studied IPO underpricing in shipping sector using a sample of 60 shipping IPOs from four stock exchanges, namely New York Stock Exchange (NYSE), NASDAQ, London Stock Exchange (LSE) and Oslo Bors (OSE). Findings show that average underpricing is 2.8% in the sample.

Gounopoulos, et al. (2009) have examined 143 global shipping companies that went public during the period of 1984-2007 in large stock exchanges. They used buy-and-hold abnormal returns (BHAR) and cumulative abnormal returns (CAR) and found that in the long-term, after five month-holding period, Shipping IPOs underperform.

Also in the study of Merikas, Gounopoulos and Karli (2010), returns of shipping IPOs in the US are examined. 61 shipping companies in 1987-2007 are included in the sample. Buy-and-hold abnormal returns and cumulative abnormal returns are used. Findings show that these IPOs are underpriced by 4,44% by average and returns by BHAR are 7,50%, 7,73% and 3,26% for 1, 2 and 3-year holding period. They also state that no guaranteed investment exists for long-term shipping IPOs.

2.2. LITERATURE REVIEW ON POST-IPO OPERATING PERFORMANCE

In a study conducted by Jain and Kini (1994), operating performance of 682 initial public offerings are examined. Results show that there is an important decline in operating performance after the offering. Additionally post-IPO operating performance has significantly positive relationship with equity retention by the

original entrepreneurs, but relation does not exist between post-IPO operating performance and underpricing level.

Balatbat, Taylor and Walter (2004) studied 313 initial public offerings in Australia. Results show that after the offering, operating performance of companies went worse during 4-year period.

In the study of Kutsuna, Okamura and Cowling (2002), effect of ownership structure pre- and post-IPOs on operating performance of JASDAQ companies is examined. Results show that operating performance of companies vary according to the managerial ownership, age and size of the firm.

In the study of Wang (2005), changes in operating performance of Chinese firms that went public are examined. Study focused on the effect of ownership and ownership concentration on IPO performance changes. Wang states that, in post-issue operating performance a sharp decline occurred. Also study shows that change in operating performance is not associated with state ownership or concentration of ownership.

Pereira, and Sousa (2016) studied post-IPO operating performance of 555 European firms that offered to public in period of 1995 and 2006. Study show that a decline is seen in post-IPO operating performance of firms. Also, firms in emerging European countries perform worse than those in developed European countries.

In the study of Loughran and Ritter (1997), examination is made to seasoned equity offerings. Study shows that operating performance of issuing firms show improvement on pre-IPO period but after it worsens.

Kitsabunnarat, and Nofsinger (2004) studied operating performance of Thai firms after their offerings. They state that performance declines in overall. Study also shows there is a positive relationship between managerial ownership and performance change in firms with 'low' and 'high' levels of managerial ownership. However, firms with 'intermediate' levels of ownership experience negative relationship between managerial ownership and performance change.

Coakley, Hadass and Wood (2007) examined operating performance of UK IPOs 1985-2003. The sample contains 316 venture-backed and 274 non-venture companies. Results show there is a strong relationship between venture capital certification and operating performance in the non-bubble years.

Operating performance of IPOs in China is examined by Chi, and Padget (2006). They also examined whether there is a relation between operating performance and both short and long-term market returns and short-term underpricing. Study shows that listing causes a change for the worse in profitability, sales-growth rates and efficiency but it affects sales in a positive way. Also study shows that underpricing has an insignificant power on prediction of post-IPO operating performance.

Cai, and Wei (1997) studied long-term stock returns and the operating performance of 180 IPOs on the Tokyo Stock Exchange during 1971-1992 period. Study shows that managerial ownership has no relationship with breakdown in post-issue operating performance.

Chi, Mcwha and Young (2010) studied the performance and survivorship of initial public offerings in New Zealand for the period 1991 to 2005. Results show that there is a proof of existence of underpricing and underperformance in New Zealand. It is reported that operating performance of these New Zealand firms does not change significantly after going public. Market performance of IPOs is affected by underpricing, size and operating performance. In the subject of survival, most of the firms delisted is merger and acquisitions rather than failed firms and failed firms have higher market volatility.

Chen and Liang (2016) studied operating performance of IPOs. They state that venture capital backed initial public offerings underperform non-VC backed IPOs when there is an excess cash on firms. They also add that higher excess cash may motivate firms to spend money on wasteful investments.

Roles of institutional investors before and after IPO are subject of the study conducted by Lo, Wu and Kweh (2017). The results of the study show that before IPO, accrual-based earnings management is facilitated by institutional investors but after the IPO, it is restrained. High post-IPO stock returns and operating performance is experienced by firms having high institutional ownership. Also capital market behaves positively on monitoring function of institutional investors.

There is also studies conducted in Turkey on this subject. These studies are summarized as follows.

Ownership structure and performance of 70 firms is examined by Şamiloğlu and Ünlü (2010). Results indicate that statistically significance is not found in relationship of ownership structure and performance.

Effect of mergers and acquisitions on operating performance of firms is examined by İlarslan (2011). Results of the study show that mergers have an impact of increase on operating performance.

Bulut, Çankaya and Er (2009) have conducted a study on IMKB. The focus of the study is effect of management-ownership on operating performance. The study contains 205 IPOs in the period between 1992 and 2000. Analysis shows that relationship exists between management-ownership level and post-IPO operating performance. Study shows that firms that have low level of management-ownership experience higher underpricing than firms that have high level of management-ownership. Also, high level companies perform better than low level companies.

Bulut (2008) examined the relationship between investment bank and post-offering operating performance. In the study various operating performance measurements are used and investment banks that have high prestige, and investment banks that have low prestige, are compared. 175 initial public offerings are examined in 1992-2000. Results show that no relation appeared between investment bank and post-IPO operating performance.

Table 7: Studies on Post-IPO Operating Performance

Author(s)	Years	Country
Jain, and Kini (1994)	1976-1988	USA
Loughran, and Ritter (1997)	1979-1989	USA
Mikkelson, et al. (1997)	1980-1983	USA
Cai, and Wei (1997)	1971-1992	Japan
Bulut (1997)	1992-2000	Turkey
Chui, et al. (2001)	1990-1997	China
Kutsuna, et al. (2002)	1996-1997	USA
Gönenç, and Karacaer (2002)	1991-1996	Turkey
Napompech (2002)	1980-2000	USA
Wang (2005)	1994-1999	China
Albez (2003)	1995-2001	Turkey
Alper, and Güvençer (2006)	2003-2007	Turkey
Kim, et al. (2004)	1987-1993	Tailand
Yükseltürk (2006)	1994-2001	Turkey
Aydın (2005)	2003-2005	Turkey
Chi, and Padget (2006)	1996-1997	China
Coakley, et al. (2007)	1985-2003	England
Jain, and Kini (2008)	1980-1997	USA
Suzuki (2008)	1997-2002	Japan
Zhang (2008)	1991-1999	USA
Bulut, et al. (2009)	1992-2000	Turkey
Chi, et al. (2010)	1991-2005	New Zealand
Şamiloğlu, and Ünlü (2010)	2002-2007	Turkey
Ünlü (2011)	2004-2008	Turkey
Wong (2012)	1991-2000	Hong Kong

Source: Küçükçaylı, 2013.

CHAPTER THREE
POST-IPO STOCK PRICE PERFORMANCE

3.1. THE AIM OF THE STUDY

This study aims to evaluate stock performances of global shipping companies which has offered and traded in a stock exchange and tries to explain short-term trend in terms of abnormal return. Study examines 21-day short-term performance in terms of stock exchanges for investors' side. It is aimed to be an addition to literature on the subject of post-IPO stock performance in shipping sector.

3.2. DATA

List of companies included in study are collected from their respective websites and information about shipping companies in Oslo Bors has been obtained by e-mail coming directly from Oslo Bors.

Data consisting of companies' close prices is retrieved from Yahoo! Finance. Morningstar, Inc. and Commodity Sistems, Inc. (CSI) are providers of data to Yahoo! Finance (Yahoo! Finance, 13.07.2018).

Data consists of 46 companies which went public between 2000 and 2018. While selecting companies, all companies that were offered to the public within the time period were included in the sample.

Sample of this study is created from companies of selected stock exchanges. These stock exchanges are:

- NASDAQ
- NASDAQ Copenhagen
- New York Stock Exchange
- Oslo Bors

Companies included in the sample are distributed by their public offering years and presented in the following table.

Table 8: Distribution of IPOs by Year in the Study

Year	Number of IPOs
2000	8
2001	1
2002	1
2003	N/A
2004	2
2005	8
2006	2
2007	6
2008	3
2009	N/A
2010	2
2011	1
2012	N/A
2013	1
2014	3
2015	4
2016	1
2017	N/A
2018	2

Source: Author

In the sample, 10 publicly offered shipping companies have been selected from NASDAQ. Also, 4 companies from NASDAQ Copenhagen have been included into the sample and calculated separately.

Table 9: Companies Selected From NASDAQ

Company Ticker	Company
CPLP	Capital Product Partners L.P.
DCIX	Diana Containerships Inc.
DRYS	DryShips Inc.
EGLE	Eagle Bulk Shipping Inc.
ESEA	Euroseas Ltd.
PXS	Pyxis Tankers Inc.

SHIP	Seanergy Maritime Holdings Corp
SBLK	Star Bulk Carriers Corp.
GASS	StealthGas, Inc.
TOPS	TOP Ships Inc.
DFDS	DFDS A/S*
MAERSK-A	A.P. Moller Maersk (Shares A)*
MAERSK-B	A.P. Moller Maersk (Shares B)*
ERRIA	Erria A/S*

Source: NASDAQ and *NASDAQ OMX Nordic, 03.06.2018.

9 publicly-traded companies in the sample have been selected from Oslo Stock Exchange.

Table 10: Companies Selected From Oslo Stock Exchange

Company Ticker	Company
WWIB	Wilh. Wilhelmsen Holding ser. B
BEL	Belships
ODF	Odfjell ser. A
ODFB	Odfjell ser. B
WWI	Wilh. Wilhelmsen Holding ser. A
JIN	Jinhui Shipping and Transportation
AMSC	American Shipping Company
WWL	Wallenius Wilhelmsen Logistics
TEAM	Team Tankers International

Source: Oslo Stock Exchange

In the sample of 46 shipping companies, there are 23 shipping companies from New York Stock Exchange.

Table 11: Companies Selected From New York Stock Exchange

Company Ticker	Company
CMRE	Costamare Inc.
DAC	Danaos Corporation
DHT	DHT Holdings, Inc.
DSX	Diana Shipping inc.
LPG	Dorian LPG Ltd.
EURN	Euronav NV
FRO	Frontline Ltd.
GNK	Genco Shipping and Trading Limited Warrants
GNRT	Gener8 Maritime, Inc.

GSL	Global Ship Lease, Inc.
HMLP	Hoegh LNG Partners LP
INSW	International Seaways, Inc.
NVGS	Navigator Holdings Ltd.
NM	Navios Maritime Holdings Inc.
NMM	Navios Maritime Partners LP
SB	Safe Bulkers, Inc
SALT	Scorpio Bulkers Inc.
SMHI	SEACOR Marine Holdings Inc.
SSW	Seaspan Corporation
SFL	Ship Finance International Limited
TGP	Teekay LNG Partners LP
TNK	Teekay Tankers LTD
TNP	Tsakos Energy Navigation Ltd

Source: Top Foreign Stocks and NASDAQ, 03.06.2018.

3.3. METHODOLOGY

The most appropriate metric to use in order to measure post-offering stock performance is a matter of disagreement (Fama, 1998). Currently, there are three popular ways to measure post-offering stock performance:

- Buy-and-hold abnormal return (BHAR)
- Cumulative average adjusted return (CAAR)
- Fama-French model (Gao, et al., 2015).

Gounopoulos et al. (2009) stated that Brav et al. (2000), Drotbetz et al. (2005), and Alvarez and Gonzalez (2005) showed that performance is highly dependent on the methodology selected for evaluation.

As an example for studies using different methodologies, Chang et al. (2010) have evaluated the IPO stock performance using three approaches: pooled regressions using buy-and-hold returns, Fama-MacBeth regressions using post-IPO monthly returns, and the Fama-French three factor model (Chang, et al., 2010).

In this study, for evaluation of performance of global shipping companies, methodology used is event study.

Event studies are applications that used capital asset pricing model widely. They attempt to identify whether an event in market or life of a company, affected performance of the company (Beninga, 2014).

Shortly, capital asset pricing model is an important theoretical development. One of the major application of capital asset pricing model (CAPM) is to measure cost of equity capital. To explain shortly, CAPM states that cost of equity capital is equal to risk-free rate plus a risk premium. Riskiness of a stock relative to the market and difference between market rate of return and risk-free rate determine the risk premium. Riskiness is determined by beta which indicates how stock is relative to the market. It is calculated by regressing stock and an index of a market like Standard and Poor's Index for 500 Common Stocks (S&P500) and risk-free rate is generally 91-day treasury bills (Droms and Wright, 2015).

How a new information has an effect of the price of security is measured by an event study. Especially, the hypothesis that an event will create an effect on the value of a firm/firms and this effect will be visible on the prices of securities is researchers' concern (Dutta, 2014).

Aim of an event study is to determine if an event created unnatural movement of company's share price (Beninga, 2014). For instance, in order to determine whether earning announcement will have an impact on stock prices, event study may be conducted (Dutta, 2014).

On this subject, Dutta (2014) states that accounting, finance and economics uses event study methodology extensively. Events in various types are studied with this methodology. Takeover announcements, CEO resignation announcements, and competitor bankruptcy announcements may be an example. Econometric techniques are used to measure effects of an event on the value of a firm in such methodology (Dutta, 2014).

In an event study, there is a calculation of abnormal returns. Abnormal returns are the difference between realized return and its expected return. This expected return is generally measured by market model which requires market index for estimation. Also, in order to see the total impact, cumulative abnormal return is calculated (Beninga, 2014).

An event study includes three time frames: the estimation window, the event window, the post-event window.

The event window is the time frame consisting of the actual event date. It generally starts before a few trading days before. The length is generally 3, 5 or 10 days. This helps to investigate whether there is a leakage of information.

The estimation window is a time frame that usually has a length of 1 calendar year or minimum it should have 126 trading days. Estimation window is used in order to determine normal behavior of returns of the firm. Mostly regression is used for it.

The post-event window could have a length of 1 month or years. It is used to measure longer impact of the event (Beninga, 2014).

There are many ways to estimate abnormal returns. Two of these ways are buy-and-hold abnormal return and cumulative abnormal return. In short-term calculation, these two are very alike. For long-term calculation, BHAR seems better as a concept (Bauer, 22.08.2018) and it became standard method for long-term abnormal return calculation (Barber and Lyon, 1996).

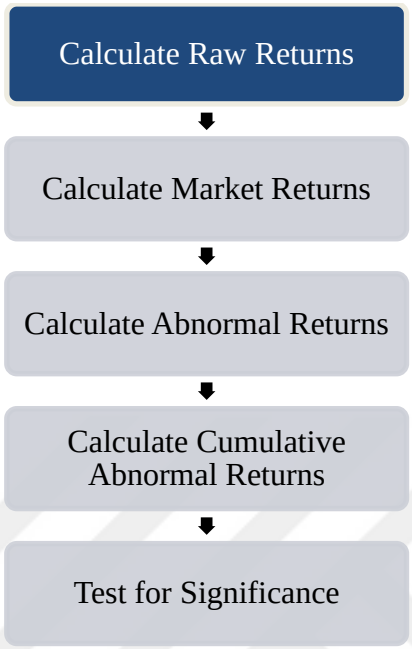
In this study, *cumulative abnormal return method* is used.

When market model is used in event study method, beta which shows the relation between market and stock should be used but due to that initial public offerings have no historical price data, beta is assumed to be equivalent to 1 (Kıymaz, 1997).

Similar to Gounopoulos, et al. (2009), cumulative abnormal return method is used on calculation of abnormal returns. This study's sample is selected from global shipping companies in the period between 2000 and 2018 and due to that it presents more recent results than other studies. Also, comparison of portfolios created from stock exchanges is what it differs from other studies.

Firstly, in the study, the raw returns of the stocks on the first trading day are calculated. The result obtained from raw returns does not fully reflect the market psychology of the day. Because the performance of the related stock exchange index is not considered in these calculations. On the other hand, the fluctuation experienced in the market on the day when the initial public offering will see the first transaction can affect the performance of the stock. In order to neutralize the performance of such a stock, an abnormal return of the stock has been obtained by the raw return of the stock minus the market return (Otlu and Ölmez, 2011).

Figure 5: Calculation Order



Source: Author

3.3.1. Calculation Of Abnormal Return

Definition of abnormal return by Morningstar, Inc. is the difference between the expected return of a security or portfolio and its actual return (Morningstar, Inc., 15.07.2018). A security's expected return could be calculated by using different models. The simplest model is the market-adjusted model. In market-adjusted model, you need actual return of security and the actual return of market index (Beninga, 2014). Abnormal returns are dependent on actual returns. Whether actual returns are higher or lower, so abnormal returns could be positive or negative (Morningstar, Inc., 15.07.2018).

Return of the share i at the time t is calculated by using the formula below:

$$R_{i,t} = (P_{i,t} / P_{i,t-1}) - 1$$

In the formula above,

$P_{i,t}$ = close price of share i at the time of t,

$P_{i,t-1}$ = represents close price of share i at the time of t-1

$R_{i,t}$ = raw return of stock at the time i

In order to calculate market return, formula below is used:

$$R_{m,t} = (P_{m,t} / P_{m,t-1}) - 1$$

In this formula;

$R_{m,t}$ = market return at the time t

$P_{m,t}$ = close price of market at the time t

$P_{m,t-1}$ = close price of market at the time t-1

In order to calculate market return, a general index is defined for each stock exchange as Gounopoulos et al. (2009) did in their study. Composite or all-share indices are selected for calculation. Raw returns of the companies in the stock exchanges are adjusted by using market returns of their respective indices.

Indices used in this study are;

NASDAQ Composite Index for NASDAQ,

NYSE Composite Index for NYSE,

OMX Copenhagen 20 Index for NASDAQ Copenhagen,

Oslo Bors Benchmark Index for Oslo Stock Exchange.

It must be noted that OMX Copenhagen 20 and Oslo Bors Benchmark Index are selected due to the absence of composite or all-share indices data of these stock exchanges at Yahoo! Finance.

Abnormal return of the stock i at the time t is calculated by substracting raw return of the stock at the time t from market return at the time t. The formula of abnormal return calculation is:

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

In the formula above,

$AR_{i,t}$ = abnormal return of stock i at the time t

$R_{i,t}$ = raw return of stock i at the time t

$R_{m,t}$ = market return at the time t

3.3.2. Calculation of Average Abnormal Return

After the calculation of abnormal returns, average abnormal return is calculated by the formula below:

$$\mathrm{AAR}_t = \frac{\sum_{i=0}^{n} AR_{i,t}}{n}$$

In the formula above;

AAR_t = average abnormal return

$AR_{i,t}$ = abnormal return of stock i

n = number of stocks

Average abnormal return is equally-weighted arithmetic mean of abnormal returns. It is calculated by the sum of abnormal returns of n stocks divided by number of stocks at the time t.

3.3.3. Calculation of Cumulative Abnormal Return

Cumulative abnormal return is defined by NASDAQ as sum of differences between the expected return on a stock and the actual return often used to evaluate the impact of news on a stock price (NASDAQ, 15.07.2018). Cumulative abnormal return for stock i, sum of abnormal returns from time t to time s as indicated in the formula below:

$$CAR_{i(q,s)} = \sum_{t=q}^{s} AR_{i,t}$$

3.3.4. Calculation of Cumulative Average Abnormal Return

Cumulative average abnormal return is the sum of average abnormal returns. Cumulative average-adjusted return of portfolio i from the time q to time s is calculated by formula below:

$$CAAR_{(q,s)} = \sum_{t=q}^{s} AAR_i$$

3.3.5. Calculation of T-Statistics

In order to measure significance, t-statistics is calculated by mean of abnormal returns at the time t is divided by standard error of the mean. Standard error of mean is calculated by IBM SPSS Statistics 23.

The t-statistics is calculated in the formula below:

$$t = \frac{AAR_t}{S.E.(AR_t)}$$

In the formula below, $\sigma(AR_t)$ is standard deviation of abnormal returns and it is used for calculation of standard error. n shows number of observations:

$$S.E.of\ AR_t = {\sigma(AR_t)}\Big/{\sqrt{n}}$$

Same calculation is also applied to cumulative abnormal returns as Otlu, and Ölmez (2011) did in their study.

3.4. LIMITATIONS

This study includes 4 stock exchanges and sample of selected companies. Due to that it may not reflect the true nature of short-term stock performance of global shipping companies. Future studies may cover broader samples and stock exchanges. Also there is an absence of data in both close prices of some shipping companies and market indices in Yahoo! Finance. Due to that companies which do not have enough data to be evaluated are eliminated. In the study it is determined to be used composite or all-share indices in order to reflect market but NASDAQ Copenhagen and Oslo Stock Exchange have different indices used in calculation due to lack of data.

3.5. FINDINGS

In this study, a sample of global shipping companies selected from stock exchanges: NASDAQ (including NASDAQ Copenhagen), New York Stock Exchange and Oslo Bors. Cumulative average abnormal return and average abnormal return of the sample are also presented. Figures of them are represented as percentages. 21-day short-term stock performance of these shipping companies are evaluated on the following section.

3.5.1. Post-IPO Performance of New York Stock Exchange

The New York Stock Exchange, is the world largest organized securities market in terms of market capitalization (Goetzmann, and Rouwenhorst, 2005).

Portfolio of New York Stock Exchange consists of 23 shipping companies. Average abnormal returns, cumulative average abnormal returns, their significance levels and figures are presented in the following.

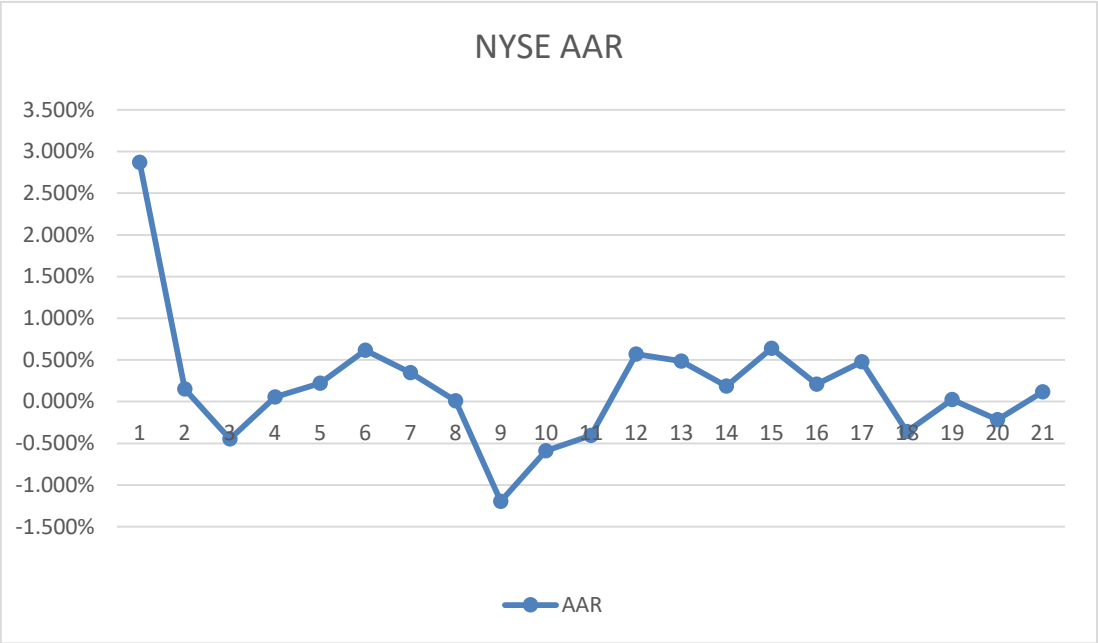
Table 12: Average Abnormal Returns of New York Stock Exchange

Days	Firms	AAR	t-stat
1	23	0.02872	1.175
2	23	0.00151	0.271
3	23	-0.00448	-0.842
4	23	0.00055	0.079
5	23	0.00219	0.399
6	23	0.00618	1.556
7	23	0.00349	0.709
8	23	0.00009	0.023
9	23	**-0.01198***	**-3.48***
10	23	-0.00589	-0.796
11	23	-0.00406	-0.679
12	23	0.00571	0.851
13	23	0.00487	0.765
14	23	0.00185	0.509
15	23	0.00641	1.2
16	23	0.00210	0.515
17	23	0.00478	0.738
18	23	-0.00358	-1.073
19	23	0.00023	0.072
20	23	-0.00216	-0.481
21	23	0.00118	0.334

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

In the table, 21-day average abnormal returns of portfolio from New York Stock Exchange are presented. Average abnormal returns are not statistically significant. However, according to results, only 9^{th} day is statistically significant at 1% and it is the lowest value of the abnormal returns (-1,198%). As a result, it could be said that there is a strong evidence that the lowest average abnormal return of NYSE is -1,198%.

Figure 6: Average Abnormal Returns of New York Stock Exchange



Although first-day return is high, returns of following days fluctuated between positive and negative values. Returns are relatively positive. The highest return is 2,87% on the first day and the lowest return is -1,19% on the 9th day. After 11th day, returns became positive. At the end of 21st day, average abnormal return of NYSE is 0,118%.

Table 13: Cumulative Average Abnormal Returns Of New York Stock Exchange

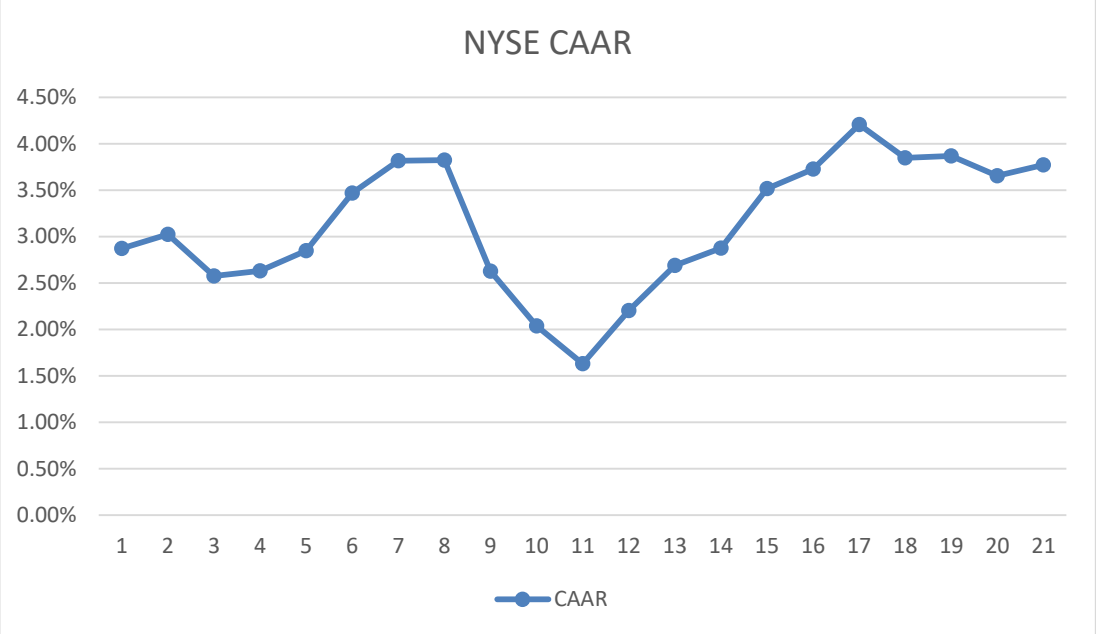
Days	Firm	CAAR	t-stat
1	23	0.02872	1.175
2	23	0.03023	1.401
3	23	0.02575	1.117
4	23	0.02630	1.007
5	23	0.02849	1.041
6	23	0.03467	1.298
7	23	0.03816	1.425
8	23	0.03825	1.434
9	23	0.02627	1.081
10	23	0.02038	1.027
11	23	0.01632	1.014
12	23	**0.02203*** **	**1.732*** **
13	23	0.02690	1.662
14	23	0.02875	1.614

15	23	0.03517	1.658
16	23	0.03727	1.57
17	23	0.04205	1.658
18	23	0.03847	1.653
19	23	**0.03870*** **	**1.753*** **
20	23	0.03654	1.611
21	23	0.03772	1.589

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

Cumulative average abnormal returns of New York Stock Exchange provide positive returns. According to the results, most of them are not statistically significant. However, there are two days statistically significant at 10%, 12th and 19th days. On these days, returns are 2,20% and 3,87% relatively.

Figure 7: Cumulative Average Abnormal Returns of New York Stock Exchange



It is clearly seen that cumulative average abnormal returns of portfolio consisting of companies from New York Stock Exchange, are positive. After the 11th day, returns have an increasing trend. The highest return is 4,21% on the 17th day and the lowest return is 1,63% but those values are not statistically significant. On the 19th day, return is 3,87% and it is statistically significant. Thus it could be said that average abnormal return of New York Stock Exchange is 3,87% on the 19th day.

3.5.2. Post-IPO Stock Performance of NASDAQ

According to Forbes, NASDAQ is world's second largest stock exchange after NYSE (Forbes, 17.07.2018). Average and cumulative average abnormal returns of the portfolio are in the following tables.

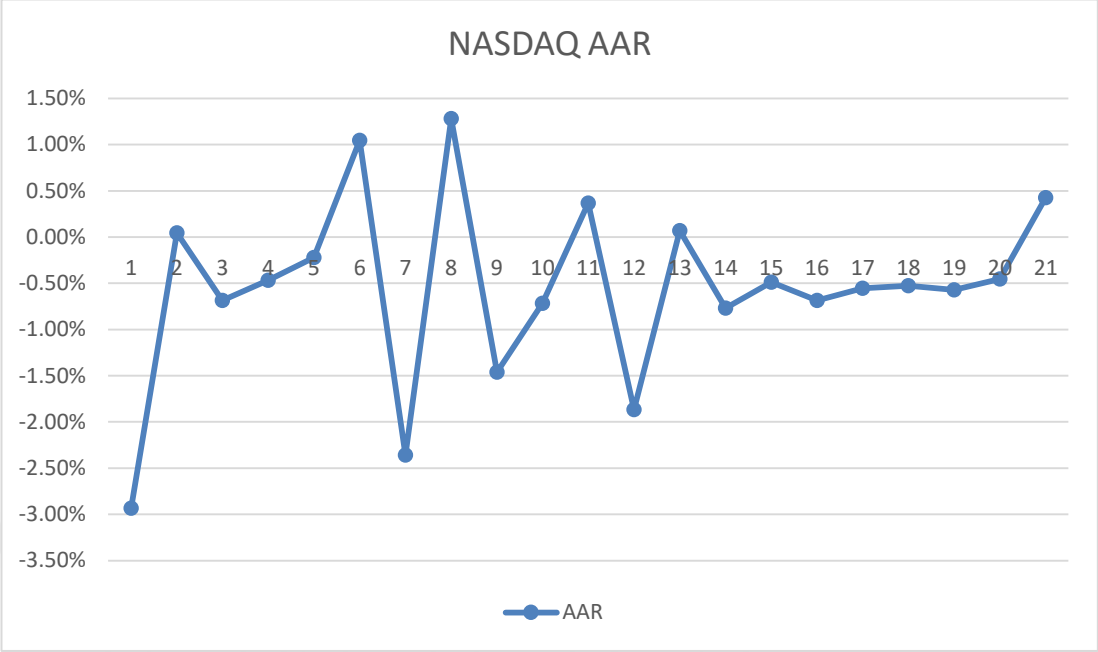
Table 14: Average Abnormal Returns of NASDAQ

Day	Firms	AAR	t-stat
1	10	-0.02935	-0.368
2	10	0.000437	0.026
3	10	-0.00684	-1.746
4	10	-0.00467	-0.562
5	10	-0.00221	-0.379
6	10	0.010478	0.853
7	10	-0.02357	-1.558
8	10	0.012831	0.827
9	10	-0.0146	-1.223
10	10	-0.00718	-1.017
11	10	0.003667	0.293
12	10	-0.01865	-1.5
13	10	0.000693	0.097
14	10	-0.0077	-0.838
15	10	-0.00487	-1.089
16	10	-0.00686	-0.943
17	10	-0.00553	-0.926
18	10	-0.00525	-1.406
19	10	-0.0057	-0.806
20	10	-0.00453	-0.73
21	10	0.004276	0.462

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

Average abnormal returns are mostly negative and results indicate that none of them is statistically significant. At the end of 21st day, average abnormal return is 0,42%.

Figure 8: Average Abnormal Returns of NASDAQ



On the chart, returns have fluctuation between the first day and 14th day. After, values have a trend of increase and at the end of 21st day, average abnormal return is 0,43%. The highest return is 1,28% on the 8th day and the lowest return is -2,94% on the first day.

Table 15: Cumulative Average Abnormal Returns of NASDAQ

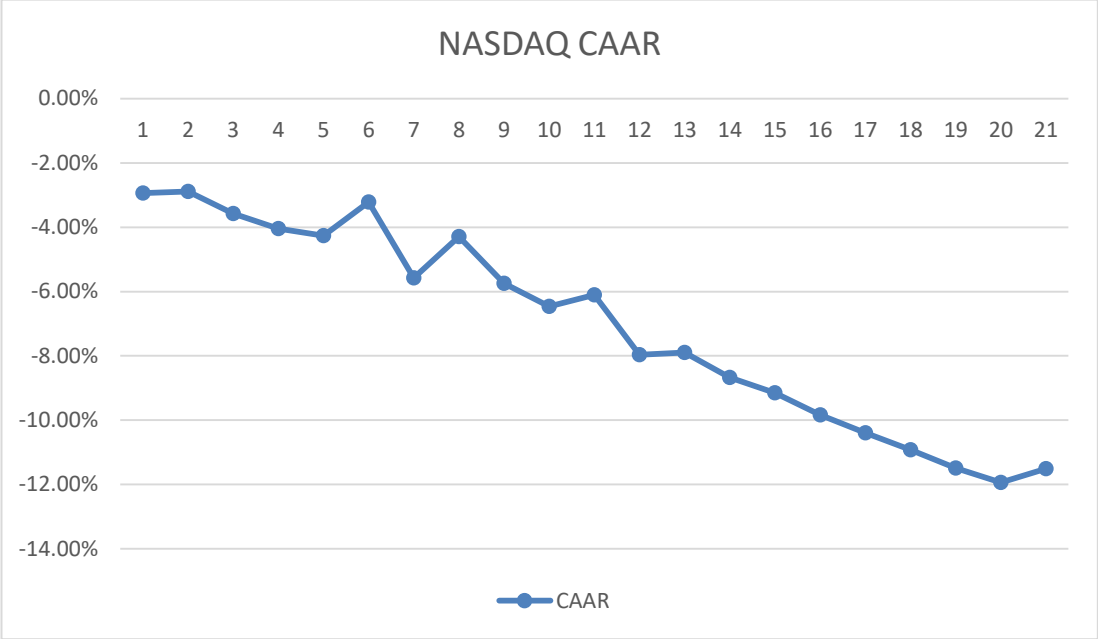
Days	Firms	CAAR	t-stat
1	10	-0.02935	-0.368
2	10	-0.02891	-0.374
3	10	-0.03575	-0.464
4	10	-0.04042	-0.531
5	10	-0.04263	-0.556
6	10	-0.03215	-0.448
7	10	-0.05572	-0.745
8	10	-0.04289	-0.664
9	10	-0.05748	-0.851
10	10	-0.06467	-0.912
11	10	-0.061	-0.929
12	10	-0.07966	-1.123
13	10	-0.07896	-1.12
14	10	-0.08667	-1.238
15	10	-0.09153	-1.274

16	10	-0.09839	-1.377
17	10	-0.10392	-1.391
18	10	-0.10917	-1.432
19	10	-0.11487	-1.573
20	10	-0.1194	-1.644
21	10	-0.11513	-1.59

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

According to the results, none of cumulative average abnormal returns of NASDAQ is statistically significant as average abnormal returns of NASDAQ. At the end of 21st day, NASDAQ has -11,51% cumulative average abnormal return. Also cumulative returns are negative.

Figure 9: Cumulative Average Abnormal Returns of NASDAQ



In the Figure 9, it is clearly shown that cumulative average abnormal return shows consistently decreasing trend and at the end of 21st day, return is -11,51%. The highest return is -2,89% on the 2nd day and the lowest return is -11,94% on the 20th day.

3.5.3. Post-IPO Performance of NASDAQ Copenhagen

NASDAQ Copenhagen A/S operates a Danish securities market. Shares, bonds, investment certificates and derivatives are listed and traded. It provides a channel Danish companies can raise capital (Bloomberg, 18.07.2018).

Average and cumulative average abnormal return of the portfolio consisting 10 shipping companies from NASDAQ Copenhagen are on the following table.

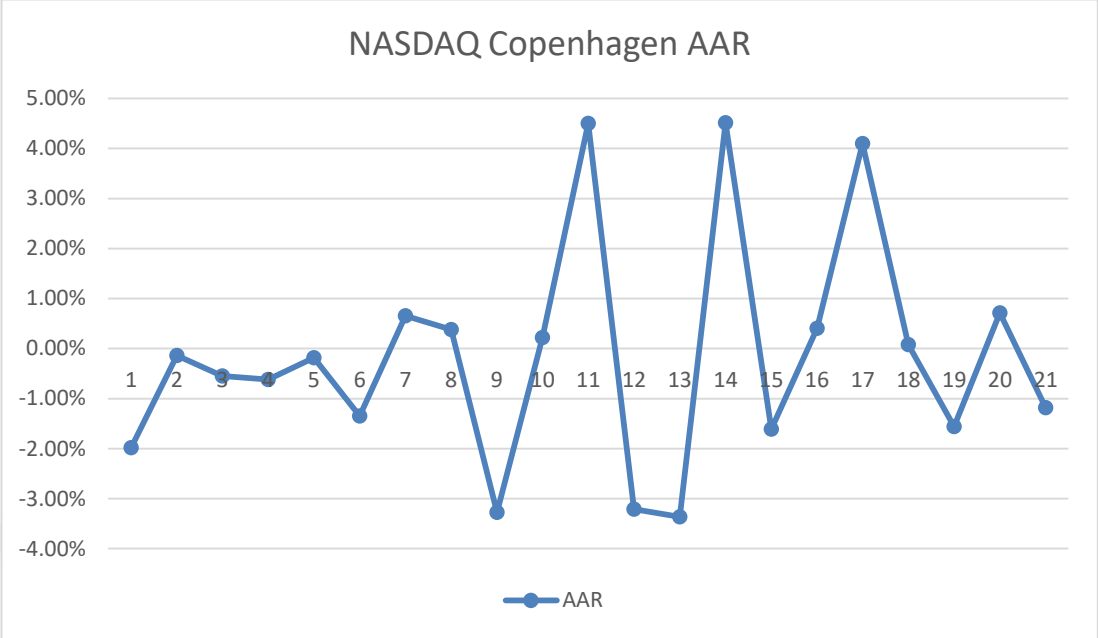
Table 16: Average Abnormal Returns of NASDAQ Copenhagen

Day	Firms	AAR	t-stat
1	4	-0.01979	-0.794
2	4	-0.00141	-0.045
3	4	-0.0055	-2.041
4	4	-0.00617	-0.73
5	4	-0.00182	-0.163
6	4	-0.0135	-1.571
7	4	0.006541	0.654
8	4	0.003796	0.539
9	4	-0.03276	-1.661
10	4	0.002228	0.17
11	4	0.04501	1.578
12	4	-0.0321	-0.947
13	4	-0.03366	-1.15
14	4	0.045102	0.86
15	4	-0.01609	-1.218
16	4	0.004068	0.331
17	4	0.040995	1.594
18	4	0.000759	0.142
19	4	-0.01558	-0.744
20	4	0.007133	0.41
21	4	-0.01182	-0.392

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

In the table, average abnormal returns are not found statistically significant as NASDAQ. Average abnormal returns are mostly negative. First-day return is -1,98%.

Figure 10: Average Abnormal Returns of NASDAQ Copenhagen



In the graph, returns fluctuated widely between -3,37% and 4,51%. At the end of 21st day, average abnormal return is -1,18%. The highest average abnormal return is 4,51% on the 14th day and the lowest average abnormal return is -3,37% on the 13th day but statistically significance is not observed on the highest and lowest values.

Table 17: Cumulative Average Abnormal Returns of NASDAQ Copenhagen

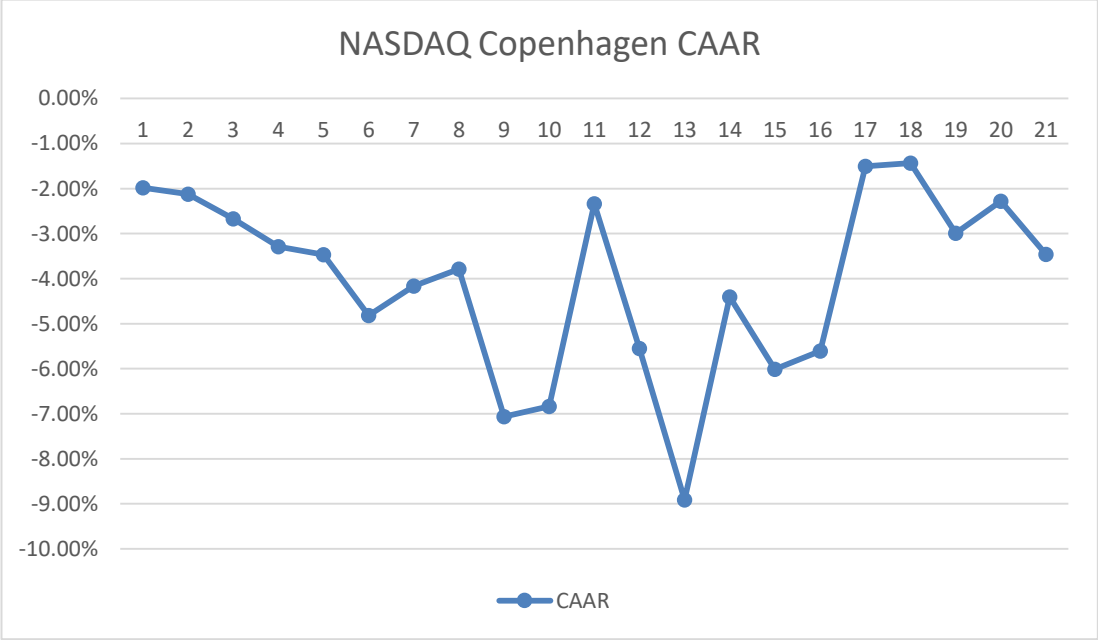
Day	Firms	CAAR	t-stat
1	4	-0.01979	-0.794
2	4	-0.0212	-1.518
3	4	-0.0267	-1.662
4	4	-0.03287	-2.277
5	4	**-0.0347****	**-5.171****
6	4	**-0.0482****	**-3.927****
7	4	-0.04166	-2.087
8	4	-0.03786	-1.474
9	4	-0.07062	-2.044
10	4	**-0.06839*****	**-2.97*****
11	4	**-0.02338*****	**-3.128*****
12	4	-0.05549	-1.917
13	4	-0.08914	-1.538
14	4	-0.04404	-1.879

15	4	-0.06013	-2.181
16	4	-0.05606	-1.472
17	4	-0.01507	-0.714
18	4	-0.01431	-0.591
19	4	-0.02989	-0.918
20	4	-0.02276	-0.514
21	4	-0.03457	-0.715

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

Unlike AAR results of NASDAQ Copenhagen, when results of cumulative average abnormal returns are observed, there are 4 days that are statistically significant. Cumulative average abnormal returns of these days are negative. Returns are -0,18% on the 5th day, -1,35% on the 6th day, 0,22% on the 10th day and 4,50% on the 11th day.

Figure 11: Cumulative Average Abnormal Returns of NASDAQ Copenhagen



From the first day to 21st day, cumulative average abnormal returns of NASDAQ Copenhagen fluctuated in negative values. The highest cumulative average abnormal return is -1,43% on the 18th day and the lowest is -8,91% on the 13th day. At the end of 21st day, cumulative average abnormal return is -3,46%.

3.5.4. Post-IPO Performance of Oslo Stock Exchange

Oslo Stock Exchange, also called Oslo Bors, is a stock exchange founded in 1819 in Norway (NASDAQ, 03.08.2018). Oslo Bors is a marketplace of seafood, shipping and energy sector aiming to become major marketplace for Norwegian companies (Oslo Bors, 03.08.2018). Index used as benchmark for Oslo Stock Exchange is Oslo Bors Benchmark Index.

Average and cumulative average abnormal return of the portfolio consisting 10 shipping companies from Oslo Stock Exchange are on the following table.

Table 18: Average Abnormal Returns of Oslo Stock Exchange

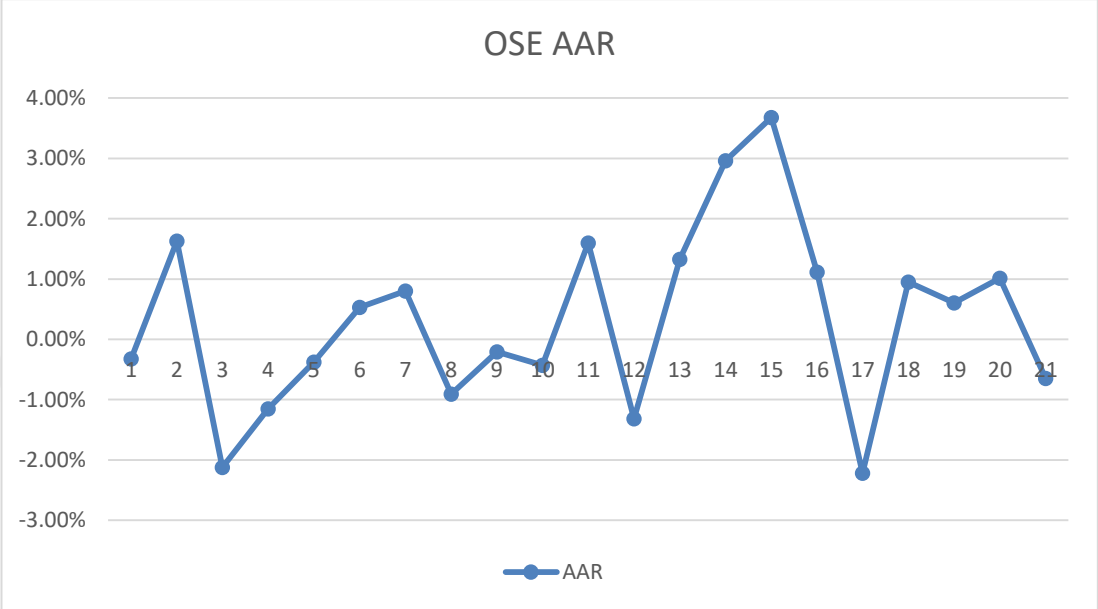
Day	Firms	AAR	t-stat
1	9	-0.00322	-0.34
2	9	0.01628	1.028
3	9	-0.02125	-1.836
4	9	-0.01150	-1.725
5	9	-0.00380	-0.308
6	9	0.00528	0.286
7	9	0.00799	0.878
8	9	-0.00906	-1.327
9	9	-0.00210	-0.344
10	9	-0.00428	-0.26
11	9	0.01595	1.108
12	9	-0.01318	-1.237
13	9	0.01327	1.578
14	9	0.02960	1.799
15	9	**0.03679****	**2.476****
16	9	0.01114	0.584
17	9	**-0.02218****	**-2.63****
18	9	0.00952	0.972
19	9	0.00607	0.462
20	9	0.01012	0.917
21	9	-0.00649	-0.359

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

Results of Oslo Stock Exchange do not show mostly statistically significant results. However 2 days appeared as significant: 15th day and 17th day. On these days, average abnormal returns are 3,67% and -2,21% respectively. These days are also the

highest and lowest average abnormal returns are Oslo Stock Exchange. On the end of 21st day, average abnormal return is -0,64% but it is not statistically significant.

Figure 12: Average Abnormal Returns of Oslo Stock Exchange



In the Figure 12, returns are represented as percentages. Most of the returns are positive. There is a fluctuation between 1st day and 12th day and returns increased between 3rd day and 7th day. After 12th day, returns seem to have an increasing trend but it changes on the 15th day. 3,68% on 15th day is the highest average abnormal return. On the 17th day, returns have the lowest value, -2,22%. Returns of 15th day and 17th day are statistically significant.

Table 19: Cumulative Average Abnormal Returns of Oslo Stock Exchange

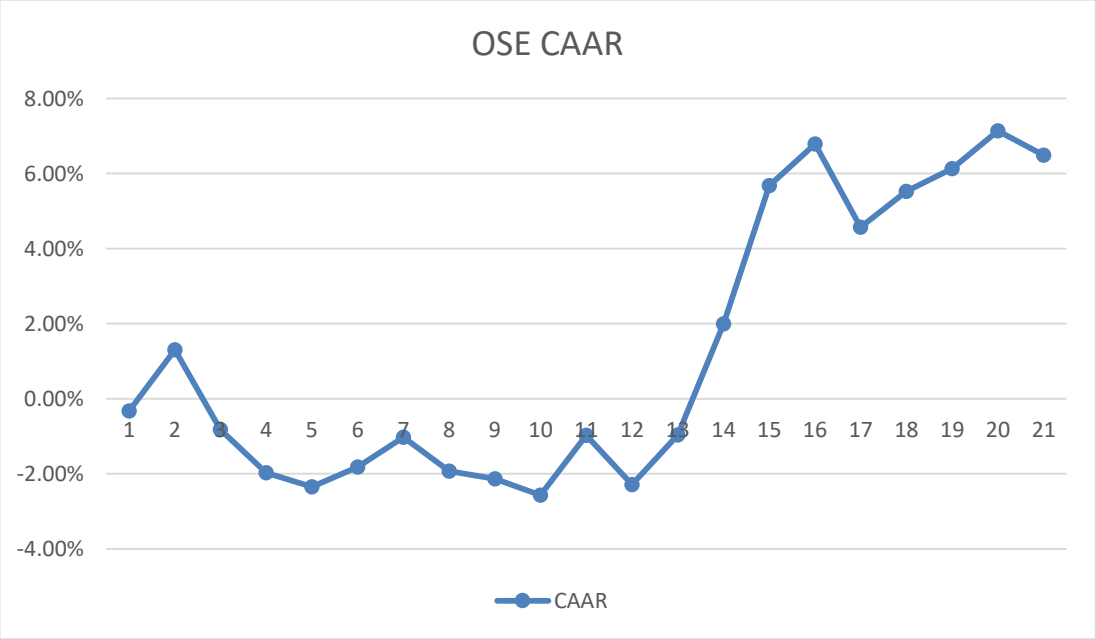
Days	Firms	CAAR	t-stat
1	9	-0.00322	-0.34
2	9	0.01306	1.071
3	9	-0.00819	-0.528
4	9	-0.01969	-1.556
5	9	**-0.02349****	**-2.739****
6	9	-0.01821	-0.98
7	9	-0.01022	-0.63
8	9	-0.01929	-1.044
9	9	-0.02138	-1.176
10	9	-0.02566	-1.534

11	9	-0.00971	-0.439
12	9	-0.02289	-0.979
13	9	-0.00962	-0.343
14	9	0.01998	1.04
15	9	**0.05677*** **	**2.241*** **
16	9	**0.06791*** **	**2.105*** **
17	9	0.04573	1.524
18	9	0.05525	1.8
19	9	0.06131	1.584
20	9	0.07143	1.482
21	9	**0.06494*** **	**1.923*** **

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

Like NASDAQ Copenhagen's CAAR results, results of Oslo Stock Exchange show statistically significant results on 4 days. At the end of 21st day, cumulative average abnormal return is 6,49% and it is statistically significant. 5th day has negative return, -2,35% but 15th and 16th days have positive returns, 5,68% and 6,79% respectively.

Figure 13: Cumulative Average Abnormal Returns of Oslo Stock Exchange



First-day return of Oslo Stock Exchange is -0,32%. After the 2nd day, returns have decreasing trend until 5th day. After the 5th day, returns fluctuated in negative

values until 12th day. After 12th day, returns followed and increasing trend and even if there is a decrease on the 17th day, at the end of 21st day, cumulative average abnormal return is 6,49%. The highest and lowest cumulative average abnormal returns are 7,14% on the 20th day and -2,57% on the 10th day respectively.

3.5.5. Comparison of Stock Exchanges

In this section, results of all stock exchanges are presented for comparison. In the tables, average abnormal returns and cumulative average abnormal returns of portfolios are presented with their significance. Number of companies included per portfolio is 23 companies in New York Stock Exchange, 10 companies in NASDAQ, 4 companies in NASDAQ Copenhagen and 9 companies in Oslo Stock Exchange.

Table 20: Average Abnormal Returns of Stock Exchanges

Days	NYSE	NASDAQ	NASDAQ Copenhagen	OSE
1	0.02872	-0.02935	-0.01979	-0.00322
2	0.00151	0.000437	-0.00141	0.01628
3	-0.00448	-0.00684	-0.0055	-0.02125
4	0.00055	-0.00467	-0.00617	-0.01150
5	0.00219	-0.00221	-0.00182	-0.00380
6	0.00618	0.010478	-0.0135	0.00528
7	0.00349	-0.02357	0.006541	0.00799
8	0.00009	0.012831	0.003796	-0.00906
9	**-0.01198***	-0.0146	-0.03276	-0.00210
10	-0.00589	-0.00718	0.002228	-0.00428
11	-0.00406	0.003667	0.04501	0.01595
12	0.00571	-0.01865	-0.0321	-0.01318
13	0.00487	0.000693	-0.03366	0.01327
14	0.00185	-0.0077	0.045102	0.02960
15	0.00641	-0.00487	-0.01609	**0.03679****
16	0.00210	-0.00686	0.004068	0.01114
17	0.00478	-0.00553	0.040995	**-0.02218****
18	-0.00358	-0.00525	0.000759	0.00952
19	0.00023	-0.0057	-0.01558	0.00607
20	-0.00216	-0.00453	0.007133	0.01012
21	0.00118	0.004276	-0.01182	-0.00649

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

In terms of average abnormal returns of stock exchanges, none of the first-day returns are statistically significant but the highest first-day return belongs to New York Stock Exchange with 2,8%.

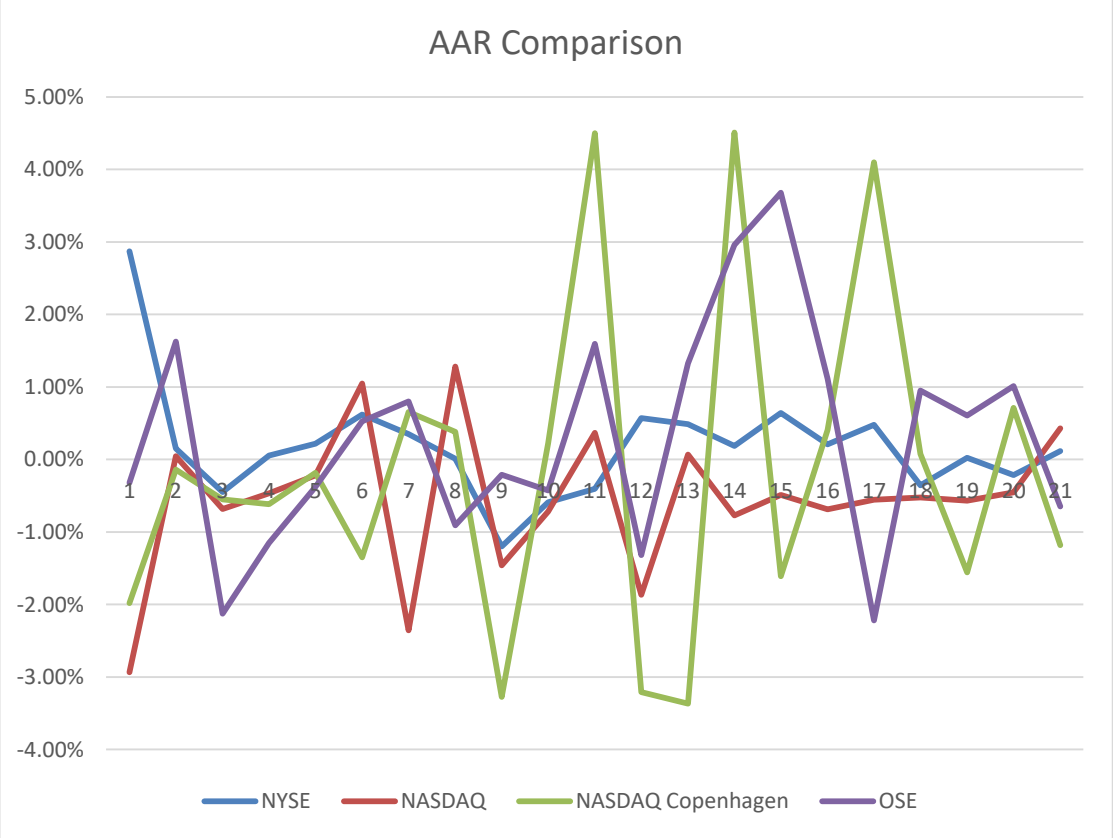
New York Stock Exchange does not show statistically significant results except for 1 day. On the 9th day, average abnormal return is -1,19%.

NASDAQ and NASDAQ Copenhagen do not show any statistically significant results and average abnormal returns are mostly negative.

Alongside with results of other exchanges, Oslo Stock Exchange also does not show statistically significant results. However 2 days show significant results. 3,6% on 15th day and -2,21% on 17th day. These values are the highest and lowest average abnormal returns respectively.

On the Table 20, volatile nature of shipping business can be observed. Underpricing of IPO in the first day is seen on NASDAQ, NASDAQ Copenhagen and Oslo Stock Exchange. It also shows similarity with the findings of Engelen and Essen (2010). Overpricing is observed on New York Stock Exchange.

Figure 14: Average Abnormal Returns of Stock Exchanges



Among average abnormal returns of 4 portfolios, New York Stock Exchange performed more stable returns than the other stock exchanges. On the other hand, Oslo Stock Exchange and NASDAQ are the ones that fluctuated the most. NASDAQ is stabilized on the 14th day and Oslo Stock Exchange has mostly positive returns. The highest average abnormal return belongs to NASDAQ Copenhagen, 4,51% but that value is not statistically significant.

Table 21: Cumulative Average Abnormal Returns of Stock Exchanges

Days	NYSE	NASDAQ	NASDAQ Copenhagen	OSE
1	0.02872	-0.02935	-0.01979	-0.00322
2	0.03023	-0.02891	-0.0212	0.01306
3	0.02575	-0.03575	-0.0267	-0.00819
4	0.02630	-0.04042	-0.03287	-0.01969
5	0.02849	-0.04263	**-0.0347****	**-0.02349****
6	0.03467	-0.03215	**-0.0482****	-0.01821
7	0.03816	-0.05572	-0.04166	-0.01022
8	0.03825	-0.04289	-0.03786	-0.01929
9	0.02627	-0.05748	-0.07062	-0.02138
10	0.02038	-0.06467	**-0.06839*****	-0.02566
11	0.01632	-0.061	**-0.02338*****	-0.00971
12	**0.02203*****	-0.07966	-0.05549	-0.02289
13	0.02690	-0.07896	-0.08914	-0.00962
14	0.02875	-0.08667	-0.04404	0.01998
15	0.03517	-0.09153	-0.06013	**0.05677*****
16	0.03727	-0.09839	-0.05606	**0.06791*****
17	0.04205	-0.10392	-0.01507	0.04573
18	0.03847	-0.10917	-0.01431	0.05525
19	**0.03870*****	-0.11487	-0.02989	0.06131
20	0.03654	-0.1194	-0.02276	0.07143
21	0.03772	-0.11513	-0.03457	**0.06494*****

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

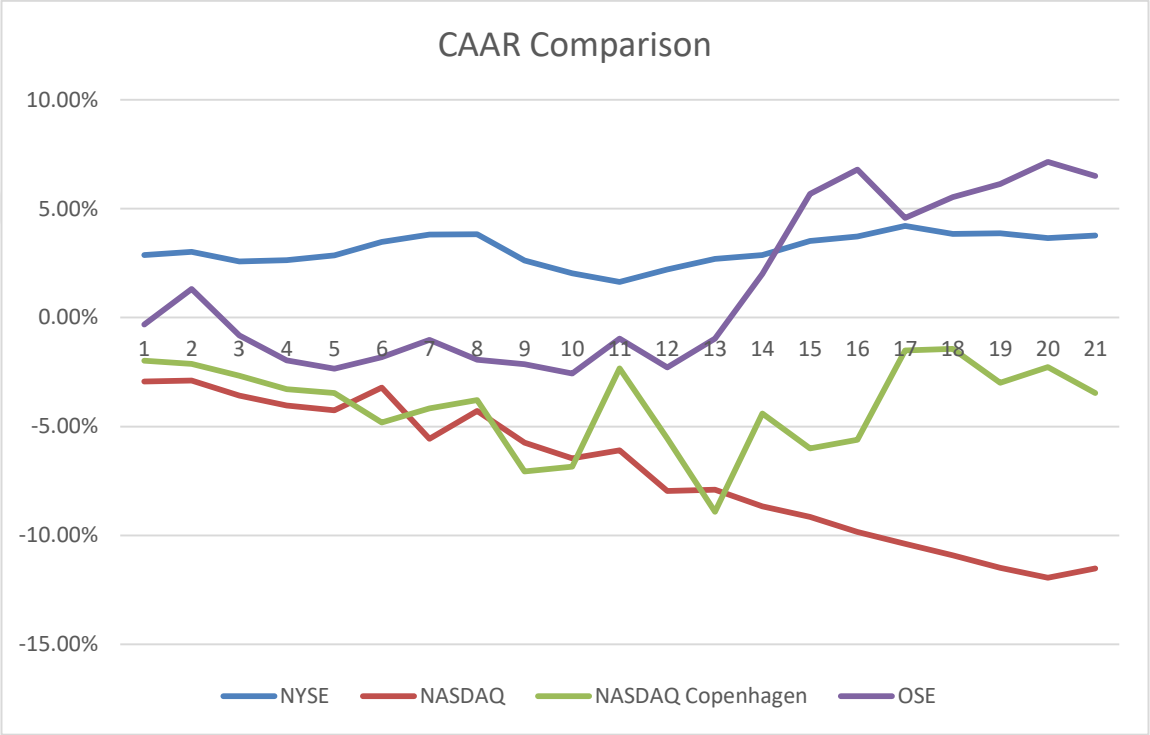
Although New York Stock Exchange does not show such a strong results, it may provide positive cumulative abnormal returns. 12th and 19th days are positive and returns are 2,2% and 3,8% respectively.

Like average abnormal returns of NASDAQ, cumulative average abnormal returns also do not show significant results. Thus there is no statistical evidence that NASDAQ could provide abnormal return.

Apart from the results of AAR of NASDAQ Copenhagen, CAAR results show 4 days statistically significant. Values of these days are negative.

On the other hand, Oslo Stock Exchange shows statistically significant results on 4 days. It could provide positive returns and at the end of 21st day, cumulative average abnormal return is 6,49% and the value is statistically significant.

Figure 15: Cumulative Average Abnormal Returns of Stock Exchanges



New York Stock Exchange shows stable cumulative average abnormal returns. Its values change between 4,57% and 1,63%. At the end of 21st day, New York Stock Exchange has a CAAR of 3,77%.

Cumulative average abnormal returns of NASDAQ have a decreasing trend. It consistently decreased until 20th day. The lowest CAAR belong to NASDAQ with the value of -11,94% on 20th day.

Like NASDAQ, NASDAQ Copenhagen also shows negative cumulative average abnormal returns. It has -3,46% CAAR at the end of 21st day.

Like New York Stock Exchange, Oslo Stock Exchange also has positive cumulative average abnormal returns. After the 12th day, it started to increase until 16th day and on the 21st day, it has cumulative average abnormal return of 6,49%.

When compared to CAARs of 21st day, the highest and lowest belong to Oslo Stock Exchange with 6,49% and NASDAQ with -11,51% respectively.

3.5.6. Short-Term Stock Performance of the Sample

In this study, the sample consists of 46 shipping companies from three stock exchanges and 21-day short term price performance of stock of the sample is evaluated. In the following tables, significance results of the sample are presented. Also average abnormal returns and cumulative average abnormal returns are presented in figures.

Table 22: Average Abnormal Returns of the Sample

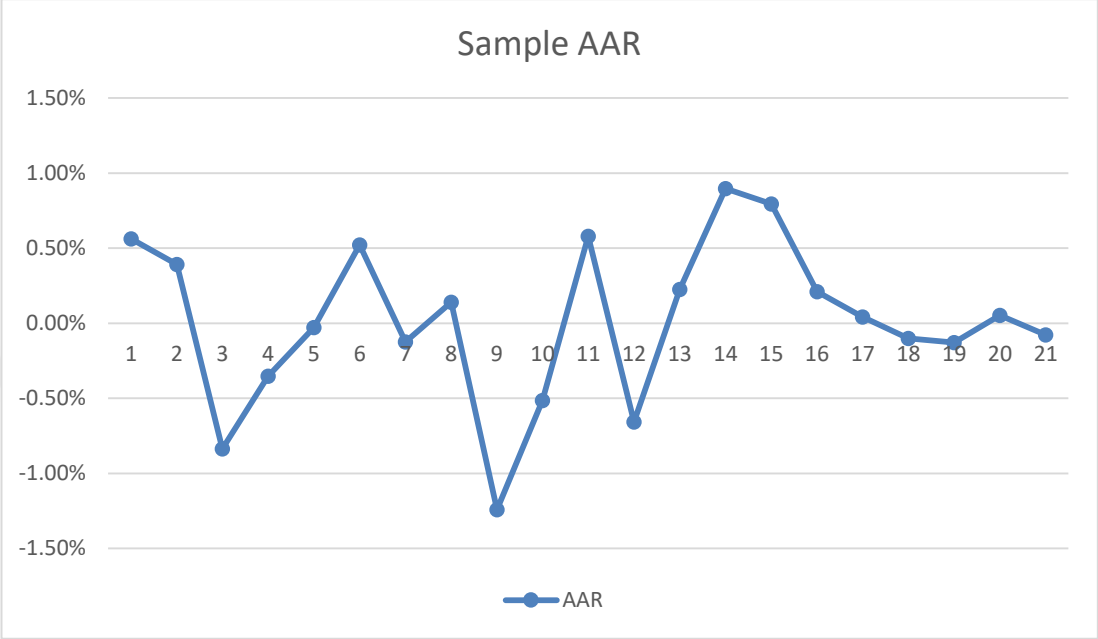
Days	Firms	AAR	t-stat
1	46	0.005631	0.268
2	46	0.00391	0.659
3	46	**-0.00836****	**-2.302****
4	46	-0.00353	-0.846
5	46	-0.00029	-0.074
6	46	0.005228	1.078
7	46	-0.00125	-0.263
8	46	0.001392	0.335
9	46	**-0.01242***	**-3.329***
10	46	-0.00515	-1.008
11	46	0.005803	1.026
12	46	-0.00657	-1.158
13	46	0.002258	0.474
14	46	0.008963	1.443
15	46	**0.007949*****	**1.691*****
16	46	0.002094	0.461
17	46	0.000412	0.084
18	46	-0.001	-0.367
19	46	-0.00129	-0.345
20	46	0.000533	0.146
21	46	-0.00078	-0.159

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

First-day average abnormal return of the sample is 0,56%. However, sample does not indicate mostly statistically significant results. According to the results, 3rd,

9th, and 15th days are found statistically significant. -1,24% on the 9th day is the lowest average abnormal return at 1% level.

Figure 16: Average Abnormal Returns of the Sample



The highest return is 0,90% on the 14th day and the lowest return is -1,24% on the 9th day. Returns are relatively positive.

Table 23: Cumulative Average Abnormal Returns of the Sample

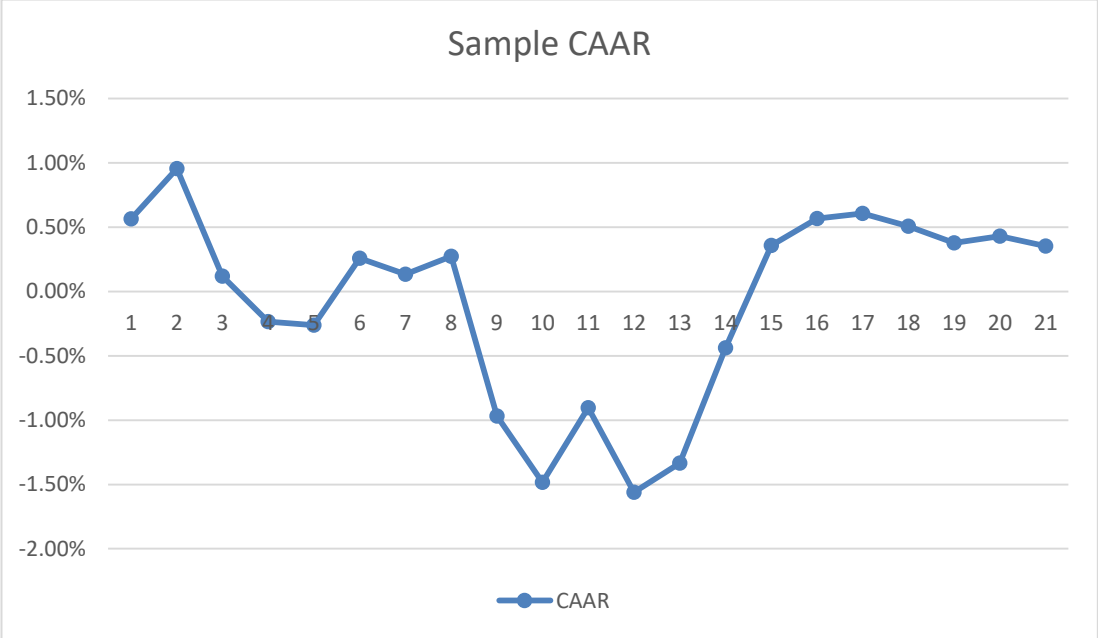
Days	Firms	CAAR	t-stat
1	46	0.005631	0.268
2	46	0.009541	0.481
3	46	0.00118	0.058
4	46	-0.00235	-0.111
5	46	-0.00263	-0.122
6	46	0.002594	0.124
7	46	0.001345	0.062
8	46	0.002737	0.137
9	46	-0.00969	-0.488
10	46	-0.01484	-0.783
11	46	-0.00904	-0.532
12	46	-0.0156	-0.871
13	46	-0.01335	-0.688
14	46	-0.00438	-0.232

15	46	0.003565	0.171
16	46	0.005659	0.255
17	46	0.00607	0.268
18	46	0.005066	0.225
19	46	0.003775	0.168
20	46	0.004308	0.183
21	46	0.003531	0.155

Asterisks indicate statistically significance levels at *1%, **5% and ***10%.

CAAR results of the sample is mostly positive. However, it shows no statistically significant results. At the end of 21st day, the sample has 0,35% CAAR.

Figure 17: Cumulative Average Abnormal Returns of the Sample



In the first three day period, returns are positive but after 8th day, positive returns turned into negative and it lasted until 14th day. After the 14th day, returns are relatively positive but none of the days have met 2nd return.

The highest cumulative average abnormal return is 0,95% on the 2nd day and the lowest value is -1,56% on the 12th day. It should be noted that cumulative average abnormal return are not statistically significant.

CONCLUSION

Initial public offering is an alternative way to obtain capital for companies in order to continue activities and operations. Initial public offering is defined as the initial sale of stocks of the company and become listed in an exchange.

Initial public offering has advantages and disadvantages for companies. Main advantages are stated in previous studies as prestige, visibility and liquidity.

An observable stock price is one of the advantages. Stocks can be used as collateral in order to get a loan from a bank or they can be used as incentives for employees or managers. When a company is listed on a stock exchange, stocks become liquid and easily can be converted into cash. Also investors can see how company performs and decide whether is worth holding or selling it.

On the other hand, when a company became public, there are certain rules it must apply such as periodically reporting and control. Also disclose and loss of control are considered as main disadvantages of going public.

In this study, a sample of publicly-traded shipping companies is used and their 21-day short term stock performance is examined. Methodology is selected as event study and in order to calculate abnormal returns, cumulative abnormal return method is used and values are tested with t-statistics.

46 companies are included in the study. Distribution of these companies by stock exchanges are; 23 companies in New York Stock Exchange, 10 companies in NASDAQ, 4 companies in NASDAQ Copenhagen and 9 companies in Oslo Bors.

For each stock exchange, market indices are used as benchmark. Market indices used in calculation are, New York Stock Exchange Composite Index for New York Stock Exchange, NASDAQ Composite Index for NASDAQ, OMX Copenhagen 20 for NASDAQ Copenhagen and Oslo Bors Benchmark Index for Oslo Stock Exchange. Average abnormal and cumulative average abnormal returns are calculated using these indices.

Results of the study can be listed as:

- The lowest average abnormal return of New York Stock Exchange is -1,19%.
- The highest and lowest average abnormal returns of Oslo Stock Exchange are 3,67% and -2,21% respectively.

- At the end of 21-day period, Oslo Stock Exchange provided cumulative average abnormal return of 6,49%.
- The lowest average abnormal return of the sample is -1,24%.

Finally, results shows that portfolios of stock exchanges do not show such a statistically significant results. However, some results found are highlighted. Among all the stock exchanges, one that has mostly significant results is Oslo Stock Exchange and it must be noted study could not reach a general conclusion about short-term stock performance of shipping sector.

When results are considered, it is seen that the Oslo Stock Exchange is more successful in terms of providing positive returns in the portfolios created by the mentioned stock exchanges. It has 6,49% cumulative abnormal return on average and this is the highest CAAR among the stock exchanges. On the other hand, NASDAQ with -11,51% CAAR, is the worst performed stock exchange but this result is not statistically significant. In short-term, sample has positive results in terms of CAAR. Cumulative average abnormal returns of stock exchanges are 3,77% on NYSE, -11,5% on NASDAQ and -3,45% on NASDAQ Copenhagen.

Contribution of this study to existing literature is that, Firstly, existing literature examines shipping IPOs as a whole. However, this study evaluates short-tem performance of global shipping companies on a stock exchange basis and it provides a comparison between them. Additionally, its coverage of years is more recent than previous studies. Study covers 46 shipping companies from stock exchanges listed between 2000 and 2018.

Future studies can continue examining post-IPO performance of global shipping companies by using larger sample size and broader year coverage. They also can compare results of two abnormal return calculation methods, namely cumulative abnormal return and buy-and-hold abnormal return methods.

REFERENCES

Açıkgöz, Ş. and Gökkaya, A. (2017). Türkiye'de İlk Halka Arz Getirilerinin Değişkenliği, *Ege Akademik Bakış,* 17(1): 33-57.

Agathee, U.S., Sannassee, R.V. and Brooks, C. (2014). The Long-run Performance of IPOs: The Case of the Stock Exchange of Mauritius, *Applied Financial Economics*, 24(17): 1123-1145.

Aggarwal, R. and Rivoli, P. (1990). Fads in The Initial Public Offering Market, *Financial Management*, (19)5: 45-57.

Akkılıç, M.E. and Yıldırım, H.H. (2017). The Effect of Optimum Pricing for the Initial Public Offerings on the Return of Stocks: Evidence from İstanbul Stock Exchange for 2014-2016, *Journal of Economics, Finance and Accounting,* 4(1): 37-47.

Al-Tally, H.A. (2014). An Investigation of the Effect of Financial Leverage on Firm Financial Performance in Saudi Arabia's Public Listed Companies (Doctorial Dissertation), Melbourne: Victoria University.

Altan, M. and Hotamış, N.T. (2008). Türkiye'de Halka İlk Arzı Yapılan Hisse Senetlerinin Kısa Dönem Fiyat Performansı, *KMU İİBF Dergisi,* (14): 1-36.

Altın, H. (2010). *İlk Halka Arzlar ve İlk Halka Arzlarda Fiyat İstikrarı Sağlayıcı İşlemlerin Analizi* (PhD Thesis). Ankara: Ankara Üniversitesi.

Alvarez, S. and Gonzalez, V. (2005). Long-run Performance of Initial Public Offerings (IPOs) in the Spanish Capital Market, *Journal of Business Finance and Accounting*, 32(1): 325-350.

Anderloni, L. and Tanda, A. (2016). Green Energy Companies: Stock Performance and IPO Returns, *Research in International Business and Finance,* 39: 546-552

Atack, J. and Neal, L. (2009). *The Origins and Development of Financial Markets and Institutions: From the Seventeenth Century to the Present,* UK: Cambridge University Press.

Aydoğan, K. and Yıldırım, J. (1991). *İlk Kez Halka Arz Edilen Senetlerin Fiyat Performansı* (Unpublished Study of Third İzmir Economic Congress). Ankara: Bilkent Üniversitesi.

Ayoğlu, T. (2008). *Sermaye Piyasası Hukukunda Halka Arz Kavramı ve Halka Arza Aracılık Sözleşmeleri,* İstanbul: Vedat Kitapçılık Basın Yayım Dağıtım.

Balatbat, M., Taylor, S. and Walter T. (2004). Corporate Governance, Insidership and Operating Performance of Australian Initial Public Offerings, *Accounting and Finance,* 44: 299-328.

Bancel, F., and Mittoo, U. (2007). Why European Firms Go Public?

Baker, M. and Wurgler, J. (2002). Market Timing and Capital Structure, *Journal of Finance,* 57(1): 1-32.

Barber, B.M. and Lyon, J.D. (1997). Detecting Long-run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics, *Journal of Finance Economics,* 43: 341-372.

Başpınar, A. (2008). *Halka Arzlarda Oluşan Fiyat Anomalilerine Bağlı Çıkar İlişkileri* (Unpublished PhD Thesis). Ankara: Başkent Üniversitesi Sosyal Bilimler Enstitüsü.

Bayram, V. (2015). *Türkiye'de İlk Halka Arzların Kısa ve Uzun Dönem Performansı* (PhD Thesis). İstanbul: Marmara Üniversitesi Sosyal Bilimler Enstitüsü

Brau, J.C. (2010). *Why Do Firms Go Public?,* Oxford Handbook of Entrepreneural Finance.

Beccalli, E., Casu, B. and Girardone C. (2006). Efficiency and Stock Performance in European Banking, *Journal of Business, Finance and Accounting,* 33(1): 245-262.

Beninga, S. (2014). *Financial Modelling,* Cambridge: The MIT Press.

Bildik, R. and Yılmaz, M.K. (2008). The Market Performance of Initial Public Offerings in the İstanbul Stock Exchange, *BDDK Bankacılık ve Finansal Piyasalar,* (2).

Bloomberg, Capital Markets: Company Overview Of Nasdaq Copenhagen A/S https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=4481057 (18.07.2018).

Brammer, C., Brooks, C. and Pavelin S. (2009). The Stock Performance of America's 100 Best Corporate Citizens, *The Quarterly Review of Economics and Finance,* 49: 1065-1080.

Brav, A., Geczy, C. and Gompers, P. (2000). Is the Abnormal Return Following Equity Issuances Anomalous?, *Journal of Financial Economics,* 56(2): 209-249.

Brealy, R.A. and Myers, S.C. (1991). *Principles of Corporate Finance,* Maidenhead: McGraw-Hill.

Bulut, H.İ. (2008). Yatırım Bankası ve Halka Arz Sonrası Faaliyet Performansı: İMKB Uygulaması, *İMKB Dergisi,* 10(39): 19-42.

Bulut, H.İ., Çankaya, F. and Er, B. (2009). *Yönetici-Sahiplik Düzeyinin Halka Arz Sonrası Faaliyet Performansı ve Düşük Fiyatlandırma Üzerine Etkisi: İMKB Örneği*, Gazi University Journal of Faculty of Economics and Administrative Sciences, 11(1).

Buser, S.A. and Chan, K.C. (1987). *NASDAQ/NMS Qualification Standards, Ohio Registration Experience and the Price Performance of Initial Public Offerings,* Department of Commerce and National Association of Securities Dealers, Inc., Ohio: Columbus.

Cai, J. and Wei, J. (1997). The Investment and Operating Performance of Japanese Initial Public Offerings, *Pacific Basin Finance Journal,* 5: 389-417.

Campbell, T. (1979). Optimal Investment Financing Decisions and the Value of Confidence, *Journal of Financial and Quantitative Analysis*, 14: 913-924.

Chalk, A.J. and Peavy, J.W. (1987). Initial Public Offerings: Daily Returns, Offering Types and the Price Effect, *Financial Analysts Journal*, 43(5): 65–69.

Chancellor, E. (1999). *Devil Take the Hindmost: History of Financial Speculation,* Farrad, Straus & Giroux.

Chang, X., Lin, S.H., Tam, L. and Wong, G. (2010). Cross-sectional Determinants of Post-IPO Stock Performance: Evidence from China. *Accounting and Finance,* (50): 581-603.

Chemmanur, T. and Fulghieri, P. (1999). *A Theory of the Going-Public Decision,* The Review of Financial Studies, 12(2): 249-279.

Chen, G., Firth, M. and Jeong-Bon K. (2000). The Post-Issue Market Performance of Initial Public Offerings in China's New Stock Markets, *Review of Quantitative Finance and Accounting,* (4): 319-339.

Chen, H. and Liang W. (2016). Do Venture Capitalists Improve the Operating Performance of IPOs?, *International Review of Economics and Finance,* 44: 291-304.

Chi, J., Mcwha M. and Young M. (2010). The Performance and the Survivorship of New Zealand IPOs, International Review of Financial Analysis, 19: 172-180.

Chi, J. and Padget, C. (2006). Operating Performance and Its Relationship to Market Performance of Chinese Initial Public Offerings, *The Chinese Economy*, 39(5): 28-50.

Cifrino, D.A., Conaghan, T.P. and Murphy, T.J. (2014). *The IPO and Public Primer: A Practical Guide to Going Public, Raising Capital and Life as a Public Company* (Publication of McDermott Will & Emery LLP).

Cihangir, M. and Kandil, İ.E. (2009). Türkiye'de Borsaya Yeni Kote İşletmelerin Halka İlk Arzda Uyguladıkları Düşük Fiyatlandırma Olgusunun Test Edilmesi ve Nedenleri Üzerine Bir Değerlendirme (01.01.2003-30.06.2008) Dönemi, *Muhasebe ve Finansman Dergisi*, 44: 165-178.

Coakley, J., Hadass, L. and Wood, A. (2007). Post-IPO Operating Performance: Venture Capital and the Bubble Years, *Journal of Business Finance and Accounting,* 34(9/10): 1423-1446.

Çavuşoğlu, S. (2008). *Halka Arzların Başarısızlık Sebepleri: Coca-Cola İçecek A.Ş. Örnek Olay İncelemesi* (Unpublished Master Thesis). Ankara: Ankara Üniversitesi Sosyal Bilimler Enstitüsü.

Çelik, M.K. (2016). Firmaların İlk Halka Arz Sonrası Faaliyet Performanslarının Değerlendirilmesi: Borsa İstanbul Örneği, *Uluslararası Yönetim İktisat ve İşletme Dergisi,* 12(27).

Dağlı, H. and Kurtaran, A. (2008). İlk Halka Arzlarda Düşük Fiyatlandırmayı Etkileyen Unsurlar: Türkiye Örneği. *Muhasebe ve Finansman Dergisi,* 39(3): 58-66.

Dawson, S.M. (1987). Secondary Stock Market Performance of Initial Public Offers, Hong Kong, Singapore and Malaysia: 1978-1984, *Journal of Business Finance,* 14(1): 65-76.

Dell'Acqua, A., Etro, L., Tetia, E. and Murri, M. (2015). IPO Underpricing and Aftermarket Performance in Italy, *Journal of Economic and Financial Studies*, 3(3).

Demetoğlu, F.Y. (2016). *İlk Halka Arzlarda Düşük Fiyatlama ve Maliyetlere Etkisi* (Master Thesis). Ankara: Başkent Üniversitesi.

Dhamija, S. and Arora, R.K. (2017). Determinants of Long-run Performance of Initial Public Offerings: Evidence from India, *Vision*, 21(1): 35-45.

Dong, M. and Michel J.S. (2012). Do Industry Growth Prospects Drive IPO Stock Performance?

Drobetz, W., Kammermann, M. and Wälchli, U. (2005). Long-run Performance of Initial Public Offerings: The Evidence for Switzerland, *Schmalenbach Business Review*, 57(3): 253-275.

Droms, W.G. and Wright, J.O. (2015). *Finance And Accounting For Nonfinancial Managers*, New York: Basic Books.

Durukan, M.B. (2002). The Relationship Between IPO Returns and Factors Influencing IPO Performance: Case Study of the Istanbul Stock Exchange, *Managerial Finance,* (28): 18-38.

Dutta, A. (2014). Parametric and Nonparametric Event Study Tests: A Review, *International Business Research,* 7(12).

Düzakın, H.G. (1998). *İMKB'de Halka İlk Arzdan Sonra Hisse Senetlerinin Performanslarının Ölçümü ve Düşük Fiyatlandırma ile İlgili Yaklaşımların Şirketler*

ve Bunlara Aracılık Eden Kurumlar Açısından Değerlendirilmesi (Unpublished PhD Thesis). Adana: Çukurova Üniversitesi Sosyal Bilimler Enstitüsü.

Ehrhardt, M.C. and Brigham E.F. (2011). *Financial Management: Theory and Practice,* USA: South Western Cengage Learning.

Ellingsen, T. and Rydqvist, K. (1997). The Stock Market as a Screening Device and the Decision to Go Public.

Engelen, P.J. and Essen, M. (2010). Underpricing of IPOs: Firm-, Issue- and Country-specific Characteristics, *Journal of Banking & Finance,* 34: 1958-1969.

Erdem, C. and Erdem, M.S. (2008). Turkish Banking Efficiency and Its Relation to Stock Performance, *Applied Economics Letters*, 15: 207-211.

Erdem, H. (1993). *A Study on the Price Behaviour of Initial Public Offerings* (Unpublished Master Thesis). İstanbul: Boğaziçi Üniversitesi.

Ertaş, V. (2012). *İstanbul Menkul Kıymetler Borsası'nda 1998-2007 Yılları Arasında Halka Açılan Şirketlerin Hisse Senedi Performansı* (Unpublished PhD Thesis). Ankara: Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü.

Espenlaub, S., Gregory, A. and Tonks, I. (2000). Re-assessing the long-term underperformance of UK initial public offerings. *European Financial Management*, 6(3): 319–342.

Fama, E.F. (1998). *Market Efficiency, Long-Term Returns And Behavioral Finance*, Journal of Financial Economics, (49): 283–306.

Forbes, The World's Biggest Stock Exchanges.
https://www.forbes.com/pictures/eddk45iglh/the-worlds-biggest-stock-exchanges/#5decdbd76d2b (17.07.2018).

Gao, J., Cong, L.M. and Evans, J. (2015). Earnings Management, IPO Underpricing, and Post-Issue Stock Performance of Chinese SMEs, *The Chinese Economy*, 48: 351-371.

Geddes, R. (2003). *IPOs and Equity Offerings,* UK: Butterworth Heinemann.

Gitman, L.J. and Zutter, C.J. (2010). *Principles of Managerial Finance,* USA: Pearson.

Goergena, M., Khurshed, A. and Renneborg, L. (2009). Why Are the French So Different From the Germans? Underpricing of IPOs on the New Markets, *International Review of Law and Economics.*

Goetzmann, W.N. and Rouwenhorst, K.G. (2005). *The Origins of Value: The Financial Innovations That Created Modern Capital Markets,* the UK: Oxford University Press.

Goh, T.N., Low, P.C., Tsui, K.L. and Xie, M. (2003). Impact of Six Sigma Implementation on Stock Price Performance, *Total Quality Management and Business Excellence,* 14(7): 753-763.

Gompers, P.A. and Lerner, J. (2003). The really long-run performance of initial public offerings: The pre-Nasdaq evidence. *The Journal of Finance*, 58(4): 1355–1392.

Gounopoulos, D., Merikas, A. and Nounis, C. (2009). Global Shipping IPOs Performance, *Maritime Policy and Management*, 36(6): 481-505.

Grammenos, C. and Arkoulis, A. (1999). *The Long Run Performance of Shipping Initial Public Offerings*, Maritime Economics and Logistics, 1(1): 71-93.

Guo, R. and Zhou, N. (2016). Innovation Capability and Post-IPO Performance, *Review of Quantitative Finance and Accounting*, 46(2): 335-357.

Güldiken, O., Tupper, C., Nair, A. and Yu, H. (2016). The Impact of Media Coverage on IPO Stock Performance, *Journal of Business Research,* 72: 24-32.

Güzelhan, H. and Ağar, M. (1991). İlk Halka Arzlarda Hisse Senedi Performansı, *İktisat, İşletme ve Finans Dergisi,* (68).

Hartog, B. (2016). Post IPO-Performance: A Comparative Analysis between the US and China.

Hoque, H. and Lasfer, M. (2015). Directors' Dealing and Post-IPO Performance, *European Financial Management,* 21(1): 178-204.

Houge, T. and Loughran, T. (1999). Growth Fixation and the Performance of Bank Initial Public Offerings, 1983-1991, *Journal of Banking & Finance,* (23).

Huang, T. and Zong, S. (2017). Stock Performance of Socially Responsible Companies, *Nang Yan Business Journal,* 5(1).

İlarslan, K. (2011). *Birleşme ve Satınalmaların Finansal Oranlar Yoluyla İşletmelerin Finansal Performansı Üzerindeki Etkisinin İncelenmesi* (PhD Thesis). Afyon: Afyon Kocatepe Üniversitesi Sosyal Bilimler Enstitüsü.

Jain, B.A. and Kini, O. (1994). The Post-Issue Operating Performance of IPO Firms, *The Journal of Finance,* (49): 1699-1726.

Jain, B.A. and Kini, O. (2008). The Impact of Strategic Investment Choices on Post-Issue Operating Performance and Survival of US IPO Firms, *Journal of Business Finance & Accounting,* 35(3) & (4): 459-490.

Jensen, M. and Meckling W. (1976). Theory of the Firm: Managerial Behavior, Agency and Ownership Structure, *Journal of Financial Economics,* 3: 305-360.

Karan, M.B. and Ayden, T. (2000). İMKB'de İlk Halka Arzların Uzun Vadeli Fiyat Performanslarının Ölçülmesi, *Gazi Üniversitesi İİBF Dergisi,* 2(3): 87-96.

Kaya, T. (2017). Borsa İstanbul'da İlk Halka Arzların Uzun Dönem Performans Analizi: Normalüstü Getiri Mümkün Mü?, *Ekonomi, Politika & Finans Araştırmaları Dergisi,* 2(1): 6-19.

Kırkulak, B. (2010). Uzun Dönemli Al ve Tut Getirileri: İMKB'de Halka Açık Şirketler Üzerine Bir Uygulama, *Ege Akademik Bakış*, 10(2): 465-486.

Kıymaz, H. (1996). Halka İlk Kez Arzedilen Hisse Senetlerinin Performansları, *İşletme ve Finans Dergisi*, (4).

Kıymaz, H. (1997). İMKB'de Halka Arz Edilen Hisse Senetlerinin Uzun Dönem Performansları ve Bunları Etkileyen Faktörler: İmalat Sektörü 1990-1995 Uygulaması, *İMKB Dergisi,* 3: 47-73.

Kıymaz, H. (2000). The Initial and Aftermarket Performance of IPOs in an Emerging Market: Evidence From İstanbul Stock Exchange, *Journal of Multinational Financial Management,* 10(2): 213-227.

Kim, K.A., Kitsabunnarat, P. and Nofsinger J.R. (2004). Ownership and Operating Performance in an Emerging Market: Evidence from Thai IPO Firms, *Journal of Corporate Finance,* 10(3): 355-381.

Klova, V. (2017). IPO Underpricing: What About the Shipping Sector?, *Journal of Multinational Management*, 42-43: 95-115.

KPMG, (2015). *A Guide to Going Public.*

Kurtaran, A.T. (2013). Türkiye'deki İlk Halka Arzların İlk Getirileri ile Uzun Dönem Fiyat Performansları Arasındaki İlişki Analizi, Uluslararası İktisadi ve İdari İncelemeler Dergisi, 6(11): 185.

Kutsuna, K., Okamura, H. and Cowling M. (2002). Ownership Structure Pre- and Post-IPOs and the Operating Performance of JASDAQ Companies, *Pacific-Basin Finance Journal*, 10: 163-181.

Küçükkocaoğlu, G. (2008). Underpricing in Turkey: A Comparison of the IPO Methods, *International Research Journal of Finance and Economics*, (13): 162-179.

Laiakis, A. (2010). *Finance and IPO at Dry Bulk Industry*. University of Piraeus.

Levis, M. (1993). The Long-Run Performance of Initial Public Offerings: The UK Experience 1980-1988, *Financial Management*, (22).

Liu, J., Uchida, K. and Gao, R. (2012). Political Connections and the Long-term Stock Performance of Chinese IPOs, *Journal of International Markets, Institutions and Money*, 22: 814-833.

Ljungqvist, A. (1997). Pricing Initial Public Offerings: Further Evidence from Germany, *European Economic Review*, 3: 1309-1320.

Lo, H., Wu, R. and Kweh, Q.L. (2017). Do Institutional Investors Reinforce or Reduce Agency Problems? Earnings Management and the Post-IPO Performance, *International Review of Financial Analysis*, 52: 62-76.

Loughran, T. and Ritter J.R. (1997). The Operating Performance of Firms Conducting Seasoned Equity Offerings, Journal of Finance, 52(5): 1823-1850.

Lyn, E. and Zychowicz, E.J. (2003). The Performance of New Equity Offerings in Hungary and Poland, *The Journal of Financial Economics*, 14(2): 181-195.

Madura, J. (2014). *Financial Markets and Institutions*, Canada: Cengage Learning.

Marinkovic, S., Ljumovic, I. and Stojkovic, D. (2012). Going Public and Initial Public Offering: An Exploratory Study of Motives from Serbian Companies, *Industrija*, 40(2).

Mateiciuc, A.G. (2009). *Why Do Firms Go Public?* (Master Thesis). Rotterdam: Erasmus University.

Mayer Brown JSM (2016). *Initial Public Offerings: An Issuer's Guide (Asia Edition).*

Mayer Brown JSM, About Us.
https://www.mayerbrown.com/mayerbrownjsm/ (13.06.2018).

Merikas, A., Gounopoulos, D. and Karli, C. (2010). *Market Performance Of US-Listed Shipping IPOs,* Maritime Economics and Logistics, 12(1): 36-64,

Morningstar, Inc., Glossary: Abnormal Return.
http://www.morningstar.co.uk/uk/glossary/107143/abnormal-return.aspx

Mulugetta, A., Movassaghi, H. and Zaman, R. (2002). The Influence of Standard and Poor's Ranking Changes on Stock Price Performance, *Managerial Finance*, 28(4): 19-30.

Museum Of American Finance, America's First IPO.
https://www.moaf.org/exhibits/americas_first_ipo (21.07.2018).

Naidu, W. (2011). *The Implications of Capital Structure Theories and Regulation For South African Banking Institutions* (Master Thesis), South Africa: University of Pretoria

NASDAQ, Abnormal Returns.
https://www.nasdaq.com/investing/glossary/a/abnormal-return (15.07.2018).

NASDAQ, Cumulative Abnormal Return.
https://www.nasdaq.com/investing/glossary/c/cumulative-abnormal-return (15.07.2018).

NASDAQ, Underpricing.
https://www.nasdaq.com/investing/glossary/u/underpricing (09.08.2018).

NASDAQ, Companies by Industry.
http://www.nasdaq.com/screening/companies-by-industry.aspx?industry=Transportation (03.06.2018).

NASDAQ OMX Nordic, Listed Companies.
http://www.nasdaqomxnordic.com/shares/listed-companies/nordic-large-cap (03.06.2018).

Top Foreign Stocks, The Complete List of Marine Transportation Stocks Trading on the NYSE.
http://topforeignstocks.com/stock-lists/the-complete-list-of-marine-transportation-stocks-trading-on-the-nyse/ (03.06.2018).

Newman, P.K. (2001). The Pros and Cons of Going Public, *SAM Advanced Management Journal*, 10-13.

Otlu, F. and Ölmez, S. (2011). Halka İlk Arz Edilen Hisse Senetlerinin Kısa Dönem Fiyat Performansları ile Fiyat Performanslarını Etkileyen Faktörlerin İncelenmesi: İMKB'de Uygulama, *Akademik Yaklaşımlar Dergisi*, 2(2).

Oslo Bors, About Oslo Bors.
https://www.oslobors.no/ob_eng/Oslo-Boers/About-Oslo-Boers (22.07.2018).

Özdemir, Ö. and Kızıldağ, M. (2017). Does Franchising Matter on IPO Performance? An Examination of Underpricing and Post-IPO Performance, *International Journal of Contemporary Hospitality Management*, 29(10): 2535-2555.

Özer, B. (1999). Price Performance of Initial Public Offerings in Turkey, Sermaye Piyasası Kurumu Yayınları, (128).

Pagano, M., Panetto, F. and Zingales, L. (1995). Why Do Companies Go Public? An Empirical Analysis.

Pagano, M. and Ailsa, R. (1998). The Choice of Stock Ownership Structure: Agency Costs, Monitoring, and the Decision to Go Public, *Quarterly Journal of Economics*, 113(1): 187-225.

Panchenko, V. (2007). Impact of Analysts' Recommendations on Stock Performance, *The European Journal of Finance*, 13(2): 165-179.

Peng, L. (2008). Empirically Study on the Performance of Initial Public Offerings in China, *Journal of Service Science and Management*, 1(2): 135-142.

Pereira, T.P. and Sousa, M. (2017). Is There Still a Berlin Wall in the Post-Issue Operating Performance of European IPOs?, *International Journal of Finance & Economics*, 22(2): 139-158.

Renaissance Capital, All Time Largest US IPOs. https://www.renaissancecapital.com/IPO-Center/Stats/Largest-Global-IPOs (15.07.2018).

Rhoades, S., Güner, N. and Önder, Z. (2004). *Underwriter Reputation and Short-run IPO Returns: A Re-evaluation For An Emerging Market.*

Ritter, J.R. (1987). The Cost of Going Public, *Journal of Financial Economics*, 19(2): 269-281.

Ritter, J.R. (1991). The Long-Run Performance of Initial Public Offerings, *The Journal of Finance,* 46(1): 3-27.

Ritter, J.R. (1998). Initial Public Offerings, *Contemporary Finance Digest,* 2(1): 5-30.

Ritter, J.R. (2000). The Differences between European and American IPO Markets, *European Financial Management,* 4: 421-434.

Ritter, J.R. and Welch, I. (2002). A Review of IPO Activity, Pricing and Allocations, *The Journal of Finance,* (4).

Röell, A. (1996). The Decision to Go Public: An Overview, *European Economic Review,* 40: 1071-1081.

Savaşkan, O. (2005). Halka Arz Fiyatının Belirlenmesinde Kullanılan Yöntemler, Halka Arz Sonrası Hisse Senedi Performansı, *SPK Yeterlilik Etüdü.*

Sayar, A.R. Zafer (2003). Bankaların Halka Açılması ve Banka Yatırımcılarının Korunması, *Sermaye Piyasası Kurulu,* (146): 7.

Schultheis, P.J., Day, R.G., Lewis, J.R., Lindquist, S.J. and O'Connor R.G. (2008). *The Initial Public Offering: A Guidebook For Executives and Boards of Directors,* New York: Bowne.
https://www.wsgr.com/publications/PDFSearch/IPO-guidebook-3.pdf (03.06.2018).

Serbest Piyasalar Kurulu (2016). *Halka Arz Bilgilendirme Kitapçığı.*

Statista, Number Of IPOs In The United States From 1999 To 2017. https://www.statista.com/statistics/270290/number-of-ipos-in-the-us-since-1999/ (20.07.2018).

Stoll, H.R. and Curley, A. (1970). Small Business and the New Issues Market for Equities, *Journal of Financial and Quantitative Analysis*, 5(3): 309-322.

Şamiloğlu, F. and Ünlü, U. (2010). Sahiplik Yapısı ve Firma Performansı Arasındaki İlişki. *Muhasebe ve Finansman Dergisi*, (46): 66-73.

Teker, S. and Ekit, Ö. (2003). The Performance of IPOs in İstanbul Stock Exchange in Year 2000, *Doğuş Üniversitesi Dergisi,* (4).

Tükel, A. (2010). Asimetrik Enformasyon Işığında Halka Arzların Uzun Dönemli Performanslarının Değerlendirilmesi, *Ekonometri ve İstatistik*, (12): 102-121.

University of Houston, Lecture Notes. https://www.bauer.uh.edu/rsusmel/phd/lecture%206.pdf (22.07.2018).

U.S. Securities and Exchange Commission. (2013). *Investor Bulletin: Investing in an IPO.*

Ünlü, U. (2006). Türkiye'de İlk Defa Halka Arz Edilen Bankacılık Sektörü Hisse Senetlerinin Uzun Dönem Fiyat Performansları, *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* (27): 119-147.

Ünlü, U. and Ersoy, E. (2008). İlk Halka Arzlarda Düşük Fiyatlama ve Kısa Dönem Performansın Belirleyicileri: 1995-2008 İMKB Örneği, *Dokuz Eylül Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* (2).

Ünlü, U. and Ersoy, E. (2006*). İMKB'de İlk Defa Halka Arz Edilen Hisse Senetlerinin Kısa Dönem Fiyat Performansları ve Bu Performansların Belirleyicileri,*

Dokuz Eylül Üniversitesi İİBF İşletme Bölümü, 10. Ulusal Finans Sempozyumu, Sürmeli Efes Oteli, İzmir.

Popescu, L. and Visinescu, S. (2009). A Review of the Capital Structure Theories, *Annals of Faculty of Economics,* 3(1): 315-320.

Wagner, N. (2006). NASDAQ IPOs Around the Market Peak In 2000. *Initial Public Offerings: An International Perspective* (pp.3-12). USA: Elsevier Inc.

Wang, C. (2005). Ownership and Operating Performance of Chinese IPOs, *Journal of Banking & Finance*, 29(7): 1835-1856.

Yahoo! Finance, Exchanges And Data Providers On Yahoo Finance. https://help.yahoo.com/kb/SLN2310.html (03.06.2018).

Yalçıner, K. (2006). Düşük Fiyatlama Olgusu ile Halka Arz Şekilleri ve Halka Arz Fiyatı Arasındaki İlişkinin Analizi: 1997-2004 Dönemine Ait Bir İnceleme, *Gazi Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi,* 7(2).

Yu, T. and Tse, Y.K. (2006). An Empirical Examination of IPO Underpricing in the Chinese A-Share Market, *China Economic Review,* 17.

Zaremba, A. and Szyszka, A. (2016). Is the Abnormal Post-IPO Underperformance Really Abnormal? The Evidence from CEE Emerging Markets, *Emerging Markets Finance & Trade,* 52: 2721-2739.

Zhang, Y., Jiang, Y. and Guo, Y. (2017). The Effects of Haze Pollution on Stock Performances: Evidence From China, *Applied Economics,* 49(23): 2226-2237.

Zimmer, S. (2015). *Salem Press Encyclopedia.*

Zozan, Ş. (2007). *Underpricing of Initial Public Offerings Listed on the Istanbul Stock Exchange (ISE)* (Master Thesis). İzmir: Dokuz Eylül Üniversitesi.