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THE AMERICAN
UNIVERSITY IN CAIRO

SCHOOL OF
BUSINESS

**TESTING SHORT-TERM OVER/ UNDERREACTION HYPOTHESIS:
EMPIRICAL EVIDENCE FROM THE EGYPTIAN STOCK EXCHANGE**

Master of Science in Finance
The American University in Cairo
Cairo, Egypt

Submitted to the Faculty of the
School of Business
The American University in Cairo

in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE IN FINANCE

By
AMIRA RAGAB

Under the supervision of
Dr. ALIAA BASSIOUNY
May/2014

Dedication

To my dear baba, my beloved mama

To my men Ahmed and Amr

ACKNOWLEDGEMENTS

First, I would like to thank Allah, as I totally admit this thesis would not have been possible without his guidance and help. Moreover, I would like to thank several people who in one way or another helped me in the preparation and completion of my thesis

I am deeply grateful to Dr Aliaa Bassiouny for her permanent support from my first day at the American University in Cairo. Working with you Dr was such a rewarding and fulfilling experience that helped me gaining lots of skills that seemed to be very critical and helped me a lot when doing my research. You have always been patient and encouraging in times of difficulties. Thank you, Dr Aliaa for your precious time and support all along the process. Furthermore, I am very grateful to my reviewers Dr Ahmed Abd El-Maguid and Dr Neveen Ahmed.

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Amira Ragab

The American University in Cairo
School of Business
Management Department

TESTING SHORT-TERM OVER/ UNDER-REACTION HYPOTHESIS: EMPIRICAL EVIDENCE FROM THE EGYPTIAN STOCK EXCHANGE

By

Amira Ragab

Under the supervision of Dr. Aliaa Bassiouny

ABSTRACT

The overreaction hypothesis, as postulated by De Bondt and Thaler (1985) dictates that “stocks that have performed poorly in the past (loser stocks) tend to outperform stocks that have performed well in the past (winner stocks)” (DeBondt, et al., 1985). On the other hand, the under-reaction hypothesis argues that stock’s return shows momentum, whereby winner stocks continue to exhibit high returns in future periods, reflecting tendency of investors to underweigh the extent of new information. The aim of this thesis is to investigate whether short-term overreaction or under-reaction appears in the Egyptian Exchange (EGX) over the period of January 1998 to December 2013, making this the first attempt to test these market anomalies in an Arab stock market. The thesis surveys the overreaction/under-reaction literature focusing on the differences in methodologies and results across the various sample markets and timeframes. The thesis compares two standard methodologies in the literature, that of Ali et al (2011) and Clare & Thomas (1995), to test the overreaction/under-reaction hypothesis over various holding periods ranging from one week to 52 weeks. The analysis reveals that while short-term overreaction doesn’t exist in the Egyptian Exchange, there is statistically significant evidence of under-reaction for the holding periods of one to four weeks. This motivates further tests to establish the profitability of utilizing this evidence of under-reaction by applying a momentum strategy that invests in winner stocks. The results show that while a momentum strategy can provide significant abnormal returns of up to 0.885% over a holding period of four weeks, when trading costs are taken into account, the profitability of the momentum strategy becomes insignificant.

The thesis further analyzes whether size of the company can explain the evidence of under-reaction. This is done on the basis of creating portfolios with large and small capitalization stocks. For large capitalization stocks, an under-reaction that is statistically significant over holding periods from 1 to 3 weeks is found. The overall result for this thesis suggests that while evidence of under-reaction appears for Egyptian listed stocks, this is concentrated in large firms. Investor, however, cannot profit from this market anomaly by applying a momentum strategy since after taking into account trading costs involved in trading Egyptian stocks, the profitability of this strategy diminishes.

Keywords: Overreaction; Under-reaction; momentum strategy; Market Efficiency; Return reversals; Market anomalies; Market capitalization

TABLE OF CONTENTS

DEDICATION	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
I. INTRODUCTION	1
II. THE OVER AND UNDER-REACTION LITERATURE	4
III. DATA AND METHODOLOGY	14
IV. FINDINGS.....	22
V. CONCLUSIONS.....	31
REFERENCES	33
APPENDICES	39

LIST OF TABLES

Table 1- Descriptive Statistics of the Total Sample	22
Table 2-Testing the Over/Under-reaction Hypothesis within the Total Sample	23
Table 3-Post-revolution Analysis	25
Table 4-Appying a momentum Strategy	26
Table 5-Testing Over/under-reaction Hypothesis using Clare and Thomas Method	27
Table 6-Testing Over/under-reaction Hypothesis within Large caps Stocks.....	28
Table 7-Testing Over/under-reaction Hypothesis within Small caps Stocks.....	29

LIST OF FIGURES

Figure 1-Market anomalies	4
Figure 2-Weekly price movements in EGX30	15

CHAPTER I

INTRODUCTION

1.1 Overview of Capital Markets

The efficient market hypothesis (EMH) is a controversial issue that is often disputed both empirically and theoretically. Fama in 1995 defined the efficient market as "a market where there are large numbers of rational, profit-maximizers actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants. In an efficient market, competition among the many intelligent participants leads to a situation where, at any point in time, actual prices of individual securities already reflect the effects of information based both on events that have already occurred and on events which, as of now, the market expects to take place in the future. In other words, in an efficient market at any point in time the actual price of a security will be a good estimate of its intrinsic value" (F.Fama, 1995).

So according to the EMH, markets are rational and their prices should respond only to the arrival of new information that gets incorporated in prices instantaneously making it impossible for investors to beat or predict the market using technical or fundamental analysis.

Fama showed evidence in favor of market efficiency. He argued that contrarian strategies don't work in such type of markets because prices tend to be at their fundamental values. Further, Fama intensifies the random walk implication of the efficient market hypothesis which states that, future changes in stock prices should be un-predictable. However, a large strand of academic studies since early 1980's emerged to criticize the notion of capital market efficiency. These studies documented evidences of capital markets anomalies that seem to contrast the efficient market hypothesis.

“Capital market anomalies refer to situations when securities’ prices deviate or depart from the norm” (Iqbal, et al., 2013). These deviations indicate either market inefficiency or inadequacies in the underlying asset-pricing model. Anomalies could be fundamental, technical or calendar related, and they are either a one-time occurrence or a persistent event. Persistent anomalies are a concern since they could produce future outperformance of the market; however there is no guarantee of this.

The number of these documented anomalies is large and continues to grow. An example of these growing anomalies is the “Calendar effect”, which includes the observed different behaviour of stock markets on different calendar days, months, or different times of the year in gener. The most important calendar anomalies are the January effect and the weekend effect. Another example of stock market anomalies could be the “small-firm effect”. This anomaly states that firms that are small in size (smaller capitalization) tend to outperform larger ones, this outperformance is driven by the company’s potential to grow and inevitably smaller companies business has more chance to grow, while big companies have less room for growing

This thesis aims at testing one of these anomalies in one of the Arab stock markets, the “Egyptian Exchange”. The anomaly of concern here is the short-term Over/under-reaction hypothesis. The overreaction-first noted by DeBondt and Thaler (1985) in the US stock market-dictates that “stocks that have underperformed the market over a period of time will outperform the market over a subsequent and similar time period” (DeBondt, et al., 1985). While Jegadeesh and Titman (JT) were the first to refer to the under-reaction patterns in returns, when they used a sample of stocks listed on the NYSE and AMEX, for the period between 1965 and 1989.

The Arab Stock Markets are small in terms of market capitalization as they account for approximately 16 per cent¹ of the total market capitalization of the 21 emerging markets² and for

¹ Per cent is calculated based on information from MSCI.com (2014)

² Emerging markets are (Brazil, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey)

1.76 per cent³ of the world's stock market capitalization of \$54.57 trillion⁴ in 2012 (Perry, 2013), and there exists to the best of my knowledge no study on short-term over/under-reaction on the cross-section of any of the Arab stocks markets so far.

This study provides insights about the dynamics of one of the Arab stock markets by examining the short-run over or under-reaction phenomenon in “the Egyptian Stock Exchange” using weekly closing prices data of all stocks listed in the exchange. The test period is from January 1998 to December 2013, which is chosen to reflect most of the significant economic and political events Egypt passed by since the re-opening of the Egyptian Exchange in early 1990s. This study relies on combination of methodologies, and by comparing the results of the methodologies; it is intensified that there is an evidence of short-term under-reaction in the Egyptian Exchange,

The rest of the thesis is organised as follows. Section II will present the literature review of the main studies of the over/under-reaction hypothesis. Section III will present the data, and methodology used in this thesis. Section IV will provide the results of this empirical study and section V concludes with areas for future research.

³ This ratio is calculated based on what is officially published by Mubasher.info that Arab stock exchanges reach \$960.2 billion on March 18,2012, and the information from the World Federation of Exchanges that total world's market capitalization in 2012 is \$54.57 trillion (Mubasher, 2012)

⁴ The Paris-based World Federation of Exchanges, an association of 52 regulated stock market exchanges around the world, recently released data on the world stock market capitalization for December 2012. As of December, the total value of world equities was \$54.57 trillion

CHAPTER II

THE OVER AND UNDER-REACTION LITERATURE

The key strand of literature in which this thesis falls tests whether market anomalies that contradict the efficient market hypothesis do exist. In Figure (1), a mapping of market anomalies in literature is summarized

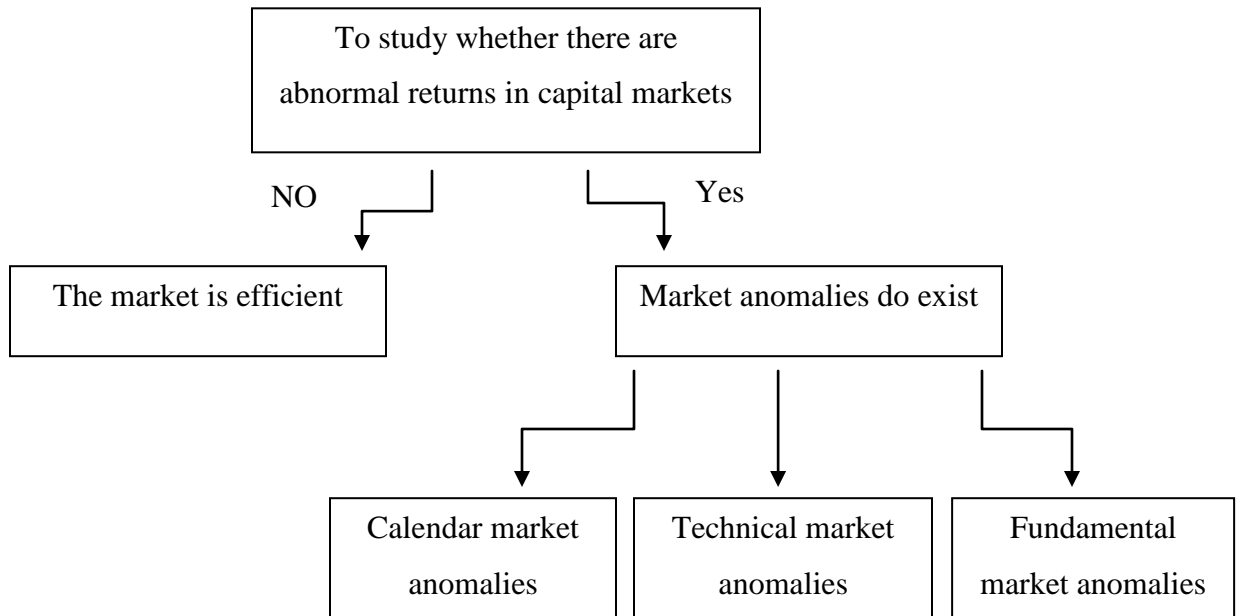


Figure (1): Market anomalies

2.1 Related Literature: Calendar-related market anomalies

Calendar anomalies, also known as seasonal anomalies, are irregular pattern of stock returns that are related with a particular time period. They include the day of the week effect, turn of the month effect, January effect and the holiday effect.

The day of the week effect, that is also known as the weekend effect exhibits relatively larger Friday returns as compared to Monday returns, where Friday and Monday being the last and the first trading days of the week respectively. According to Nawaz and Mirza, “This is attributable to the trading patterns of the individual investors. However, in the recent time period a reverse weekend effect has been observed where Monday returns have yielded more than the Friday returns contributed by the change in the trading pattern of investors” (Nawaz, et al., 2012).

The January effect is another calendar anomaly according to which stock market returns increase in the month of January more than in any other month. Various studies have reported “window dressing” by institutional investor as the reason behind what is called the January effect. For example, according to Lakonishok, Shleifer, Thaler, and Vishny (1991), “at the end of the calendar year, institutional investors may be prone to sell losers and buy winners to improve perceived performance” (Lakonishok, et al., 1991). As documented in the literature, size and tax loss selling are two other contributors to the January effect. Small size stocks tend to generate higher returns in January as compared to large stocks, as concluded by Haug and Hirschey (2006) when examining returns of the US equities. Tax loss selling phenomenon indicates that stocks which are expected to have low returns (losers) towards the end of the year are sold and stocks which are expected to have higher returns (winners) are held till the beginning of the New Year. These stocks are then sold in January and thereafter the loser stocks replace winner stocks in a portfolio. Ritter (1988) explained this behavior by quoting that “individuals apparently sell stocks that have declined in price in December in order to realize the tax losses, and then, they do not immediately reinvest all of the proceeds from these sales in other stocks, but they wait until January, as this January buying may be augmented by cash infusions from year-end bonuses and from the sales of larger firms on which long-term capital gains are being realized” (Ritter, 1988)

2.2 Related Literature: Technical market anomalies

Technical analysis is theoretically defined as using analyzing techniques to forecast future prices of stocks on the basis of past prices and relevant past information. If the EMH holds, these techniques are of no use. On the other hand, when the efficient market hypothesis does not hold, and when techniques as the moving average, and trading range break find their way to predict

future prices, we can ensure that there exist what we can call technical market anomalies. The existence of momentum is an evidence of this type of market anomaly. As according to momentum, rising asset prices will continue to rise, and falling asset prices will continue to fall. Consequently, in the next period, stocks that showed strong performance in the past continue to outperform stocks that showed poor performance in the past. Investors can make use of this anomaly, and make abnormal returns by implementing a momentum strategy that sells loser stocks and buy winner stocks.

2.3 Related Literature: Fundamental market anomalies

Fundamental anomalies state that prices of stocks do not reflect the stocks' fair values. These anomalies include value anomaly, dividend yield anomaly, over/under-reaction anomaly, low price to earnings ratio anomaly, and low price to earnings anomaly.

The value anomaly for example occurs as a result of investors overestimating the future earnings of growth companies and underestimating those of value companies (Graham, et al., 1962). As documented by Lakonishok, "this overestimation from individual investors perspective may be due to judgment errors and extrapolate past growth rates of growth stocks, on the other hand institutional investors that do not make judgement errors, prefer growth stocks as they appear to be "prudent" investments, and hence are easy to justify to sponsors" (Lakonishok, et al., 1994).

In the coming few paragraphs the literature of overreaction and under-reaction anomaly which is the main focus of this thesis will be discussed in details.

2.3.1 Defining the over and under-reaction hypotheses

The Overreaction Hypothesis occurs when stock prices rise (fall) too much in response to good (bad) news. A manifestation of this phenomenon could be that when bad news arrives to the stock market regarding certain stocks, investors panic at first and start trading based on this misconception, consequently prices of these stocks fall sharply and lead to mispricing. Later, when investors realise the true extent of the news, they start to trade in the opposite direction so

that prices subsequently correct themselves. The opposite exactly occurs for stocks associated with good news; their prices tend to overshoot upon the arrival of the news because of investor's misjudgement and then when investors know they were over optimistic they tend to trade in the opposite direction leading to price reversals to their reasonable levels. "Based on this "overreaction phenomenon", the subsequent price reversal should be predictable from past returns data, and consequently adopting a contrarian strategy that sells winners stocks and buys loser ones sometimes leads to abnormal profits benefiting from this overreaction" (Ali, et al., 2011). The under-reaction hypothesis, in contrast, is characterised by a lower than optimal response of the market to information. This under-reaction" of investors to newly arrived information stems from investors being conservative. Investors then gradually adapt to news recently flowing into the market, and start to incorporate their predictions into prices

Both over and under-reaction are important indicators of market inefficiency as they sometimes lead to achieving abnormal profits, which are returns that differ from the expected rate of return and are not a compensation for risk, through implementing either a contrarian or a momentum strategy.

Supporters of the efficient market hypothesis (EMH), as Harry Roberts (1967) and Fama (1970) consider these reactions as chance occurrences which vanish when the methodology of study is changed. But, on the other hand, Behavioral economists as Thaler (1990), and Tversky and Kahneman (1974) consider over- and under-reaction, and other anomalies, as something natural. They claim that human mind falls prey to many biases while making a decision, as overreacting to private information signals and under-reacting to public information signals (Daniel, et al., 1998). These biases, as mentioned by Kalb (2011) cause markets to show a behavior that may not be in complete harmony with what the standard finance theories expect.

The over/under-reaction can be analyzed from any of two perspectives, a long-run perspective using monthly or yearly data or a short-run perspective using daily or weekly data. Although the focus in this study is on short-term stock market over/under-reaction, including the long-term literature is important as it provides a stronger theoretical foundation.

Both the long-term and short-term perspectives are detailed in the following subsection to show that there is mixed evidence in the literature on whether long-term and short-term over and under-reaction occurs.

2.3.2 Long-term overreaction

De Bondt and Thaler (1985) motivated most other research on overreaction, after being able to document return reversals over long horizons ranging from 3 to 5 years. The authors found using US data that stocks which experienced bad performance over the past three to five year period (losers) tend to outperform winners over the following three to five years. This implies that investors using a contrarian investment strategy could earn a highly significant abnormal profit. Zarowin (1989) examined the subsequent stock return performances of firms that have experienced extreme earnings years and found that losers outperform the winners by a statistically significant amount over the subsequent 36 months. However, he pointed out that at the time of portfolio formation losers were significantly smaller than the winners. But, when the losers were matched with the winners of the same size, there was virtually no evidence of differential stock return performance. Zarowin claimed that “the market does not over- react to extreme earnings news, and suggesting that size discrepancies between winners and losers may be responsible for the apparent overreaction phenomenon” (Zarowin, 1990) . Motivated by these findings, Zarowin re-examined DeBondt and Thaler (1985), and criticised their result. He was able to dismiss the overreaction phenomenon presented by them as an explanation of the size effect.

A point consistent with Zarowin’s (1990) result is Clare and Thomas’s (1995) attempt to investigate the long-run overreaction in the UK stock market. Clare and Thomas found an evidence of limited economically insignificant difference in the performance of previous losers and previous winners over the period 1955 to 1990, moreover this limited overreaction, where the losers outperformed the winners, was attributed to the size effect, as they found that losers tended to be smaller than winners. In contrast to Zarowin (1990) and Clare and Thomas (1995), Dissanaik (2002) concluded that there is no evidence to suggest that the size effect explains the difference in the performance between winners and losers in the UK stock market.

Investigating this long-term overreaction anomaly in the Canadian equity market, Kryzanowski and Zhang (1992) documented no evidence of overreaction, rather, they found that Canadian stocks have tended to show evidence of momentum as investors under-react to new information by failing to reflect news instantaneously in their transaction prices

As documented by Lobe and Rieks (2011), “research from several countries, such as that by Alonso and Rubio (1990) from Spain, da Costa (1994) from Brazil, Meyer (1994), Mun, Vasconcellos, and Kish (1999) and Schiereck, DeBondt, and Weber (1999) from Germany, or by Baytas and Cakici (1999), who examined seven developed countries, finding overreaction in all but the United States, shows that long-term overreaction is persistent even when the critic’s arguments are accounted for” (Lobe, et al., 2011).

2.3.3 Short-term overreaction

The availability of more frequent datasets from around the world motivated more recent research to examine the question in short-term.

Lehmann (1990) examined whether short-term overreaction existed in the US stock market in weekly returns. He found evidence that "winner" and "loser" portfolios that are formed in one week exhibit return reversals the next week allowing short-term contrarian strategies to realize statistically significant profits even after accounting for bid-ask spreads and plausible transactions costs. This result is consistent with that of Debondt and thaler (1985) study in the long-term

Similarly in the US, Lo and MacKinlay (1990) questioned whether the profitability of contrarian investment strategies necessarily implies stock market overreaction. They introduced a “decomposition process” so as to determine whether a lead/ lag effect or an overreaction to firm specific information is a main reason behind the short-term contrarian profits. Lo and MacKinlay reported less than half of the profits to overreaction and claimed that a lead/lag effect is the main reason behind the majority of the observed short-term contrarian profits (Lo, et al., 1990). Contradicting Lo and MacKinlay (1990), Jegadeesh and Titman (1995), examined the New York

and American stock exchanges to check whether there is any evidence for the existence and possible sources of short-term contrarian profits. They found that short-term contrarian profits are predominantly the result of an overreaction to firm specific information and not the result of lead/lag effects as suggested by Lo and MacKinlay. Indeed, Jegadeesh and Titman found only a small fraction (less than 1%) of the short-term contrarian profits are due to the lead/lag effect. In a follow up paper by Conrad et al. (1997), it was claimed that the significant profits due to price reversals of Lehmann (1990) and Lo and MacKinlay (1990) may not reflect the overreaction anomaly but may instead be generated entirely by market microstructure effects, such as the bid-ask bounce (Conrad, et al., 1997) .

In another attempt to examine the short term overreaction in New York Stock Exchange, Atkins and Dyl [1990] using daily data, showed that stock prices overreact in the short run, especially to negative information, however the magnitude of this statistically significant overreaction, is small compared to the bid-ask spreads observed for these stocks. Thus, this overreaction does not violate the EMH as it could not be exploited because of bid-ask spreads. However, Akhigbe, Gosnell, and Harikumar [1998] argue that bid-ask spread used by Atkins and Dyl [1990] to represent transaction costs does not reflect the round-trip trading costs faced by investors. So they addressed this shortcoming by using a more developed measure of bid-ask spread, and documented significant stock price reversals. They added that, “Except for the greatest losers, using a simple trading rule to exploit the excess profit net of transaction costs is not possible” (Akhigbe, et al., 1998).

Cox & Peterson (1994) also examined the US market trying to explore the role of the bid-ask bounce, market liquidity, and overreaction in explaining price reversals in the three-day period immediately following large one-day decline. They concluded that price reversals in short term can be explained by “bid-ask bounce” and “degree of market liquidity”, and that overreaction vanishes with rising market liquidity (Cox, et al., 1994).

Outside the US, there are fewer studies of short-term overreaction than of long-term overreaction. These studies include Bowman & Iverson’s (1998) study that covered the New Zealand stock market. Based on empirical evidence they concluded that short term overreaction does exist there.

In the UK, Spyrou, Kassimatis, and Galariotis in their attempt to examine investor's reaction to market shocks in the UK stock market in the short term for the period from 1989 to 2004 using daily closing prices, reported that "the market reaction to shocks for large capitalization stock portfolios is consistent with the Efficient Market Hypothesis. However, for medium and small capitalization stock portfolios their results indicate significant under-reaction to both positive and negative shocks for many days subsequent to a shock" (Spyrou, et al., 2007)

In Japan, Bremer, Hiraki, and Sweeney (1997) documented short-term overreaction. In addition, Iihara, Kato and Tokunaga (2004) examined the Japanese markets for short-term overreaction using data from Tokyo Stock Exchange (TSE) and found that overreaction explains the 1-month return reversal in Japan.

Several studies have been done on emerging markets such as Malaysia and Johannesburg. These studies have to be taken into consideration while doing anomalies test in Egypt as these countries are very close in structure and functioning to the Egyptian market. For example, a study that was done by Ali, Ahmad, and V. Anusakumar (2011) who investigated short-term overreaction in Bursa Malaysia and concluded that an investor could make abnormal profits that are highly significant especially for periods ranging between 1 and 12 weeks by implementing a short term contrarian strategy that buys loser stocks and sells winner stocks. In addition, their results also imply that this profitable contrarian strategy will yield even higher profits if focused on low-volume stocks, as they reported an inverse relationship between trading volume and overreaction.

Another study was done on Johannesburg Stock Exchange by Hsieh & Hodnett (2011). The authors were trying to examine the overreaction hypothesis in the JSE, and they found evidence of overreaction Hypothesis in South Africa for the period from period from January 1993 to March 2009

Beside evidences of short-term overreaction, evidences of short-term under-reaction are also found. For instance, Schnusenberg & Madura (2001) investigated the short-term (daily) investor over- an under-reaction to market shocks for six US indexes and reported evidence of under-reaction. "They argue that the results they found reflects a model of investor psychology in which investors interpret extremely positive news releases pessimistically and extremely

negative news releases optimistically” (Schnusenberg, et al., 2001). Another evidence of under-reaction in the U.S. was given by Pritamani and Singal (2001). The authors found under-reaction to price shocks.

Outside the U.S., Maher & Parikh (2011), while investigating the Indian stock market, found evidence of under-reaction to bad news. They added that this under-reaction is mainly concentrated in the medium and smaller capitalization stocks, in all periods except post-crisis.

2.3.4 Profitability of the over and under-reaction phenomena

Can investors make use of the over and under-reaction market anomalies? Many researches have dealt extensively with this issue aiming at exploring the profitability of contrarian and momentum strategies that follow the existence of overreaction and under-reaction respectively, and different results were found. For the momentum strategy, Jegadeesh and Titman (1993) showed that a momentum strategy, that buys the winner stocks that performed well in the past and sells the losers stocks that performed poorly in the past of the previous six months, will realize significant abnormal profits in the US markets over the period from 1965 to 1989 if held for a holding period of 3- to 12-month.

A further evidence of profitable momentum strategy in the U.S market was reported by Chan, Jegadeesh, and Lakonishok (1996) who documented that investors routinely under-react and, therefore can exploit a momentum strategy at intermediate terms of 3 to 6 months by buying recent winners and selling recent losers to make abnormal profits.

McInish, et al (2008), in their attempt to test the profitability of short-term contrarian and momentum strategies in Asian markets found out that except for the Taiwan and Korea stock markets, winner portfolios experience price reversals, while loser portfolios experience momentum prices. However, contrarian strategy will realise significant profits only in Japan, and momentum strategy will yield persistent and significant profits only in Japan and Hong Kong. McInish, et al (2008) also documented in their paper that “Chui, Titman, and Wei (2003) reported significant momentum profits for seven out of the eight Pacific Basin countries for the period from (1975 to 2000). In particular, they found significant momentum profits in stocks of

small-capitalization, low book-to-market ratio, and high turnover companies” (McInish, et al., 2008).

Several papers demonstrate that the contrarian strategies resulting from the existence of overreaction anomaly could be profitable. For example, De Bondt and Thaler (1985), and Chou, Wei, and Chung (2007) documented highly profitable contrarian returns for US stocks and stocks from Tokyo stock exchange respectively.

Conrad et al (1998) applied contrarian strategies to weekly transaction returns of NYSE/AMEX stocks and concluded that the momentum strategy usually leads to statistically significant profits at medium horizons, except during the 1926-1947 sub-period and that the contrarian strategy leads to profits at long horizons that are only statistically significant, during the 1926-1947 sub-period.

Hameed and Ting (2000), Using Malaysian stock market data examined short-term contrarian returns and trading volume and concluded the contrarian profits on actively and frequently traded securities are significantly higher than that generated from less active securities.

Lee, Chan, Fatt and Kalev (2003) using weekly return data found significant short-term contrarian profits in the Australian markets". Further they documented that Lee, Darren D., et al (2003) in a follow up paper found that in Australia profits are to a great extent related to the market capitalization of the firm as an indicator of its size with overreaction to information that are specific to a firm being the major factor that contributes to short-term contrarian profits. However, when transaction costs are accounted for, all profits are wiped out.

CHAPTER III

DATA AND METHODOLOGY

3.1 Institutional Framework

The Egyptian Exchange (previously known as the Cairo and Alexandria Stock Exchange (CASE)), is one of the oldest stock markets established in the Middle East. The Egyptian Exchange traces its origins to 1883 when the Alexandria Stock Exchange was established, followed by the Cairo Stock Exchange in 1903. As quoted on the Egyptian Exchange website “Egypt adopts the vision of being the financial hub and investment gateway in the Middle East and North African (MENA) Region that best serves its stakeholders” (The Egyptian Exchange, 2014). The Egyptian stock market has received increased attention in the last decade, especially since it was considered one of the world’s best performing stock exchanges in 2005. As per Standard & Poor’s and Morgan Stanley indices in 2005, Egypt surpassed any previously established record, and outperformed both developed and emerging markets, which pushed the Newsweek magazine to choose Egypt as one of the best 10 stock markets in the world for the year 2005. The privatization program was very successful in 2005 and the Ministry of Investment showed commitment to activate it through the stock exchange. The Egyptian Exchange back at that time reported that “nineteen privatization deals worth L.E14.9 billion, representing 94% of total privatization proceeds were conducted through the stock exchange during this year, Consequently, CASE 30 index showed an extra-ordinary performance during 2005, recording the highest ever annual growth rate of 146% versus an increase of 135% and 122% during 2003 and 2004, respectively” (The Egyptian Exchange, 2005). When the global financial crisis hit in 2008, the Egyptian Stock Exchange was in a better place compared to several global markets which recorded higher losses than that of EGX as announced by Merrill Lynch, however, CASE 30 index incurred 56% losses over the year 2008 since the Egyptian

market was not isolated from the global financial crisis repercussions due to asset liquidation and the decrease in shares value of the Egyptian companies listed in the EGX (The Egyptian Exchange, 2008). In 2011, the year started with a phase of unrest and political turmoil, it started with the 25th of January revolution,. In response to that, the Egyptian stock market had been shut since 27 January, after losing 18% in the two trading days before closure. The exchange opened again on Wednesday 23 March after closing for almost 8 weeks. On reopening, the market fell by a further 8.9% (BBC News, 2014) . By the end of June 2013, the total market capitalization of the listed stocks culminated at LE 322 billion (The Egyptian Exchange, 2013)

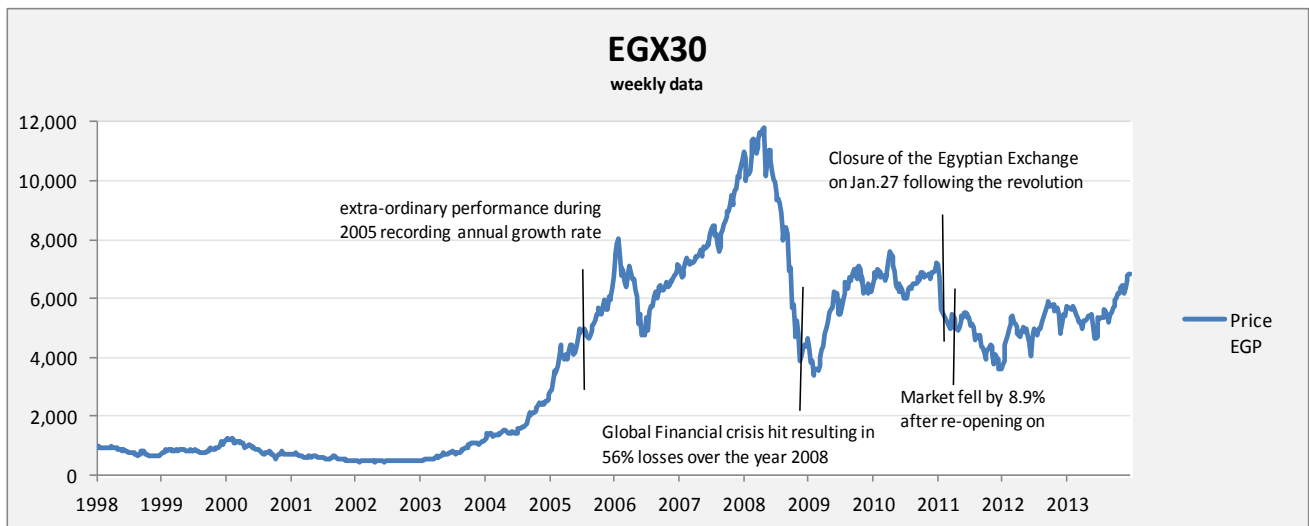


Figure (2): Weekly price movements in EGX30

3.2 Data

In this study, our sample involves all stocks listed on Egyptian Exchange as of 31st of March 2014. We focus on weekly prices, as well as volume, market capitalization and number of outstanding shares. Data of 16 years from January 1998 to December 2013 is used in this study and was compiled from Reuters Eikon 2013 database. Unlike previous studies that focus on sample cross-section of stocks listed on an exchange that are only part of an index, this study takes into consideration all stocks listed in the Egyptian Exchange.

For market benchmarking, the index employed in this study is the EGX 30 (previously named CASE 30 Index). The start date of the index was January 2nd 1998, with a base value of 1000

points. “EGX 30 index value is calculated in local currency terms and denominated in US dollars since 1998. It includes the top 30 companies in terms of liquidity and activity. The Index is weighted by market capitalization and adjusted by the free float. For a company to be included in EGX 30 index, it must have at least 15% free float. This ensures market participants that the index constituents truly represent actively traded companies and that the index is a good and reputable measure for the Egyptian market” (The Egyptian Exchange, 2014).

Stocks are then filtered where the least active ones are excluded. The activity here is measured using the same criteria the Egyptian Exchange uses to measure the activity of stocks to decide whether they should be included in any of the three major indices. For example, for a company to be included in EGX30 (includes the top 30 companies in terms of liquidity and activity), it must be traded at least 50% of the trading days during a specific period. For example, if the total number of traded days during the last six month period is 120 (5 x 4 x 6). The company must be traded at least 60 days during this period to join the index (The Egyptian Exchange, 2013) . To ensure that we have the most active stocks out of the sample, a second filtering criterion is used which is the turnover ratio of the stocks. Turnover ratio is the trading volume divided by the number of shares outstanding. Stocks with average annual turnover ratio less than 80 % (lowest decile) are excluded.

We further exclude observations around political events (the post-revolution closure of EGX for two months in 2011). This gives us 827 weekly observations of 184 stocks representing 84.40 percent of the entire universe of listed securities (as per 2014 list). Appendix A and B of this thesis provides a summary of stocks used in this study, outlining their sector, market capitalization, listing date as well as descriptive statistics on their weekly returns over the sample period.

3.3 Methodology

As a first test of the Overreaction or under-reaction hypotheses in the Egyptian stock market, the same standard study techniques used by Ali et al. (2011) while testing the overreaction hypothesis in Bursa Malaysia are used. Afterwards, the methodology used by Clare and Thomas (1995) is being combined with our first methodology to check the robustness of the results. For

simplicity, let's call Ali et al. (2011) methodology by "Methodology 1", and Clare and Thomas (1995) by "Methodology 2"

In both methodologies, we find the stocks' abnormal returns, based on which stocks are ranked and assigned to either a portfolio of losers or to a portfolio of winners. These losers and winners portfolios are then held for H weeks, where H takes the value of 1,2,3,4,12,24,36, or 52. Cumulative average returns (CARs) are then computed for each holding period, and finally the average cumulative abnormal return (ACAR) is computed for the winners, losers and the arbitrage portfolios over the formation period as well as each of the holding periods. The way we test the over/under-reaction hypothesis is what differentiates the two methodologies. In methodology 1, we simply check the ACAR for the arbitrage portfolio over the holding periods, whether it is positive, negative or equals to zero, and check its statistical significance as well and find out whether the result indicates over/under-reaction or supports the efficient market hypotheses. In methodology 2, we compare the means of the winner and loser portfolio returns by regressing the return of the arbitrage portfolio against a constant once (Test 1), and another time by regressing the arbitrage portfolio, against the market risk premium (Test 2). Based on the results (either Overreaction, under-reaction or efficient market hypothesis) we will measure the profitability of employing a contrarian or a momentum strategy.

The Final analysis will involve testing the relationship between the resulted over/under-reaction and size of the firm as measured by its market capitalization.

3.3.1 Finding stock's abnormal returns

First, we measure stocks weekly returns as follows:

$$R_{i,t-1} = \frac{P_{t-1} - P_{t-2}}{P_{t-2}} \quad \text{Equation (1)}$$

Where $R_{i,t-1}$ is the return for stock i at week t-1, P_{t-1} is the price of the stock at time t-1, and P_{t-2} is the price of the stock at time t-2.

Market adjusted returns (abnormal returns) are then calculated for all stocks weekly

$$AR_{i,t-1} = R_{i,t-1} - R_{m,t-1} \quad \text{Equation (2)}$$

Where $R_{i,t-1}$ is the return for stock i at week $t-1$, and $R_{m,t-1}$ is the return for the market at week $t-1$, here R_m , is the return on EGX30 index.

3.3.2 Portfolio formation

Stocks are then ranked in each week based on past week's abnormal returns. In case of finding stocks with the same abnormal return, a second ranking criterion is considered. It ranks stocks based on their past week's trading volume. Stocks are assigned accordingly to one of two portfolios, either the winner portfolio or the loser portfolio. Where the top one third of stocks constitute the winner portfolio and the bottom one third construct the loser portfolio, we took the top and bottom one third of stocks to construct the portfolios instead of deciles and quintiles following the same concept followed by Ali et al (2011) in which they state that they did so due to the smaller number of stocks compared to studies in other markets (Ali, et al., 2011). Consequently equally weighted winner and loser portfolios are formed weekly.

3.3.3 Holding periods

The portfolios are then held for H weeks, where H takes the value of 1,2,3,4,12,24,36, or 52. These specific pins (1,2,3,4,12,24,36,or 52 months) are meant to account for investors with different time horizons. Portfolio returns are found in the formation period, and in each of the holding periods.

Since we have equally weighted portfolios, we find the portfolios' returns using the following formula

$$E(R_i)_P = \sum_{i=1}^n W_i \times R_i \quad \text{Equation (3)}$$

Where, $E(R_i)_p$ is the expected return on portfolio P, and W_i is the weight of stock i in the portfolio

Holding periods' returns are calculated using the cumulative average returns (CARs), which is the sum of abnormal returns over H weeks (where H takes the value 1,2,3,4,12,24,36, or 52).

$$CAR_{pt} = \sum_{i=1}^H E(R_i)_p \quad \text{Equation (4)}$$

3.3.4 Testing the overreaction and under-reaction hypotheses

Finally, the average cumulative abnormal return (ACAR) is computed for the winner and loser portfolios as follows:

$$ACAR_{pt} = \left(\frac{1}{N}\right) \sum_{N=1}^N CAR_{pt} \quad \text{Equation (5)}$$

Where $ACAR_p$ is the average CAR for portfolio P, and N represents the test periods.

3.3.4.1 Applying Methodology 1

The ACAR for the arbitrage portfolio is the difference between the ACAR for the loser and that of the winner (i.e. $ACAR_{Loser} - ACAR_{winner}$)

In an efficient market that difference should be zero ($ACAR_L - ACAR_W=0$), but in case that overreaction exists, this difference should be greater than zero ($ACAR_L - ACAR_W>0$). On the contrary, if ($ACAR_L - ACAR_W<0$), this indicates that the market under-reacts to the arrival of new information.

In order to assess the statistical significance of ACAR, the t-statistic has been used which is calculated as follows:

$$t = \frac{ACAR}{\sigma / \sqrt{N}} \quad \text{Equation (6)}$$

Where, σ is the standard deviation of CARs, and N is the number of test periods.

The post 2011 Revolution period is also investigated for the existence of over and under-reaction using the same steps mentioned above but starting from January 2011 to December 2013, for 149 weeks.

3.3.4.2 Applying Methodology 2:

According to Clare and Thomas (1995), if the return on the difference portfolio (Loser-winner) is insignificantly different from zero, the overreaction hypothesis should be rejected, and if the return is a significant positive value, the overreaction hypothesis is accepted.

In this study the same two tests used by Clare and Thomas are used. Where the first test is based on comparing the means of the winner and loser portfolio returns by regressing the return of the difference portfolio against a constant.

$$ACAR_{l-w} = ACAR_P^L - ACAR_P^W = \alpha_1 + n_t \quad \text{Equation (7)}$$

Where α_1 is a constant and n_t is a white noise error term.

This regression is done for $t=1,2,3,4,12,24,36$, or 52, which represents all the holding periods we have in this study. Then a simple t-test on the significance of the constant α_1 tells us whether there is a difference in the performance between winner and loser stocks.

A significant positive value for α_1 confirms that an evidence of the overreaction.

The second test is done by regressing the difference portfolio, against the market risk premium. However, due to data limitations and the difficulty of getting the risk free rate as being represented by Egypt's T-bills historically since 1998, the regression is done against the market return. This test as quoted by Clare and Thomas (1995) "allows us to control for possible different exposures to systematic risk which may explain the differential returns between the winner and loser portfolios" (Clare, et al., 1995).

$$ACAR_{L-W} = \alpha_2 + \beta(RM_t) + \epsilon_t \quad \text{Equation (8)}$$

Where the intercept α_2 term, is the Jensen performance index

β represents the difference between the market beta of $ACAR_P^L$ and $ACAR_P^W$

RM, is cumulative return on the EGX30 index $t=1,2,3,4,12,24,36$, or 52 holding periods.

ϵ_t is a white noise error term and where t represents the appropriate period after portfolio formation.

As postulated by Clare and Thomas, “a significantly positive value for α_2 can be seen as confirmation of the Overreaction Hypothesis. If β is significantly different from zero then differences in systematic risk explain some of the difference in returns. A significantly positive value for β means that losers bear more systematic risk than winners” (Clare, et al., 1995).

3.3.5 Testing the relationship between over/under-reaction and Firm size

For the second part of the analysis, we investigated the over/under-reaction hypothesis within each market-capitalization category, targeting to check whether our result is explained by the size of the firm as well as to find the relationship between the over/under-reaction hypothesis and firm size.

The market capitalization at the end of the previous week is used to sort the stocks into Large-market capitalization stocks and Small-market capitalization stocks. Following this, stocks within each market-capitalization category are sorted again based on past week excess returns to form winner and loser portfolios.

CHAPTER IV

FINDINGS

4.1 Sample Descriptive Statistics

Descriptive statistics of the total sample used is provided in Table 1. The final sample consists of 184 stocks of those listed in the Egyptian exchange. The study covers 827 weeks. The average weekly return for all the 184 stocks is 0.124%, which translates to 6.67% annualized. The average weekly market capitalization for the stocks included in the sample is LE 1,646 millions and the average annual turnover ratio is

Table 1: Descriptive statistics for total sample

Number of stocks	184
Number of weeks	827
Average weekly return (%)	0.124
Average weekly market capitalization in LE million	1,646
Average annual turnover ratio (%)	292.241

4.2 Results of Methodology 1

4.2.1 Analyzing the Whole Sample

Table 2 presents the result of testing the overreaction or under-reaction hypotheses for the whole sample. The table shows the average abnormal return during the formation period for the winner, loser and arbitrage (loser-winner) portfolios and the average cumulative abnormal returns (ACAR) for the three portfolios for 8 holding periods (1,2,3,4,12,24,36,or 52).

Table 2: Average cumulative abnormal return (ACAR) for the whole period for the winner (W), loser (L) and loser-winner portfolio (L-W)

		Formation Period	Holding Period (weeks)							
			1	2	3	4	12	24	36	52
Portfolio	Winners									
	AVERAGE	6.459%	0.404%	0.616%	0.858%	0.884%	1.367%	1.441%	2.322%	3.443%
	t-stat	24.917**	3.330**	3.442**	3.407**	3.114**	2.590**	1.965	2.591**	3.008**
	Losers									
	AVERAGE	-5.541%	-0.016%	0.044%	0.007%	0.053%	0.522%	1.185%	1.088%	0.908%
	t-stat	-50.575**	-0.102	0.188	0.027	0.176	1.025	1.631	1.200	0.787
	Arbitrage Portfolio									
	AVERAGE	-11.999%	-0.420%	-0.572%	-0.850%	-0.831%	-0.845%	-0.256%	-1.233%	-2.534%
	t-stat	-46.74**	-2.727**	-2.557**	-3.073**	-2.845**	-1.759	-0.389	-1.500	-2.495*

** Significance at 1% level

* Significance at 5% level

For the winner portfolio, it is obvious that weekly winners exhibit price momentum. There is a strong positive return in week t-1, followed by statistically significant at the (1% level) positive returns for the holding periods from 1 to 52 weeks, except for the holding period of 24 weeks, where the return is significant at the (5% level). The returns for the winner portfolios are gradually increasing along the holding periods, until a maximum return of 3.44% is reached at the holding period of 52 weeks with statistical significance of at the (1% level). Hence, a return momentum appears to gradually increase for the winner stocks along the 8 holding periods.

In contrast to the winner portfolios, the loser ones exhibit price reversals. They showed a strong negative return in the portfolio formation period that slightly increases at the holding period of 1 week, and continued in this increasing trend till the holding period of 24 weeks then starts to decline for the holding periods of 36 and 52 weeks. However, the return for the loser portfolios is positive for all the holding periods except for the holding period of 1 week, though the returns are not statistically significant.

The result states that In general, “winner” stocks display subsequent price momentum while “loser” stocks show price reversals. The result corroborates that of Fung, Leung, & Patterson (1999) who studied the profitability of implementing a trading strategy based on the one-day price performance in six Pacific Basin markets during the period between 1980 and 1993. In

general, they found that daily winners exhibit price momentum, while losers show price reversals during the following one to five trading days. This result may also be related to the “Uncertain Information Hypothesis”, claimed by Brown, Harlow, and Tinic (1988). This hypothesis states that investors react more strongly to bad news than to good news. Which means that winner stocks associated with good news will show price continuation (momentum), while loser stocks associated with negative news will exhibit an average abnormal return that is positive (price reversal). Therefore, as quoted by Fama (1998) “there is something about investor’s psychology that causes simultaneous under-reaction to some types of events, and overreaction to others” (Fama, 1998)

The last row in Table 2 provides the ACAR for the arbitrage portfolio for each of the 8 holding periods, which is defined as the difference in the ACAR between the loser and winner portfolios. Although, we have positive returns for the loser portfolios for the holding periods from 2 to 52 weeks, the ACAR for the arbitrage portfolio is negative which gives a sign of under-reaction. These negative returns for the arbitrage portfolio for all the holding periods can be attributed to the price continuation (momentum) of the winner portfolio. The result for the arbitrage portfolio is significant at the (1% level) for the holding periods from 1 to 4 weeks and for the holding period of 52 weeks it is significant at the (5% level). The remaining holding periods of 12, 24 and 36 weeks the result is not significant.

4.2.2 Post-revolution Analysis

In analyzing the post revolution period that consists of 149 weeks, Table 3 shows that for the winner portfolio there is a strong significant positive return in the portfolio formation period that starts to decline gradually exhibiting price reversals. The reversals are not significant for the holding periods from 1 to 24 weeks, however it is statistically significant at the (1% level) for the holding period of 36 and 52 weeks. The loser portfolio, on the contrary showed price momentum during the post revolution period, however the result is not significant except for the holding period of 36 weeks, where it is statistically significant at the (5% level), and that of 52 weeks where it is statistically significant at the (1% level). For the arbitrage portfolio, the results showed under-reaction that is not significant statistically.

Table 3: Average cumulative abnormal return (ACAR) for the post revolution period for the winner (W), loser (L) and loser-winner portfolio (L-W)

		Formation Period	Holding Period (Weeks)							
			1	2	3	4	12	24	36	52
Portfolio	winners									
	AVERAGE	4.636%	0.168%	0.165%	0.030%	-0.087%	-0.492%	-1.415%	-2.741%	-5.785%
	t-stat	20.052**	0.827	0.554	0.083	-0.209	-0.696	-1.463	-2.510**	-5.827**
	Losers									
	AVERAGE	-4.365%	-0.274%	-0.412%	-0.455%	-0.354%	-0.345%	-0.647%	-2.272%	-4.744%
	t-stat	-21.389**	-1.284	-1.332	-1.116	-0.746	-0.479	-0.634	-2.047*	-4.673**
	Arbitrage Portfolio									
	AVERAGE	-9.001%	-0.442%	-0.577%	-0.485%	-0.267%	0.147%	0.768%	0.470%	1.041%
	t-stat	-34.837**	-1.934	-1.761	-1.164	-0.565	0.242	1.068	0.601	1.241

** Significance at 1% level

* Significance at 5% level

The price reversals and price momentum for winner and loser portfolios respectively during the post revolution period can be attributed to the panic and irrationality that investors investing in the Egyptian exchange had after the revolution, when they try to cling to every piece of good news that might reduce their levels of fear and anxiety. After the revolution, Investors tend to attach excessively optimistic expectations with stocks associated with favorable information trying to benefit from every good news entering the market quickly before it goes, so they rush in buying stocks with good news and later on they realize they had overreacted. Consequently, prices return to their fundamental values. The opposite exactly occurs for stocks accompanied with unfavorable news. This result supports that of Brown et al. (1988) who theorized that the reaction of investors to good news is stronger than their reaction to bad news.

Overall, this study documents an evidence of under-reaction in the Egyptian exchange that is statistically significant for the holding periods of 1 to 4 weeks. The under-reaction means that the momentum traders can profit by trend-Chasing. Therefore, a momentum strategy that buys winner stocks and sells loser stocks⁵ seems to be profitable for the holding period from 1 to 4 weeks. However, as shown in Table 4, when we account for the prevailing fees rate in the market asked for by financial brokers, as well as the transaction costs levied by the Egyptian Exchange,

⁵ Selling loser stocks is not considered here because short-selling is not allowed in Egypt

resulting in a 3 in a thousand (0.3%) as total trading costs for each side of the transaction, we found that implementing a momentum strategy will not yield significant profits. This result supports that of Fung, et al (1999) when they found that momentum profits disappeared when transaction costs were taken into account in six Pacific Basin markets.

Table 4: Momentum Strategy of buying Winner portfolios before and after applying a 0.6% round-trip Transaction costs on periods when significant under-reaction exists

ACAR	Holding Period (Weeks)			
	1	2	3	4
Before trading cost	0.404%	0.616%	0.859%	0.885%
T-test	3.330**	3.442**	3.407**	3.114**
After trading cost	-0.196%	0.016%	0.259%	0.285%
T-test	-1.610	0.092	1.026	1.003

**Significance at 1% level

*Significance at the 5% level

4.4.3 Results of methodology 2

As we mentioned above, we will apply Clare and Thomas's (1995) methodology of testing the over/under-reaction hypothesis. By comparing the two methodologies together we can check whether our previous results were valid and robust

Table 5: Using Clare and Thomas's (1995) methodology of testing the over/under-reaction hypothesis.

		Holding Period (Weeks)							
		1	2	3	4	12	24	36	52
	ACAR _W	0.404%	0.616%	0.858%	0.884%	1.367%	1.441%	2.322%	3.443%
	ACAR _L	-0.016%	0.044%	0.007%	0.053%	0.522%	1.185%	1.088%	0.908%
	ACAR _{L-W}	-0.420%	-0.572%	-0.850%	-0.831%	-0.845%	-0.256%	-1.233%	-2.534%
Test 1	α_1	-0.004	-0.006	-0.009	-0.008	-0.008	-0.003	-0.012	-0.025
	t-stat	-2.727**	-2.557**	-3.074**	-2.845**	-1.759	-0.389	-1.500	-2.495*
Test 2	α_2	-0.005	-0.006	-0.009	-0.009	-0.010	-0.004	-0.011	-0.021
	t-stat	-2.934**	-2.751**	-3.264**	-2.951**	-2.021*	-0.550	-1.253	-1.872
	β	0.096	0.069	0.059	0.030	0.038	0.015	-0.012	-0.026
	t-stat	2.700**	1.956	1.686	0.952	1.379	0.639	-0.504	-1.152
	R ²	0.9%	0.5%	0.3%	0.1%	0.2%	0.05%	0.03%	0.2%

** Significance at 1% level

* Significance at 5% level

Table 5 presents results of our application of Clare and Thomas method that seem to confirm our original findings. The results confirm that there is an evidence of significant under-reaction in the Egyptian Exchange for the holding periods of 1 to 4 weeks as being clear from the significant (at the 1% level) negative value for α_1 .

Controlling for risk using Test 2, the significantly (at the 1% level) negative value for α_2 for the holding periods from 1 to 4 weeks; can be seen as confirmation of the under-reaction hypothesis.

The significantly positive value for β for the holding period of 1 week means that losers may embody more systematic risk than winners.

4.4.4 Investigating the Relationship between Under-reaction and Size

In the following, we proceed to investigate the relationship between under-reaction and the firm's size as measured by the market capitalization of stocks. The sample is divided into small and large market capitalization categories. Where the top one third of stocks constitutes the large market capitalization stocks and the bottom one third constructs the small market capitalization stocks.

The results for the large market capitalization stocks are presented in Table 6.

Table 6: Testing under-reaction hypothesis within large capitalization stocks

		Formation Period	Holding Period (weeks)							
			1	2	3	4	12	24	36	52
		Winners								
Portfolio	ACAR	5.171%	0.087%	-0.412%	-0.668%	-1.028%	-3.001%	-5.713%	-8.089%	-10.714%
	t-stat	9.697**	0.919	-0.823	-0.963	-1.164	-1.151	-1.326	-1.385	-1.546
	Losers									
	ACAR	-4.232%	-0.199%	-0.877%	-1.190%	-1.454%	-3.975%	-6.723%	-9.507%	-12.505%
	t-stat	-46.399**	-2.239*	-1.770	-1.763	-1.669	-1.571	-1.602	-1.646	-1.827
	Arbitrage Portfolio									
ACAR	-9.403%	-0.286%	-0.466%	-0.522%	-0.425%	-0.974%	-1.010%	-1.419%	-1.792%	
t-stat	-17.542**	-2.761**	-3.309**	-2.963**	-2.117*	-1.567	-1.414	-1.824	-2.060*	

** Significance at 1% level

* Significance at 5% level

As shown in Table 6, for the large winner stocks, a strong highly significant positive return appears in the formation period, it starts to decline showing notable price reversals along each of the 8 holding periods. However, these price reversals are not significant statistically. On the other hand, large losers continue to have negative returns for all the holding periods. A significant under-reaction can be noticed for the holding period of 1, 2 and 3 weeks, as the difference of the ACAR between the loser and winner portfolios is negative and statistically significant at the (1% level). Whilst returns are negative at the holding periods of 4 to 52 weeks, they are only significant at the (5% level) at the holding period of 4 weeks and that of 52 weeks. For the rest of the holding periods none of the returns are significant.

The average abnormal cumulative returns (ACARs) for small capitalization stocks for the 8 holding periods are detailed in Table 7.

Table 7: Testing under-reaction hypothesis within small capitalization stocks

		Formation Period		Holding Period (weeks)						
		1	2	3	4	12	24	36	52	
Portfolio	winners									
	ACAR	5.322%	0.334%	-0.157%	-0.247%	-0.440%	-2.092%	-3.539%	-5.330%	-5.113%
	t-stat	27.909**	2.010*	-0.184	-0.193	-0.255	-0.433	-0.453	-0.493	-0.405
	Losers									
	ACAR	-5.367%	0.223%	-0.346%	-0.620%	-0.898%	-2.352%	-3.369%	-4.568%	-4.671%
	t-stat	-39.713**	1.467	-0.407	-0.495	-0.522	-0.492	-0.437	-0.425	-0.376
	Arbitrage Portfolio									
	ACAR	-10.689%	-0.111%	-0.188%	-0.374%	-0.458%	-0.260%	0.169%	0.762%	0.441%
	t-stat	-63.864**	-0.853	-0.951	-1.527	-1.660	-0.562	0.276	1.027	0.493

** Significance at 1% level

* Significance at 5% level

The small winners exhibit price reversals starting from the holding period of 2 weeks up to that of 52 weeks, but none of which are statistically significant. Small losers exhibit price momentum for all of the holding periods except for the holding period of 1 week, but the results are not significant exactly the same as for the small winners. This yields a negative difference between the ACARs of the small loser and small winner stocks for the holding period from 1 to 12 weeks,

which can be interpreted as under-reaction, however it is not statistically significant, and a positive difference between ACARs of the small loser and small winner stocks for the holding period from 24 to 52 weeks that is also not significant statistically.

Indeed the returns are clearly more prominent for large capitalization stocks than for small ones. Overall, the evidence indicates that for large capitalization stock portfolios, there is a significant under-reaction to market shocks for a number of days subsequent to a shock up to 21 days (3 weeks). Hence, large capitalization stocks tend to under-react more than small capitalization stocks and exhibit correspondingly higher return momentum. This result seems to contradict that of Spyrou, Kassimatis, and Galariotis (2007). The three authors studied the UK market for short-term investor reaction for the period 1989 to 2004, and they showed that the market reaction to shocks for large capitalization stocks is consistent with the notion of market efficiency which suggests that information is incorporated instantaneously in prices. However, for medium and small capitalization stock portfolios, their results indicate significant under-reaction to market shocks whether they are positive or negative shocks.

To sum up, the findings indicate that investors will not be able to profit from employing a momentum strategy, to benefit from the significant under-reaction to good or bad news that is to a great extent attributable to the “price momentum in the Egyptian Exchange in general and in the large market capitalization stocks listed in the Egyptian Exchange in specific, and this is due to the round-trip transaction costs that wipe-out any statistically significant profits.

CHAPTER V

CONCLUSIONS

The efficient market hypothesis is one of the basic foundations of standard finance. However, several scholars have challenged the efficiency of stock markets by presenting empirical evidence of stock market anomalies that seem to challenge the notion of market efficiency. While evidence of anomalies exists, what remains controversial is the question of “Can investors exploit these market anomalies to make superior profits?” As suggested by Kalb (2011), these anomalies can appear in the market in the form of over- and under-reaction that in turn lead to market inefficiency. The purpose of this study is to look for the existence of these anomalous reactions in the short term in the Egyptian Exchange. This study employs weekly closing prices data of all the stocks listed in the Egyptian Exchange as per 2014 list. All the data is obtained from Thomson- Reuters® Eikon. We use several different testing methodologies to evaluate the robustness of the results.

This thesis extends current knowledge by assessing the short-term over/under-reaction phenomenon in the Egyptian Exchange for the period from 1998 to 2013. It produces no evidence of the presence of the overreaction effect for the specified test period, but on the contrary, our results seem to be supportive of the under-reaction hypothesis, that is robust to risk and non-risk control. It finds evidence of under-reaction hypothesis for the holding periods ranging from 1 to 4 weeks.

Further, after examining the relationship between the under-reaction found and the size of the firm as being measured by the market capitalization, it shows that there exists a direct relationship between under-reaction and size of the firm especially for the holding periods from 1 to 3 weeks.

"One possible explanation of our results on evidence of under-reaction, specifically in large sized stocks, might be attributed to institutional trading. Institutions on the Egyptian Stock Exchange concentrate their trading in large sized companies and tend to outperform individual investors both in the short and long term (Bassiouny & Tooma, 2013). It is also well documented that institutional investors are momentum traders (Griffin et al, 2003) and therefore under-reaction evidence might be attributed to institutional momentum trading strategies.

Based on the findings and after previewing the main results and conclusions a strong evidence of under-reaction is found in the Egyptian Exchange and no evidence is found to support the overreaction hypothesis. Evidence of under-reaction suggests that a momentum strategy of buying winner stocks should results in profits. However, this anomaly could hardly be exploited to obtain abnormal returns after accounting for the round-trip transaction costs levied by the Egyptian Exchange.

Future research on this topic may be done using a multivariate regression model that accounts for more variables that could affect over/under-reaction hypothesis. In addition, testing the over/under-reaction hypothesis in other Arab stock exchanges as well as analyze further factors that might contribute to the anomaly provide an avenue for future research.

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Appendix

Appendix A

The following table shows all the stocks that are used in the sample, their Reuters code, and their date of listing as well as their market capitalization as of 7th of May 2014

Stocks	Reuters Code	Listing Date	Market Capitalization
Banks			
Credit Agricole Egypt	CIEB.CA	03/07/1996	4,104,100,000
Al Baraka Bank Egypt	SAUD.CA	25/12/1984	1,265,835,120
Faisal Islamic Bank of Egypt - In US Dollars	FAITA.CA	07/06/1995	2,481,245,651
Qatar National Bank Alahly	QNBA.CA	03/07/1996	15,812,498,436
Union National Bank - Egypt " UNB-E	UNBE.CA	05/11/1995	672,262,500
Commercial International Bank (Egypt)	COMI.CA	02/02/1995	34,092,831,050
Abu Dhabi Islamic Bank- Egypt	ADIB.CA	19/06/1996	1,514,000,000
Egyptian Gulf Bank	EGBE.CA	17/11/1983	1,932,530,661
El Watany Bank of Egypt	WATA.CA	12/09/1994	2,464,000,000
Suez Canal Bank	CANA.CA	15/09/1982	994,000,000
Faisal Islamic Bank of Egypt - In EGP	FAIT.CA	07/06/1995	630,418,115
Basic Resources			
EL Ezz Aldekhela Steel - Alexandria	IRAX.CA	17/09/1995	9,609,012,947
Egypt Aluminum	EGAL.CA	29/07/1997	2,165,000,000
Egyptian Iron & Steel	IRON.CA	13/11/1958	5,167,654,351
Asek Company for Mining - Ascom	ASCM.CA	08/10/2003	508,200,000
Paper Middle East (Simo)	SIMO.CA	01/04/1997	46,050,000
Rakta Paper Manufacturing	RAKT.CA	15/11/1994	217,800,000
Ezz Steel	ESRS.CA	25/05/1999	8,947,574,995
Chemicals			
Samad Misr -EGYFERT	SMFR.CA	01/12/1999	58,080,000
Abou Kir Fertilizers	ABUK.CA	12/09/1994	13,796,507,872
Misr Chemical Industries	MICH.CA	03/08/1994	524,500,000
Sidi Kerir Petrochemicals	SKPC.CA	09/03/2005	10,200,750,000
Egyptian Chemical Industries (Kima)	EGCH.CA	16/08/1995	2,451,000,510
Kafr El Zayat Pesticides	KZPC.CA	01/08/1996	220,642,159
Egyptian Financial & Industrial	EFIC.CA	10/03/1996	821,224,339
Construction & Materials			
Delta Construction & Rebuilding	DCRC.CA	12/09/1994	228,980,866
Egyptian for Developing Building Materials	EDBM.CA	11/08/1999	65,919,000
Modern Company for water proofing (Bitumode)	WATP.CA	24/12/2001	181,560,000
Arab Valves Company	ARVA.CA	14/02/2007	99,923,716
Paint & Chemicals Industries (Pachin)	PACH.CA	03/08/1994	824,400,000
El Ezz Porcelain (Gemma)	ECAP.CA	09/12/1998	266,967,792
National Cement	NCEM.CA	30/11/1995	1,726,536,000
Torah Cement	TORA.CA	30/03/1995	1,561,373,286
Misr Beni Suef Cement	MBSC.CA	11/08/1999	4,011,000,000
Orascom Construction Industries (OCI)	OCIC.CA	03/09/1998	59,087,784,893

Misr Conditioning (Miraco)	MRCO.CA	07/04/1992	806,700,000
Alexandria Cement	ALEX.CA	27/09/1995	3,053,842,744
Acrow Misr	ACRO.CA	15/09/1982	286,504,594
Giza General Contracting	GGCC.CA	19/06/1997	470,205,015
Upper Egypt Contracting	UEGC.CA	07/05/1997	951,300,000
Nasr Company for Civil Works	NCCW.CA	07/12/1997	136,200,000
Suez Cement	SUCE.CA	08/02/1995	7,106,952,294
Arab Ceramics (Aracemco)	CERA.CA	07/04/1992	986,250,000
Sinai Cement	SCEM.CA	03/07/2000	2,449,300,000
Misr Cement (Qena)	MCQE.CA	24/05/2000	2,056,801,520
South Valley Cement	SVCE.CA	08/10/1998	3,886,990,130

Financial Services excluding Banks

Arab Moltaka Investments Co	AMIA.CA	14/12/1995	425,568,205
Alexandria National Company for Financial Investment	ANFI.CA	04/11/1998	34,772,375
Grand Investment Capital	GRCA.CA	19/08/2009	62,478,000
Amer Group Holding	AMER.CA	09/11/2010	5,684,232,322
Export Development Bank of Egypt (EDBE)	EXPA.CA	14/12/1995	1,291,680,000
Mohandes Insurance	MOIN.CA	07/05/1995	106,875,000
El Kahera El Watania Investment	KWIN.CA	08/09/1997	64,365,000
Housing & Development Bank	HDBK.CA	13/09/1983	2,185,000,000
Delta Insurance	DEIN.CA	03/07/1996	148,950,000
Saudi Egyptian Investment & Finance	SEIG.CA	07/04/1992	67,720,000
Egyptians Abroad for Investment & Development	ABRD.CA	30/09/1986	232,798,530
Citadel Capital - Common Shares	CCAP.CA	03/12/2009	5,508,000,000
Arabia Investments,Development,Fin. Inv. Holding Comp.-Cash	AIND.CA	03/06/2010	1,192,210,907
Reacap Financial Investments	REAC.CA	08/08/2006	370,145,876
Al Arafa For Investment And Consultancies	AIVC.CA	06/09/2006	790,584,300
Naeem Holding	NAHO.CA	16/11/2006	1,053,982,245
Egyptian Arabian (cmar) Securities Brokerage EAC	EASB.CA	17/01/2007	114,375,000
Belton Financial Holding	BTFH.CA.	09/04/2008	244,693,010
Prime Holding	PRMH.CA	23/04/2008	238,813,669
El Orouba Securities Brokerage	EOSB.CA	14/05/2008	27,195,000
Pioneers Holding	PIOH.CA	22/06/2008	6,655,000,000
El Ahli Investment and Development	AFDI.CA	28/05/1997	245,400,000
Egyptian Financial Group-Hermes Holding Company	HRHO.CA	10/02/1999	7,552,790,865
Egyptian Kuwaiti Holding	EKHO.CA	27/01/1999	6,408,392,122

Food & Beverage

Atlas For Land Reclamation and Agricultural Proccssing	ALRA.CA	07/11/2012	69,640,000
Cairo Poultry	POUL.CA	05/11/1995	1,922,973,696
East Delta Flour Mills	EDFM.CA	19/06/1996	263,700,000
Upper Egypt Flour Mills	UEFM.CA	01/08/1996	506,940,000
Egyptian Starch & Glucose	ESGI.CA	29/05/1996	441,366,345
Middle Egypt Flour Mills	CEFM.CA	27/03/1996	373,815,320
Delta Sugar	SUGR.CA	07/04/1992	1,576,976,652
The Arab Dairy Products Co. ARAB DAIRY	ADPC.CA	24/01/2001	453,600,000
Northern Upper Egypt Development & Agricultural Production	NEDA.CA	25/11/1998	34,890,000
Juhayna Food Industries	JUFO.CA	18/05/2010	8,077,255,598
Ismailia National Food Industries	INFI.CA	06/09/2010	107,370,000
Ismailia Misr Poultry	ISMA.CA	07/06/1995	269,617,913
Mansourah Poultry	MPCO.CA	02/02/1995	114,050,309
International Agricultural Products	IFAP.CA	23/12/1998	305,142,434
Egypt for Poultry	EPCO.CA	06/12/2001	119,196,000
National company for maize products	NCMP.CA	18/04/2006	783,855,665
El Nasr For Manufacturing Agricultural Crops	ELNA.CA	17/01/2007	150,858,909

North Cairo Mills	MILS.CA	17/09/1995	301,312,000
Bisco Misr	BISM.CA	19/06/1997	701,500,000
Alexandria Flour Mills	AFMC.CA	01/04/1997	166,000,000
Middle & West Delta Flour Mills	WCDF.CA	11/05/1996	396,525,000
South Cairo & Giza Mills & Bakeries	SCFM.CA	11/05/1996	122,310,000
Cairo Oils & Soap	COSG.CA	05/05/1999	113,600,000
Extracted Oils	ZEOT.CA	17/09/1995	204,360,000
Misr Oils & Soap	MOSC.CA	01/08/1996	74,580,000
Sharkia National Food	SNFC.CA	27/02/1995	100,979,106

Healthcare & Pharmaceuticals

Minapharm Pharmaceuticals	MIPH.CA	11/01/2004	368,015,434
Medical Union Pharmaceuticals	MEDU.CA	22/04/1997	981,213,006
Alexandria Pharmaceuticals	AXPH.CA	27/02/1995	211,950,000
Cairo Pharmaceuticals	CPCI.CA	09/04/1996	301,674,375
Nozha International Hospital	NINH.CA	27/11/1997	79,940,000
Cairo Medical Center	MEDC.CA	24/07/2012	182,358,000
Medical Packaging Company	MEPA.CA	03/08/2011	43,520,000
Egyptian International Pharmaceuticals (EIPICO)	PHAR.CA	27/09/1995	4,046,156,400
Glaxo Smith Kline	BIOC.CA	23/10/1985	1,110,738,860
Memphis Pharmaceuticals	MPCI.CA	27/09/1995	89,943,750
Nile Pharmaceuticals	NIPH.CA	27/02/1995	152,381,250
Arab Pharmaceuticals	ADCI.CA	06/02/1996	74,479,500
Advanced Pharmaceutical Packaging Co. (APP)	APPC.CA	29/12/1999	62,698,855

Industrial Goods and Services and Automobiles

Engineering Industries (ICON)	ENGC.CA	19/02/1982	158,063,400
Electro Cable Egypt	ELEC.CA	30/03/1995	774,364,500
Egyptian Transport (EGYTRANS)	ETRS.CA	28/12/1992	228,475,500
Alexandria Containers and goods	ALCN.CA	16/08/1995	2,896,322,818
El Ahram Co. For Printing And Packing	EPPK.CA	03/02/2003	51,272,000
ELSWEDY ELECTRIC	SWDY.CA	18/05/2006	7,596,212,000
Delta For Printing & Packaging	DTPP.CA	21/05/2008	84,980,000
Suez Bags	SBAG.CA	07/04/1992	364,500,000
El Arabia Engineering Industries	EEII.CA	05/11/1995	55,873,171
El Nasr Transformers (El Maco)	NASR.CA	11/05/1996	334,156,690
Canal Shipping Agencies	CSAG.CA	27/02/1995	2,412,000,000
Maridive & oil services	MOIL.CA	07/04/1992	2,955,325,440
United Arab Shipping	UASG.CA	07/04/1992	268,000,000
Modern Shorouk Printing & Packaging	SMPP.CA	30/12/2002	164,358,000
GB AUTO	AUTO.CA	07/03/2007	4,638,855,471
Universal For Paper and Packaging Materials (Unipack)	UNIP.CA	11/10/1995	74,160,000

Oil & Gas

GMC GROUP FOR INDUSTRIAL COMMERCIAL & FINANCIAL INVESTMENTS	GMCI.CA	04/01/2006	53,549,969
Alexandria Mineral Oils Company	AMOC.CA	22/12/2004	6,918,996,000

Personal & Household Products

El Nasr Clothes & Textiles (Kabo)	KABO.CA	08/02/1995	362,315,822
Eastern Tobacco	EAST.CA	27/09/1995	8,300,000,000
ARAB POLVARA SPINNING & WEAVING CO.	APSW.CA	20/03/2002	327,902,960
Alexandria Spinning & Weaving (SPINALEX)	SPIN.CA	17/09/1995	426,474,084
Nile Cotton Ginning	NCGC.CA	25/09/1996	347,100,875
Arab Cotton Ginning	ACGC.CA	08/07/1995	1,631,265,827
Oriental Weavers	ORWE.CA	14/12/1994	4,195,800,000
Ceramic & Porcelain	PRCL.CA	10/03/1996	359,108,867

Real Estate			
United Housing & Development	UNIT.CA	14/12/1994	1,301,520,000
Egyptians Housing Development & Reconstruction	EHDR.CA	03/08/1994	340,195,432
Gharbia Islamic Housing Development	GIHD.CA	12/09/1994	46,462,500
El Obour Real Estate Investment	OBRI.CA	18/06/1998	29,348,000
Six of October Development & Investment (SODIC)	OCDI.CA	10/03/1998	2,195,274,385
Palm Hills Development Company	PHDC.CA	27/12/2006	5,757,326,400
National Housing for Professional Syndicates	NHPS.CA	30/03/1995	318,080,000
El Kahera Housing	ELKA.CA	30/03/1995	1,049,062,500
El Shams Housing & Urbanization	ELSH.CA	12/09/1995	508,000,000
Development & Engineering Consultants	DAPH.CA	19/06/1996	212,914,280
Egyptian Real Estate Group Bearer Shares	AREHA.CA	11/11/1998	12,167,785
Egyptian Real Estate Group	AREH.CA	16/02/1998	77,357,419
Mena Touristic & Real Estate Investment	MENA.CA	27/09/1995	170,250,000
National Real Estate Bank for Development	NRPD.CA	07/04/1992	122,603,453
Heliopolis Housing	HELI.CA	07/05/1995	3,625,868,889
Medinet Nasr Housing	MNHD.CA	07/05/1995	5,130,500,000
International Co For Investment & Development	ICID.CA	02/02/1985	91,170,000
Ismailia Development and Real Estate Co	IDRE.CA	16/06/2011	236,501,565
North Africa Co. for Real Estate Investment	NOAF.CA	26/03/2012	518,750,000
General Company For Land Reclamation,Development & Reconstru	AALR.CA	26/08/1996	196,992,600
Gulf Canadian Real Estate Investment Co.	CCRS.CA	30/12/2001	126,810,000
Egyptians For Investment & Urban Development	EIUD.CA	14/07/2011	204,000,000
T M G Holding	TMGH.CA	25/11/2007	18,468,882,460
Arab Real Estate Investment CO.-ALICO	RREI.CA	11/08/2011	308,000,000
Retail			
Cairo Educational Services	CAED.CA	11/09/2000	60,504,000
Assiut Islamic Trading	AITG.CA	18/01/1996	40,918,176
Misr Duty Free Shops	MFSC.CA	19/06/1996	306,562,500
General Silos & Storage	GSSC.CA	29/05/1996	168,800,000
Media			
Egyptian Media Production City	MPRC.CA	26/09/1999	841,957,200
Technology			
Egyptian Satellites (NileSat)	EGSA.CA	09/12/1998	2,193,662,093
Sues Canal Company For Technology Settling	SCTS.CA	31/03/2004	1,271,691,000
Raya Holding For Technology And Communications	RAYA.CA	12/05/2005	578,012,284
Telecommunications			
Global Telecom Holding	GTHE.CA	13/01/1999	27,802,160,286
Telecom Egypt	ETEL.CA	29/12/1999	25,042,740,372
Egyptian Company for Mobile Services (MobiNil)	EMOB.CA	10/05/1998	12,343,000,000
Orascom Telecom Media And Technology Holding	OTMT.CA	02/01/2012	6,819,397,806
Travel & Leisure			
Orascom Hotels And Development	ORHD.CA	18/06/1998	4,312,727,955
El Wadi Co. For Touristic Investement	ELWA.CA	06/09/2012	282,600,000
Rowad Tourism (Al Rowad)	ROTO.CA	28/10/1998	155,286,846
Remco for Touristic Villages Construction	RTVC.CA	21/10/1998	887,330,971
Pyramisa Hotels	PHTV.CA	18/02/1997	324,129,885
Egyptian for Tourism Resorts	EGTS.CA	10/02/1999	1,942,500,000
TransOceans Tours	TRTO.CA	02/12/1998	98,070,000
Misr Hotels	MHOT.CA	15/11/1994	270,600,000

Orascom Development Holding (AG)	ODHN.CA	03/12/2009	3,333,839,570
Marsa Marsa Alam For Tourism Development	MMAT.CA	06/09/2012	100,800,000
Sharm Dreams Co. for Tourism Investment	SDTI.CA	18/10/2000	585,000,000
Tourism Urbanization	TOUR.CA	05/11/1995	53,349,020
		Utilities	
Natural Gas & Mining Project (Egypt Gas)	EGAS.CA	07/04/1992	771,240,000

Appendix B

The following table shows the stocks included in the sample, their average return, their average risk, their average trading volume, and their average value traded of each over the sample

Stock	Average Return	Average Risk	Average Trading Volume	Average Value Traded
CIEB.CA	0.0087	0.1781	655,591.04	7,767,109.28
SAUD.CA	0.0022	0.0674	803,839.52	5,703,437.35
FAITA.CA	0.0030	0.0536	77,054.10	345,191.50
QNBA.CA	0.0042	0.0496	959,922.28	13,122,858.76
UNBE.CA	0.0041	0.0907	168,123.70	1,064,609.81
COMI.CA	0.0038	0.0493	9,961,955.20	102,343,560.85
ADIB.CA	0.0028	0.0733	1,096,271.46	8,016,102.94
EGBE.CA	0.0010	0.0574	449,111.13	602,093.49
WATA.CA	0.0026	0.0633	572,095.33	8,260,237.40
CANA.CA	0.0007	0.0622	130,684.91	1,823,067.01
FAIT.CA	0.0061	0.0664	55,037.76	1,206,007.07
IRAX.CA	0.0035	0.0564	40,765.40	26,148,675.57
EGAL.CA	0.0021	0.0729	128,779.01	3,852,004.93
IRON.CA	0.0054	0.0965	509,456.11	9,190,283.69
ASCM.CA	0.0155	0.2350	766,725.17	9,191,715.62
SIMO.CA	0.0026	0.0853	44,782.66	527,153.01
RAKT.CA	0.0047	0.0955	206,054.26	2,237,381.59
ESRS.CA	0.0042	0.0774	5,960,803.78	71,877,534.79
SMFR.CA	0.0017	0.0798	749,619.16	5,848,832.32
ABUK.CA	0.0024	0.0426	107,975.17	10,163,878.76
MICH.CA	0.0021	0.0692	792,488.25	7,661,105.97
SKPC.CA	0.0013	0.0491	3,888,822.90	36,630,705.30
EGCH.CA	0.0068	0.0855	322,335.68	2,830,665.52
KZPC.CA	0.0033	0.0841	26,784.50	718,008.39
EFIC.CA	0.0020	0.0583	1,094,923.41	19,967,364.77
DCRC.CA	0.0028	0.0811	564,348.13	3,938,180.48
EDBM.CA	0.0075	0.1138	574,028.82	5,230,909.37
WATP.CA	-0.0007	0.0809	3,304,793.66	1,632,636.61
ARVA.CA	0.0003	0.0839	1,313,986.09	847,619.61
PACH.CA	0.0010	0.0498	123,172.28	4,338,062.06
ECAP.CA	0.0022	0.0785	1,325,060.51	8,799,119.22
NCEM.CA	0.0021	0.0718	91,141.96	1,842,648.92
TORA.CA	0.0013	0.0552	215,498.25	4,720,297.10
MBSC.CA	0.0049	0.0528	477,242.53	4,899,554.49
OCIC.CA	0.0066	0.0550	1,188,862.66	112,870,220.40

MRCO.CA	0.0038	0.0680	31,685.69	1,085,816.02
ALEX.CA	0.0062	0.0999	593,546.87	2,688,362.31
ACRO.CA	0.0047	0.0727	77,025.44	1,224,081.85
GGCC.CA	0.0049	0.0858	767,756.54	6,509,807.87
UEGC.CA	0.0068	0.0896	16,178,701.24	22,527,222.47
NCCW.CA	0.0033	0.0824	45,544.35	1,513,023.32
SUCE.CA	0.0010	0.0508	328,644.53	9,735,749.04
CERA.CA	0.0062	0.0718	113,009.47	1,648,590.84
SCEM.CA	0.0034	0.0530	443,585.37	7,225,310.16
MCQE.CA	0.0035	0.0405	150,729.75	5,607,802.04
SVCE.CA	0.0082	0.0759	4,849,733.86	23,146,675.52
AMIA.CA	-0.0004	0.0838	192,846.30	2,253,752.31
ANFL.CA	0.0040	0.0875	39,026.20	218,680.66
GRCA.CA	0.0004	0.0709	206,161.42	704,396.19
AMER.CA	-0.0039	0.0652	42,233,156.59	6,863,764.99
EXPA.CA	0.0015	0.0556	438,620.24	4,375,884.11
MOIN.CA	0.0017	0.0643	17,263.73	354,912.19
KWIN.CA	0.0024	0.0993	95,082.19	332,260.57
HDBK.CA	0.0030	0.0702	358,819.01	9,213,970.48
DEIN.CA	0.0018	0.0634	149,406.74	1,279,862.37
SEIG.CA	0.0106	0.0874	2,574.80	120,488.27
ABRD.CA	0.0048	0.0949	1,497,623.81	11,752,606.81
CCAP.CA	-0.0026	0.0687	15,046,201.40	17,199,663.00
AIND.CA	-0.0001	0.1004	16,168,967.31	18,180,209.01
REAC.CA	-0.0074	0.1266	341,185.78	179,895.90
AIVC.CA	-0.0019	0.0528	2,935,652.43	634,811.60
NAHO.CA	-0.0022	0.0690	3,813,181.67	1,533,270.04
EASB.CA	-0.0068	0.0756	1,141,116.63	426,381.27
BTFH.CA.	0.0075	0.0709	217,135.07	342,715.97
PRMH.CA	-0.0031	0.0811	727,518.18	789,664.26
EOSB.CA	0.0098	0.1375	537,840.01	255,865.98
PIOH.CA	0.0010	0.0978	16,806,712.39	37,198,859.20
AFDI.CA	0.0017	0.0775	702,465.44	16,148,367.04
HRHO.CA	0.0034	0.0777	12,302,925.92	192,729,108.49
EKHO.CA	0.0031	0.0683	3,947,432.58	5,954,396.19
ALRA.CA	0.0192	0.1272	90,909.66	165,289.77
POUL.CA	0.0039	0.0632	546,621.22	3,580,814.88
EDFM.CA	0.0012	0.0539	57,526.44	1,797,136.97
UEFM.CA	0.0016	0.0550	71,309.25	4,140,957.26
ESGI.CA	0.0034	0.0762	192,339.34	1,960,561.82
CEFM.CA	0.0019	0.0676	163,014.49	2,887,191.85
SUGR.CA	0.0009	0.0761	437,446.49	5,725,176.71
ADPC.CA	0.0249	0.3281	59,912.96	1,155,374.54

NEDA.CA	0.0096	0.1024	470,783.48	3,810,891.80
JUFO.CA	0.0277	0.2639	5,772,485.43	6,089,507.52
INFL.CA	0.0106	0.1159	223,588.82	1,527,179.65
ISMA.CA	0.0131	0.0988	284,157.41	704,659.21
MPCO.CA	0.0073	0.0932	227,293.05	2,431,677.36
IFAP.CA	0.0136	0.1799	1,791,342.03	6,628,410.68
EPCO.CA	0.0083	0.0935	2,863,411.02	7,840,664.66
NCMP.CA	0.0069	0.1120	620,442.50	3,930,313.40
ELNA.CA	0.0070	0.1014	300,016.76	2,880,098.57
MILS.CA	0.0003	0.0668	107,662.55	3,647,131.89
BISM.CA	0.0039	0.0561	65,074.95	1,339,498.21
AFMC.CA	0.0014	0.0764	39,355.02	849,714.53
WCDF.CA	0.0011	0.0558	63,745.59	2,187,644.23
SCFM.CA	0.0022	0.0762	30,258.71	1,108,603.78
COSG.CA	0.0015	0.0784	71,103.26	1,049,355.25
ZEOT.CA	0.0023	0.0777	4,635,815.68	10,056,779.90
MOSC.CA	0.0027	0.0763	81,422.53	1,492,377.30
SNFC.CA	0.0117	0.1162	1,138,209.41	3,451,380.28
MIPH.CA	-0.0009	0.0755	40,881.53	552,003.41
MEDU.CA	0.0021	0.0671	56,712.35	1,259,163.22
AXPH.CA	0.0019	0.0460	8,262.24	326,572.82
CPCI.CA	0.0017	0.0491	30,107.86	620,101.30
NINH.CA	0.0074	0.0794	34,279.54	445,586.39
MEDC.CA	0.0095	0.0697	11,156.63	22,255.88
MEPA.CA	-0.0102	0.0826	6,921,184.37	1,243,456.86
PHAR.CA	0.0024	0.0418	282,592.43	5,469,780.56
BIOC.CA	0.0054	0.0893	135,095.25	1,665,645.64
MPCI.CA	0.0024	0.0669	9,559.65	263,121.91
NIPH.CA	0.0039	0.0574	10,079.50	173,938.87
ADCI.CA	0.0028	0.0657	15,276.14	285,964.30
APPC.CA	-0.0025	0.0809	539,258.97	1,609,868.73
ENGC.CA	0.0049	0.0795	466,504.46	3,887,309.90
ELEC.CA	0.0029	0.0937	20,678,485.63	23,621,925.48
ETRS.CA	0.0035	0.0898	629,481.91	6,230,674.18
ALCN.CA	0.0075	0.0786	36,327.91	3,680,012.13
EPPK.CA	0.0042	0.0766	94,067.73	780,898.65
SWDY.CA	0.0025	0.0578	1,365,960.49	24,503,526.35
DTPP.CA	0.0164	0.2194	35,022.62	341,323.65
SBAG.CA	-0.0005	0.0683	1,841.65	129,032.36
EEIL.CA	0.0005	0.0655	53,643.04	248,031.10
NASR.CA	0.0042	0.1009	365,941.71	3,613,452.32
CSAG.CA	0.0052	0.0906	955,983.37	10,222,002.18
MOIL.CA	0.0022	0.0998	3,161,675.94	2,138,205.40

UASG.CA	0.0060	0.1270	3,938,567.27	8,203,674.16
SMPP.CA	0.0075	0.1015	52,999.08	491,123.33
AUTO.CA	0.0014	0.0610	503,183.38	6,902,198.03
UNIP.CA	0.0035	0.1051	341,258.18	2,639,386.26
GMCI.CA	0.0097	0.0963	1,686,695.12	3,109,140.32
AMOC.CA	0.0002	0.0422	435,660.35	16,193,582.41
KABO.CA	0.0028	0.0835	10,738,248.91	15,433,368.85
EAST.CA	0.0023	0.0435	159,088.33	14,471,197.61
APSW.CA	0.0030	0.0849	4,893,549.32	26,287,414.05
SPIN.CA	0.0383	1.0289	4,333,380.65	10,481,290.54
NCGC.CA	0.0021	0.1026	3,669,305.16	23,447,998.81
ACGC.CA	0.0022	0.0933	11,664,946.66	65,751,347.76
ORWE.CA	0.0025	0.0501	377,321.63	13,305,571.38
PRCL.CA	0.0074	0.1035	1,017,725.81	6,357,340.75
UNIT.CA	0.0052	0.0747	1,971,492.50	11,334,187.58
EHDR.CA	0.0109	0.1356	4,553,414.39	12,071,890.68
GIHD.CA	0.0099	0.1050	220,625.76	1,936,326.23
OBRI.CA	-0.0024	0.0703	89,664.50	147,372.91
OCDI.CA	0.0081	0.1217	990,517.08	35,236,623.17
PHDC.CA	0.2219	3.7964	37,914,114.10	28,644,897.42
NHPS.CA	0.0078	0.1064	30,437.24	490,236.51
ELKA.CA	0.0036	0.0741	4,527,126.25	21,661,502.45
ELSH.CA	0.0037	0.0806	1,336,754.71	5,586,859.04
DAPH.CA	0.0032	0.0798	345,500.53	5,246,582.72
AREHA.CA	0.0080	0.1254	39,507.09	616,908.28
AREH.CA	0.0027	0.1120	376,149.52	2,688,958.62
MENA.CA	0.0019	0.0807	1,252,458.16	5,552,718.49
NRPD.CA	0.0129	0.1246	642,292.11	4,872,973.81
HELI.CA	0.0029	0.0756	565,226.45	17,418,071.37
MNHD.CA	0.0035	0.0779	1,463,950.31	28,144,593.90
ICID.CA	0.0123	0.1149	118,656.71	1,522,389.12
IDRE.CA	0.0017	0.0901	568,137.54	771,198.08
NOAF.CA	0.0076	0.1391	430,667.63	152,418.92
AALR.CA	0.0131	0.1656	80,757.89	1,201,086.50
CCRS.CA	0.0071	0.1023	212,383.22	3,117,627.04
EIUD.CA	0.0057	0.1063	2,995,420.72	3,416,737.47
TMGH.CA	-0.0001	0.0671	32,833,463.66	73,152,724.11
RREI.CA	-0.0004	0.1023	10,139,443.22	8,250,981.15
CAED.CA	0.0056	0.0777	17,260.78	107,441.91
AITG.CA	0.0032	0.0831	335,267.66	1,442,697.92
MFSC.CA	0.0047	0.1115	340,732.31	1,045,334.69
GSSC.CA	0.0003	0.0706	71,027.28	2,799,758.35
MPRC.CA	0.0008	0.0835	2,801,467.02	29,872,497.93

EGSA.CA	0.0022	0.0571	27,640.26	92,528.66
SCTS.CA	0.0028	0.0587	307,488.02	2,030,553.68
RAYA.CA	-0.0002	0.0711	3,190,820.97	13,731,221.22
GTHE.CA	0.0054	0.0754	39,038,788.38	92,623,953.36
ETEL.CA	0.0003	0.0484	7,458,054.37	61,903,274.63
EMOB.CA	0.0100	0.1351	711,522.31	75,679,516.17
OTMT.CA	0.0161	0.0596	171,202,355.78	8,201,263.07
ORHD.CA	0.0044	0.0898	1,411,811.58	23,221,744.59
ELWA.CA	0.0051	0.0833	537,210.46	573,507.15
ROTO.CA	0.0040	0.0893	193,423.63	2,029,671.56
RTVC.CA	-0.0005	0.0719	3,668,006.65	11,562,030.53
PHTV.CA	0.0014	0.0636	73,361.72	1,205,181.54
EGTS.CA	0.0063	0.0998	24,396,252.57	52,837,194.02
TRTO.CA	0.0162	0.1283	1,881,370.82	235,238.02
MHOT.CA	0.0010	0.0623	13,897.81	587,831.62
ODHN.CA	-0.0047	0.0801	106,352.53	3,576,072.62
MMAT.CA	0.0252	0.1170	1,634,294.10	318,055.07
SDTI.CA	0.0027	0.0850	160,941.01	1,298,948.61
TOUR.CA	0.0002	0.0755	61,347.13	584,448.52
EGAS.CA	0.0004	0.0547	43,113.94	3,477,493.28