

The Profitability of Contrarian Strategy: Borsa Istanbul Case

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ABSTRACT

Behavioral finance, which emerged from the debate on traditional finance theories, suggests that investors do not act rationally and that market operations are not completely active. Studies in this field demonstrated that it is possible to predict future asset price movements based on historical movements of these prices. The purpose of the present study is to analyze the contrarian strategy profitability in Istanbul Stock Exchange (Borsa Istanbul), which argues that the past losers are the winners in the future. For this purpose, the performances of the 1,2,3,4 and 5-year term portfolios between January 2001 and December 2015 are examined for the consecutive 1, 2, 3, 4 and 5-year periods. Analysis results demonstrated that the contrarian strategy is a profitable investment strategy in Borsa Istanbul.

Keywords: *Contrarian Strategy, Behavioral Finance, Overreaction, Borsa Istanbul.*

Jel Classification: *G11, G12, G14.*

Zıtlık Stratejisi Karlılığı: Borsa İstanbul Örneği

ÖZET

Geleneksel finans teorilerinin sorgulanmaya başlaması ile ortaya çıkan davranışsal finans, yatırımcıların rasyonel hareket etmediğini ve piyasaların tam olarak etkin işlemediğini öne sürmektedir. Bu alanda yapılan çalışmalar, varlık fiyatlarının geçmiş hareketlerine bakarak gelecekteki fiyat hareketlerini tahmin etmenin mümkün olduğunu göstermiştir. Bu çalışmanın amacı, geçmişin kaybedenlerinin geleceğin kazananları olduğunu ileri süren zıtlık stratejisi karlılığının Borsa İstanbul'da analiz edilmesidir. Bu amaçla, Ocak 2001-Aralık 2015 tarihleri arasında 1,2,3,4 ve 5 yıllık vadelerle oluşturulan portföylerin, izleyen 1,2,3,4 ve 5 yıllık vadelerdeki performansları incelenmiştir. Analiz sonucunda, zıtlık stratejisinin Borsa İstanbul'da karlı bir yatırım stratejisi olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: *Zıtlık Stratejisi, Davranışsal Finans, Aşırı Reaksiyon, Borsa İstanbul.*

JEL Sınıflandırması: *G11, G12, G14.*

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1. INTRODUCTION

The most common definition of financial markets is the exchange environment where those who need funds and those with excessive funds meet. In these markets, investors have developed a series of simple and complex strategies to generate returns over the market value. Traditional finance and theories suggest that none of these strategies could provide a return over the market. These theories are based on the two basic concepts of rational investor and efficient market. The rational investor is defined as an individual who has rational expectations, avoids risk in uncertain situations, and tries to maximize the expected return in the problem of decision. Based the traditional approach, if any investor acts irrationally, rational arbitrageurs intervene and bring the market to equilibrium. Furthermore, effective markets are defined as perfect, competition-based, liquid and complete markets (De Bondt et al., 2008: 8; Shleifer, 2000: 2). According to Fama (1970), market efficiency refers to the situation in which stock prices reflect all existing information in the market and prices are corrected based on the new information that is introduced to the market. As a result, price changes on the market are random and it is not possible to predict future prices based on past price movements. Based on the assumptions of the rational investor and effective market, the security price reflects the real value of the asset, and investors are unable to obtain returns over the market. Although debate commenced in the beginning of the 1970s on these views suggested by traditional financial theories and no significant antithesis is developed against these theories at the time, it is observed that these theories are insufficient in explaining certain events that occur in the market (Shiller, 2003: 84). This inadequacy of traditional finance has led to the emergence of the field of behavioral finance.

Behavioral finance seeks to understand financial markets and the participants of these markets through the integration of different disciplines such as sociology, psychology and finance, and it differentiates clearly with traditional finance on this respect (Baltussen, 2009: 2). Behavioral finance, by integrating human psychology in the decision making process of the investors, suggests that investors' instincts, beliefs, and mental models influence their decisions (McFadden, 1996: 1). In other words, behavioral finance states that investors are not always rational and some decisions are made based on their emotions. In the market where investors do not act rationally, arbitrage opportunities become limited. In this case, there is no single and rational price in the market and the effectiveness of the market activity decreases. Irrational investors who act with their emotions and would like to make optimum decisions rapidly without making complex calculations in the decision making process, however, fail in this process. This leads to the emergence of anomalies in the markets, in other words, situations that traditional finance could not explain.

The concept of anomaly became significant in finance literature with the behavioral finance and it is used to explain situations that contradict the effective market hypothesis. One of the most important anomalies observed in stock markets is price anomalies. The price anomaly is caused by the extreme and low reaction that occurs in the markets as a result of extraordinary movements in stock prices. These reactions could arise due to psychological factors that affect investors' decision making processes. Low reaction occurs when investors ignore certain news in the market for 1-12 month intervals, while extreme reactions are more likely to occur when stock prices ignore the similar news over longer periods of time (3-5 years) (Barberis et al., 1998: 308). Utilizing the advantages of the extreme and low reaction, contrarian and momentum market strategies are developed.

Momentum investment strategy suggests that winning stocks in the past will continue to win in the future as well. According to the contrarian investment strategy, the losers of the past tend to be the winners of the future. In other words, with a portfolio that is created by purchasing the stocks that lost in the past and selling the winning stocks in the past, it is possible to gain over the market returns in the next 3-5 years. The objective of the present study is to analyze whether the contrarian investment strategy is profitable in Borsa Istanbul between 2001 and 2015. The analysis is conducted using the winner-loser portfolio strategy developed by De Bondt and Thaler (1985).

The study is planned as follows. In the next section, the contrarian strategy is explained and literature related to the topic is discussed. Data and methodology are addressed in the third section and analysis results are provided in the fourth section. And the final section is reserved for conclusions.

2. OVERREACTION AND CONTRARIAN STRATEGY

The most popular among the strategies developed for financial markets is simple trading strategies. In recent years, certain simple investment strategies based on past good / bad performances of financial assets have become very popular. As a result, studies in the academic circles on the predictability of the future return-on-assets by observing their past performances have increased. Several scholars have focused on the time series predictability of returns in ineffective markets. It is observed that most of the results obtained from the studies on the time series behavior of assets depended on two commonly known phenomena. The first phenomenon is the price continuations that occur in the short or medium term, while the other is the price reversals that are observed in the long term. The price reversals are associated with the contrarian strategy, while the price continuation is associated with the momentum strategy (Baal, 2011: 43, Conrad and Kaul, 1998: 490, Hong and Stein, 1999: 2144).

The foundation of the contrarian strategy is based on buying (selling) stocks with prices lower (higher) than their real value based on the assumption that the prices will increase (decrease) in the future. The contrarian strategy stems from the

overreaction of investors to new knowledge (Bali, 2011: 43). The overreaction occurs when the average returns after the announcement of a series of good news is lower than the average returns after the announcement of a series of bad news (Barberis et al., 1998: 313). This is usually observed when sudden and unexpected news are reported in the market. When the overreaction is accompanied by these sudden events, a period of below-normal returns is observed following large positive return periods (caused by positive news) in the market, while a high return period would be observed after large negative returns (caused by negative news) (Howe, 1986: 74).

The long-term returns in stock price movements observed in the markets are explained by the overreaction hypothesis and it is accepted that a market where overreaction is observed is not efficient in the weak form. The overreaction hypothesis argues that the latest bad (good) news that arrive in the stock market cause an extreme fall (rise) in stock prices. However, this fall (increase) in stock prices ends with investors noticing their overreaction to the latest news, and the stock price returns to the baseline value. Thus, poor performance stocks (losers) in the past (when the portfolio is created) are able to obtain above the market returns in the consecutive periods (test period). The winning stocks of the past would earn below the market returns in the following period. (Baytas and Cakici, 1999: 1122)

3. LITERATURE REVIEW

The pioneering study that examined the profitability of the contrarian strategy and associated this profit with the overreaction was conducted by De Bondt and Thaler. De Bondt and Thaler developed a simple equity investment strategy in their study. According to their conclusions, investors ignore the real data when reviewing the possibilities for a decision, overreact to the latest news, experiencing an overreaction problem. This overreaction exhibited by investors to returns results in a deviation of the stock prices from their base values. The fact that prices are affected by over-optimism or over-pessimism leads to previous losers making more profitable investments when compared to the previous winners (De Bondt and Thaler, 1986: 557).

After the work of De Bondt and Thaler, studies are conducted on several markets that demonstrated overreaction caused contrarian profits. Bacmann and Dubois (1998) argued that the reason for the abnormal profits caused by the contrarian strategies is because of the overreaction to the firm-specific information. In a study by Mun et al. (1999) on France and Germany, it is also argued that the contrarian profits earned with annual winner and loser portfolio is not due to a change in risk but due to the contrarian effect and the overreaction of investors. Kang et al. (2002) determined that the explicit contrarian profits are due to the overreaction of stock prices to firm-specific information in a study they conducted on the Chinese stock market. Antoniou et al. (2003) found that the magnitude of the investors' overreaction to firm-specific information increased the extent of the impact on contrarian profits in a study they

conducted on London stock exchange. Moreover, when an investor moves to a larger equity from a smaller one, they argued that the contribution of the overreaction to the contrarian profit continuously increased. Chen et al. (2010) pointed out that the short-term contrarian strategy following a market decline is more profitable in a study they conducted on the Chinese stock market, and claimed that market conditions could be used in anticipating the magnitude of the contrarian profit. Furthermore, they stated that investors exhibit different responses in different market conditions, and in many cases, losers of the past demonstrated a better performance when compared to past winners following both a decline and a rise in the market, suggesting that overreaction of the investors to the news is the source of contrarian and momentum returns.

The following studies are conducted on the overreaction and contrarian strategy in Turkey. Sevim et al. (1997) have concluded that the performance of the loser portfolio is better than that of the winner portfolio in a study conducted with the stocks traded between January 1988 and December 2002 in Istanbul Stock Exchange (ISE), consistent with the overreaction hypothesis. Bildik and Gülay (2002) examined the contrarian and momentum strategies in the ISE between 1991 and 2000. As a result, they argued that the contrarian strategy - more clearly the "winners and losers effect" - existed in the ISE and provided significant profits. Durukan (2004), in a study on ISE in the period of 1988-2003, achieved results consistent with the overreaction hypothesis and stated that the increase in returns and price conversion for the loser portfolio is greater than the winner portfolio (Barak, 2008: 211). Doğukanlı and Ergün (2011) obtained results that supported the hypothesis of overreaction and the profitability of the contrarian strategy in indices except the ISE 30 Index in their study on ISE indices between 1998-2008. Barak (2008) stated that past winner investor portfolios became losers or earned less in the following period, while loser portfolios became winners in the following period in the ISE between 1992 and 2004. Tunçel (2013) supported the presence of overreaction hypothesis in Borsa Istanbul in an analysis conducted for the 1998-2012 period. Tetik and Özen (2016) noted in the study they conducted with daily data between January 2010 and June 2016 that BIST 100 index did not comply with the assumptions of the effective market hypothesis and the overreaction hypothesis is invalid.

4. DATA AND METHODOLOGY

The objective of the present study is to investigate the presence of the overreaction anomaly and the profitability of the contrarian strategy in the long term and whether it is valid in Borsa Istanbul in periods of different length.

The study sample included the stocks of all corporations except the financial sector that are traded continuously between January 1, 2001 and December 31, 2015 in Borsa Istanbul National Market.¹ Fama and French (1992) stated that the high leverage

¹ On November 2015, the National Market and Second National Market in Borsa Istanbul Share Market are abolished and two new markets called Star Market (BIST Star) and Main Market (BIST Main) are

that is normal for financial sector companies may be an indicator of financial distress for non-financial corporations. Thus, financial sector companies are not included in the sample. Furthermore, corporations with more than one group of stocks are excluded from the analysis. Strong and Xu (1997) stated that firms with more than one group of stocks would create problems in the analysis due to the difficulties they cause in defining accounting data and equity capital. Under these constraints, the sample of the research is identified as the equities of 122 companies. Within the scope of the study, monthly equity prices and return data and BIST 100 index monthly return data are used.

The methodology used in the study was the De Bondt and Thaler (1985) winner loser portfolio strategy. Monthly equity price data between January 2001 and December 2015 is used to analyze the profitability of the contrarian strategy in Istanbul Stock Exchange. For this purpose, winner and loser portfolios are created in 1, 2, 3, 4 and 5 year periods and the returns of these portfolios in the following 1, 2, 3, 4 and 5 year periods are calculated.

To construct winner and loser portfolios, initially, monthly abnormal returns for each equity are calculated. For this purpose, initially, proportional returns and abnormal equity returns are calculated using monthly closing prices of each equity and index and the following equations, respectively:

$$EG_t = (GD_t - GD_{t-1}) / GD_{t-1}$$

EG_t : BIST 100 index / equity i monthly return rate

GD_t : BIST 100 index for month t / equity i TL return

GD_{t-1} : BIST 100 index for month t-1 / equity i TL return

$$AR_{it} = R_{it} - R_{mt}$$

AR_{it} : Abnormal return for each equity i on month t

R_{it} : Proportional return for equity i on month t

R_{mt} : Proportional return on the index for month t

The following equation is used in the calculation of cumulative abnormal returns of stocks that exhibited abnormal returns for each term.

$$CAR_i = \sum_t^U AR_{it}$$

established. In the study, 2015 December data was considered as the continuation of November National Market figures.

Equities are quoted in descending order based on CAR returns, divided into 10% segments for each period.² The first 10% formed the winners portfolio and the last 10% formed the losers portfolio. Following the formation of the winners and losers portfolios, the cumulative abnormal portfolio returns are calculated using the following formula.

$$CAR_{p,z,t} = \sum_t \left[(1/N) \sum_{i=1}^N AR_{it} \right]$$

$CAR_{p,z,t}$: Cumulative abnormal returns on portfolio p in period z and month t

N : Number of shares in the portfolio

p : Winner, loser portfolios

z : The period where the portfolios are created

AR_{it} : Abnormal return on equity i on month t

After calculating the cumulative abnormal returns for each term and each portfolio, the average cumulative abnormal returns on the portfolios are calculated using the following equation.

$$ACAR_{p,t} = \frac{\sum_{z=1}^z CAR_{p,z,t}}{Z}$$

$ACAR_{p,t}$: Average cumulative abnormal return on each portfolio in each portfolio period

$CAR_{p,z,t}$: Cumulative abnormal return on portfolio p in portfolio period z and month t

z : The period where the portfolios are created

p : Winner, loser portfolio

The average cumulative abnormal returns on the winner and loser portfolios are compared in the assessment of the contrarian investment strategy. For the contrarian investment strategy to be valid, the following conditions should be ensured:

$$ACAR(L) - ACAR(W) > 0$$

$$ACAR(L) > ACAR(W)$$

² Since there are 122 shares in the sample, each 10% segment included 12 shares.

5. ANALYSIS FINDINGS

The performances of the winner and loser portfolios during the test periods of 1, 2, 3, 4, and 5 years are examined at five different terms to measure the profitability of the contrarian investment strategy that is caused by overreaction during the 15 year period between January 2001 and December 2015.

Table 1. Average Cumulative Abnormal Returns on Winner and Loser Portfolios in the Portfolio Creation Period and Test Period

<i>TERMS</i>	<i>WINNERS PORTFOLIO</i>			<i>LOSERS PORTFOLIO</i>		
	Portfolio Period ACAR	Test Period ACAR	<i>DIFF.</i>	Portfolio Period ACAR	Test Period ACAR	<i>DIFF.</i>
<i>1 Year Term</i>	8,4958	(0,5718)	%(7.7)	(6,3574)	(0,2756)	%5.2
<i>2 Year Term</i>	2,4124	(0,3891)	%(5.6)	(2,1148)	(0,2269)	%3.7
<i>3 Year Term</i>	1,0960	(0,1767)	%(4.5)	(0,9751)	(0,1113)	%3.1
<i>4 Year Term</i>	0,5772	(0,1266)	%(4.2)	(0,4927)	(0,0369)	%2.7
<i>5 Year Term</i>	0,2964	(0,1895)	%(4.8)	(0,2874)	0,0004	%2.8

Table 1 compares the average cumulative abnormal returns on the winner and loser portfolios created during the January 2001-December 2015 analysis period in the five different portfolio creation and test periods and demonstrates the differences between increases and decreases in returns between the two periods.

As seen in Table 1, the winners portfolio resulted in losses for the investors in all 5 different terms. In other words, the investors invested in the winners portfolio lost

- 7.7% in the following 12-month period,
- 5.6% in the following 24-month period,
- 4.5% in the following 36-month period,
- 4.2% in the following 48-month period and
- 4.8% in the following 60-month period.

Furthermore, the losers portfolio has resulted in losses for its investors in all terms except the 5-year period. In other words, the losers portfolio investor earned 2.8% over the market and 7.6% over the winners portfolio in the following 60-month period. In addition, the losses of winners portfolio investor is higher than that of the winners portfolio investor in 1, 2, 3, and 4 year.

Table 2 demonstrates the comparison of average cumulative abnormal returns on winners and losers portfolios created for 1, 2, 3, 4 and 5-year terms in the following 1,

2, 3, 4 and 5 year periods and the profitability of contrarian strategy in the January 2001- December 2015 analysis period.

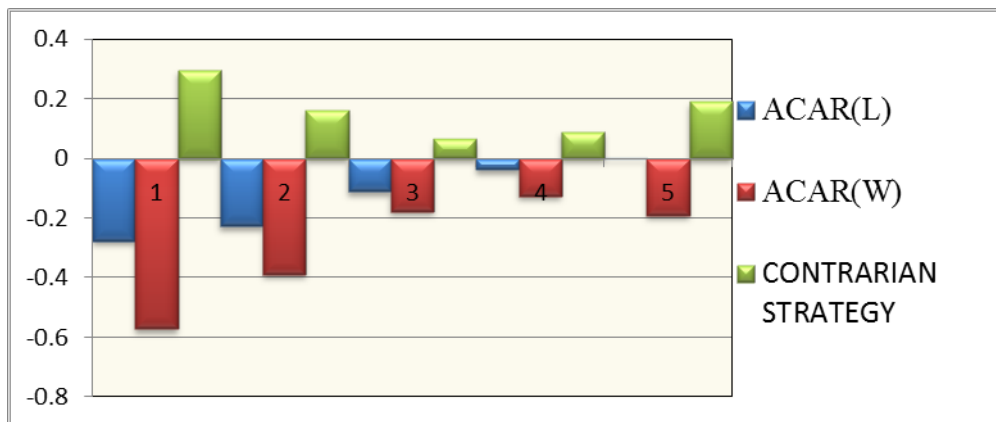
Table 2. Average Cumulative Abnormal Returns on Winner and Loser Portfolios in the Test Period

<i>Terms</i>	<i>Loser Portfolio</i>	<i>Winner Portfolio</i>	<i>Difference between Loser / Winner Portfolios</i>	<i>Contrarian Strategy Profitability</i>
	ACAR(L)	ACAR(W)	ACAR(L) – ACAR(W)	ACAR (L)-ACAR(W) >0
<i>1 Year Term</i>	(0.2756)	(0.5718)	0.296	0.296 > 0
<i>2 Year Term</i>	(0.2269)	(0.3891)	0.162	0.162 > 0
<i>3 Year Term</i>	(0.1113)	(0.1767)	0.065	0.065 > 0
<i>4 Year Term</i>	(0.0369)	(0.1266)	0.090	0.090 > 0
<i>5 Year Term</i>	0.0004	(0.1895)	0.190	0.190 > 0

Table 2 demonstrates that in all terms, the performance of the loser portfolios in the test period are higher than the winner portfolios. Thus, the loser portfolio investor earned

- 29% more than the winner portfolio investor in the 12-month period,
- 16% more than the winner portfolio investor in the 24-month period,
- 6.5% more than the winner portfolio investor in the 36-month period,
- 9% more than the winner portfolio investor in the 48-month period, and
- 19% more than the winner portfolio investor in the 60-month period cumulatively.

Figure 1. Average Cumulative Abnormal Returns on Winner and Loser Portfolios in 5 Different Test Periods and Contrarian Strategy Profitability



As a result, it could be observed in Figure 1 that for all portfolios with 1, 2, 3, 4, and 5 year terms between January 2001 and December 2015 the following conditions are valid:

$$\text{ACAR (L)} - \text{ACAR (W)} > 0$$

$$\text{ACAR (L)} > \text{ACAR (W)}$$

In other words, the contrarian investment strategy is a profitable investment strategy in Borsa Istanbul. However, when holding periods are compared, it could be observed that the holding periods where the contrarian investment strategy is the most profitable in Borsa Istanbul are 12 months and 60 months (1 and 5 years).

6. CONCLUSION

Behavioral finance, as a field that investigates financial decisions and human psychology in conjunction, suggests that investors do not always act rationally and sometimes act on their emotions when making financial decisions. This causes stock prices to digress out of their typical tendencies and certain anomalies appear in the markets that cannot be explained by traditional finance theories. Two of the most common anomalies known are low reaction and overreaction. By exploiting the advantages of these anomalies, two opposite examples of simple trading strategies, namely the contrarian and momentum investment strategies have been developed. These strategies briefly argue that it is possible to predict future prices by examining the past price movements, as opposed to the efficient market hypothesis. The contrarian strategy suggests that stocks that lost in the past are likely to be the winners of the future. Several studies are conducted on the overreaction anomaly that results in the emergence of the contrarian investment strategy and on the investor psychology that causes this anomaly.

In the present study, whether the contrarian investment strategy, which is proven to exist and is profitable in several national and international markets, is profitable in the Istanbul Stock Exchange. The study sample included 122 corporate shares outside the financial sector that are traded continuously in the Borsa Istanbul National Market between January 1, 2001 and December 31, 2015. The analysis is conducted using the De Bondt and Thaler (1985) contrarian portfolio strategy. To measure the profitability of the contrarian investment strategy, portfolios that won and lost in 1, 2, 3, 4 and 5 year periods are created and the performances of these portfolios in the following 1, 2, 3, 4 and 5 year periods are analyzed.

The conducted analysis demonstrated that the contrarian investment strategy is a profitable investment strategy in Istanbul Stock Exchange in all periods. Thus, the loser portfolio investor earned 29% in 1 year, 16% in 3 years, 9% in 4 years and 19% in 5 years more when compared to the winner portfolio investor. On the other hand, when holding periods are compared, it is observed that the holding periods where the

contrarian investment strategy is the most profitable in the Istanbul Stock Exchange are 1 and 5 years (12 months and 60 months), contrary to the 3 and 5 year periods indicated in the literature.

As a result, it is concluded that the contrarian investment strategy could be applied as a profitable investment strategy in the Istanbul Stock Exchange, benefiting from the advantage of overreaction, in the long term, supporting the findings in the literature. It is a sign that investors in Istanbul Stock Exchange did not make rational decisions and decided with the influence of certain psychological bias that prices have overreacted. As a result, it is possible to gain returns over the market by exploiting the overreaction in Borsa Istanbul without taking additional risks. The results demonstrated that Borsa Istanbul is not an effective market in the weak form, in support of behavioral finance assumptions. In other words, it could be argued that the assumptions of traditional finance and effective market hypotheses are not valid in Istanbul Stock Exchange.

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