ERF Working Papers Series

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ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية

Working Paper No. 1422
November 2020

ISLAMIC FINANCE AND ANCHORING HEURISTIC BIAS: AN ANALYSIS TO GULF ISLAMIC STOCK MARKETS

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First published in 2020 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Abstract

This study explores the importance of the 52-week high price in the Islamic GCC stock market returns. We study the anchoring bias of Muslim investors and the important role of the 52-week high price strategy in predicting future returns in the Islamic GCC stock market returns based on new information. For doing this, we have collected data of Islamic GCC companies listed on all sectors of Islamic GCC stock market. Two methods are employed in this paper. The first, interested to the stock price behavior and by using linear regression models, empirical results show that 52-week high price indicator can be considered as a good anchor which used for the prediction of future returns based on new information. The second analysis is interested to anchoring bias in analysts' forecasts. By using variables related to earning per share (EPS) and EPS forecast we conclude that analysts on the GCC market make biased estimates and they tend to anchor to the historical and industry norms. We obtain a negative impact of POSITIVE variable on error forecast indicating then that analysts are more pessimist.

Keywords: Behavioral finance, GCC Islamic stock market, anchoring bias, 52-week high price, Muslim investors.
JEL Classifications: G11, G40, G41**.**

1. Introduction

Inefficiencies in stock markets and deviations from the right decision explained by behavioral heuristic and cognitive biases of investors give rise to the development of the literature on behavioral finance that assumes that investors are irrational in their decision-making and thus contribute to the loss of confidence under the assumption of market efficiency for investors. Investors making deviations from efficiency attempt to correct their decisions by taking new decisions based on their predictions. To forecast future equity returns, we need information on stock performance from previous periods. However, extraneous factors play an important role in investment decisions and the choice of the stocks. Based on first impressions and the latest market news, investors and analysts need to make predictions to estimate the future probability of a company, to make decisions, even at the level of global markets. These decisions encountered by high uncertainty can be right or wrong and the anchoring bias can occur. In other way, initial perceptions affect future decisions.

The 52-week high price plays an important role in predicting future stock prices. In fact, many works (George and Hwang (2004) for example), showed that the notion of the 52-week high stock price can be considered as the more suitable indicator for prediction.

In their study, they suggested that traders should use the 52-week high stock price as an anchor when they hope to allocate the addition of the new good or bad information to predict the new stock value. They argue that a stock whose price is too near to its 52-week high is a stock for which good (bad) news has recently arrived, and that this may be precisely the time when traders' under reaction to good (bad) news is at its peak (though). Hence, nearness to the 52-week high is positively associated with expected returns in the cross-section. On the other hand, Peng and Xiong (2006) show that limited investor attention leads to category-learning behavior, i.e., investors tend to process more market-wide information than firm-specific information. Because the Dow-Jones index is arguably the most widely available information about the market, investors are likely to use the Dow index as a benchmark when evaluating new market-wide information.

But, the use of this indicator by investors can under or overestimate the future value of the stock price. Investors should use the 52-week high price statistic as an anchor when they make prediction of stock price and when they have new information. By considering the 52-week high stock price as an indicator and reference point of starting and when we try to evaluate the impact of good or bad information on the new future price, the most of times we obtain a deviation of the stock price to its 52-week high price and therefore a future correctness to the price must be done. In other way, investors use the 52-week high price indicator as an anchor when introducing a new information and evaluating the new price.

Anchoring is related with adjustments of investors in the market from which they base their ideas and decision making on initial information and after that they make changes over time to this initial point. These changes are essentially driven by this starting point. Therefore, anchoring describes the cases in which investors choose a starting information to fix a specific target, known as anchor, and subsequently they try to adjust this starting information to choose an acceptable value that can be reached over time. These adjustments are inadequate and still too close to the original anchor, which can make a problem when the anchor is very different from the true answer. When the initial information, the anchor, deviates from the true value, anchoring and adjustments shown to produce erroneous results.

On the other side, many studies highlighted the role of financial analysts in taking future decisions. Being in the buy- side or in the sell-side, analysts play an important role and they are considered as the principal actor of anchoring bias. Meanwhile, they represent the link between investors and market information sources. They based their decisions on forecasts which are frequently different to the actual value but they attempt always to be as close as possible to the reality.

One of the most important ratios that can be considered to analyze anchoring bias is the earnings per share ratio (EPS). This ratio is considered as a good proxy to the opinion of analysts. They consider anchors for their EPS forecasts in the next quarter after the announcement of the EPS, i.e. they consider the prior EPS as an anchor that can be used to revise their beliefs and adjust their judgments[3]. Kratz and Wenning (2016) showed that based on financial analysts' discussions, they concluded that earnings forecasts for a firm are affected by the forecasted EPS of other firms. Therefore, forecasts are biased and influence decision because of the error of forecast which measured as the difference between actual EPS and forecasted EPS. Based on forecast error and the anchor median forecasted EPS, Cen and Wei (2013) concluded that analysts' forecasts tend to have been more optimistic and there are more negative earnings surprises. The authors concluded the evidence of anchoring bias when they considered the impact of analysts' EPS forecasts in their work.

Tversky and Kahneman (1974) are the pioneers who studied the anchoring bias. After that, many works were interested to the concept of anchoring heuristics and examined the effect of anchoring in price estimation, credit market, foreign institutional investment and different types of financial markets. Studies were applied to different countries, markets and fields (Park (2010), Li and Yu (2012), Duclos (2015), etc). In this paper, our main goal is to analyze anchoring bias in the GCC Islamic stock market. Our objective is to contribute to the discussion on the anchoring bias in the Islamic GCC stock market. For doing this we use the methodology applied by Shin and Park (2018).

[3] They also consider median EPS as a good proxy to anchor measure.

We considered two kinds of database, the first is based on the daily market prices Islamic GCC stock market companies and the second correspond to the earning per share and forecasted EPS for Islamic companies. Stock prices cover the period July 3, 2016 and July 2, 2019 while EPS and their forecasts cover the period October 2013 and December 2019. We expect to find as results that the nearness of current price to the 52-week high is positively related to the spread size of both Islamic and conventional listed securities market and that anchoring effect of stock's 52-week high prices is mitigated by Muslim investors. We expect that Muslim investors do not prefer to revise their beliefs where surprises reach the price is near to its 52-week high in both Islamic and conventional GCC stock markets. On the other hand, and according to the previous pioneer works, we expect to find that analysts are more optimist and they tend to anchor.

An outline of the remainder of the paper is as follows. Section 2 presents a brief literature on anchoring heuristics. Section 3 is devoted to the details of the empirical results where we present the methodology and the data followed by the results and their interpretation. Finally, Section 4 concludes the paper.

2. Literature review: What about anchoring

The succession of the financial crises and the various anomalies observed in the financial markets, have contributed to the emergence of behavioral finance. It's a new vision of markets that is interested in finding an explanation for the different anomalies on the markets. Behavioral finance has distinguished behavioral biases and heuristics. In this work we are interested in the study of the heuristic of mental anchoring. Anchoring or focalism is a cognitive bias where an individual depends too heavily on an initial piece of information offered when making decision. Anchoring occurs when, during decision making an individual depends on an initial piece of information to make subsequent judgments.

The anchoring effect is described as the heuristics implemented when making judgments under uncertainty (Tversky and Kahneman, 1974). Amid choice making, anchoring happens when people utilize an introductory bit of data to make resulting judgments. When a stay is situated, different judgments are made by conforming far from that anchor, and there is an inclination toward deciphering other data around the anchor. In numerical prediction, when a relevant value is available, people make estimates by starting from an initial value that is adjusted to yield the final answer. In either case, adjustments are typically insufficient (Rekik and Boujelbene, 2013). Frequently, financial specialist's utilization to offer significance to mentally decided "anchors" and factually irregular facts which is unnecessary as this inclination drives irrational investment decisions. Information in number may not reflect real force of its nature and inherent value.

The results of prior researches, such as Kahneman and Tversky (1974), suggest that individuals use cognitively tractable decision strategies, known as heuristics, to cope

with complex and uncertain situations. These heuristics reduce complex inference tasks to relatively simple cognitive operations. Although these "mental short-cuts" help individuals in dealing with complex and uncertain situations, they may also lead to systematically skewed outcomes. The anchoring effect is one of the most studied cognitive biases that lead individuals to make sub-optimal decisions.

In their study, Kahneman and Tvesky (1974) explore the idea that individuals frequently form estimates by starting with an easily available reference value and then adjusting from this value. Although this approach may not be problematic per se, research has shown that individuals typically fail to properly adjust their final estimates away from the salient but overemphasized starting point (the "anchor").

More recently, Qu, Zhou, and Luo (2008) provide physiological evidence of the anchoring process based on event-related potential techniques (i.e., techniques that measure the brain responses stimulated by a thought or a perception). Research has shown that anchoring influences various types of decisions in many different contexts. Among these decisions we can include judicial sentencing decisions (Englich and Mussweiler, (2001)), personal injury verdicts (Chapman and Bornstein (1996)), estimation of the likelihood of diseases (Brewer, Chapman, Schwartz, and Bergus (2007)), job performance evaluation (Latham, Budworth, Yanar, and Whyte (2008)), judges' rankings in competitions (Ginsburgh and van Ours (2003)), and real estate acquisitions (Northcraft and Neale (1987)).

Previous researches haves also suggested that it is particularly difficult to correct anchoring bias. Consistent with this view, Northcraft and Neale (1987) conclude that "(1) experts are susceptible to decision bias, even in the confines of their 'home' decision setting, and (2) experts are less likely than amateurs to admit to (or perhaps understand) their use of heuristics in producing biased judgments." Plous (1989) shows that task familiarity is not sufficient to avoid anchoring bias and that the effects of anchoring bias are not significantly influenced by the ease with which respondents can imagine the outcome (outcome availability), by asking the respondents to list the most likely path to the outcome (path availability), or by casting the problem in terms of avoidance (rather than occurrence).

In addition, anchoring has been shown to influence intuitive numerical estimations (Wilson, Houston, Etling, and Brekke (1996)), probability estimates (Plous (1989)), estimations of sample means, standard deviations and estimates of confidence intervals (Lovie (1985), and Block and Harper (1991)), sales predictions (Hogarth (1980)), Bayesian updating tasks (Lopes (1981)), utility assessments (Johnson and Schkade (1989)), risk assessments (Lichtenstein, Slovic, Fischhoff, Layman, and Combs (1978)), preferences of gambles (Lichtenstein and Slovic (1971)), perception of deception and information leakage (Zuckerman, Koetsner, Colella, and Alton (1984)), negotiation outcomes (Ritov (1996)), and choices between product categories (Davis, Hoch and Ragsdale (1986)).

Plous (1989) also mentions that anchoring bias exists even after correcting for various social demand biases (i.e., the existence of expert opinion running against the initial anchor). Wright and Anderson (1989) consider the effect of situation familiarity on anchoring. They conclude that, "the anchoring effect is so dominant that increasing situational familiarity did not result in decreased anchoring." They find that monetary incentives can reduce anchoring, but the effect is only marginal in its statistical significance.

George and Hwang (2004) suggest that investors are reluctant to bid the price high enough when a stock price is at or near its highest historical value. Consistent with this intuition, they find that a stock price near its 52-week high has a predictive power for future stock returns. Campbell and Sharpe (2009) show that professional forecasters anchor their predictions of macroeconomic data such as the consumer price index or non-farm payroll employment on previous values, which leads to systematic and sizeable forecast errors. Baker, Pan, and Wurgler (2009) suggest that anchoring bias also affects corporate acquisitions.

Hirshleifer (2001) considers anchoring to be an "important part of psychology based dynamic asset pricing theory in its infancy" (p. 1535). Shiller (1999) argues that anchoring appears to be an important concept for financial markets. This argument has been supported quite strongly by recent empirical researches on financial markets. Anchoring has been found to matter for credit spreads that banks charge to firms (Douglas et al. (2015), it matters in determining the price of target firms in mergers and acquisitions (Baker et al (2012), and it also affects the earnings forecasts made by analysts in the stock markets (Cen et al (2013)). Furthermore, Siddiqi (2015) shows that anchoring provides a unified explanation for a number of key puzzles in options market.

Abdul Hamid Habbe (2017) showed that under reaction happens because of anchoring-adjustment heuristic bias. Consequently, when the previous and CEs have low (high) persistence earnings trend, they underestimated (overestimated) to the future earnings or made error in earnings estimation and underpriced (overpriced) to the securities accordingly or mispriced. It can also be concluded that the error of earnings estimation and stock mispricing is a consequence of the usage of representativeness or anchoring-adjustment heuristic, and indicates that psychological perspective can explain post earnings announcement drift in the capital market.

The effect of anchoring bias on market participants and investors has not been extensively investigated previously. For the Islamic markets, anchoring bias has not been the focus of previous studies. The earlier studies on the impact of behavioral biases in Islamic markets mainly analyzed the overconfidence bias, for example, Ranjbar et al. (2014) for Tehran market and Saadaoui and Albaity (2019) for the

financial market of the United Arab Emirates. To our knowledge the anchoring bias has not been the subject of many studies in the Muslim countries and more specifically for the GCC Markets. This investigation will help to raise the awareness of Muslim investors on the influence of behavioral factors on their investment decision and in particular the anchoring bias.

3. Empirical method

3.1. Data and descriptive statistics

In this analysis we are interested to the study of anchoring bias in the Islamic GCC stock market. Data were collected for Islamic companies operating in any GCC country and listed in stock exchange market. We considered two kinds of database, the first is based on the daily market prices Islamic GCC stock market companies and the second correspond to the earning per share and forecasted EPS for Islamic companies[4]. Stock prices cover the period July 3, 2016 and July 2, 2019 while EPS and their forecasts cover the period October 2013 and December 2019. From these data we construct the variables used in this paper. From the first database, we determine the 52-week high statistic for all companies. This variable is constructed by using the following formula:

$$52 - Week\ high = \frac{Current\ price}{52 - week\ high\ price}$$

As we can see from this formula, the higher value of this variable is closer to the high price for a period of 52 weeks with a maximum value equals 1. This variable can be used as an anchor in order to value the potential impact of new information to the stocks. The stock returns are calculated on the basis of logarithmic differences of stock prices over time. After that, 52-week high winner and loser indicator variables are constructed. In fact, dummy variables, which correspond to the winner and loser stocks GHW, GHL, RPW and RPL, are calculated. GHW (GHL) is the 52-week high winner (loser) indicator variable, which takes the value 1 if the stock i in the top (bottom) 30% and 0 otherwise. RPW (RPL) represents the reference price winner (loser) indicator variable, which takes the value 1 if the stock's i embedded capital gain is in the top (bottom) 30% on the formation month. These variables will be explained next section. We add to these variables the volume of transactions of stocks.

[4] We have to note that we haven't use the same companies for the two kinds of data because of the data unavailability of EPS and/or Forecasted EPS for many countries.

Table 1.a Descriptive statistics related to stock returns

	Obs	Mean	Median	Min	Max	Std Dev	Skewnss	Kurtosis
Rt	481	.273	.217	-.881	1.874	.692	.496	2.403
WH52	481	.899	.905	.745	.994	.0608	-.287	2.316
Size	481	11.953	11.954	11.228	12.861	.374	.174	2.478
RPW	481	.405	0	0	1	.491	.385	1.148
RPL	481	.162	0	0	1	.368	1.833	4.361
GHW	481	.324	0	0	1	.468	.751	1.563
GHL	481	.270	0	1	0	.444	1.034	2.071

We use the second database to analyze the anchoring bias from the point view of analysts. For doing this we consider the following variables: forecast error which is defined as the absolute value of the difference between EPS and forecasted EPS. In order to measure Anchor, we construct a binary variable by considering past EPS, median stock market EPS and median industry EPS. This variable equals 1 if estimated EPS is between Actual EPS and the chosen anchor[5] and 0 otherwise. POSITIVE is a dummy variable which equals 1 if estimated EPS is greater than the actual EPS. The firm size is measured by the revenues of the company which is expressed in logarithm. We consider a total of 36 Islamic companies registered on GCC stock market for the period third quarter 2013 – fourth quarter 2019[6]. Table 1-b lists the descriptive statistics for this second analysis.

Table 1-b Descriptive Statistics related to EPS

Variable	Obs.	Mean	Median	Std Dev	Min	Max	Skewness	Kurtosis
FE	142	.551	.115	1.041	0	4.14	2.235	6.592
ANCHORED (Previous EPS)	134	.381	0	.487	0	1	.491	1.241
ANCHORED (Median all)	142	.641	1	.481	0	1	-.587	1.344
ANCHORED (Med industry)	142	.436	0	.497	0	1	.256	1.059
POSITIVE	142	.563	1	.497	0	1	-.255	1.065
REVENUE	169	6.359	6.304	.837	4.948	9.56	1.001	4.351
EPS	160	.884	.43	1.148	-.74	4.55	1.738	4.909

3.2. GH and RP winner-loser anchoring bias analysis

For the empirical analysis we consider the methodology employed by George and Hwang (2004). Following this approach, proxies are included to analyze anchoring and take in account loser and winner Islamic stocks. Dummy variables GHWi,t-j , GHLi,t-j , RPWi,t-j and RPLi,t-j are included in the model. According to the methodology of George and Hwang (2004) and Fama and Macbeth (1973) cross-sectional regression for firm stocks, we apply the following model:

[5] Two methods are considered for the anchor: actual EPS past quarter and median EPS.

[6] Only 3 companies are observed over all the period 2013:3 – 2019:4, the others are observed for a sub period only. We have many missing observations.

$$R_{i,t} = \beta_{0j} + \beta_{1j}R_{i,t-1} + \beta_{2j}\ln(Vol_{i,t-1}) + \beta_{3j}GHW_{i,t-j} + \beta_{4j}GHL_{i,t-j} + \beta_{5j}RPW_{i,t-j} + \beta_{6j}RPL_{i,t-j} + \varepsilon_{i,t} \quad (1)$$

Where,
$R_{i,t}$: is the stock I's return in month t.

$Vol_{i,t-1}$: is the volume of stock i in month t-1.

$GHW_{i,t-j}$ $(GHL_{i,t-j})$: is the 52-week high winner (loser) indicator variable, which takes the value 1 if the stock i in the top (bottom) 30% on month t-j for j = 2, ….., 7 and 0 otherwise.

$RPW_{i,t-j}$ $(RPL_{i,t-j})$: is the reference price winner (loser) indicator variable, which takes the value 1 if the stock's i embedded capital gain is in the top (bottom) 30% on the formation month t-j for j = 2,…, 7 over the past 24 months and 0 otherwise.

After estimating equation 1 for j = 2, …, 7 we present an average estimate of six estimates. Table2-a presents these estimations and it reports the average monthly logarithmic returns.

Table 2-a Model estimation relative to the 52-week high and the reference price strategies

	j = 2	j = 3	j = 4	j = 5	j = 6	j = 7	Average
Constant	4.87***	5.881***	3.284***	4.689***	5.509***	2.591**	4.471***
R_{t-1}	0.0219	-0.0194	-0.0762	-0.0607	-0.0064	-0.156**	-0.0494
$Log(Volume_{t-1})$	-0.407***	-0.463***	-0.236***	-0.359***	-0.476***	-0.219**	-0.36***
GHW_{t-j}	-0.0679	-0.461***	-0.0913	0.564***	0.626***	0.0904	0.112**
GHL_{t-j}	0.212***	-0.159**	-0.201**	-0.0591	0.584***	0.368***	0.124***
RPW_{t-j}	0.384***	-0.00569	-0.192***	-0.256***	0.216***	0.321***	0.0778
RPL_{t-j}	0.686***	0.798***	0.0586	-0.814***	-0.0989	0.421***	0.175***
R-squared	0.179	0.236	0.077	0.258	0.291	0.229	0.211

*, **, and *** denote the null hypothesis is rejected at one percent, five percent and ten percent level statistical, respectively.

Looking to the estimations we can notice that the coefficient estimate relative to the constant, β_{0j}, and which can be interpreted as the return to a neutral portfolio is statistically significant for most results. The estimated coefficient relative to the variable last month returns is negative and significant only for lagged return j = 7. We obtain a negative and significant relationship between firm size and stock returns for all estimations. Results show evidence of momentum for winners and losers. In fact, the coefficient estimates for the variables GH winner and GH loser portfolios are in overall significant implying then that GH winner and loser portfolios account for the momentum returns. The coefficient estimates β_{3j} (β_{4j}) represent the return in excess (decline) of β_{0j} that can be earned by staying a long period in pure GH winner (loser)

portfolio. From the average coefficient estimates we find a positive significant relationship between winners and losers and returns. As well, the same interpretation can be concluded for RP winner and loser portfolios where we find evidence of momentum returns. Therefore, the GH and RP strategies can be considered as profitable in the GCC Islamic stock market, as their monthly profits are significant and we accept the evidence of the existence of price momentum effect in this market. These results support those found by George and Hwang (2004) for which the 52-week high indicator can be considered as a good predictor for the future stock returns and investors can consider this statistic as an anchor for evaluating the impact of new information.

In order to improve the importance of the 52-week high price indicator in predicting stock returns for both winners and losers in the Islamic GCC stock market we add to the previous model the variable WH-52 as the high price for a period of 52 weeks with a maximum value equals one. To examine whether the interaction effects exist among the WH-52 and GH winner and loser strategies, we estimate the following equation:

$$R_{i,t} = \beta_{0j} + \beta_{1j}R_{i,t-1} + \beta_{2j}\ln(Vol_{i,t-1}) + \beta_{3j}GHW_{i,t-j} + \beta_{4j}GHL_{i,t-j} + \beta_{5j}RPW_{i,t-j} + \beta_{6j}RPL_{i,t-j} + \beta_{7j}WH52_{i,t-j} * GHW_{i,t-j} + \beta_{8j}WH52_{i,t-j} * GHL_{i,t-j} + \varepsilon_{i,t} \quad (2)$$

The coefficients on the interaction between WH52 and GH winners and losers (β_{7j} and β_{8j}) capture the incremental effects of the 52-week high price. Table2-b represents the regression results of equation (2) for j = 2,…,7.

Table 2-b Model estimation relative to the 52-week high and the reference price strategies

	j = 2	j = 3	j = 4	j = 5	j = 6	j = 7	Average
Constant	4.52***	6.686***	3.319***	4.11***	6.765***	3.499**	4.816***
R_{t-1}	-0.0716	0.128***	-0.072	-0.099**	-0.017	-0.352***	-0.0806*
Log($Volume_{t-1}$)	-0.374***	-0.534***	-0.238***	-0.307***	-0.582***	-0.296***	-0.338***
GHW_{t-j}	-0.899***	0.715***	-0.0871	-0.502***	0.113	1.094***	0.0723*
GHL_{t-j}	0.281***	-0.511	0.019	0.201	1.024***	-0.471***	0.0905*
RPW_{t-j}	0.413***	-0.0878	-0.192***	-0.208***	0.237***	0.346***	0.0847
RPL_{t-j}	0.451***	0.109***	0.0291	-0.114***	-0.0863	0.292***	0.113**
WH52*GHW_{t-j}	0.974***	0.837***	0.0889	0.703***	-0.0578	1.237***	0.63***
WH52*GHL_{t-j}	-0.299***	0.441	-0.0239	-0.228	-1.011***	-0.552***	-0.278***
R-squared	0.289	0.309	0.077	0.335	0.349	0.232	0.265

*, **, and *** denote the null hypothesis is rejected at one percent, five percent and ten percent level statistical, respectively.

As results obtained from equation (1), we conclude from the equation (2) that estimates of the variable WH-52 can be a good indicator for predicting future returns.

The estimated coefficients of WH52×GHW and WH52×GHL are statistically significant implying then the persistence of momentum profits behind the 52-week high strategy following sentiment of winner and loser investors. Therefore, we can conclude that the average monthly returns on the differences between WH52×GHW and WH52×GHL are statistically significant. Results show then that the momentum return on the 52-week high strategy is based on the recent 52-week high price, suggesting the evidence of interaction effect between the anchoring and momentum biases. The empirical results indicate that both interaction terms for winners and losers in the Islamic GCC market are significant. According to the controlling interaction effects, the WH52×GHW strategy displays significantly positive momentum returns while the WH52×GHL strategy displays significantly negative momentum returns. This opposite finding between winners and losers suggests that GH winners and losers both contribute to the profitability of the strategy.

3.3. Analysts and anchoring bias analysis

When an investor takes a future decision for a holding stock, he considers the price of the stock at the time of purchase as an anchor. When the stock price knows a drop for example, the investor waits to break even to sell the stock although other indicators and new information show improbable rebound in price. Investors should be reasonable and objective when buying and selling stocks.

Several studies showed that is difficult to avoid anchoring bias as it is based on judgments (how, when and what we have to buy and sell …). These judgments are essentially based on predictions and according to the information circulating in the market. These predictions are made by analysts who make forecasts based on good and bad news. As forecasts usually presents errors even if analysts think that their estimates are "good enough", they have to adjust their decisions every time in order to make the best decision and avoid losing.

Edwards (1968) signaled that anchoring adjustment is a pure mental process that is related to the previous decisions and the future predictions of analysts. Based on news, analysts should every time revise their beliefs as anchoring bias leads to insufficient information according to news. The anchor adjustment effects can lead to an under reaction of the financial analysts when they revise their benefit predictions. The under reaction of analysts is the result of negative changes whereas overreaction is the result of positive changes. When the ratio of negative earnings prediction errors on the positive ones is greater than one, the anchor adjustment effect can lead to optimism bias and the under reaction of analysts following the revisions in the earnings.

Analysts' earnings per share forecast is considered as a good proxy to the opinion of an expert. In fact, analysts consider anchors for their EPS forecasts in the next quarter after the announcement of the EPS, i.e. they consider the prior EPS as an anchor that can be used to revise their beliefs and adjust their judgments. Kratz and Wenning

(2016) showed that based on financial analysts' discussions, they concluded that earnings forecasts for a firm are affected by the forecasted EPS of other firms in the same industry. So that analysts consider the industry median EPS as a proxy to the anchor variable. Cen and al. (2013) considered Fama McBeth (1973) and employed the following equation for studying empirically anchoring bias:

$$FE_{i,t} = \alpha + \beta CAF_{i,t-1} + \gamma^k X^k_{i,t-1} + \varepsilon_{i,t} \qquad (3)$$

The dependent variable FE represents the forecast error which can be considered as the absolute value of the difference between actual EPS and forecasted EPS. CAF is the difference between the consensus forecast and the anchor and X^k is a vector of control variables for which we can consider the logarithm of the firm's size, volume, market capitalization, etc.

In this paper we employ the following equation:

$$FE_{i,t} = \beta_0 + \beta_1 ANCHORED_{i,t} + \beta_2 VOLUME_{i,t-1} + \beta_3 POSITIVE_{i,t-1} + \varepsilon_{i,t}$$

Where,
$FE_{i,t} = \left|Estimated\ EPS_{i,t} - Actual\ EPS_{i,t}\right|$

$VOLUME_{i,t-1}$: $the\ volume\ of\ transactions\ of\ firm\ i\ in\ the\ previous\ period$ which is expressed in logarithm.

$POSITIVE_{i,t-1}$: is a dummy variable which equals 1 if $Estimated\ EPS_{i,t-1} > Actual\ EPS_{i,t-1}$ and 0 otherwise.

$ANCHORED_{i,t}$: is a dummy variable which equals 1 if
$Actual\ EPS_{i,t} < Estimated\ EPS_{i,t} < Chosen\ Anchor$.

It is expected that the coefficient relative to the ANCHORED variable is positive as well as for the coefficient relative to the variable POSITIVE while the coefficient relative to the variable REVENUE is expected to be negative.

To estimate this model, we consider three regressions according to the measure of the variable anchored[7]. Table 3 represents the results obtained for these regressions by using OLS.

[7] The first measure of the variable Anchored (previous EPS) corresponds to the previous EPS, the second is the median EPS of all the companies and the third is measured according to industry median.

Table 3. Estimated coefficients

FE			
Constant	1.012	1.747*	1.859**
ANCHORED (Previous EPS)	.933***	-----	-----
ANCHORED (Median all)	-----	.239*	-----
ANCHORED (Med industry)	-----	-----	.522*
REVENUE	-.102	-.135	-.191
POSITIVE	-.313*	-.913**	-.653**
R^2	.291	.204	.217

The numbers in the parenthesis are the robust standard errors. *, ** and *** are respectively Statistical significance at the 1%, 5% and 10% levels.

The regressions show a positive significant relationship between the anchor variable and the dependent variable for the three measures of anchor at 1% and 10% level. We also find a negative significant relationship between the variable positive and the forecast error while revenue does not have any significance for all considered regressions. Therefore, statistical results indicate that we should accept the hypothesis indicating that analysts tend to anchor to the previous, industry median or market median. We can conclude that like the other markets, analysts on the GCC market make biased estimates. Our results confirm the findings made by: (1) Cen et al. (2010) who highlighted that analysts tend to anchor to the industry norm, (2) Kaustia et al. (2008) who indicated that analysts tend to anchor to historical EPS. Also, we obtain a negative significant estimated coefficient of the variable positive on the 10% and 5% levels indicating then that analysts are more pessimist and this action will impact the forecast EPS. This result is contradictory to the findings of major previous researches such as the study of Kratz and Wenning (2016) on the Swedish market. The estimated coefficient relative to the variable is negative but insignificant.

4. Conclusion

Islamic stock markets were declared best performing than conventional stocks in the GCC region but it still considered as a small market similar to the conventional one. It is a volatile market characterized by down and up periods and dependent to the conventional market. In this paper we are studying the anchoring bias of investors by using both methods: in the first one we based our analysis on the concept of the 52-week high momentum as an anchor reference. For doing this we have constructed proxies attributable to the GH and RP strategies. Results indicate that, like in developing and emerging markets and the point view of George and Hwang (2004), the coefficient estimates relative to GH and RP loser and winner stocks can justify the momentum returns. Then, the 52-week high can be considered as a good anchor which used for the prediction of future returns based on new information. Also, by considering interactions between 52-week high price and GH strategies to study the controlling interaction effects, we concluded an opposite estimated coefficient between winners and losers suggesting then that GH winners and losers both contribute to the prediction of future returns based on new information. In the second

method we are interested to the effect of anchoring on analysts' forecast errors by using actual and forecasted EPS. Results showed that analysts in Islamic GCC market are subject to anchoring bias and they are more pessimist in their forecasts.

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