

Islamic finance and anchoring heuristic Bias: an analysis to Gulf Islamic stock markets

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Introduction

- Behavioral finance assume that investors are irrational and this contribute to the loss of confidence in the assumption of market efficiency.
- Extraneous factors play an important role in investment decisions and the choice of the stocks.
- Investors and analysts use their first impression and the latest news to make predictions and make decisions.

Introduction

- In the presence of a high uncertainty the decisions can be right or wrong and the anchoring bias can occur, due to the fact that initial perception affect future decision.
- Many works showed that the notion of the 52- week high stock price can be considered as the more suitable indicator for prediction.
- George and Hwang(2004) suggested that traders should use 52-week high stock as an anchor when they want to take in account the new information to predict the new value of a stock

Introduction

- The nearness to the 52- Week high is positively associated with expected returns in the cross- section.
- Peng and Xiong (2006) show that investors tend to process more market- wide information than firm specific information.
- When the investors use the 52- week as an anchor they can under or overestimate the future value of the stock price.

Introduction

- Anchoring is based on the fact that investors base their ideas and decisions on initial information.
- If the initial information deviates from the true value, anchoring and the adjustments shown to produce erroneous results.
- Many studies highlighted that analysts play an important role and they are considered as the principal actor of anchoring bias.
- They represent the link between investors and market information sources.

Introduction

- To analyze anchoring bias the earning per share ratio (EPS) is considered as a good proxy to the opinion of analysts.
- The analysts consider the prior EPS as an anchor that can be used to revise their beliefs and adjust their judgments.
- Kratz and Wenning (2016) concluded that the earning forecasts for a firm are affected by the forecasted EPS of other firms.

Introduction

- If analysts EPS is considered, Cein and Wei(2013) concluded that the anchoring bias is persistent.
- many works examined the effect of anchoring on price estimation, credit market, foreign institutional investment and different types of financial markets.
- The studies were applied to different countries, markets and fields, Park (2010) Li and Yu (2012), Duclos (2015) etc.

Introduction

- Our objective in this work is to analyze anchoring bias in the GCC Islamic stock market and we use the methodology applied by Shin and Park (2018).
- For doing we analyze the anchoring effect:
 - ❖ For Muslim investors in the Islamic and conventional GCC stock market using the daily market price
 - ❖ For analysts in the same markets using the EPS and forecasted EPS for Islamic companies.

II. Literature Review

- Behavioral finance is interested in finding an explanation for the different anomalies in the market.
- In this work we are interested in the study of the heuristic of mental anchoring.
- Anchoring occurs when, during decision making an individual depends on an initial piece of information to make subsequent judgments.

II. Literature Review

- Kahneman and Tversky (1974) suggest that individuals use cognitively tractable decision strategies, known as heuristics, to cope with complex and uncertain situations.
- The heuristics reduce complex inference tasks to relatively simple cognitive operations.
- The anchoring effect is one of the most studied cognitive biases that lead individuals to make sub-optimal decisions.

II. Literature Review

- Research has shown that individuals typically fail to properly adjust their final estimates away from the starting point (the anchor)
- Research has shown that anchoring influences various types of decisions in many different contexts:
 - ✓ Influence intuitive numerical estimations
 - ✓ Probability estimates
 - ✓ Estimation of sample means and standard deviation
 - ✓ Estimates of confidence intervals
 - ✓ Utility assessment
 - ✓ Perception of deception and information leakage

II. Literature Review

- Plous (1989) mentions that anchoring bias exists even after correcting for various social demand bias.
- George and Hwang (2004) consider that investors are reluctant to bid the price high enough when a stock price is at or near its highest historical value.
- That is why a stock price near its 52-week high has a predictive power for future stock returns.
- Shiller (1999) argues that anchoring appears to be an important concept for financial markets

II. Literature Review

- Abdul Hamid H (2017) showed that under reaction happens because of anchoring adjustment heuristic bias.
- The anchoring bias has not been extensively investigated for the Islamic markets.
- The overconfidence bias is analyzed for the Tehran market by ranjbar el al (2014) and saadaoui & Albaity (2019) for the Emirates market.
- Anchoring bias has not been the subject of much study in the Muslim countries and more specifically for the GCC markets.

III. Data and descriptive statistics

- The data were collected for Islamic companies operating in the GCC countries and listed in stock exchange market.
- We use two kinds of database
 - First : The daily market prices Islamic GCC stock market Companies.
For the period July 3, 2016 to July 2, 2019
 - Second: The Earning per share and forecast EPS for Islamic companies.
The EPS and their forecasts cover the period October 2013,
December 2019.

IV. Empirical analysis

- We use the first data base to determine the 52-week high statistic for all companies, using the following formula.

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

- The higher value of this variable is closer to the high price for a period of 52 weeks with a maximum value equals 1

IV. Empirical analysis

- After that we construct the 52- week high winner and loser indicator.
- For this We use dummy variables:
 - GHW (GHL) is the 52-week high winner (loser) indicator variable and it takes the value 1 if the stock is in the top (bottom) 30% and 0 otherwise.
 - RPW (RPL) represents the reference price winner (loser) indicator variable, That takes the value 1 if the stock's embedded capital gain is in the top (bottom) 30% on the formation month.

IV. Empirical analysis

Table 1: 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

IV. Empirical Analysis

To analyze the anchoring bias from the point view of analysts we consider the following variables:

- Forecast error is the difference between EPS and forecasted EPS.
- To measure the anchor, we construct a binary variable by considering past EPS, median stock market EPS and median industry EPS.
- Positive: is a dummy variable which equals 1 if estimated EPS is greater than the actual EPS.
- The Revenue is a measure of the size of the firm (36 Islamic companies)

IV. Empirical Analysis

- **Table 2 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

V. Empirical Results

GH and RP winner-loser anchoring analysis

- We consider the methodology employed by George and Hwang (2004) to analyze anchoring and take in account loser and winner stocks.
- According to the methodology of Fama and Macbeth, we apply the following model:

$$R_{i,t} = \beta_{0j} + \beta_{1j}R_{i,t-1} + \beta_{2j}\ln(\text{Vol}_{i,t-1}) + \beta_{3j}\text{GHW}_{i,t-j} + \beta_{4j}\text{GHL}_{i,t-j} + \beta_{5j}\text{RPW}_{i,t-j} + \beta_{6j}\text{RPL}_{i,t-j} + \varepsilon_{i,t}$$

III. Empirical results

- $GHW_{i,t-j}$ ($GHL_{i,t-j}$) : 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 $j = 2, \dots, 7$ 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 $j = 2, \dots, 7$ over the past 24 months and 0 otherwise.
- After estimating the equation for $j = 2, \dots, 7$ we present an average estimate of six estimates.

III. Empirical Results

- Table3: 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
$\text{Log}(\text{Volume}_{t-1})$	-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

III. Empirical results

- We obtain a negative and significant relationship between size firm and stock returns for all estimations.
- Results show evidence of momentum for winners and losers.
- 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.

III. Empirical results

- 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.

- 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.

III. Empirical results

- 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.
- To examine whether the interaction effects exist among the WH-52 and GH winner and loser strategies, we estimate the following equation:

$$R_{i,t} = \beta_{0j} + \beta_{1j}R_{i,t-1} + \beta_{2j}\ln(\text{Vol}_{i,t-1}) + \beta_{3j}\text{GHW}_{i,t-j} + \beta_{4j}\text{GHL}_{i,t-j} + \beta_{5j}\text{RPW}_{i,t-j} + \beta_{6j}\text{RPL}_{i,t-j} \\ + \beta_{7j}\text{WH52}_{i,t-j} * \text{GHW}_{i,t-j} + \beta_{8j}\text{WH52}_{i,t-j} * \text{GHL}_{i,t-j} + \varepsilon_{i,t}$$

III. Empirical results

Table 4 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*
$\text{Log}(\text{Volume}_{t-1})$	-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**
$\text{WH52} * \text{GHW}_{t-j}$	0.974***	0.837***	0.0889	0.703***	-0.0578	1.237***	0.63***
$\text{WH52} * \text{GHL}_{t-j}$	-	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

Empirical results

- The WH-52 can be a good indicator for predicting future returns.
- The estimated coefficients of $WH52 \times GHW$ and $WH52 \times GHL$ are statistically significant.
- ❖ Implying the persistence of momentum profits behind the 52-week high strategy following sentiment of winner and loser investors.
- ❖ Show 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.

Empirical results

- The interaction terms for winners and losers in the Islamic GCC market are significant:
 - ✓ The $WH52 \times GHW$ strategy displays significantly positive momentum returns.
 - ✓ The $WH52 \times GHL$ 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.

Empirical results

- **Analysts and anchoring bias analysis**
- Predictions are made by analysts who make forecasts based on good and bad news.
- The analysts have to adjust their decisions every time in order to make the best decision and avoid losing.
- The anchor adjustment effects can lead to an under reaction of the financial analysts when they revise their benefit predictions.

Empirical Results

- The under reaction of analysts is the result of negative changes whereas overreaction is the result of positive changes.
- Analysts' earnings per share forecast is considered as a good proxy to the opinion of an expert.
- Analysts consider anchors for their EPS forecasts in the next quarter after the announcement of the EPS.
- They consider the prior EPS as an anchor that can be used to revise their beliefs and adjust their judgments.

Empirical results

- . Kratz and Wenning (2016), concludes that earnings forecasts for a firm are affected by the forecasted EPS of other firms in the same industry.
- In this paper we employ the following equation:

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

Empirical results

- Table5 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

Empirical results

- The results indicate that analysts tend to anchor to the previous, industry median or market median.
- The analysts on the GCC market make biased estimates.
- Our results confirm the findings made by:
 -
 - ✓ Cen et al. (2010) who highlighted that analysts tend to anchor to the industry norm,
 - ✓ Kaustia et al. (2008) who indicated that analysts tend to anchor to historical EPS.

Empirical results

- The 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.

Conclusion

- Based on the concept of the 52-week high momentum as an anchor
- ✓ The GH and RP loser and winner stocks can justify the momentum returns.
- ✓ The 52-week high can be considered as a good anchor which is used for the prediction of future returns based on new information.
- For the second method interested to the effect of anchoring on analysts' forecast errors, by using actual and forecasted EPS.
- ✓ Analysts in Islamic GCC market are subject to anchoring bias.
- ✓ They are more pessimist in their forecasts.

Thank you for your
attention