

Theme: BEHAVIORAL FINANCE

Title: Islamic finance and herding behavior theory: a sectoral analysis for Gulf Islamic stock market

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Abstract:

This study examines herding behavior in four sectors of the Gulf Islamic stock markets. Based on the methodology of Chiang and Zheng (2010) to the GCC Islamic sectoral daily stock prices from 2013 to 2018, results showed evidence of herding behavior in the insurance and industrial sectors during falling market periods only. In addition, we found that conventional return dispersions have a dominant influence on the Islamic GCC stock market during both falling and rising market periods in all sectors. We found also evidence of herd around the conventional sectors during down market period only in the banking and hotels, restaurants and foods sectors. There is evidence of herd around conventional sector during both falling and rising periods in the insurance sector, while we confirm herd around conventional industrial sector during rising market.

Keywords: Islamic stock market, GARCH model, Quantile regression, herding behaviour, GCC countries, sectoral analysis.

Jel Classification: G14, G15.

1. Introduction

Stock market anomalies and inefficiencies were proved for major markets, especially developed and emergent, have questioned the importance of standard finance theory and give rise to the development of modern behavioral finance theory (Kahneman and Tversky, 1979). However, the rejection of the basics of traditional finance theory, such as heterogeneity of investors, asymmetric information, and irrationality of investors is explained by the psychology of investors which is different among individuals. This modern theory gives rise to the development of behavioral biases on financial practitioners like anchoring, availability, herding, mental accounting, optimism, overconfidence and representativeness. This analysis focuses on herding behavior bias. In other ways, this paper examines sectoral specific herding behavior in Islamic GCC stock market for the period 2010-2017. Previous researches¹ showed that, like in developed and emerging markets, evidence of herding behavior was confirmed for Islamic GCC stock market, but this bias differ among GCC countries. Do these differences exist among sectors for these countries? Our objective is to determine which sectors herd in the Islamic GCC stock market.

Mimetism or herding behavior is often observed during periods of crisis and rapid growth and then this phenomenon damages both investors and stock markets. In its simple form herding is defined as the result of buying and selling same stocks in the same period. It is based on the fact that less informed investors take decision to copy from the others because they believe that other investors are more informed and have better access than them to information. Some investors make this decision of following others because of complexity or the lack of understanding the characteristics of the market. Complexities of markets differ from one sector to another and sectors do not have the same characteristics. However, herding can be detected in a sector but not in another sector.

Also, researchers insist in the fact that investors choose to follow others in the market or herd when volatility and unpredictability is high in the market. Herding have a severe effect on the stock markets and can occur particularly during extreme periods (crisis or high growth). Investors tend to mimic the actions of others especially during periods when volatility and uncertainty in the market are high. According to Banerjee

¹ See Medhioub and Chaffai (2018), "Islamic finance and herding behavior: an application to Gulf Islamic stock markets", Review of Behavioral Finance, Vol. 10 Issue: 2, pp.192-206.

(1992), herding behavior is defined as: "... doing what everyone else is doing, even when one's private information suggests doing something else". While Hwang and Salmoon (2007) defined herding as; "... Imitating observed decisions of other investors or movements on the financial market rather than following own beliefs and information". Cote and Sanders (1997) defined this bias referred to: "... individuals alter their private beliefs to correspond more closely with the publicly expressed opinions of others".

In the Gulf region, Islamic stock markets have registered prominent growth due to religious beliefs of investors and the high level of economic developments in the region. Most studies interested to the comparison between Islamic and conventional stock markets suggested similarities among markets. Even, herding behavior detected for major developed and emerging markets for conventional stocks has been proven for the GCC Islamic stock market (Chaffai and Medhioub, 2018). Contrary to the conventional sectoral markets, studies showed that Islamic stock markets are sector oriented and they are dominated by the financial sector, especially banking sector which represents more than 30% of Islamic activities. Specifically, this study tests the phenomenon of herding in the GCC Islamic stock market, by carrying out previous issues from the previous studies, in a sectoral manner.

Due to their religious beliefs, Muslim investors will not be easy to trade in stock markets and therefore some behavioral biases are confirmed (Callen and Fang (2015), Goel and Srivastava (2016), etc). Is this the case for herding behavior in GCC Islamic stock market and is it different from one sector to another? Also, as financial system in GCC countries is characterized by the operation of both Islamic and conventional we treat the influence of conventional herding on Islamic herding to verify whether Muslim investors follow decisions taken in conventional markets or not in the region. The major contributions of this paper are as follows: First, since most studies examined whether herding behaviors differ among periods of expansion and crisis, we tried to explore the effects of extreme periods in Islamic GCC stock market on herding by using the quantile regression analysis. Results confirm that, for the Islamic GCC stock market, herding is present in insurance and industrial sectors only during down market periods. Second, since introducing the GCC conventional herding behavior, the empirical findings suggest the influence of this factor on Islamic herding stock market in the region. We found that conventional return dispersions have a dominant influence on the Islamic GCC stock market during both falling and rising

market periods in all sectors. Third, results showed evidence of herd around the conventional sectors during down market period only in the banking and hotels, restaurants and foods sectors. There is evidence of herd around conventional sector during both falling and rising periods in the insurance sector, while we confirm herd around conventional industrial sector during rising market.

The remainder of the paper is organized as follows. The second section presents an overview of Islamic GCC stock market. The third section provides a review of the literature on herding behavior. Section 4 presents the methodology and data sources employed in this research. The empirical results and their interpretations are presented in this section. Our conclusion is in section five.

2. Characteristics of Islamic GCC market and herding behavior for Muslim countries

Since recent crisis 2007-2008, Islamic finance has given great attention and has witnessed a solid growth and Islamic stock markets have gained a large interest from Muslim investors seeking for stocks and investments compliant with Shariah. However, due to the confidence and support accorded by governments to Islamic markets, Muslim investors participate positively to the rapid growth of Islamic finance by their strong demand to Shariah-compliant products. They believe that Islamic market offers investments that are ethical (prohibition of products non-compliant with Shariah and prohibition of speculative activities) and stable (less risky than conventional market). Therefore, Islamic investments are considered socially more responsible than conventional investments.

In major Muslim countries, stock market consists of both types of market: Islamic and conventional. Moreover, Islamic market is considered as an important complement to conventional which offers a wide range of financial products and services Shariah-compliant. In August 18, 2010 Dow Jones Islamic Market GCC index was launched. This index represents a part of the Dow Jones Islamic market index and it is employed to measure the stock performance of GCC companies which are compliant with Sharia. This market, supported by GCC governments, provides a benchmark for Muslim investors who believe well on the application of the Shariah principles and seeking for ethical investments.

Over the last few years, the Dow Jones Islamic Market GCC index has performed strongly and has been very volatile. Compared to its conventional counterpart in the region, Dow Jones Islamic Market GCC index released a better performance,

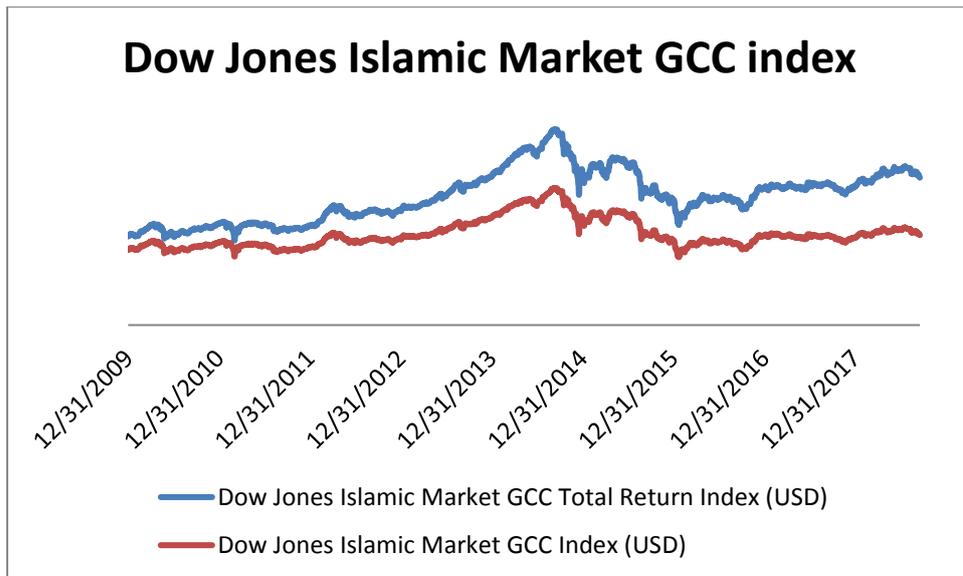
especially during extreme periods, i.e., in August 2012 Dow Jones Islamic Market GCC index gained 2.30 percent while conventional index released a growth of 1.45 percent in the same period only. While other studies, showed that there is no considerable differences between GCC Islamic and conventional GCC index (Miniaoui, Syani and Chaibi, 2015). They found also that there are differences on the impact of financial crisis among GCC countries and sectors.

Filtering criteria and screening procedure adopted to dismiss companies non-compliant with Shariah encourage Muslim investors to invest in Islamic markets which are less risky than conventional markets and do not lead to huge losses in case of crisis and extreme periods.

These filtering procedures results from the concentration in some sectors. For the Dow Jones Islamic GCC stock index financial sector is the more important one with a weighting exceeding 1/3 of the index followed by the sector of Basic Materials and Telecommunications. Health Care, Utilities and Oil and Gas represent the weakest sectors for this market. Whereas for the conventional indexes we observe that industrial sector, consumer goods and services sector and financial sector are the most important sectors. For this region, the financial is dominated by the banking sector where Islamic banks are considered as the prominent source of financial intermediation in the region. Islamic GCC Banking sector represents 38.2 percent of global Islamic banking assets in 2014. Due to the differences in sector orientations between conventional and Islamic markets, we observe a difference between both markets in risk adjusted performance. Results showed higher risk adjusted performance for Islamic market compared to its conventional counterpart and the existence of differences in performance at sector level (Charles and Darné, 2015).

Table 1: Index properties

Lunch date	August 18, 2009	Number of constituents	114
Financials	38.2%	Saudi Arabia	66
Basic Materials	27.1%	Kuwait	18
Telecommunications	10%	Qatar	11
Industrials	8.8%	United Arab Emirates	8
Consumer Services	6.6%	Oman	8
Others	9.3%	Bahrain	3



Looking to the previous graph, GCC’s Islamic stock market is interesting and resembles to emerging and developed markets. Muslims participate largely in its development and GCC governments encourage and help it in order to release best performances.

3- Herding Behavior: literature review

Studies on herd behavior in GCC stock markets are recent. All of them have focused on overall market and non sectoral analysis has been conducted. Generally, studies found the evidence of herding by using different methodologies and different time periods. For example, Gabori (2018) studied the impact of religious events (like Ramadan, Ashoura, Eid-El-Fitr, Eid-El-Idha, ...) on herd behavior in Saudi Arabia stock market for the period October 2005-February 2016. She found that there is evidence of herding around religious events during crisis period only. Based on monthly data for GCC Islamic stock markets, Medhioub and chaffai (2018) concluded an evidence of herding behavior during down market periods in the case of Qatar and Saudi Arabia. They also found that Kuwaiti and Emirates Islamic stock markets herd with the local conventional stock markets. By using daily stock data for the period 2010-2016 for GCC Islamic stock markets Chaffai and Medhioub (2018) suggested the presence of herding behavior in Islamic GCC stock markets during upward market periods. However they mentioned no evidence of herding behavior during stress market periods. Youssef and Mokni (2018) examined the effect of herding behavior on dependence structure between GCC stock markets. Based on weekly data for the period 2003–2017, authors concluded the presence of herding behavior in most of the

GCC markets except for Bahraini and Kuwaiti markets. They showed that the effect of this behavior on the dependence structure is statistically significant and positive. Ulussever and Demirer (2017) examined the evidence of herding behavior in the GCC stock markets for the period 2003–2013. They distinguished the evidence of herding in all the GCC markets except for the Omani and Qatari markets. Moreover, the authors suggest that herding behavior among investors is more prominent during periods of market stress, possibly due to the loss aversion by traders. Gavriilidis et al. (2016) made comparison between Ramadan and non-Ramadan days on herding for seven Islamic countries (Bangladesh, Egypt, Indonesia, Malaysia, Morocco, Pakistan, and Turkey). They found that religious social moods and habits in period of Ramadan lead to a higher herding in most of the countries.

In the same way, Yousaf et al. (2018) studied the impact of Ramadan and financial crises on herding behavior for Pakistani stock market. Daily and yearly analyses were conducted. For the daily analysis, they showed an absence of herding behavior during down and up market periods as well as during high and low volatility in market. Based on yearly stock data they showed that herding behavior is detected during the period 2005-2007 while it is not detected during the rest of the period.

We relate our study to the study of Medhioub and Chaffai (2018) in which we use the cross-sectional absolute deviation of returns, denoted CSAD, to estimate herding behavior in Islamic GCC stock market. We include the impact of conventional cross-sectional absolute deviation of returns and stock market returns of GCC market. In a second way, in order to track the behavior of Islamic GCC stock index under downward and upward market conditions, we divide the sample period into two sub periods by employing the Markov switching approach. Quantile regression analysis was conducted to estimate herding behavior under these two periods. CSAD represents the degree of non-linearity between dispersion and market return which can be increasing or decreasing during certain periods where investors follow aggregate market behavior. Chang et al. (2000) argued that CSAD can be used to measure herding as during downward market periods we can remark an increasing association between the dispersion and the market return if investors follow the aggregate market which can lead then to the evidence of non-linearly between dispersion and market return. Authors in the domain have agreed that CSAD can be calculated using the following formula:

$$CSAD_t = \frac{1}{N} \sum_{i=1}^N |R_{i,t} - R_{m,t}|$$

Where:

CSAD: represents the Cross-Sectional Absolute Deviation of returns

$R_{i,t}$: represents the company i stock's return at period t

$R_{m,t}$: represents the market return at period t

N: represents the number of stocks at time t

To test evidence of herding, a nonlinear relationship between individual returns and portfolio return was considered by the following regression:

$$CSAD_t = \beta_0 + \beta_1 R_{mt} + \beta_2 |R_{mt}| + \beta_3 R_{mt}^2 + \varepsilon_t \quad (1)$$

According to regression (1), a statistically negative estimated coefficient β_3 indicates the presence of herding in market. As many studies showed the evidence of asymmetry between stock return dispersion during up market and declining market periods (Chiang and Zheng (2010), Huang, Lin, and Yang (2015), etc), we introduce in model (1) a dummy variable D_t , which equals 1 if the market return is negative and zero otherwise, to detect differences in herding between up and down market periods. The equations to use are the following:

$$CSAD_t = \beta_0 + \beta_1 D_t R_{mt} + \beta_2 D_t R_{mt}^2 + \varepsilon_t \quad \text{for down market period (2-1)}$$

$$CSAD_t = \beta_0 + \beta_1 (1 - D_t) R_{mt} + \beta_2 (1 - D_t) R_{mt}^2 + \varepsilon_t \quad \text{for up market period (2-2)}$$

GCC market is characterized by the coexistence of both systems conventional and Islamic. This can lead to the transmission of shocks from one system to another and this can affect herding. For this reason we introduce respectively in equations (2-1) and (2-2) the impact of the CSAD and the squared market return of conventional system. Therefore, equations (3), (4-1) and (4-2) are defined as:

$$CSAD_t = \beta_0 + \beta_1 R_{mt} + \beta_2 |R_{mt}| + \beta_3 R_{mt}^2 + \beta_4 CSAD_{conv,t} + \beta_5 R_{conv,mt}^2 + \varepsilon_t \quad (3)$$

$$CSAD_t = \beta_0 + \beta_1 D_t R_{mt} + \beta_2 D_t R_{mt}^2 + \beta_3 CSAD_{conv,t} + \beta_4 D_t R_{conv,mt}^2 + \varepsilon_t \quad (4-1)$$

$$CSAD_t = \beta_0 + \beta_1 (1 - D_t) R_{mt} + \beta_2 (1 - D_t) R_{mt}^2 + \beta_3 CSAD_{conv,t} + \beta_4 (1 - D_t) R_{conv,mt}^2 + \varepsilon_t \quad (4-2)$$

For equation (3) we can say that a statistically negative coefficient β_2 indicates a market wide herd behavior coming from Islamic stock market return, while a

significant negative coefficient β_4 implies that the Islamic stock market herd around the conventional one. In the same way, a statistically positive coefficient β_3 indicates a significant impact of conventional market return on the Islamic stock market returns. So, various types of herding behavior will be examined in Islamic GCC stock market during the period 2013 – 2018 next section.

4- Empirical results

4-1 Data description

This analysis is devoted to the Islamic GCC stock market. We considered the daily market prices of Dow Jones Islamic GCC stock market. Conventional Dow Jones GCC market is also considered to test the influence of conventional market on herding of the Islamic market. The stock prices were considered for the periods that cover September 15, 2013 to October 14, 2018. Descriptive statistics of the stock returns and for the CSAD series for both Islamic and conventional markets are reported in Table 1. This table showed that Islamic market index appear to be less risky than conventional market, but also emerging Islamic indexes appear to show the highest return in mean. Regarding the properties of the series, we also remark significant asymmetry, a negative skewed distribution and a leptokurtic excess for all-time series data. Also, based on Jarque-Bera test the normality hypothesis is rejected for all series. Finally, ADF test reject unit root hypothesis for all series while we identified the presence of an ARCH effect in CSAD time series for banking sector.

Table 1: Descriptive statistics

Statistics	Industrial		Banking		Insurance		Hotels, Restaurants and Foods	
	CSAD	Rmt	CSAD	Rmt	CSAD	Rmt	CSAD	Rmt
Mean	.0451	.00074	.00601	.000059	.0361	.000156	.0361	.000159
Median	.0443	-.00024	.00535	.000117	.0361	-.000146	.0361	-.000146
Std. Dev	.0125	.0111	.00337	.00390	.00453	.0051	.00453	.005118
Min	.0125	-.1275	.00269	-.0733	.0167	-.0346	.0167	-.0346
Max	.28335	.06307	.0784	.0732	.0718	.0358	.0718	.0358
Skewness	1.662	1.0011	1.302	-.107	.296	.743	.296	.7417
Kurtosis	9.861	10.4258	5.656	5.904	9.218	10.525	9.181	10.477
Jarque-Bera	1816.53	1831.73	1040.61	637.934	2057.09	3101.92	2015	3039
ADF	-30.504	-8.515	-19.726	-35.339	-24.821	-26.005	-24.705	-25.891

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

4-2 Estimation and interpretation

After the presentation of descriptive statistics, we present now the results of estimation for selected sectors. Table 2 presents the results

Table 2: Regression of CSAD_t

CSAD Islamic	Down period		Up period	
	Model (2-1)	Model (4-1)	Model (2-2)	Model (4-2)
Panel A: Banking Sector				
Constant	.00577***	.00266***	.00439***	.00405***
Rmt Islam	-.146***	-.592***	.971***	.938***
Rmt ² Islam	.114***	.533***	.578	1.011
CSAD Conv		.219***		.0372*
Rmt2 Conv		-.771*		.775**
ARCH(q)	2.525 [.087]	2.076 [.126]	.339 [.671]	.208 [.811]
R ²	.737	.749	.874	.876
Panel B: Insurance Sector				
Constant	.0387***	.0293***	.0339***	.0017***
Rmt Islam	-1.535***	-1.481***	-1.302***	-1.171***
Rmt ² Islam	.410***	.525***	.0456	.0501
CSAD Conv		.226***	-----	.444***
Rmt2 Conv		-.163***	-----	-.271***
ARCH(q)	1.66 [.183]	1.44 [.235]	-.0348 [.145]	
R ²	.537	.589	.633	.718
Panel C: Industrial Sector				
Constant	.0444***	.0247***	.0445***	.0302***
Rmt Islam	-.912***	-.915***	-.941***	-.842***
Rmt ² Islam	.287***	.381	.109***	.119***
CSAD Conv		.361****		.268***
Rmt2 Conv		-.321		-.0351***
ARCH(q)	12.59*** [.000]	11.85 [.000]	3.988** [.019]	3.088 [.0463]
R ²	.562	.597	.266	.338
Panel D: Hotels, Restaurants and Foods				
Constant	.0359***	.0358***	.0345***	.0358***
Rmt Islam	-.982***	-.985***	-.956***	-.928***
Rmt ² Islam	1.134***	.943***	.226***	.191***
CSAD Conv		.0013***		.319***
Rmt2 Conv		-.838***		-.00252
ARCH(q)	2.272** [.0462]	4.395** [.0127]		.112 [.851]
R ²	.683	.752	.498	.501

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

According to the estimates of the Islamic banking sector in the GCC countries which is presented in table 2, panel A, results show some differences between down and up market periods. We find for both periods that there is no herding behavior during up-market the estimate of β_2 for all models is significant but positive. This indicates that during the time period under investigation investors in Insurance sector for this market do not follow the performance of the market and take in account the individual characteristics of the stocks. Results obtained from models (4-1) and (4-2) are interesting and present the difference between both periods. We find negative and statistically significant β_4 at significance level 10% during down market but this estimates is positive during up market periods indicating then that the Islamic Banking sector herd around the conventional banking sector in the GCC market

during period of stress only. We find a positive and highly statistically significant β_3 for these periods which imply that the conventional banking sector return dispersions have a dominant influence on the Islamic banking sector during down market periods. This estimate is positive and significant at 10% level only during up market periods confirming then the existence of asymmetries between both periods in Islamic banking sector in the region. The same concept is obtained for the Hotels, Restaurants and Foods sector. We conclude essentially the evidence of asymmetry between down and up market periods and that, like in Islamic banking sector, Hotels, restaurants and Foods companies compliant with Shariah herd around the conventional banking sector in the GCC market during period of stress only. Concerning the Islamic insurance results and according to the estimates expressed in table 2, panel B, we notice that there is no herding behavior during up-market and down-market periods in insurance sector for the Islamic GCC market. The estimate of β_2 in model (2-1) is negative but not significant. This estimate is positive for the other models. This indicates that during the time period under investigation investors in Insurance sector for this market do not follow the performance of the market and take in account the individual characteristics of the stocks. Results obtained from model 3 are interesting. We find a negative and statistically significant β_4 indicating then that the Insurance Islamic sector herds around the conventional insurance sector in the GCC market. In addition we find a positive and highly statistically significant β_3 which imply that the insurance conventional sector return dispersions have a dominant influence on the Islamic insurance sector. The same results are obtained when we take in account the asymmetries that can occur between down market and up market periods.

We obtain opposite results for the industrial sector where we find negative and statistically significant β_4 for up market period while this coefficient is negative but not significant for down market period. Then we can conclude that Industrial Islamic sector herd around the conventional industrial sector in the GCC market during up market periods only. In addition we find a positive and highly statistically significant β_3 for both periods which imply that the insurance conventional sector return dispersions have a dominant influence on the industrial sector.

4-3 Quantile regression analysis

Quantile regression analysis is applied to take in account the extreme values characterizing financial series .As herding behaviour can be detected in the tails of the

market return distribution, we employ in our analysis the quantile regression method. For doing this, we follow the methodology developed by Chiang Li and Tan (2010). Looking for the results presented in tables 3-1 and 3-2, we can show a difference between sectors and periods. First, according to table 3-1 relative to the down market period; we notice an evidence of herding in insurance and industrial sectors while the concept is not present in banking and Hotels, restaurants and foods sectors. The estimated coefficient of the variable Rmt^2 is statistically significant and negative when we consider Quantile regression method. For up market periods presented in table 3-2, the results show the absence of herding behaviour in all sectors. For sectors, we obtain a statistically significant and positive estimated coefficient, which indicates the absence of herding behaviour in up market periods.

Table 3-1: Quantile Regression results under Up Market periods

CSAD	Banking	Insurance	Hotels, Restaurants and Foods	Industrial
Constant	.00225***	.0344***	.0357***	.0156**
Rmt Islam	-.398***	-1.007***	-.864***	-.819***
Rmt² Islam	.818***	-.216**	-.131*	-.521***
CSAD Conv	.0677**	-.00525	.00141	.406***
Rmt2 Conv	-.00928	.0308	-.514*	-.101
Pseudo R²	.167	.618	.519	.123

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

Table 3-2: Quantile Regression results under Down Market periods

CSAD	Banking	Insurance	Hotels, Restaurants and Foods	Industrial
Constant	.00361***	.0344***	.0358***	.0251***
Rmt Islam	.949***	-1.054***	-1.047***	-1.226***
Rmt² Islam	.929***	.853***	1.528***	1.584***
CSAD Conv	.0413*	.00217	-.0012	.271***
Rmt2 Conv	.561	.515	.116	-.0579**
Pseudo R²	.544	.590	.263	.371

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

5- Conclusion

In this paper, our focus is devoted to the study of herd behavior in Islamic GCC stock market. A sectoral analysis was considered and we have chosen 4 sectors: Banking Insurance, Industrial and Hotels, restaurants and foods. As we said market-wide

herding arises when investors ignore individual characteristics of stocks and follow the decision of other investors in the market. We used the approach of Chiang and Zheng (2010) and Christie and Huang (1995) to detect herding in the market. This approach is based on the assumption that herd behavior in the market is consistent with a non-linear relationship between dispersions (CSAD) and the corresponding market return which means then that the dispersions decrease or least increase at a less rate than of the market return. By considering a sectoral analysis for the Islamic GCC stock market we can notice a slight difference among sectors analyzed in this paper and there is evidence of herding among investors in the insurance and industrial sectors only for the GCC Islamic stock market during falling period only, while this concept is not present during rising periods. Also, we are interested in this study to the concept of asymmetry between up and down market periods. Our results confirm the evidence of asymmetric concept between both periods for some sectors. In fact we found that there is evidence of asymmetry in herding of conventional sector on Islamic one in Banking and Hotels, Restaurants and Foods sectors and that there is evidence of herd around the conventional sectors in down market period only for these two sectors. We obtain an opposite result for the industry sector for which we find that there is evidence of herd around the conventional industrial sector during up market period.

Suggestions for further research include the study of interdependence between Islamic sectors in GCC market to examine the influence of some sectors on other sectors in this market. This can give an explanation to the concept of why herd behavior is found in some sectors but not for other sectors. Furthermore, more sophisticated data and time period can conduct to additional test of herding in the region and can lead to important results different to the previous results.

References:

- Avery, Christopher, Zemsky, Peter (1998). Multidimensional Uncertainty and Herd Behavior in Financial Markets. *American Economic Review*, 88, pp. 724-748.
- Banerjee, A. (1992). A simple model of herd behavior. *Quarterly Journal of Economics*, 107, pp. 797-817.
- Bekaert, G., Wu, G. (2000). Asymmetric volatility and risk in equity markets. *Review of Financial Studies*, 13, pp. 1-42.
- Bikhchandani, S., and Sharma, S. (2001). Herd Behavior in Financial Markets. *IMF Staff Papers*, Vol. 47 (No. 3), pp. 279-310.

- Bikhchandi, S., Hirschleifer, D., Welch, I. (1992). A theory of fads, fashion, custom and cultural change as informational cascades. *Journal of Political Economy*, 100, 992-1026.
- Cakan, Esin and Balagyozyan, Aram., (2017). Sectoral Herding: Evidence from an Emerging Market. *Journal of Accounting and Finance*,
- Chaffai, M., and Medhioub, I. (2018). Herding behaviour in Islamic GCC stock market : A daily analysis. *International Journal of Islamic and Middle Eastern Finance and Management*. Vol. 11 Issue: 2, pp.182-193, <https://doi.org/10.1108/IMEFM-08-2017-0220>
- Chang, E.C., Cheng, J.W., Khorana, A., (2000). An examination of herd behavior in equity markets: An international perspective. *Journal of Banking and Finance* 24, pp. 1651–1679.
- Chiang, Thomas C., Zheng, D. (2010). An empirical analysis of herd behavior in global stock markets. *Journal of Banking and Finance* 34, pp. 1911–1921.
- Christie, W. G., Huang, R. D. (1995). Following the pied piper: do individual returns herd around the market? *Financial Analysts Journal*, 51, pp. 31–37.
- Devenow, A., Welch, I. (1996), Rational herding in financial economics. *European Economic Review*, 40, pp. 603-615.
- Gabbouri Dina (2018), The impact of Islamic Events on herding Behaviour in Saudi Arabia financial market, *European Financial Management Association, Annual Meeting, Milan*.
- Gavriilidis, K., Kallinterakis, V., and Tsalavoutas, I. (2016) Investor mood, herding and the Ramadan effect. *Journal of Economic Behavior and Organization*, 132(Suppl.), pp. 23-38.
- Huang, T. C., B. H. Lin, and T. H. Yang. 2015. Herd behavior and idiosyncratic volatility. *Journal of Business Research* 68 (4), pp. 763–70. doi:10.1016/j.jbusres.2014.11.025.
- Hwang, S., Salmon, M. (2004), Market stress and herding. *Journal of Empirical Finance*, 11(4), pp. 585-616.
- Kaminsky, G.L., Schmukler, S.L. (1999). What triggers the market? *Chronicle of the Asian crisis*. Board of Governors of the Federal Reserve System, pp. 3-40.
- Kern, S. (2012). GCC Financial Markets Long-Term Prospects for Finance in the Gulf Region. *Current Issues, Global Financial Markets*, 14 November. Frankfurt: Deutsche Bank.
- Lakonishok, J., Shleifer, A., and Vishny, R. W. (1992). The impact of institutional trading on stock prices. *Journal of Financial Economics*, 31, pp. 13-43.
- Miniaoui, H., Syani, H. & Chaibi, A. (2015), 'The Impact of financial crisis on Islamic and conventional indices of the GCC countries', *Journal of Applied Business Research*, vol. 31, no. 2, pp. 357-370.
- Nofsinger, J., Sias, R., (1999). Herding and feedback trading by institutional and individual investors. *Journal of Finance* 54, pp. 2263–2295.
- Scharfstein D.S., Stein, J.C. (1990). Herd behavior and investment. *American Economic Review* 80, pp. 465-479.
- Sherif, M. (2016), "Ethical Dow Jones indexes and investment performance: international evidence", *Investment Management and Financial Innovations*, Volume 13, Issue 2, pp. 206-225.
- Tan, L., Chiang, T.C., Mason, J. and Nelling, E., (2008). Herding behavior in Chinese stock markets: an examination of A and B shares. *Pacific-Basin Finance Journal* 16, pp. 61–77.
- Yousaf et al. (2018), Herding behavior in Ramadan and financial crises: the case of the Pakistani stock market, *Financial Innovation* 4:16, <https://doi.org/10.1186/s40854-018-0098-9>.

