



# The composition and characteristics of stockholders in GCC markets, and their response to the released information: an application to credit rating agencies' and Imams' announcements

Turki Alshammari

## ► To cite this version:

Turki Alshammari. The composition and characteristics of stockholders in GCC markets, and their response to the released information: an application to credit rating agencies' and Imams' announcements. Business administration. Université de Lorraine, 2020. English. NNT: 2020LORR0098 . tel-03007537

**HAL Id: tel-03007537**

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## **SOUTENANCE DE THÈSE**

Pour l'obtention du titre de

**DOCTEUR de L'UNIVERSITÉ DE LORRAINE**

En Science de Gestion - Finance

Laboratoire : Centre Européen de Recherche en Economie Financière et en Gestion des Entreprises  
(CEREFIGE)

Présenté par

**Turki ALSHAMMARI**

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### **English title**

**The composition and characteristics of stockholders in GCC markets, and their response to the released information:**

*An application to credit rating agencies' and Imams' announcements*

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### **Titre en français**

**La composition et les caractéristiques de l'actionnariat dans les marchés du CCG, et leur réponse aux informations transmises :**

*Une application aux annonces des agences de notation et des Imams*

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## Abstract

We examine the possible influence of the domination of individual investors on stock markets' behaviour in Gulf Cooperation Council (GCC) countries, with respect to the credit rating agencies' and Imams' "Islamic scholars" announcements. We assume that the English language used by the international Credit Rating Agencies (CRAs) to publish their news may fail to reduce the asymmetric information in GCC markets, due to the low level of English knowledge amongst the individual investors. We also assume that Sharia law (Islamic law) is an essential characteristic that is likely to affect the formulation of investment decisions in GCC countries. Hence, we suggest, in Saudi Arabia, the Imams' announcements (the announcements that classify the listed firms in Saudi Stock Exchange to Sharia and non-Sharia compliant firms) are likely to affect the stock prices and the firms' financial health. Arguing that the religious status of a firm may control the market reaction to CRAs' decisions, as Sharia legitimacy might come first compared to the default risk.

To examine our assumptions, we firstly apply a questionnaire to investigate the behaviour of individual investors in the Saudi market. We tend to investigate how the individual investors reach the financial information concerning the stock market, and how these individuals treat the foreign news (announced in the English language). We find that the majority of individual investors tend to rely only on the Arabic sources and pay attention to the translated news, whereas following the English news directly from the source is appeared to be only amongst the individual investors who understand the English language. Regarding the Imams' announcements, we also aim in our questionnaire to find out whether the religion factor plays a role in their investment' decisions, and to which extent the religious status of a firm can affect the individual investors' desire to hold and purchase its securities. This investigation will allow us to examine whether the religion factor has the power to impact the firms' financial health in high religious markets, which also allows us to suggest taking into consideration this factor when assessing firms for a credit rating in high religious areas. Based on the survey, the findings indicate an essential role played by the religion amongst the individual investors, where the religion factor is likely to affect the market as much as other financial indicators could do.

Secondly, we apply an event study methodology and find positive (negative) abnormal returns following the positive (negative) credit rating events, indicating that the market participants

see the positive (negative) rating events as good (bad) news. Interestingly, the stock reaction on markets characterised with lower individual investors' domination is found to occur faster than on the markets characterised with higher individual investors' domination. We assume the language used by the CRAs to publish their decisions is likely to be one cause of the lag, due to the low level of English knowledge amongst the individual investors. Then, we use the raw data of a previous Meta-Analysis study with respect to the CRAs' announcements, to examine the difference in times of reactions in markets located in Anglophone countries and non-Anglophone countries. The results provide insights about a faster response in Anglophone countries than non-Anglophone countries. Furthermore, the event study applied on the Imams' announcements in the Saudi market proves the influence of the religion factor on the stock prices, as the market immediately reacts positively (negatively) to the Imams' announcements, positively to upgrades (to Sharia-compliant firms) and negatively to downgrades (to non-Sharia compliant firms).

Therefore, we suggest that international CRAs should 1- choose the proper language to deliver their opinions (not only in English), and 2- take into consideration the religion factor when assessing firms in high religious areas, especially the ones characterized by a high proportion of individual investors.

**Keywords:** Rating agencies, religious effects, Imams' announcements, event study, questionnaire, stock returns, language effect, individual domination, GCC countries, Islamic finance, investors' behaviour.

**JLE classifications : G11, G14, G24, G41, Z12, Z13, C83**

## Résumé

Nous examinons l'influence possible de la présence dominante des investisseurs individuels sur le comportement des marchés boursiers dans les pays du Conseil de Coopération du Golfe (CCG), en réaction aux annonces provenant des agences de notation de crédit et de celles émanant des Imams (érudits islamiques). Nous faisons notamment l'hypothèse que la langue anglaise utilisée par les agences internationales de notation de crédit (CRAs) pour publier leurs décisions ne réduirait qu'imparfaitement l'asymétrie d'information présente sur les marchés du CCG, en raison du faible niveau de connaissance de l'anglais par les investisseurs individuels. Nous supposons également que l'existence de la Charia (loi islamique) est une caractéristique essentielle, susceptible d'influer sur les décisions des investisseurs dans les pays du CCG. Par conséquent, nous suggérons qu'en Arabie saoudite, les annonces des Imams (qui classent les entreprises cotées au marché saoudien « Tadawul » comme conformes à la charia, ou non, sont susceptibles d'affecter le cours des actions et la santé financière des entreprises. Nous développons d'ailleurs une argumentation selon laquelle « le statut religieux » conféré à une entreprise par les Imams pourrait influencer la réaction du marché financier aux décisions de « rating » prises par les agences de notation, car la Charia pourrait être perçue par les investisseurs comme ayant une légitimité première, relativement à la perception du risque de défaut.

Pour examiner nos hypothèses, nous construisons puis administrons « par internet » une enquête sous forme questionnaire, afin d'étudier le comportement des investisseurs individuels sur le marché boursier saoudien. Nous voulons notamment analyser comment les investisseurs individuels accèdent et maîtrisent l'information financière concernant le marché boursier, et comment ils interprètent les informations « étrangères » (annoncées en langue anglaise). Nous constatons ainsi que la majorité de ces investisseurs ont communément l'habitude de se fier uniquement aux sources arabes, et à prêter attention aux informations qu'une fois celles-ci traduites, sachant que seule une partie d'entre eux comprend la langue anglaise et semble suivre les informations « à la source ». Pour ce qui concerne les annonces des Imams, nous cherchons également à savoir, à travers ce questionnaire, si le facteur religieux joue un rôle dans les décisions d'investissement sur le marché boursier, et notamment dans quelle mesure le « statut religieux » conféré à une entreprise peut influer sur le souhait des investisseurs individuels de détenir, acheter ou vendre des titres. En outre,

cette enquête justifiera notre postulat selon lequel le « facteur religieux » peut également impacter à plus long terme la santé financière des entreprises, dans les pays où la religion est éminemment importante. Ce qui justifierait alors notre recommandation aux agences de notation de mieux prendre en compte le « facteur religieux » dans leur processus de notation. Les résultats tirés de ce questionnaire confirment d'ailleurs le rôle essentiel joué par la religion dans les décisions d'investissements, et par là-même le comportement du marché financier, au moins autant que d'autres indicateurs financiers pourraient le faire.

Dans un second temps, nous appliquons une méthodologie d'étude d'événements appropriée aux caractéristiques de nos séries de données, qui nous permet de mettre en évidence des rendements anormaux positifs (négatifs) associés à des événements de notation positifs (négatifs), confirmant par là-même que les participants du marché les voient respectivement comme de bonnes (mauvaises) nouvelles. Nous postulons que le langage utilisé par les agences de notation pour publier leurs décisions peut expliquer le délai de réaction constaté, en raison du faible niveau de connaissance de l'anglais des investisseurs individuels. Pour étayer ce postulat, nous utilisons les données d'une méta-analyse précédemment réalisée, en ce qui concerne les annonces des agences de notation, pour examiner le temps de réaction du marché boursier aux décisions des agences de rating dans les pays anglophones et non anglophones. Les résultats de notre analyse confirment une réponse plus rapide et plus brève dans les pays anglophones que dans les pays non anglophones. En outre, l'étude d'événement appliquée aux annonces des Imams sur le marché saoudien prouve l'influence du facteur religieux sur les prix des actions, car le marché boursier réagit immédiatement à ces annonces, positivement à leurs opinions positives (entreprises devenant conformes à la charia) et négativement à leurs opinions négatives (entreprises devenues non conformes à la charia).

Par conséquent, nous suggérons aux agences de notation internationales de communiquer leurs annonces dans la langue appropriée (et pas seulement en anglais), mais également de prendre en considération le facteur religieux dans l'évaluation des entreprises dans les zones où la religion est prépondérante, en particulier si leurs marchés financiers sont caractérisés par une forte proportion d'investisseurs individuels.

### Acknowledgement

At first, I would like to express my sincere and deepest gratitude to my director “my mentor” Prof. **Jean-Noël ORY** for his unlimited support, guidance, and advises as well as his patience, motivation, enthusiasm, and precious feedbacks and knowledge. I am also grateful for his advice and encouragement as a director, a colleague, and a friend during my entire higher education in Nancy.

I would like to thank the members of the jury for accepting to participate in my PhD defence.

Also, I would like to express my great thanks to Prof. Jérôme HUBLER for his important contribution and suggestions during my PhD thesis. I also thank him as a friend for supporting me during my PhD.

Many thanks to Christine LOUARGANT and Patrice LAROCHE for allowing me to use the raw data of their work that was done with Jean-Noël ORY and Jérôme HUBLER. I also appreciate the suggestions that I received from Vincent FROMENTIN and Veasna KHIM.

Thanks to the laboratory CEREFIGE for giving me access to what I need during my PhD, as well as IAE Nancy/Metz and ICN Nancy. I also wish to thank the Doctoral School ED-SJPEG and the University of Lorraine for the PhD program and great support for the higher education.

I would also like to extend my gratitude to Laurence CONTOIS and Vincent BRAUN for their significant help and assistance at the laboratory CEREFIGE, as well as Sandrine CLAUDEL-CECCHI at the ED-SJPEG. I would also like to acknowledge the assistance in statistics that I received from Komivi AFAWUBO.

Thanks should go also to Jonathan LABBE, Junmei Qi, Sarah Maire, Rui Guo, Coralie LALLEMAND, Pauline COLIN, Frederic BONIN, and all my friends and colleges at the laboratory CEREFIGE for their help and support.

Special gratitude and appreciation to the greatest person on earth “my mother” (**Hessa ALKATHREEE**) for her massive encouragement, tremendous inspiration, and unlimited support to complete this thesis and my entire higher education.

Sincere appreciation and many thanks to my brothers Mohammed ALSHAMMARI and Marshad ALSHAMMARI, as well as my uncle Khaled ALKATHEREE and all my family for their help, support and encouragement.

Many thanks should also go to Fahad ALNJIMAN, Antonio OLMEDOZA, Chahrazed TOUAOBOA, Abdulaziz ALFALLAJ, Mouath ALSHOAIBI, Hossam ALSHAABI, Khalied ALMATAR, Osama MADKHALI, Mohsen Aldhofairi, Omar Al Kandari, and all my friends for their support during my studies in Nancy.

Finally, I would like to express my gratitude and appreciation to the **King Abdullah Scholarships Program (KASP)** for the great opportunity (the PhD grant and my entire higher education). I would also like to thank the Saudi Arabian Cultural Bureau in Paris for the support and supervision, especially Dr. Jamal ALSHEIBANI and Said MAZLOUM.

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### **Useful information:**

- Abbreviations:
  1. CRAs = Credit Rating Agencies
  2. GCC countries = Gulf cooperation council countries (Saudi Arabia, United Arab Emirates, Qatar, Oman, Kuwait, and Bahrain)
  3. AARs = Average Abnormal Returns
  4. CARs = Cumulative Abnormal Returns
  5. CAARs = Cumulative Average Abnormal Returns
- The pegged exchange rates for the GCC countries with US\$ as in 31<sup>st</sup> December 2015:

1 US\$= 3.75 SR, 3.67 AED, 3.64 QR, 0.39 OMR, 0.38 BHD, 0.30 KD

SR = Saudi Riyal

AED = Arab Emirates Dirham

QR= Qatari Riyal

OMR = Omani Riyal

BHD = Bahrain Dirham

KD = Kuwaiti Dinar



## Chapter 1: introduction

There are previous studies that have been conducted in the Gulf Cooperation Council (GCC) countries (i.e. Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Oman, and Bahrain) concerning the equity markets such as the effects of oil prices, the co-movement between oil and stock markets, the influence of financial crises, the efficiency of the markets, the spill-over effects, Sukuk and Sharia stocks, etc. However, the domination of individual investors in GCC equity markets and its possible impact on the stock market behaviour concerning the Credit Rating Agencies' (CRAs') announcements and the religious decisions by the Imams (Islamic scholars) have not been questioned yet.

This research will extensively investigate the stock markets' reaction in GCC countries towards the announcements of Credit Rating Agencies (CRAs) and Imams. The interest behind examining the response of the equity markets in GCC countries is due to some extraordinary characteristics, such as the domination of individual investors in its incidence (mostly their religiosity and English knowledge), and the narrow and small bonds/Sukuk markets (which is contradictory with the increase of the demand of CRAs' services in these markets).

We investigate the role played by the CRAs in GCC countries and why there is an increase in demand for the rating services even though the secondary market of bonds and Sukuk is too narrow. In addition, there are also issuers who have asked to be rated despite no-issuance of bonds/Sukuk. We assume that the mimicry behaviour between corporations may explain the demand for CRAs' services. And regarding the domination of individual investors in GCC equity markets, this characteristic distinguishes these markets from any other mature and non-mature markets around the world. Usually, 90% of the daily transactions in stocks are addressed by institutional investors in the large OECD bourses (Samba Group, 2009). In contrast, in GCC equity markets, individual investors dominate the daily transactions. The proportion of the daily transactions that are placed by the individual investors in some of the GCC stock markets is around 88%, while the rest of the daily transactions are addressed by the institutional investors. The behaviour of individual investors is likely to affect the behaviour of the GCC equity markets towards the CRAs' announcements and Imams'

announcements due to the influence of religion and the educational level. Hence, we set two main assumptions as follow:

Firstly, we assume that the stock market reaction towards the CRAs' announcements in GCC markets will react differently than other mature and non-mature markets. We argue that in some of the GCC markets (the one characterized with a large proportion of individual investors) the stock prices will experience a delay to react to the CRAs' announcements. This delay is expected to arise from the difficulties to receive, absorb, and understand the English language that is used to diffuse the CRAs' announcements. We assume that the majority of the individual investors in these countries may not speak very well the English language to interpret the news directly from the source. Hence, the majority of these investors are likely to be in need to wait for the news to be translated into the mother language (the Arabic), leading the sophisticated investors (who understand the language) to benefit first from the announced news. Thus, we suggest that the CRAs may fail to reduce the information asymmetry in this type of markets.

Secondly, we focus on the religion factor and how it may affect the stock market behaviour through its influence on the investors' behaviour, especially the individuals. We assume that religion is likely to play an essential role in the Saudi market. The religion factor may have an impact on investment decisions amongst the religious investors, possibly as much as the financial indicators could have. The stock prices are assumed to react to the Imams' announcements concerning the "upgrades" from non-Sharia compliant firms to Sharia-compliant firms, and the "downgrades" from Sharia-compliant firms to non-Sharia compliant firms. We also argue that religious investors may tend to follow the Imams' decisions remarkably and may leave the market if there are no more Sharia-compliant firms in the market. Hence, we suggest that, in religious markets, the religion factor should be taken into consideration when the credit rating agencies tend to assign a rating to a firm, due to the assumption that the religion factor may affect the firms' financial health.

In line with the assumptions listed above, our research study aims to answer the following questions:

1. How may the domination of individual investors in GCC equity markets affect the market reaction to CRAs' announcements?

2. How are the Imams' announcements going to affect the stock prices for the re-classified firms?
3. Which would be the dominant factor over the individual investors' decisions: the default risk (CRAs' announcements) or the religion (the Imams' announcements)?
4. In such markets characterised with a high proportion of religious individual investors, should credit rating agencies take into consideration the religion factor in the rating determinants?

To be able to answer our research questions accurately, we are going to use two principal methodologies. First, we applied a questionnaire and diffused it amongst the individual investors in Saudi Arabia.<sup>1</sup> The purpose is to examine the reaction of the (high religious investors and the less religious investors) and (who can speak very well the English language and who do not speak English) to several scenarios and situations. Identifying these groups allows us to comprehend the behaviour of each group regarding the religious announcements and the announcements of CRAs, and how each group may react. Besides, the survey will provide an insight to which type of announcements (CRAs or Imams) can have a greater significant influence on the individual investors. The questionnaire can provide insights into the investors' behaviour and to initially confirm a part of our hypotheses, as the survey provides evidence of the possible influence of language and religion. Then we move to the second methodology to examine the stock responses.

Secondly, we apply an event study methodology to examine the stock prices reaction to the CRAs' and Imams' announcements. The stock prices reaction to the CRAs' decisions is studied in all GCC equity markets to find out how the market consider this type of news. Moreover, we examine the reaction time in each market, as we assume that the markets with a large proportion of individual investors are likely to have a delay (e.g. several days) to react, compared to the markets with less proportion of individual investors. In addition, we use the raw data of a previous Meta-Analysis study in order to examine the reaction time in stock markets to CRAs' announcements in Anglophone and non-Anglophone countries. In respect of the Imams' announcements, we have run the event study to find out the stock prices

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<sup>1</sup> The survey was diffused only amongst the individual investors in Saudi Arabia, see [chapter \(5\) - section \(1\)](#) for further information.

reaction and how fast the market reacts. Then, with a longer perspective compared to an event study, we also examine the evolution of some financial indicators in order to find out whether some of them are affected by the Imams' decisions in the long term, to see whether or not that they may influence the financial health of the firms. If so, it may justify why the CRAs should take into consideration the religion factor when they operate in such a religious environment.

For the first part of our assumption concerning the market behaviour towards the CRAs' announcements, our findings show that the GCC equity markets react positively (negatively) to the positive (negative) rating events announced by CRAs, as the markets consider the announcements as good (bad) news. Interestingly, we find that the stock prices tend to react faster in the markets characterized by a low proportion of individual investors compared to the large ones. We also find that the individual investors who do not speak English tend to rely on the translated news into the Arabic while the group who speaks English very well tends to follow the news directly from the foreign source.

Concerning the second assumption about the influence of religion, our results provide evidence of an immediate stock reaction in the Saudi stock market to the Imams' announcements, positively to the upgrades and negatively to the downgrades. We also find that high religious investors tend to vastly follow the imams' announcements and seek for their decisions before investing. The findings also demonstrate that the high religious investors may dispose of a profitable stock as soon as it is classified non-Sharia compliant. Moreover, high religious investors may also leave the equity market and change the investment field if there are no more Sharia-compliant firms.

At the end of our work, we will be able to conclude how the domination of individual investors in GCC countries is a critical feature to affect the behaviour of these stock markets and how the educational background of these of individual investors regarding the English language can affect their reaction to the CRAs' announcements. We will also demonstrate the influence power of the religion factor and how it can have an impact on the firms' risk and the market's behaviour.

For the upcoming sections in this chapter, we are going to present an overview of the economy in GCC countries as well as snapshots of the trading activity in the GCC financial

markets. Then we present an overview of the domination of individual investors in GCC equity markets. Finally, we exhibit the structure of this research for the upcoming chapters.

## 1- An overview of the economy of GCC countries

In May 1981 six countries, namely: Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Oman, and Bahrain reached a cooperative framework and agreed to establish the Gulf Cooperation Council (GCC), which aims to achieve coordination, integration and interdependence among them in all fields (GCC-SG, 2020). The GCC countries are classified as developing economies, whereas according to per capita Gross National Income (GNI), these economies are ranked as high-income countries (United Nations, 2019). Based on Gross Domestic Product (GDP) in 2018 of the World Bank (2020a) indicator, Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Oman, and Bahrain were ranked 18th, 28th, 52th, 56th, 68th, and 97th, respectively. According to this indicator, Saudi Arabia is the only Arabic country to be part of the G-20 major economies. In respect to the GNI per capita PPP in a current international dollar, the ranks become higher as Qatar, Kuwait, United Arab Emirates, Saudi Arabia, Bahrain, and Oman were ranked in 2018 the 1<sup>st</sup>, 4<sup>th</sup>, 6<sup>th</sup>, 15<sup>th</sup>, 26<sup>th</sup>, 29<sup>th</sup> in the world respectively (World Bank, 2020b).

A report by Ovaska and Fitch (2015) in Wall Street Journal illustrates the market capitalization of the GCC stock markets and compares the largest stock market in the region and northern Africa (the Saudi Stock Exchange “Tadawul”) with the global markets ([table 1](#)). Based on the market capitalization of listed domestic companies in US\$, Saudi Arabia, United Arab Emirates, Qatar, Bahrain, and Oman were ranked in 2018 as the 18<sup>th</sup>, 26<sup>th</sup>, 28<sup>th</sup>, 49<sup>th</sup>, and 51<sup>st</sup>, respectively (World Bank, 2020c).

*Table 1:* the market capitalization of stock markets in US dollar in mid-2015

Rank	Stock exchange	Country	Market capitalization	Stock exchange	Country	Market capitalization
1	Tadawul	Saudi Arabia	\$569.87 billion	NYSE	U.S.	\$19,686.94 billion
2	Qatar SE	Qatar	\$176.53 billion	Nasdaq OMX	U.S.	\$7,378.6 billion
3	Abu Dhabi SE	U.A.E.	\$114.04 billion	London SE	U.K.	\$6,796.75 billion
4	Dubai Financial Market	U.A.E.	\$96.88 billion	Shanghai SE	China	\$5,903.86 billion
5	Kuwait SE	Kuwait	\$96.49 billion	Japan Exchange Group	Japan	\$5,004.76 billion
				Tadawul	Saudi Arabia	\$569.87 billion

Source: Ovaska and Fitch (2015)

## 2- The trading activity in GCC markets

It is said that the average daily amount of traded shares and the number of traded shares can provide an idea of the market liquidity and visibility (Elayan et al., 2003; James and Edmister, 1983). In **table (2)** below, we present the market capitalisation, trading volume and the daily average value of the traded shares of each of the stock markets in the GCC area. By looking at the average amount traded per day and the number of shares traded, we can assume that liquidity in Bahrain Bourse (BHB) is relatively low compared to the other GCC markets, suggesting a probable existence of liquidity premium in this market. Whereas the contrary case is presented in Tadawul All Share Index (TASI), Dubai Financial Market (DFM), Kuwait Stock Exchange (KSE), Abu Dhabi Stock Exchange (ADX), and Qatar Stock Exchange (QE) with high trading activity, suggesting higher liquidity in these markets. Muscat Stock Market (MSM) is placed in between.

*Table 2: Market size information (year-end 2015): \**

Stock market	Number of listed companies	Market capitalisation (\$US millions)	Daily Average value of traded shares (\$US millions)	Number of traded shares (million)
Saudi Arabia	171	421,093.3	1,764.3	65,995.9
Qatar	44	151,971.5	102.9	2,302.4
Abu Dhabi	69	118,900.6	61.2	25,098.1
Kuwait	203	87,931.7	53.1	43,193.2
Dubai	61	83,805.8	164.1	98,231.1
Oman	116	36.164.3**	14.3	5,642.0
Bahrain	46	19,079.8	1.2	515.6

\*= This table was applied by (Elayan et al., 2003, pp.341-342) to compare the NZSE with other markets.

\*\*= at the annual report of Muscat Securities Market, the value of the bonds was included to the market capitalization, whereas the other markets counted only the value of shares at the market. Therefore, the market capitalization of MSM as announced in the report with counting the value of the bonds is 41,025.4\$US

**Source:** (ADX, 2016a; Bahrain Bourse, 2015a; Boursa Kuwait, 2015; Dubai Financial Market, 2015; Muscat Securities Market, 2016; Qatar Stock Exchange, 2015a; Tadawul, 2015)

In a larger image, regarding the average daily amount of traded shares and the number of traded shares, the GCC markets are considered relatively as small markets compared to the

large OECD bourses.<sup>2</sup> Small markets are likely to be characterised by lower liquidity, lower market visibility, and by far a smaller number of domestic and foreign investment analysts, unlike in large markets such as in UK and US (Elayan et al., 2003). There is an inverse relationship between liquidity and the degree of asymmetric information in a market. Hence, and as it has been argued, small markets are likely to need the credit rating agencies' services to provide information and/or certification, as reputable auditors (Wakeman, 1981).<sup>3</sup> In addition, Brookfield and Ormrod (2000) say that the information cost in debt markets would be higher when rating agencies and similar information intermediaries are absent.

Regarding the debt market, the majority of corporations seek the service of CRAs even though they do not issue Sukuk/bonds, and the debt market inside the GCC countries are clearly narrow with a low level of liquidity, and obviously a poor number of transactions ([table 3](#) below). It can be seen that despite the secondary debt market is narrow and not liquid in these countries, the borrowers issue quite important programs on the primary bond market with a remarkable large size in the amount.

*Table 3: the number of listed and value of traded bonds & Sukuk in GCC securities markets during the year 2016 (corporate bonds only).*

Securities Market	No. of listed Bonds & Sukuk	No. of issuers (issue program)	Issue size in US\$	Value traded in US\$	No. of Transactions (trades)
Tadawul	913,890	6	7,517,333,333	119,986,840	4
Abu Dhabi securities Exchange	N/A	2	N/A	1,216,840	2
Muscat securities Exchange	91,965,953	11	569,988,005	33,362,018	775
Qatar Stock Exchange *	303,785	12	N/A	834,574,176	23
Bahrain Bourse	86,107,511	2	326,572,397	N/A	N/A
Boursa Kuwait	N/A	N/A	N/A	N/A	N/A

Source: Bloomberg and (ADX, 2017; Bahrain Bourse, 2016; Boursa Kuwait, 2014; Muscat Securities Market, 2017; Qatar Stock Exchange, 2016; Tadawul, 2016). \* = The data does not clearly distinguish between corporate and government bonds.

Besides the financing on the bond market, it is also possible to assume that these firms are likely to seek for announcing their creditworthiness to achieve a lower interest rate in case of borrowing money as they are assessed by international agencies, especially if they

<sup>2</sup> OECD = the Organisation for Economic Co-operation and Development.

<sup>3</sup> As cited by authors such as (Elayan et al., 2003).

have an investment-grade rating. Moreover, the firms that are rated on the stock markets may also find a utility in being rated for their creditworthiness (quality of signature), even if they do not plan to borrow money on the bond market. Being rated may also be a signal addressed to the stock market investors, especially foreign investors.

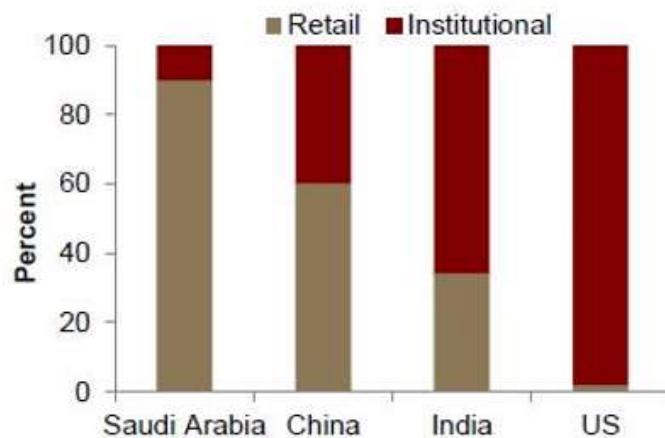
### 3- Overview of the “domination” of individual investors in GCC countries

One of the main characteristics of the GCC markets is the large proportion of individual investors in the stock market, which differentiates them from the other mature and non-mature markets either in developed or developing countries. As far to our knowledge, there is not yet any study that has been dedicated to countries and markets where the proportion of individual investors is as high as it is in GCC markets, except maybe for the Chinese market when the proportion of retail investors was about 90% regarding the traded volume, in 2003 (Jadwa Investment, 2014).

Until recently, the GCC markets have not been in favour of institutional investors due to several reasons, for example, the restrictions of entering the market for foreign investments, a shortage of available data, a lack of corporate transparency, lax in information disclosure and reporting requirements, lack of market makers as well as the underwriters, the prohibition of short-selling, etc. (Al-Hoymayn, 2013; IMF, 2005; Onour, 2010; Rahman et al., 2015; Ulussever and Demirer, 2017). Therefore, it may justify why retail investors dominate the daily transactions. With respect to the foreign ownership in the market, it is argued that the existence of foreign investors in a stock market affects the efficiency, which encourages to reduce the information asymmetry, by demanding better information disclosure, accounting, and auditing (Choi et al., 2010, 2013; Li Jiang and Jeong-Bon Kim, 2004).

The stock market in Saudi Arabia is dominated by local individuals as reported by Samba bank, who reports that around 88% of the daily transactions were performed by the individual investors in November 2009, whereas, usually 90% of transactions are addressed by institutional investors in the large OECD bourses (Samba Group, 2009). At late of 2013, 2% of the traded volumes in the US market were placed by individuals, around 35% in India and approximately 60% in China, while in the Saudi market around 90% of the traded volumes were accounted for individual investors ([figure 1](#)) (Jadwa Investment, 2014).

*Figure 1: The traded volumes between retail and institutional investors*



Source: Jadwa Investment (2014)

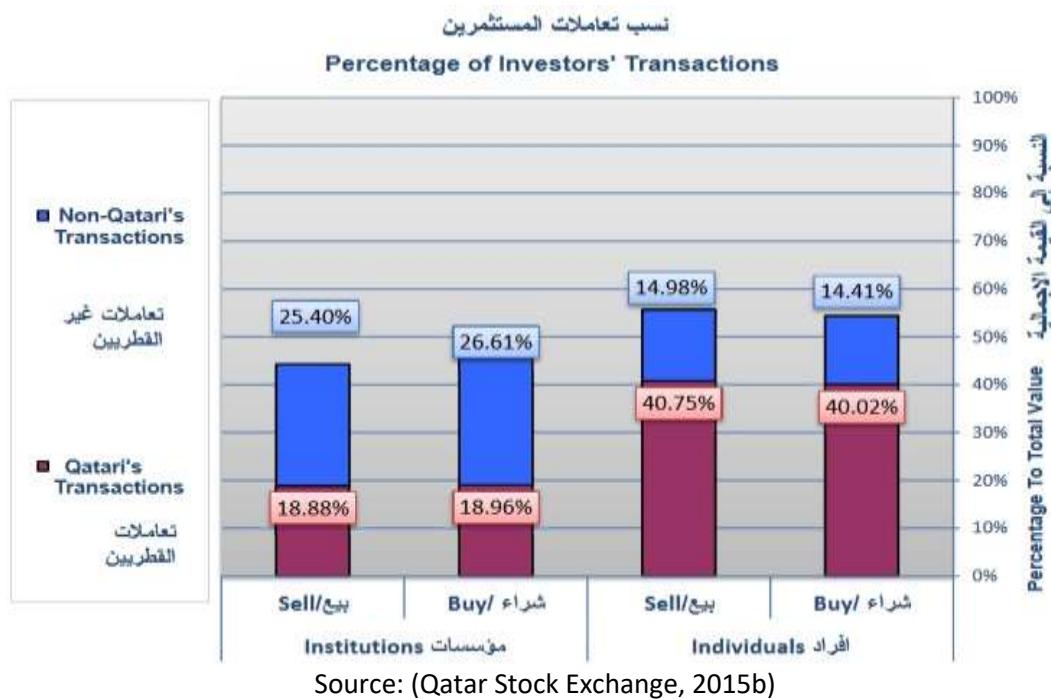
The Emirates' market experiences a slightly similar state of individuals' proportion. The proportion of the total value of stocks that were traded by retail investors was approximately 73.5% and 52% during 2015 in Dubai Financial Market (DFM) and Abu Dhabi Securities Exchange (ADX) respectively, and the total traded volume by individual investors in ADX during 2015 was about 71% (ADX, 2016b; Dubai Financial Market, 2016). Some experts in the local market explain the large proportion of individual investors by the weak role of institutional investors, who do not tend to be daily active in the market (Abdulnabi, 2011; Alswaify, 2015).

On the contrary, the importance of individual investors is a bit lower than the previous ones in the case of Qatar, Kuwait, Bahrain, and Oman equity markets with about 55%, 49%, 43% and 34% respectively, of the daily transactions accounted for individual investors during the year 2015 for Qatar and 2014 for the rest (Bahrain Bourse, 2015b; Kuwait Stock Exchange, 2015; Muscat Securities Market, 2015; Qatar Stock Exchange, 2015b).<sup>4</sup> For Qatar Stock Exchange, it can be observed in 2015 ([figure 2](#)) that the percentage of transactions accounted for foreign individual investors is about one-third of the transaction done by individuals, and around half of the transactions accounted for institutional investors is done by foreign institutions.

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<sup>4</sup> These percentages are accounted for the total individuals' transactions in the market that are traded by local GCC citizens and foreigners. However, the foreign individuals' transactions in these markets are less than 2% in each of them.

Figure 2: percentage of shares trading by the investors' type during 2015 in the Qatar Stock Exchange



#### 4- A snapshot of Credit Rating Agencies (CRAs)

In this section, we briefly shed light on the credit rating agencies' role on the financial markets, by reporting the authors' opinions about the possibility for credit rating agencies to convey valuable information to the market, or not.<sup>5</sup> Then we present the historical background of the three major international credit rating agencies in the region, as well as the local rating agencies.

- **Overview**

A credit rating is an assessment of the creditworthiness of a borrower, in order to predict whether the borrower is able to repay the debt or not. A credit rating agency (CRA) is an independent agency that assesses the creditworthiness of entities and assigns a credit rating to their debt issues. Credit Rating Agencies (CRAs) could provide their assessment of the creditworthiness (in a structure of ratings) to whom asking for their services (the issuers), e.g. government and corporations, to rate their debt obligations, debt instruments etc., or to rate

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<sup>5</sup> The theoretical part of credit rating agencies (the impact and role of CRAs) is going to be presented in details chapter (2).

the issuer's creditworthiness as an entity. Some CRAs are generally supposed to obtain non-public information about the entity as a part of the assessment process.

The information provided by Credit Rating Agencies (CRAs) has been the subject of several debates amongst researchers and authors. The opinion about how good the creditworthiness of a financial instrument, which is given by a credit rating agency, plays an essential role in the financial markets. When an announcement is provided by a credit rating agency, investors are likely to benefit from having a closer picture of the default level of securities, as well as firms, by having confidential inside information conveying to investors without revealing other than this information to competitors (Kliger and Sarig, 2000). It is said that Standard & Poor's (S&P's), Moody's, and Fitch are the largest three global credit rating agencies (Deb et al., 2011). According to a report in Bloomberg, at the end of 2015 S&P's was holding 49% of the ratings' service around the world, and then comes Moody's with 34%, followed by Fitch with 13% (Verma, 2017).

Prices should fully reflect all available information as required by the financial market efficiency theory. However, the informational content of credit rating agencies' decisions has been debated amongst authors. Firstly, there are who argued saying that credit rating announcements do not have an impact on the market because they convey public information which is already known by the investors, which leads only to lower the information cost but not provide new information (Wakeman, 1990)<sup>6</sup>. Pinches and Singleton (1978) concluded their work by confirming that bond ratings do not convey new information to the market. Also, Weinstein (1977) found no evidence of bond reaction to credit rating announcements. Accordingly, it can be said that if the capital market is efficient in the semi-strong form, and assuming that CRAs possess only public information, announcements provided by CRAs should not affect security prices.

On the other hand, authors such as (Barron et al., 1997; Cowan, 1991; Ederington et al., 1987) suggest that rating agencies provide additional information to the market; also Goh and Ederington (1993) believe that credit rating agencies can possess more information than the one that is available to investors, as this inside information is used to reach a rating decision. In addition, it is found that bond raters have an expert judgment in forecasting firms' financial

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<sup>6</sup> As cited by researchers such as (Sehgal and Mathur, 2013)

status (Danos et al., 1984). It is also suggested that credit rating agencies might play a useful role in summing up and acquiring non-public information on banks; however, this appears to be relatively limited in Europe regarding the monitoring of banks' risk through bondholders (Gropp and Richards, 2001). Consequently, this type of information is most likely to have an effect on markets.

Mattarocci (2014, p.30) said that "*Issuer and issue ratings can significantly affect market demand and thus the cost of capital for the evaluated firm*". Byoun and Shin (2012) tested the informational content of the solicited and unsolicited credit ratings for Japanese firms, and they said that "*The market appears to infer firm quality from unsolicited ratings due to its signaling nature (i.e., good firms signal with solicited ratings while bad firms do not signal and face unsolicited ratings) ...*". A firm can reduce the capital costs by having credit rating agencies certifying its value, as these agencies reduce the information asymmetry in the market (Millon and Thakor, 1985; Partnoy, 1999; Ramakrishnan and Thakor, 1984). It is also suggested that being rated by two agencies is found to provide extra information to the market about the quality of the security, leading to reduce the cost of borrowing (Hsueh and Kidwell, 1988). Exaggerating the credit risk of a firm by a credit rating agency is likely to increase the borrowing cost of this firm; therefore, issuers could acquire the desirable interest rate for their bonds by using multiple ratings, as multiple ratings may augment the likelihood of a true assessment (Baker and Mansi, 2002). Therefore, issuers with a high level of credit rating benefit of low-interest rates due to the lower level of risk compared to issuers with a low level of credit rating. Thus, one of the reasons for an issuer to ask for a credit rating is to "promote" its low level of risk in order to gain lower interest rates when borrowing money.

- [\*\*Credit rating agencies' history in GCC countries\*\*](#)

**Table (4) below** shows that the first credit rating assigns for the private sector in Gulf Cooperation Council was provided by S&P's in January 1993, for a corporation bank in Bahrain. This first assign was followed by Moody's in February 1994 for an insurance company located in Oman, and then Fitch in January 1996 for a bank in Kuwait. Since then, 137 of the listed companies in GCC stock markets have been rated by (at least one of) the three major credit rating agencies.

*Table 4: First rating assigns by the largest three Credit Rating Agencies, in the benefit of the private sector issuers in GCC Markets*

CRAs	Moody's	S&P's	Fitch
<b>Saudi Arabia</b>	June 1996	March 1997	December 2000
<b>United Arab Emirates</b>	January 1996	January 1993	December 2000
<b>Qatar</b>	June 1996	November 1996	December 2000
<b>Oman</b>	February 1994	February 1996	December 2000
<b>Kuwait</b>	April 1996	January 1997	January 1996
<b>Bahrain</b>	March 1996	January 1991	May 1999

Source: Bloomberg

**Table (5)** provides further details: it illustrates that Moody's possesses the largest share of rated firms with 37% of rated listed firms in GCC; then followed by S&P's with a slightly smaller difference 35%, whereas Fitch comes at last with slightly smaller presence 28%. However, the gap between the rating agencies regarding their market share in GCC countries is smaller than the gap around the world.<sup>7</sup>

*Table 5: Number of rated listed companies classified by CRAs as in December 2016*

Stock markets	Moody's	S&Ps	Fitch	Total of rating services received by listed companies	Total of rated listed firms
<b>Tadawul - Saudi Arabia</b>	15	20	13	48	24
<b>ADX - Abu Dhabi</b>	16	13	11	40	23
<b>Kuwait Stock Exchange</b>	16	14	11	41	21
<b>DFM – Dubai</b>	11	13	8	32	19
<b>Bahrain bourse</b>	8	12	10	30	19
<b>Qatar Exchange</b>	14	11	9	34	18
<b>MSM30 – Oman</b>	10	3	8	21	13
<b>Total</b>	90	86	70	246	137
<b>%</b>	37%	35%	28%		

Source: Bloomberg

<sup>7</sup> As mentioned earlier, according to a report in Bloomberg, at the end of 2015 S&P's is holding 49% of the ratings' service around the world, and then comes Moody's with 34%, followed by Fitch with 13% (Verma, 2017).

The three major international credit rating agencies provide their rating services to both sectors public and private through short visits to GCC countries to collect information and send it back to their regional office in London or New York (Alkhunaizi, 2009). The international credit rating agencies operate from abroad because they do not have a physical existence in these countries until recently. The first regional office for the major international credit rating agencies was in the United Arab Emirates when Fitch and Moody's established their offices in Dubai in 2006 and 2007, respectively (Charalambous, 2006; DIFC, 2007). As customs and local culture plays an essential role in the area, the international CRAs have been criticised because they were suspected not to understand the business nature and the local culture in GCC markets when they perform, compared to the countries and markets where they usually operate (Alkhunaizi, 2009).

Locally, SIMAH is a Saudi credit bureau, which started to operate in 2004 under the supervisory of Saudi Arabian Monetary Authority (SAMA). It provides credit information about individuals and companies located in Saudi Arabia, by providing their credit history and transactions upon request, to whom searching for their credit reports, more than analysing their creditworthiness based on financial statements in the case of firms. In 2015 another Credit Bureau was established, namely Bayan, under the supervisory of SAMA as an authorised credit bureau to provide credit and financial information (Bayan Credit Bureau, 2015), and unlike SIMAH, it focuses only in the Business sector. To sum up their role, we can say that SIMAH and Bayan do not provide public information nor assign a credit rating such as the well-known CRAs.

In Kuwait, Credit Information Network Company (Ci-Net) is a local agency which started to operate in 2003 under the supervisory of Ministry of Commerce and Industry and the Central Bank of Kuwait (CI-Net, 2019). Qatar Credit Bureau established in 2008 under the supervision of Qatar Central Bank and begun its operation in 2011 (Credit Bureau Qatar, 2020). In Oman, (Mala'a) the Oman credit and financial information centre was established in 2019 under the supervision of Central Bank of Oman (Malaa, 2019). In the United Arab Emirates, the Emirates Credit Information Company Limited (Emcredit) and Al Etihad Credit Bureau (AECB) were established in 2006 and 2010, respectively. (AECB, n.d.; Emcredit, 2016). Bahrain Credit Reference Bureau was licenced in 2015 in Bahrain (BENEFIT, 2016). All these

credit bureaus do not provide public information nor assign a credit rating as the international Credit Rating Agencies do.

Due to the inexistence of a local rating industry in local markets, the authorities in some of the GCC countries began to grant licences to local and international agencies to allow them to provide their credit rating services in the region. In Kuwait, the Capital Standards Rating (CSR) was authorised in 2009 by the Ministry of Commerce to conduct its rating activities in the Middle East and North Africa (MENA) (CSR, 2015; KUNA, 2009). The Islamic International Rating Agency (IIRA) in Bahrain launched its series of methodologies in 2011 to provide rating services to issuers and issues that conform to Islamic Finance (IIRA, 2017). In Saudi Arabia, in November 2014, the capital market authority announced new regulations and procedures of credit rating services in the local market. The applicant must be either an incorporated in the Kingdom or an authorised foreign credit rating agency to have an authorised licence with a setup date starting from the end of 2015 (Capital Market Authority, 2014). Consequently, the Capital market Authority (CMA) has authorised S&Ps in October 2016, and Moody's in July 2017 to conduct their services in Saudi Arabia, accordingly, Moody's officially established a local office and launched its operations in 2018 (Capital Market Authority, 2016, 2017b; Moody's, 2018). Also, Fitch Ratings has established a local office in Riyadh after obtaining authorisation to provide their services in Saudi Arabia in April 2017 (FitchRatings, 2017).

Concerning the domestic rating agencies, SIMAH Rating Agency, which is affiliated with SIMAH Credit Bureau, was authorised by the Capital Market Authority in December 2015 to perform credit rating activities in Saudi Arabia (Capital Market Authority, 2015). Hence, SIMAH Rating Agency (TASSNIEF) is the first local credit rating agency in Saudi Arabia to provide credit rating services to the government and private sectors. During the period from 2016 to 2019, TASSNIEF has assigned only three initial ratings to issuers, one initial rating to Sukuk, and one reaffirmation; totally 5 announcements (TASSNIEF, 2019).<sup>8</sup>

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<sup>8</sup> See [appendix \(17\)](#) for the rating scale used by TASSNIEF.

## 5- The structure of our research

We terminate this chapter by describing the structure of our thesis in the upcoming chapters as follows:

In **chapter (2)**, we illustrate the role played by the credit rating agencies in financial markets. We highlight the theories about the role of credit rating agencies in GCC equity markets, and the possible justifications behind asking the services of CRAs even though some issuers do not issue debt instruments, as well as despite the narrow secondary market for bonds and Sukuk. Then, we apply a logistic regression to identify some possible determinants that may increase the odds amongst firms for being rated versus not being rated. After that we recall the previous studies regarding the impact of CRAs' announcements on financial markets, mostly the equity markets, and concentrate on the impact of CRAs' announcements that occurred in narrow and non-mature markets. To terminate this chapter, we formulate our **hypotheses (H1) and (H2)** concerning the impact of CRAs' announcements in GCC equity markets.

In **chapter (3)**, we shed light on the effect of the individual investors on stock markets. We focus on the possible influence of the domination of individual investors in GCC stock markets, and how the behaviour of individuals may affect the behaviour of the markets. Then we extensively investigate how could the English language (the language used to publish the CRAs' announcements) affect the reaction time in GCC equity markets due to the possible lack of understanding amongst the individual investors. Then we reconsider the role of CRAs in light of the GCC investors' environment. At the end of this chapter, we formulate our **hypotheses (H3) and (H4)** with respect to the influence of individual investors' domination and the English language.

In **chapter (4)**, and based on the fact of the individual investors' domination in the GCC stock markets, we highlight one of the main characteristics of the individual investors in the environment of the GCC countries that is religion. We examine the possible influence of religion on stock markets and investors' attitudes towards risk, and the likelihood behind the possible effect of religion on the response of the market towards CRAs' announcements. Then, we illustrate the Imams' (Islamic scholars') announcements and describe the functionality of these announcements, which is classifying the listed firms at the Saudi Stock

Exchange concerning the religiosity of the firms. And then to explain how this type of announcements can affect the stock prices in Saudi stock exchange “Tadawul”. At the end of this chapter, we formulate our **hypotheses (H5) and (H6)** about the influence of the Sharia law.

In **chapter (5)**, we describe the data and demonstrate the methodologies adopted in our thesis. Our first methodology is the questionnaire, and the second is the Event Study. In **chapter (6)**, we present the empirical results concerning the questionnaire, and in **chapter (7)** we illustrate the results of the event study concerning the CRAs' announcements in the GCC equity markets. In addition, we extend our work to examine the previous articles that are already published by the primary authors (the raw data of a previous Meta-Analysis study) about the effect of CRAs' announcements and how the English language might cause a lag in markets' reaction. Then, in **chapter (8)**, we present the results of the Imams' announcements and their effects on stock prices. Besides, we present the possible influence of Imams' announcements on the financial health of the listed firms in the long-term. Finally, in **chapter (9)**, we present our final conclusion.

## Chapter 2: Literature review and hypotheses regarding the credit rating agencies' role and impact in GCC equity markets

In this chapter, we are going to illustrate firstly the theories that explain the role and the effects of credit rating agencies' decisions on equity and bond markets, such as the information content, signalling hypothesis, and wealth redistribution hypothesis. Then, we attempt to bring to light why some corporations in GCC markets would ask to be rated, even though they do not issue bonds/Sukuk. We assume one of the reasons behind asking for CRAs' services is the imitation, as firms from the same industry are likely to imitate each other as an action of rivals. At the end of this part, we apply a classic logit regression to investigate the characteristics of companies in GCC markets that may explain the odds of being rated (versus not being rated). Briefly, we find that firms from the financial sector, firms that issued debt instruments, and large size firms have higher odds to be rated than not being rated.

Secondly, based on previous studies, we highlight the impact of credit rating agencies' announcements over equity prices. We concentrate our literature review on the narrow and non-mature equity markets in order to study the markets that are close in their financial characteristics to our case study (GCC equity markets). Finally, we formulate our **hypotheses (H1)** and **(H2)**, and we expect the CRAs' announcements to provide new information to the market, and equity prices react positively (negatively) to good (bad) news.

### 1- Accurate theories about the role of credit rating agencies in GCC countries and markets

Referring to the agency theory, signal theory, and the information content hypothesis; credit rating agencies can be pictured as an intermediary mandated by an issuer to convey useful and valuable information (either private or public) to investors in order to reduce the information asymmetry, and then, to allow the efficiency level on the financial markets to be improved. The signal hypothesis and the information content hypothesis suggest that there is additional information that is conveyed to the market about the firms' value by a rating change, which might be treated as a signal indicative for the upcoming earnings and cash flows of the firm (Sehgal and Mathur, 2013; Zaima and McCarthy, 1988). May (2010) examined the information content of bond rating changes that assigned by the three credit rating agencies and found evidence of some new information conveyed by the credit rating

changes, moreover, he found the reaction of lower-rated firms are stronger than higher-rated firms.

Issuers usually use credit rating agencies to signal the credit quality of their debt instruments (Hsueh and Kidwell, 1988). The signal that is addressed to the investors mostly concern the creditors, as they are the holders of the debt securities that are rated. However, the information of a firm should usually be incorporated into its securities, either in the bond market or in the stock market, as it is said by Pinches and Singleton (1978) that "*Capital market efficiency also implies that the markets for different securities of the same firm are not segmented; thus, information about the future prospects of the firm should flow freely between the bond market and the stock market*". Most of the time, authors consider that in case the rating event conveys valuable information, the reaction on the stock market should be identical in its direction than the one occurring on the bond market, and be aligned with that of the rating event (i.e., negative abnormal returns for a downgrade, and vice-versa for an upgrade). Some authors link the impact of the information content of a rating change over the securities value to the reason behind this rating. Holthausen and Leftwich (1986) assumed that when a rating is assigned, *ceteris paribus*, the bond and stock prices of the rated firm should move in the same direction if the probability of default arises from a change in the firm's value, whereas if the probability of default is related to the firm's bond, then the effect on stock price can be ambiguous. It is also suggested that the cause of the downgrade must be taken into consideration; because the stock reaction can be negative if the bonds are downgraded due to a change in the firm's value, while it is not the same if the downgrade is due to an increase in leverage (Goh and Ederington, 1993). Thus, the signal theory and information content hypothesis are helpful in explaining the stock market reaction when positive (negative) news affect the market positively (negatively), symmetrically or asymmetrically, showing that this news contains an informational value to the market.

On the other hand, the wealth redistribution hypothesis (WRH) intends to describe a conflict of interest that might appear between the stockholders and bondholders. Some corporate decisions might maximise the wealth of stockholders; meanwhile, it can be at the expense of bondholders, and vice-versa (Galai and Masulis, 1976; Zaima and McCarthy, 1988). Stockholders may opt to increase the level of risk by going through investments with a higher risk in order to increase the expected returns; however, this action may cause an

augmentation in the outstanding bonds' default risk as a reflection of an alteration in the value of the firm or a modification in the variance of the cash flow. Hence, the increase in default risk is likely to lead to a decrease in the value of the outstanding bonds. This reduction in the value can be taken from bondholders for the sake of stockholders. Abad-Romero and Robles-Fernández (2007) and Zaima and McCarthy (1988) refer their findings of negative stock reaction to bond upgrades to the wealth redistribution hypothesis.

Authors justify a possible wealth transfer effects (e.g. the asymmetric change of debt and equity value) by a change in the variance of cash flow or leverage. Holthausen and Leftwich (1986) said that, with all else being equal, if the probability of default that is provided by a rating decision to a firm arises from a change in its variance of cash flow, the value of debts and equity of this firm should change asymmetrically (prices move in opposite directions), as suggested by the option pricing theory. Goh and Ederington (1993) assumed that if a CRA assigned a downgrade to a firm because the leverage of this firm was increased, the stock prices of this firm is expected to increase while the bond prices is expected to decrease, as it should be good news to stockholders due to the shift in wealth from bondholders. And vice-versa, the wealth might also be transferred from stockholders to bondholders if the default risk is lowered by decreasing the leverage (May, 2010).

The argument of transferring the wealth between bondholders and stockholders is grounded on the option theory and described by Merton (1974), who said that stockholders could be considered as holders of a call option on a firm's value. Which means that, *ceteris paribus*, the wealth should be transferred from stockholders to bondholders when the asset variance of a firm declines. Hubler et al. (2014) illustrated their findings of upgrade announcements saying that "*The a priori assumption could be a decline in systematic risk, if the rating announcement is motivated by an expected increase in operating result (i.e. the economic value) of a firm. However, if the reason is not that one, there is no more evidence about the expected direction of the β parameter, especially in case of rebalancing effects*".

Moreover, some authors found evidence of a market reaction to downgrades but not to upgrades, referring this to either, upgrades are not as timely as the downgrades (as rating decisions might have dissimilar loss function), or managers may tend to release good news about their firm to the market but not the bad ones (Chambers and Penman, 1984;

Holthausen and Leftwich, 1986; Kim and Nabar, 2007). Some authors also assume that the reaction of the market may sometimes differ in its magnitude depending on either the anticipation or the severity of a rating decision. Hand et al. (1992) found that the average abnormal returns of bonds in the case of downgrades are larger for the speculative-grade than investment-grade. They also found a larger magnitude for unexpected rating changes than the expected ones. Holthausen and Leftwich (1986) mentioned that "*If rating changes provide information, the sign (and magnitude) of the abnormal performance depend on whether the market fully anticipated the downgrade, or expected a more severe downgrade*". According to the market efficiency and as reported by May (2010), either zero or positive returns should precede a totally surprised downgrade then a large negative reaction at the announcement, whereas a fully anticipated downgrade is supposed to have its price adjusted prior the announcement. Hence, these suggestions may explain that even if the rating event is anticipated, in some cases, large abnormal returns may occur, and then followed by a reaction in the other direction, once the rating event is known, to correct the over-evaluation (the over-magnitude) of the reaction that occurred.

Generally, the information provided by CRAs' is supposed to be for the sake of all stakeholders, however, in our case study (GCC markets) the predominance is for the shareholders, due to the weak presence of bond markets, meaning a weak presence of bondholders. The minority of bondholders and the tiny number of bonds increase the probability of excluding the theory of redistribution of wealth, as wealth is improbable to be transferred from stockholders to bondholders and vice-versa. Thus, our principal attention is going to be on stocks and stockholders.

According to the demand of CRAs' services in GCC countries, there is an overgrowing interest for issuers to be rated, even though some of these issuers do not issue debt securities and despite the relative narrowness of the bond markets. In the next two sub-sections, we aim to shed light on theories that may help to understand this paradoxical situation.

### 1.1 The level of transparency in the market

Inducing the foreign direct investments into a country and promoting the local market and public financial sectors for larger transparency level are indirect benefits of Credit Rating Agencies' (CRAs') good ratings for low-income countries (Elkhoury, 2008). Market authorities

are making efforts to increase the long-term investments and institutional investors “especially foreign investments” into the local markets in GCC countries, due to several reasons:

- Improve the market stability and reduce the high volatility,
- enhance the market efficiency, and
- it would drive firms to enhance and disclose more largely their financial information and governance practices, which will lead to higher transparency and performance.

CRAs play an important role in the world financial markets, as their positive opinion might be considered as a good signal to a country or/and an entity. Their integration into the financial market is likely to signal and promote these markets and/or rated firms (in case of receiving positive decisions) to more new potential investors, as suggested by (Partnay, 1999), and we assume this is the case in GCC financial markets.

Thus, the services provided by Credit Rating Agencies in a financial market may lead the issuers (corporations) to raise the level of disclosure and their financial information in parallel with the governance practises, which will increase the level of transparency amongst the market’s participants. All these probable outcomes might elevate the existence of foreign investments, which the last is accounted as an important factor of the increase of market depth. It is said that increasing the onshore market depth leads issuers to issue in the domestic market, and the existence of large foreign investments in a market support the market depth hypothesis (Mizen et al., 2012).

If we focus on the GCC markets, it can be seen that bond markets are still weak, whereas the substantial activity is observed in equity markets, which attract the largest number of investors. Hypothetically, if we assumed that all rating changes are due to a change in the “firm value”, then *a priori* this rating change is likely to be valuable information for the whole stakeholders, mostly in the case of deteriorations. Based on the information asymmetry theory, it is argued that since stocks contain a higher level of risk compared to debts, there might be a larger necessity of information intermediation for equities than debts, since stocks are riskier, hence the sensitivity in stock returns to information asymmetry is higher (Rhee, 2015). He also said that the requirement of markets’ research resources should be higher for equities as known by complexity and larger potential earnings as well as risk, in the case of

comparing with fixed-income. Moreover, the information spread into the market by firms, which can be used by investors, cannot be assured of not being corrupted for manipulation purposes. Rhee (2015) said that "*Independent rating agencies are the best and most efficient means to achieve sorting*", and this sorting task induces and supports the market efficiency, where this sorting function is necessary for the credit market due to the large amount of information that already diffused into the market. He also reported that, in a credit market, the sorting function does not create new information; it only organises the large volume of information that already exists in the market. Therefore, the sorting function of credit rating agencies is likely to provide valuable information to the market despite the magnitude of the information content.

Market manipulation has been used to generate profits immorally since the 17<sup>th</sup> century when the Amsterdam stock exchange was established, as some brokers used to manipulate the market using the "bear raids", furthermore, these brokers found out that the profits of applying the "bear raids" can be maximised by spreading fake and negative rumours to the market (Baamir, 2008). Jarrow (1992) reported that larger traders (as defined "*any investor whose trades change prices*") are assumed to have no information unlike the information traders; however, their trades can move the prices either due to the size or because they are being informed as believed by the 'other side' of the market. He also added, "*We study conditions (necessary and sufficient) on the price process such that when trading strategically, the large trader (called a speculator) generates profits at no risk, i.e., creates arbitrage opportunities. These are market manipulation trading strategies*". In respect to the manipulation in non-mature markets, Baamir (2008) claimed that the large speculators in the Saudi Stock Exchange have succeeded in creating a herding behaviour which helped them to manipulate the market by spreading deceitful rumours, fake news, and false trading. Furthermore, he also suggested that the lack of knowledge and experience amongst individual investors was one of the main reasons behind the collapse of the Saudi Stock Exchange in February 2006, as after 2004 the market became a speculative market.

Hence, we assume that individual investors in GCC stock markets are likely to value the information conveyed by CRAs as a part of the valuable information spread into the market. After the collapses occurred in GCC stock markets during 2005/2008, we implicitly assume that those collapses affected the market behaviour, by "generally" driving the investors to

adopt more seriously the financial technics in their decisions, and “more precisely” to take into consideration the financial information when they analyse the securities into which they could invest. In addition, having an external point of view (CRAs) about the creditworthiness and the financial strength of firms would encourage the investors’ confidence towards the market, by ensuring that the provided information is unbiased and will not be for the sake of manipulating the market participants, as the case in rumours (e.g. when some large speculators spread rumours to create opportunities in order to generate profits). Moreover, it is considered that non-mature markets are likely to be in need of the credit rating agencies’ services to provide information and/or certification, as independent and reputable agencies (Wakeman, 1981, as cited in Elayan et al., 2003).

## 1.2 Neo-institutionalism theory

The behaviour of firms can be described from a sociological concept in order to identify the reason behind certain activities. Neo/New-institutionalism theory attempts to explain the phenomenon of homogeneity in organisations, the dynamics of convergence and the influence of the institutional environment on them. The theory concentrates on evolving the sociological concept of institutions, in a way to understand how these institutions interact with society and affect it. In simple words, organisations in general attempt to follow the same path of each other - from the same environment - in order to keep competing in the field; consequently, it increases the homogeneity in entities’ behaviour.

The change in Institutional isomorphic occurs through three mechanisms. The first mechanism is the '*coercive isomorphism*' that arises from the pressures of cultural expectations and regulations (e.g. governmental, environmental, etc.) over organisations (DiMaggio and Powell, 1983). The second mechanism is '*mimetic isomorphism*', which is driven by uncertainty, as organisations might imitate other organisations' model due to several reasons such as not understanding very well the organisational technologies, uncertainty atmosphere driven by the environment, or when organisations' goals are not clear enough (DiMaggio and Powell, 1983). Moreover, they say that this imitation process might arise unintentionally, as it could appear indirectly due to the turnover of employees, or directly via other organisations such as consulting companies or associations, which means that the organisation (which is being modelled by others) might not be aware of the mimetic process or want it. The third mechanism is the '*normative pressure*' that arise from

professionalization through two aspects: the educational knowledge and professional networks (DiMaggio and Powell, 1983). It is also argued that organisational behaviour is likely to be modified by individuals who move between organisations and hold similar positions (Perrow, 1974). Generally, DiMaggio and Powell (1983) assume that competitions and seeking of efficiency are not anymore the only powerful driving factors of organisations to a structural change.

White (1981) integrated the sociological view within the neoclassical economy theory of the firm in order to identify the sociological behaviour amongst these organisations. He argues that firms keep under surveillance the position of their competitors for observations. Lieberman and Asaba (2006) classified the theories of business imitation into two different ones:

1. “*information-based theories*”: is when firms follow others as believing they possess superior information,
2. “*rivalry-based theories*”: is when firms imitate others in order to keep the competitive level.

Regarding the “*information-based theories*” of imitation, they argue that when uncertainty and ambiguity become a condition in an environment, managers are likely to start considering the information implied in the others' actions, even the imperfect information may influence the “managerial perceptions and beliefs”. They also added “*in uncertain environments managers may imitate to signal others about their own (or their firm's) quality*”. According to them, the tendency of a firm being imitated rises with:

- The “*information content of its signal*”, and
- The level of the firm's relationship with the others in the market.

Regarding the other set of theories “*rivalry-based theories*”, it is common amongst the firms that have similar resource and market position to imitate each other, in order to alleviate the level of rivalry or to reduce risk (Lieberman and Asaba, 2006). They also say that the likelihood of maximising the profits of firms increases when the firms achieve to reduce the actions of rivals to imitate them, and this can be achieved by differentiating the market position and resources. However, the differentiation might be hard and risky, as firms cannot

assure superiority after a new position or niche; therefore, firms opt for homogeneous strategies (Lieberman and Asaba, 2006).

### ***1.2.1 The mimicry behaviour as a possible explanation of the growing demand for the CRAs' services in GCC markets***

As illustrated above, the Neo-institutionalism theory could explain part of the firms' behaviour, and it might be helpful to justify one of the reasons behind the overgrowing demand for CRAs services in GCC countries, although the debts markets are still narrow compared to more mature markets. This theory may also justify the attitude of firms that ask for CRAs services even in the case they have not yet issued a debt security.

Granovetter (1985) and White (1981) suggest that the market should be seen as a network of social relationships besides being a system of exchange. Hence, firms' behaviour, regarding some actions, might be explained by the assumption of imitation that firms in such an environment may follow their competitors' steps and observe their strategy of managing the firm. Therefore, we could assume that in a specific market, industry or environment, whenever a company asks for CRAs services, it is likely to encourage or to lead other firms (competitors) within the same sector activity or the same business field to act alike in the next future. This imitation process may be explained by either:

- The wish of following the competitor's management decisions, by a transfer of practices and ideas coming from professional networks (e.g. managers' relationships or turn-over), or
- Directly by the expected outcomes coming from the rating assign, which might be the signal effect for instance, as these outcomes might raise the competitive level amongst the rivals in the market causing the others to lose their relative position in the market.

Thereby, in GCC financial markets, we suggest that assessing a rating to an issuer may occur simply because another issuer "competitors" asked for it "a rival situation", or looking to signal their strength in order to obtain the best interest rates, and does not always indicate their willingness to issue debt instruments and having them rated. This is in line also with Lieberman and Asaba (2006) who suggest that the imitations between firms emerge either

from the fear of falling behind in respect to the competitors or from the point that the competitors' action might convey information to the market.

In addition to the previous theories that may influence the firms to ask to be rated in GCC markets. In the next section, we aim to investigate the variables that may influence the firms' choice to be rated by the international credit rating agencies in the GCC countries.

### ***1.2.2 Investigation into the determinants of being rated for the firms in GCC markets***

In this sub-section, we are going to investigate several variables in order to discover whether these variables may influence the probability of a firm to be rated by the credit rating agencies. This method will enhance our knowledge to illustrate when the firms in GCC markets ask to be rated, while the majority of rated firms do not issue bonds. We used a binomial logit model that is run over 13 variables to describe the possible determinants of the probability ( $p$ ) for a company of being rated, versus not being rated ( $1 - p$ ). The model can be written as follows (Liu, 2016, pp. 105-114):

$$\text{Log} \frac{p}{(1-p)} = \alpha + [\beta_i X_i]$$

Where,

$\text{Log} \frac{p}{(1-p)}$  being the estimated Logit, and  $\frac{p}{(1-p)}$  being the estimated Odds.

$X_i$  being a set of 13 explanatory variables (also called "predictor variables"), described below.

$\alpha$  is the intercept, and  $\beta_i$  is the estimated regression coefficient, and  $\exp \beta_i$  is the exponentiated logit coefficient whose value can be interpreted as an Odds Ratio (OR).

For a specific variable  $X_i$ , when the OR is larger than 1, it means that the odds for a company of being rated increases, for one-unit increase in the predictor variable. Symmetrically, if OR is less than one, it indicates that the odds of being rated decreases for a one-unit increase in the predictor variable (Liu, 2016, p. 114). In case the predictor variable is a binary variable, the "one-unit increase" in the above sentences refers to the fact for a company of being coded 1, versus 0.

Our first model ([equation 1](#)) is going to shed light on three financial indicators in order to figure out whether there is a connection between these indicators and the firms' tendency to seek for the CRAs' services.

*Equation 1*

$$\text{Rated companies} = f(\text{Total assets} + \text{Net profit} + \text{Long-Term debt})^9$$

Rated companies = is a dummy variable that takes value 1 if the company has been rated by any international credit rating agency, and zero otherwise.

Total assets = it is the total assets (transferred into natural Log) for each firm. If it is rated, we take the total asset for the year-end of the date of first rating, if it is not rated, we take the average of the available period, starting from the year 2000 until 2018. We exclude from the sample the firms that were first rated prior the year 2000, due to the unavailability of data.

Net profit = it is the net profit (transferred into natural Log) for each firm. If it is rated, we take the net profit for the year-end of the date of first rating, if it is not rated, we take the average of the available period, starting from the year 2000 until 2018. We exclude the firms that were first rated prior the year 2000 due to the unavailability of data.

Long-Term debt = it is the Long-Term debt (transferred into natural Log) for each firm. If it is rated, we take the Long-Term debt for the year-end of the date of first rating, if it is not rated, we take the average of the available period, starting from the year 2000 until 2018. We exclude the firms that were first rated prior the year 2000 due to the unavailability of data.

We have 525 observations and 3 independent variables, where two of these variables are significant at 1%. In [table \(6\)](#) below, the variable Total Assets is significant at 1% indicating that when the total asset increases by one unity, the odds ratio of being rated versus not being rated is 4.49 which is more than four times that the odd ratio of this company is being rated when the Total assets increases by one unity. Also, the variable Long-term debt is significant at 1% indicating that when the long-term debt increases by one unity, the odds

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<sup>9</sup> We first run the VIF test (Variance Inflation Factor) through an OLS model, using SPSS, in order to check for Multicollinearity. According to Hair et al. (2011), the VIF value should not exceed 5 to avoid multicollinearity problems. We found no value above 5, all values being around 1. See [appendix 5](#) for the coefficients table.

ratio of being rated is decreasing 0.73 times, which means that the odds of being rated is 27% lower than the odds of not being rated. These mean that when the companies' size regarding the total assets increases and the Long-Term Debt of the company decreases, there is a probability that the firm is going to ask for CRAs' services. The variable Net profit is not significant.

*Table 6: The logistic regression for the first model (Equation 1)*

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	434.287 <sup>a</sup>	.189	.293

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	16.195	8	.040

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup> Total assets	1.502	.182	67.815	1	.000	4.491	3.141	6.420
Net profit	-.057	.100	.326	1	.568	.945	.777	1.149
Long Term Debt	-.307	.042	53.051	1	.000	.736	.677	.799
Constant	-12.287	1.764	48.499	1	.000	.000		

Before going through the next three models, we are going to show some descriptive statistics concerning these models. According to the frequency tables below (table 7), we have 703 observations in our total sample. There are 173 companies issued debt instruments during their existence and 530 have not, where 91 companies have their debt instruments traded only offshore, 46 only onshore, and 36 companies have their debt instruments traded in both markets onshore and offshore. In addition, out of these 173 companies, there are 77 companies issued only bonds, 70 issued only Sukuk, and 26 companies issued both Bonds and Sukuk. Furthermore, out of these 703 observations, there are 257 companies have been rated by CRAs and 446 have not, and 574 companies are listed and 129 are not.

*Table 7: Frequency tables*

	Onshore	Offshore	Mix on/Off	Total
<b>Bond</b>	20	39	18	<b>77</b>
<b>Sukuk</b>	25	43	2	<b>70</b>
<b>Mix B+S</b>	1	9	16	<b>26</b>
<b>Total</b>	<b>46</b>	<b>91</b>	<b>36</b>	<b>173</b>

	Rated	Not rated	Total
<b>Listed</b>	155	419	<b>574</b>
<b>Non listed</b>	102	27	<b>129</b>
<b>Total</b>	<b>257</b>	<b>446</b>	<b>703</b>

Therefore, our second model ([Equation 2](#)) is going to shed light on the company situation:

- whether the company is listed on the stock market or not,
- whether it issues debt instruments (bonds/Sukuk) or not, and
- whether the sectors such as Banks, Financial services, etc. have an influence or not.

These variables will be examined in order to discover whether being listed on stock market, issuing debt instruments, and being in a specific sector influence the firms' tendency to seek the CRAs services or not. These variables cover the entire sample 703 observations.

#### [Equation 2](#)

$$\text{Rated companies} = f(\text{Listed} + \text{Issue debt instruments} + \text{Banks} + \text{other Financial sectors} + \text{Industry and energy})^{10}$$

Rated companies = is a dummy variable that takes value 1 if the company has been rated by any international credit rating agency, and zero otherwise.

Listed = a dummy variable that takes value 1 if the firm is listed, and zero otherwise.

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<sup>10</sup> VIF values are around 1. See [appendix \(6\)](#) for the coefficients table.

Issue debt instruments = a dummy variable that takes value 1 if the firm has ever issued bonds/Sukuk, and zero otherwise.

Banks = a dummy variable that take value 1 if the entity is a bank, and zero otherwise.

Other financial sectors = a dummy variable that takes value 1 if the entity is an assurance company or belong the financial service sector (except banks), and zero otherwise.

Industry and energy = a dummy variable that takes value 1 if the entity is a firm belongs to the industry or energy sector, and zero otherwise.

In **table (8)** below, we have 703 observations and 5 independent variables where four of them are significant at 1%. The results state that when the firm is a bank, the odds ratio of the firm being rated is 64.88 times more than not being rated. And when a firm is an assurance company or belong to the financial sector (but not a bank), the odds ratio of the firm being rated is 16.98 times more than not being rated. Also, the odds of being rated for firms issuing debt instruments (Bonds/Sukuk) are 3.80 times more than not being rated, on the other hand, the odds of being rated for listed companies are 0.10, which is 90% lower than the odds of not being rated.

This indicate that the odds of being rated for banks, firms in the financial sector, and firms issuing bonds and Sukuk are higher than the odds of not being rated, whereas the odds of being rated for the non-listed companies are higher than the listed ones.

*Table 8: The logistic regression for the second model (Equation 2).*

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	500.293 <sup>a</sup>	.452	.618

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

**Hosmer and Lemeshow Test**

Step	Chi-square	df	Sig.
1	65.859	5	.000

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>	Listed	-2.304	.298	59.945	1	.000	.100	.056 .179
	Issue debt instruments	1.335	.278	23.106	1	.000	3.801	2.205 6.552
	Bank	4.173	.408	104.457	1	.000	64.882	29.149 144.423
	Other financial sectors	2.832	.286	97.747	1	.000	16.981	9.686 29.772
	Industry and energy	.399	.337	1.404	1	.236	1.491	.770 2.886
	Constant	-.500	.322	2.409	1	.121	.606	

- a. Variable(s) entered on step 1: Listed, Issue debt instruments, Bank, Other financial sectors, industry and energy.

Our third model ([Equation 3](#)) is interested on the markets where the firms' bonds/Sukuk are being traded, in order to figure out whether there is a connection between the market of trading (Onshore, Offshore, or Mix) and the firms' tendency to seek the CRAs services.<sup>11</sup> In this model we have 173 firms, out of 703 as our total sample, who have already issued Bonds/Sukuk during their existence. Thus, the regression is run over the firms who have only issued bonds/Sukuk in order to find out whether the market of trading induce the firms to ask for CRAs' services. Therefore, our third model is,

#### [Equation 3](#)

$$\text{Rated companies} = f(\text{Onshore} + \text{Mix})^{12}$$

Rated companies = is a dummy variable that takes value 1 if the company has been rated by any international credit rating agency, and zero otherwise.

Onshore = a dummy variable that takes value 1 if the firms' bonds are traded only in local markets, and zero otherwise.

Mix = a dummy variable that takes value 1 if the firms' bonds are traded in both markets (local + international), and zero otherwise.

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<sup>11</sup> The reference variable in this model is the variable (offshore) as the majority of issues are traded offshore, where offshore = a dummy variable that take 1 if the firms' bonds are traded only in international markets, and 0 otherwise.

<sup>12</sup> VIF values are around 1. See [appendix \(7\)](#) for the coefficients table.

**Table (9)** below, shows that both variables Onshore and Mix are significant at 1% and 5% respectively. The variable Onshore indicates that when the firms' bonds/Sukuk are traded only in local markets, the odd ratio of this firm for being rated is 0.19 times, which means the odds of the firm being rated decreases with 81% lower than the odds of being not rated. On the other hand, when the firm's bonds/Sukuk are traded onshore and offshore (Mix), the odds ratio of the firm being rated is 3.20 times more than not being rated.

This result shows that a firm with issues traded only onshore have lower odds of being rated comparing to firms where their issues traded only offshore or in both market onshore and offshore, furthermore, a firm with issues traded on both market (onshore and offshore) have higher odds of being rated comparing to firms where their issues traded only offshore.

However, the model is not significant to be able to apply this finding as a proper result. On the other hand, the variable 'onshore' in the fifth model (**equation 5**) is significant as well as the model itself.

*Table 9: The logistic regression for the third model (Equation 3).*

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	192.087 <sup>a</sup>	.171	.235

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	.000	1	1.000

Variables in the Equation								
	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>	Onshore	-1.642	.391	17.653	1	.000	.194	.090 .416
	Mix	1.163	.579	4.037	1	.045	3.200	1.029 9.952
	Constant	.916	.232	15.592	1	.000	2.500	

a. Variable(s) entered on step 1: Onshore, Mix.

Our 4<sup>th</sup> model (**Equation 4**) is going to shed light on the Saudi companies in our sample regarding the company situation whether Sharia compliant or not as on 2016, in order to figure out whether there is a connection between being a Sharia compliant firm and the firms' odds to be rated by CRAs.<sup>13</sup> Also we examine the influence of total assets of the Saudi firms over the odds of being rated.

*Equation 4*

$$\text{Rated companies} = f(\text{Sharia} + \text{Total assets})^{14}$$

Rated companies = is a dummy variable that takes value 1 if the company has been rated by any international credit rating agency, and zero otherwise.

Sharia = a dummy variable that takes value 1 if the firm was listed as a Sharia-compliant firm as on 2016, and zero otherwise.

Total assets = it is the total assets (transferred into natural Log) for each firm. If it is rated, we take the total asset for the year-end of the date of first rating, if it is not rated, we take the average of the available period, starting from the year 2000 until 2018. We exclude the firms that were first rated prior to the year 2000 due to the unavailability of data.

There are 171 firms listed and classified by Imams as Sharia or non-Sharia in the Saudi market; therefore, the unlisted firms are not subjected to these classifications. Out of these 171 listed companies, there are 103 companies listed as Sharia-compliant firms according to Imams as in 2016 where only 7 firms have been rated, see **table (10)** below. However, after including the variable "Total assets" to support the significance of our model, our test is run over 157 observations out of 198 firms presenting the Saudi companies in our entire sample.

**Table (11)** below, shows that the variable Sharia is statistically significant at 5%, and show that the odds ratio of Sharia firms of being rated is 0.26, which means the odds of being rated decreases when the firm is Sharia with 84% lower than the odds of not being rated. The variable "Total assets" is significant at 5% and shows that the odds of being rated is 1.97 times

<sup>13</sup> The sample for this variable consist only of the Saudi listed firms because there is no official source for the other countries to determine whether the firm is a Sharia compliant firm or not. Also no information regarding the non-listed companies.

<sup>14</sup> VIF values are around 1. See **appendix (8)** for the coefficients table.

more than not being rated when the total assets increase by one unity. Indicating that sharia-compliant firms have lower odds of being rated than non-sharia firms, and higher total assets show higher odds of being rated.

*Table 10: The number of rated/non-rated/Sharia/non-Sharia listed companies in the Saudi Stock Exchange:*

	Rated	Non-rated	Total
<b>Sharia</b>	7	96	103
<b>Non-Sharia</b>	21	47	68
<b>Total</b>	28	143	171

*Table 11: The logistic regression for the fourth model (Equation 4)*

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	85.294 <sup>a</sup>	.056	.125

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	28.211	8	.000

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)		
							Lower	Upper	
Step 1 <sup>a</sup>	Sharia	-1.325	.595	4.968	1	.026	.266	.083	.852
	Total Assets	.680	.340	4.003	1	.045	1.974	1.014	3.842
	Constant	-7.582	3.039	6.223	1	.013	.001		

a. Variable(s) entered on step 1: Sharia, Total Assets.

Our 5<sup>th</sup> model (Equation 5) is going to combine the significant variables corresponding to the fact of issuing debt instruments 173 observations, as well as other variables, in order to test the influence of the market of trading, the type of debt instruments, and two financial indicators over the probability of being rated.

#### *Equation 5*

$$\text{Rated companies} = f(\text{Total assets} + \text{Net profit} + \text{Onshore} + \text{Mix}^{\text{on, offshore}} + \text{Sukuk})^{15}$$

<sup>15</sup> VIF values are lower than 2. See appendix (9) for the coefficients table.

Rated companies = is a dummy variable that takes value 1 if the company has been rated by any international credit rating agency, and zero otherwise.

Total assets = it is the total assets (transferred into natural Log) for each firm. If it is rated, we take the total asset for the year-end of the date of first rating, if it is not rated, we take the average of the available period, starting from the year 2000 until 2018. We exclude the firms that were first rated prior the year 2000 due to the unavailability of data.

Net profit = it is the net profit (transferred into natural Log) for each firm. If it is rated, we take the net profit for the year-end of the date of first rating, if it is not rated, we take the average of the whole available period, starting from the year 2000 until 2018. We exclude the firms that were first rated prior the year 2000 due to the unavailability of data.

Onshore = a dummy variable that takes value 1 if the firms' bonds are traded only in local markets, and zero otherwise.

Mix on, offshore = a dummy variable that takes value 1 if the firms' bonds are traded in both markets (local + international), and zero otherwise.

Sukuk = a dummy variable that takes value 1 if the firms' issues are only Sukuk (Islamic bonds), and zero otherwise.

In our sample, there are 100 observations out of 173 for the companies who have issued debt instruments (Bonds/Sukuk) during their existence.<sup>16</sup> **Table (12)** below shows two significant variables, the first is Total assets at 5% and the other is the variable Onshore at 1%. The result states that the odds ratio of being rated for firms having their debt instruments traded only onshore are 0.19 times for being not rated, which means the odds of being rated for this type of companies is 81% lower than the odds of being not rated.

This result support our finding on the 3<sup>rd</sup> model where the model was not significant, whereas this model is significant and present similar results that a firm with issues traded only onshore have lower odds of being rated comparing to firms where their issues traded offshore or in both markets onshore and offshore. Regarding the total assets, the odds ratio of being rated versus not being rated is 2.55 times higher when the total assets increases by one unity.

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<sup>16</sup> 73 of the companies in this sample does not have public information regarding the financial indicators, so they were eliminated from the sample.

Table 12: The logistic regression for the fifth model ([Equation 5](#))

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	108.055 <sup>a</sup>	.233	.315

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	16.044	8	.042

Variables in the Equation								
	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>	Total Assets	.939	.410	5.249	1	.022	2.558	1.145 5.712
	Net Profit	-.391	.304	1.652	1	.199	.676	.372 1.228
	Onshore	-1.645	.573	8.237	1	.004	.193	.063 .594
	Mix On, offshore	.190	.719	.070	1	.791	1.210	.295 4.956
	Sukuk	-.828	.535	2.398	1	.122	.437	.153 1.246
	Constant	-4.026	4.721	.727	1	.394	.018	

a. Variable(s) entered on step 1: Total Assets, Net Profit, Onshore, Mix On, offshore, Sukuk.

Our 6<sup>th</sup> model ([Equation 6](#)), is going to combine the significant variables of our previous models which cover the majority of our sample, which in this case will test the influence of the financial indicators, the sector, being listed, and issuing debt instruments for being rated. We do not add the variables corresponding to the market of trading and the type of debt instruments to this model, due to the fact that we will have only 100 observations out of 703, nevertheless, our previous model covered these variables with some other variables.

#### Equation 6

Rated companies = f (Total assets + Net profit + Long-Term debt + Listed + Issue debt instruments + Banks + other Financial sector + Industry and energy)<sup>17</sup>

<sup>17</sup> VIF values are lower than 2. See [appendix \(10\)](#) for the coefficients table.

Rated companies = is a dummy variable that takes value 1 if the company has been rated by any international credit rating agency, and zero otherwise.

Total assets = it is the total assets (transferred into natural Log) for each firm. If it is rated, we take the total asset for the year-end of the date of first rating, if it is not rated, we take the average of the available period, starting from the year 2000 until 2018. We exclude the firms that were first rated prior the year 2000 due to the unavailability of data.

Net profit = it is the net profit (transferred into natural Log) for each firm. If it is rated, we take the net profit for the year-end of the date of first rating, if it is not rated, we take the average of the whole available period, starting from the year 2000 until 2018. We exclude the firms that were first rated prior the year 2000 due to the unavailability of data.

Long-Term debt = it is the Long-Term debt (transferred into natural Log) for each firm. If it is rated, we take the Long-Term debt for the year-end of the date of first rating, if it is not rated, we take the average of the whole available period, starting from the year 2000 until 2018. We exclude the firms that were first rated prior the year 2000 due to the unavailability of data.

Listed = a dummy variable that takes value 1 if the firm is listed, and zero otherwise.

Issue debt instruments = a dummy variable that takes value 1 if the firm has ever issued bonds/Sukuk, and zero otherwise.

Banks = a dummy variable that takes value 1 if the entity is a bank, and zero otherwise.

Other financial sector = a dummy variable that takes value 1 if the entity is an assurance company or belong the financial service sector (but not a bank), and zero otherwise.

Industry and energy = a dummy variable that takes value 1 if the entity is a firm belong to the industry or energy sector, and zero otherwise.

The logistic regression in [table \(13\)](#) presents the results of 8 variables and 525 observations out of 703 due to the unavailability of data for some companies regarding the financial indicators. There are five variables are significant at 1% which are Total assets, Banks, Other financial sector, issue debt instruments, and listed. The odds ratio of being rated are 2.56 times more than not being rated when the total assets increases by one unity. Also, the

odds ratio of being rated are over 15 times, 19 times more than not being rated for banks, and companies in other financial sectors, respectively. The odds ratio of being rated for companies issuing debt instruments (Bonds/Sukuk) are 11.15 times more than not being rated. Consistently with previous models, the odds ratio of being rated for listed companies are 0.07 times, which means the odds of being rated for listed companies is 93% lower than not being rated. The variable Long-term debt is significant at 5% and shows that the odds of being rated is 14% lower than the odds of not being rated when the Long-term debt increases by one unity.

*Table 13: The logistic regression for the sixth model (Equation 6)*

#### Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	291.905 <sup>a</sup>	.382	.591

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

#### Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	16.664	8	.034

#### Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
							Lower	Upper
Step 1 <sup>a</sup>								
Total Assets	.940	.259	13.219	1	.000	2.561	1.542	4.251
Net Profit	.244	.132	3.432	1	.064	1.277	.986	1.654
Long-Term Debt	-.151	.060	6.310	1	.012	.860	.764	.967
Bank	2.740	.604	20.579	1	.000	15.486	4.740	50.587
Other financial sectors	2.946	.457	41.556	1	.000	19.038	7.773	46.632
Industry and energy	-.278	.531	.273	1	.601	.758	.268	2.145
Issue debt instruments	2.412	.388	38.554	1	.000	11.151	5.209	23.874
Listed	-2.553	.704	13.138	1	.000	.078	.020	.310
Constant	-10.268	2.564	16.038	1	.000	.000		

a. Variable(s) entered on step 1: Total Assets, Net Profit, Long-Term Debt, Bank, Other financial sector, Industry and energy, Issue debt instruments, Listed.

Our 7<sup>th</sup> model ([Equation 7](#)) is going to test the geographical location of companies to figure whether the legal location regarding the country influence the odds of being rated or not. Also, we add two other variables Listed and Issue debt instruments to support the significance of the model.

*Equation 7*

Rated companies = f (Saudi + Qatar + Kuwait + Oman + Bahrain + Issue debt instruments + Listed)<sup>18, 19</sup>

Rated companies = is a dummy variable that takes value 1 if the company has been rated by any international credit rating agency, and zero otherwise.

Listed = a dummy variable that take value 1 if the firm is listed, and zero otherwise.

Issue debt instruments = a dummy variable that take value 1 if the firm has ever issued bonds/Sukuk, and zero otherwise.

Banks = a dummy variable that take value 1 if the entity is a bank, and zero otherwise.

Saudi = a dummy variable that take value 1 if the company located legally in Saudi Arabia, and zero otherwise.

Qatar = a dummy variable that take value 1 if the company located legally in Qatar, and zero otherwise.

Kuwait = a dummy variable that take value 1 if the company located legally in Kuwait, and zero otherwise.

Oman = a dummy variable that take value 1 if the company located legally in Oman, and zero otherwise.

Bahrain = a dummy variable that take value 1 if the company located legally in Bahrain, and zero otherwise.

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<sup>18</sup> VIF values are lower than 2. See [appendix \(11\)](#) for the coefficients table.

<sup>19</sup> The reference variable regarding the legal location is UAE which is a dummy variable that take value 1 if the company located legally in UAE, and zero otherwise.

Regarding the legal location, **table (14)** below shows that the odds ratio of being rated versus not being rated are 0.28 times when the company located in Saudi Arabia comparing to UAE, which means the odds of being rated are 72% lower than not being rated when the company located in Saudi Arabia. Similarly in Kuwait with odds ratio of being rated 0.33 times, which means the odds of being rated are 67% lower than not being rated when the company located in Kuwait comparing to UAE. Both variables are significant at 1%.

The variables Issue debt instruments and Listed are significant at 1 %, where the odds ratio of being rated is approximately four times more than not being rated for companies that issue bonds and Sukuk, whereas the odds of being rated are 85% lower than not being rated for listed companies.

*Table 14: The logistic regression for the seventh model (Equation 7)*

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	700.840 <sup>a</sup>	.271	.371

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	52.137	6	.000

Variables in the Equation								
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)
							Lower	Upper
Step 1 <sup>a</sup>	Saudi	-1.268	.270	22.000	1	.000	.281	.166 .478
	Qatar	.077	.339	.051	1	.821	1.080	.555 2.100
	Kuwait	-1.107	.273	16.453	1	.000	.331	.194 .564
	Oman	.086	.360	.057	1	.811	1.090	.538 2.209
	Bahrain	.307	.345	.796	1	.372	1.360	.692 2.671
	Issue debt instruments	1.390	.210	43.904	1	.000	4.014	2.661 6.055
	Listed	-1.860	.254	53.606	1	.000	.156	.095 .256
	Constant	1.103	.278	15.680	1	.000	3.012	

a. Variable(s) entered on step 1: Saudi, Qatar, Kuwait, Oman, Bahrain, Issue debt instruments, Listed.

- Key results of the odds to be rated by CRAs

According to our logistic tests, it can be seen that big size companies, based on total assets, and firms with low level of long-term debt, have higher odds to be rated. Being in the financial sector (banks, insurance, etc.) increases tremendously the odds of being rated by CRAs than being in any other sector.

Firms that have their issues traded only in local markets have lower odds of being rated than firms whose their issues traded offshore. Also being listed shows lower odds of being rated than non-listed companies. Being a Sharia compliant firm lower the odds of being rated. The odds of being rated for companies located in United Arab Emirates are larger than the odds of being rated for companies located in Saudi Arabia and Kuwait.

The results indicate that there are other variables such as the sector increase the odds to be rated more than issuing debt instruments. This might explain why companies seek the services of CRAs even though they do not issue bonds, and located in countries with weak local bond market. As discussed previously, we consider that the main reasons for GCC companies to ask for CRAs' services can be either to signal their existence and strength, or to imitate the competitors.

## 2- The impact of CRAs decisions on financial markets

### 2.1 Rating changes & credit watches

Based on the theories and hypotheses that mentioned earlier in [section \(1\)](#) from this chapter regarding the role of CRAs, (i.e. signalling hypothesis, informational content hypothesis, redistribution of wealth hypotheses, etc.), we can say that the results of previous studies do not converge or lead to a single conclusion regarding the effects of negative or positive rating changes on stock prices.

Often, it is considered that negative rating events (downgrades and negative credit watches) are more likely to be associated with negative response of the stock markets, whereas positive announcements (upgrades and positive credit watches) are more frequently associated with a lack of effect on stock prices. The asymmetric stock reaction to negative and positive rating changes might occur because the good news has a higher probability to be disclosed by the issuer itself, whereas the bad news is more likely to be revealed by the

CRAs themselves. Moreover, a recent meta-analysis study shows that the magnitude of the reaction may depend on a large number of factors (Hubler et al., 2019).

In the following paragraphs, we aim to be exhaustive and refer to some of the previous authors that have shown significant reactions, and then we focus on previous literature dedicated to studies that have been conducted on small and non-mature markets, for they are more similar to the environment and characteristics of GCC markets. We concentrate only on the effects of CRAs' announcements on stock prices, due to the fact that bond markets (especially the secondary markets) in GCC countries are too narrow and remarkably shallow - from a liquidity perspective - to allow us applying an event study to examine the bond markets' reaction towards the CRAs' announcements.

Regarding the impact of downgrades, Hand et al. (1992) documented asymmetric results for the downgrade and upgrade announcements on stock prices, with negative reactions to downgrades and weaker or no significant response of the stock market in the case of upgrades. As well as Dichev and Piotroski (2001) for US firms, and Choy et al. (2006) in the case of Australian firms. In addition, Poon and Chan (2008) found negative signalling effects of rating downgrades by a local agency in China, concluding that downgrades provided by local rating agency have informational content. There are a great number of studies found significantly negative reaction in stock prices associated with downgrades such as (Elayan et al., 1996; Gropp and Richards, 2001; May, 2010).

When a rating event consists of a negative credit watchlisting, it is an indication of a possible change in the rating of the issuer (or of its debt) in the near future. Regarding credit watches and their effects on stock prices, Hand et al. (1992) highlighted asymmetric stock prices reaction associated with negative responses to negative credit watches and none in the case of positive credit watches. Also, Elayan et al. (1996) found significantly negative results associated with negative credit watches.

Regarding positive stock market reactions associated with upgrades, several studies found significant results such as that of Sehgal and Mathur (2013) who examine the stock prices reaction to bond rating changes in India and found significantly positive abnormal returns after the announcement and no response on the pre-announcement period. Gropp and Richards (2001) also found positive stock prices' abnormal returns associated with upgrades

for a sample of European banks. Inconsistently with several studies dedicated to the USA, Jorion et al. (2005) found significantly positive stock reactions to upgrades in the US market, with significant results being confirmed only in the post-FD<sup>20</sup> period, claiming that, after these regulations, credit rating agencies can obtain confidential information that is not accessible to the public.

Considering the UK market, Barron et al. (1997) found significant abnormal returns associated with positive credit watches. Chakravarty et al. (2009) found significant results associated with positive and negative credit watches as well as for upgrades and downgrades. Moreover, they find significantly stronger reactions to positive credit watches than for upgrades, while the impact of negative credit watches and downgrades are approximately comparable. Also, other authors conducted a comparison study for the French, European and American markets and find positive (negative) abnormal returns associated with positive (negative) credit watches in most cases (Iankova et al., 2009).

## 2.2 Previous studies on narrow and non-mature markets

As the GCC stock markets are still “small markets” comparing to the US, UK and Australian markets for instance, it is useful to focus on several studies were conducted on narrow or non-mature markets to examine whether CRAs announcements are likely to convey informational content to the market.

Elayan et al. (2003) studied the New Zealand Stock Exchange, which is considered as a small market compared with NYSE, NASDAQ, LSE and ASX. In addition, the NZSE is chosen for the study due to its economy, which is considered as developed, while other countries with similar market size to the NZSE are considered as emerging countries. They detected significant market reaction to rating assignments, credit watchlistings, and rating changes, suggesting that CRAs provide valuable information to the market.

Afik et al. (2014) conducted a study to assess the stock and bond market reaction to the local Israeli credit rating announcements<sup>21</sup> and to find out whether the delivered news by these agencies have informational value to the market or not. Based on the period of their study (from 2000 to 2009), they found that both markets (bond and equity) react to

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<sup>20</sup> Regulation Fair Disclosure

<sup>21</sup> The two local agencies are affiliated with the international credit rating agencies S&P and Moody's.

downgrade announcements only during a short period (2008-2009), and anticipation in the equity market to downgrade announcements followed by a market correction. They suggested that the reaction to downgrades might be "*behavioural by nature*" and not related to the informational content; hence, they finally concluded that the rating announcements had small and insignificant informational value in Israel.

In the Spanish market, Abad-Romero and Robles-Fernández (2007) examined the reaction of the market towards credit rating announcements and found evidence of non-anticipated informational content for the international CRAs' announcements on the stock market. They detected negative reaction related to downgrades, and negative reaction as well related to upgrades. They referred the negative abnormal returns of upgrades to the redistribution of wealth hypothesis.

Regarding the Swedish share market, a study was conducted by Hui Li et al. (2004) to examine the informational value of CRAs' announcements on the Swedish OMX index. They argue that markets with higher liquidity are likely to exhibit a lower degree of information asymmetry, leading to reduce the informational content of CRAs. By the fact that the Swedish stock market is more liquid than other small markets such as New Zealand's, they assumed lower and weaker reaction to CRAs' announcements. Generally, there was evidence of negative (positive) market response to downgrades (upgrades). In short-term reaction, they found significantly negative cumulative average abnormal returns for the rating assignment group in [-20, +20], and positive for upgrades in post-event windows [1, 10] and [1, 20], concluding a slow-digesting of the information by the market. A significant and positive reaction to negative outlook suggests that the market corrects the overreaction. They finally concluded that credit rating agencies' announcements might provide some valuable information to the market, especially in downgrades and upgrades.

Regarding the Indian market, Sehgal and Mathur (2013) examined the effect of bond rating changes on the stock market. Generally, they found positive abnormal returns for downgrades during the pre-announcement window, but no pre-event returns for upgrades, suggesting that the market tends to anticipate more the bad news. Whereas during the post-announcement window, they found positive abnormal returns to upgrades but no significant returns to downgrades, suggesting a signalling effect of upgrades. According to Rao and

Sreejith (2013) who also examined the influence of credit rating announcements on stock prices, they found a strong negative reaction to downgrades and negligible positive reaction to upgrades. Similar results presented by Lal and Mitra (2011) who found abnormal returns prior and after the downgrade announcements, unlike the upgrades, suggesting that the rating changes “downgrades” provide some new information to the market.

Freitas and Minardi (2013) examined the effect of CRAs announcements on stock markets in four Latin American countries (Argentina, Brazil, Chile, and Mexico) during the period from 2000 to 2009. They found that the credit rating announcements have informational content, especially in downgrades; however, they found some evidence of significant positive cumulative abnormal returns in Argentina and Chile to the upgrade announcements. They also suggest that credit watches are likely to be less informative than the actual rating changes. Parisi and Perez (2000) examined the stock market reaction to rating changes in Chile during the period (1994-1997) and found no effect on stock prices.

Daadaa (2016) examined the impact of the announcements of a local credit rating agency (Maghreb rating agency) on stock prices and systematic risk in the Tunisian stock market during the period from 1997 to 2010. He found evidence of an influence of the CRAs' announcements, for both events positive and negative events, suggesting valuable information conveyed to the market by these announcements.

Based on the literature review in this part, we assume the CRAs' announcements in GCC equity markets are expected to have signalling effects and to provide valuable information to the stock markets. The assumption is explained in details in [section \(3\)](#) where we formulate our hypotheses concerning the stock markets' reaction in GCC countries to the three major international CRAs' announcements.

### **3- Our hypotheses: The expected reaction of GCC stock markets to the CRAs' decisions**

Small markets seem more likely to be interested in credit rating agencies than large well-known markets. Elayan et al. (2003) suggested that there are several factors differ small markets from large markets that might affect the participants' attention to the announcements of credit rating agencies. They said that the little amount of available information in small markets as well as the limited number of analysts (domestic or/and

foreign) for the listed firms in small markets are likely to increase the importance for CRAs' announcements relatively in small markets compared to large ones. Therefore, the opinions of CRAs are assumed to be more valuable and important in small markets.

In small markets, the ones characterized by a relative scarcity of the disclosed information, the announcements of credit ratings are likely to attract the attention of investors, thus reinforcing the signal effect for the rated firms. Consequently, it might enhance the decision of investors to add the stock of this firm to their portfolio (or to sell it). In addition, the low number of investment analysts operating on such a market, either domestic or international, also increases the information asymmetry (Elayan et al., 2003). Hence, the services provided by the CRAs would better help to reduce this asymmetry, as the news conveyed by the CRAs is provided by a trustful source of information.

The value of information may vary due to several factors such as wealth. It is claimed that the proportion of risky assets (such as stocks) that is held by households is positively correlated with the level of household wealth (Cohn et al., 1975). Peress (2004) said that, for wealthier household investors, a large proportion of their wealth is held in stocks; hence, the value of information becomes more important when their investments in stocks increase, whereas the cost of acquiring this information becomes insignificant. He also claimed that wealthier households seek to acquire more information especially when they have a risker portfolio, which makes the information more valuable, suggesting a positive relationship between wealth and the tendency to acquire information.

Moreover, several studies have examined the relationship between religious investors and risk-seeking, and claimed that religious investors tend to be more risk-averse which shows a negative correlation between risk attitude and religious individuals (Hess, 2012; Hilary and Hui, 2009; Miller and Hoffmann, 1995). Considering the importance of religion in GCC countries, we may expect the investors in these countries to pay attention to institutions such as credit rating agencies, as their aim is precisely to assess the credit risk.

In addition, after the collapses occurred in GCC stock markets mid-2000, we believe those collapses affected the market behaviour, by driving the investors to start adopting the assessment and communication tools to their decisions and taking into consideration the financial information when they review the securities which they aim to invest in. Moreover,

considering an external opinion, such as the CRAs, which is about the creditworthiness and the financial strength of firms, may encourage the investors' confidence into the market by ensuring them that the provided information is unbiased and not for the sake of particular investors (as it could be in case of rumours). Therefore, it can be assumed that individual investors are more likely to react to Credit Rating Agencies' announcements.

Consequently, due to the importance of religion, and the large proportion of individual investors in GCC stock markets, we hypothesize there will be a signalling effect after the CRAs' announcements as follows:<sup>22</sup>

### Hypothesis 1

**H1-1:** The announcement of positive rating events (upgrades merged with positive credit watches) will be followed by a positive stock market reaction, as the market considers this information as good news.

**H1-2:** The announcement of negative rating events (downgrades merged with negative credit watches) will be followed by a negative stock market reaction, as the market considers this information as bad news.

Some authors, such Chakravarty et al. (2009) also point out that positive Watch Listing would have a larger impact on stock prices than the upgrade by itself, as this event would convey essential information, and would absorb most of the market reaction of the subsequent upgrade. Thus, we hypothesize that:

### Hypothesis 2

**H2:** The announcements of upgrades merged with positive credit watches (downgrades merged with negative credit watches) will be followed by a positive (negative) and greater magnitude of abnormal returns, compared to the reaction associated to upgrades (downgrades) only.

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<sup>22</sup> On the contrary, we assume the probability of occurrence of the redistribution of wealth hypothesis in GCC markets is insignificant due to the weak presence of bonds & Sukuk markets as mentioned earlier.

## Chapter 3: Literature review and hypotheses regarding the domination of individual investors and the effect of the English language

In this chapter, we illustrate one of the remarkable characteristics of the equity markets in the Gulf Cooperation Council (GCC), i.e. the importance of individual investors, comparing to institutional ones. The domination of individual investors in GCC stock markets may modify the behaviour of the markets compared to markets with a lower level of individual investors. According to the environment of the GCC countries and the fact of the domination of the individual investors in these markets, we suggest that the language used to publish the foreign news (the English language used to diffuse the CRAs' announcements) may affect the behaviour of the market participants, mostly the individual investors.

We assume the individual investors may fail to receive, absorb, and understand the foreign information (the CRAs' decisions) at the time of the announcements due to the language used to publish this information. Thus, we are going to focus on the behaviour of individual investors in stock markets; then, we explain in details the possible behaviour of individual investors in GCC markets. After that, we extensively explain how the announcement of CRAs in the English language could affect the time of reaction amongst the individual investors, and how this assumption may provoke us to reconsider the role of CRAs in light of the GCC stock markets' environment. At the end of this section, we formulate our first question, which is how may the domination of individual investors in GCC equity markets affect the market reaction to CRAs' announcements?

As a reminder, we will firstly present the individuals' behaviour in stock markets, and then the expected individuals' behaviour in GCC markets. Subsequently, we present the possible influence of the English as a business language in GCC markets, which allow us to formulate our **hypotheses (H3)** and **(H4)** for this part.

### 1. The individuals' behaviour

Individual investors are operators on stock markets who may affect the behaviour and stability of the market where they belong, as the majority of individuals are likely to trade and react to any news or rumours, sometimes without a solid financial background. Authors such as (Black, 1986; Campbell and Kyle, 1993; Kyle, 1985; Shleifer and Summers, 1990) referred

the name “noise traders” to classify the traders who trade randomly and follow the noise, as they may think that the noise is information. Ramiah et al. (2015) assign the term “noise traders” to describe the traders who follow the trends and exaggerate their reaction to bad and good news and usually do not rely on financial fundamentals to make their investment decisions. Black (1986) reported that “*noise is contrasted with information*”, and the noise as a concept is often when a large number of small events overcomes a small number of large events. He also added that there are investors who may react to a noise in the market as if it was information, despite the fact no valuable information is available to them at that time. It is sometimes said that “*noise trading is essential to the existence of liquid markets*” (Black, 1986); however, noise could also raise the imperfection and reinforce their inefficiency (Bloomfield et al., 2009).

Barber et al. (2006) postulated that in equity markets, the role of noise traders is played by individual investors, and the trades of individuals can move stock prices away from fundamental values as noise traders do. The noise trading activity can affect the market more widely. Some authors argued that noise trading could modify the strategy of managers and lead them to focus on short-term instead of long-term investment (Shleifer and Summers, 1990). Black (1986) mentioned that even information traders would not know if they are trading on information or noise, as the information that they have might have been already incorporated into the prices.

We may consider that noise traders often take their investment decisions relying on non-fundamental information such as sentiments and beliefs, rumours, word of mouth, uncertainty, excessive expectations, etc. These factors might create forces in the market that are likely to lead the stock prices to deviate from their fundamental value or the expected direction; hence, a confusing sign about the market direction may arise and drive the investors to react to the noise. According to the school of behavioural finance, investors are subjected to common human errors, and some are not fully rational in their decisions, which result from several reasons such as cognitive errors, biases, beliefs or sentiments etc. (Ramiah et al., 2015; Shleifer and Summers, 1990). It is viewed that if stock prices react only to fundamental news, then tracking the stock indicators (e.g. trends, volumes, etc.) would not make sense if the stock prices do not respond to the investor demand, implying that the investor sentiment plays an important role in the price movements (Shleifer and Summers,

1990). They also added that with the assumption of limited arbitrage, the changes in investor sentiment could determine the prices.

Regarding the “*word-of-mouth*”, some individual investors may rely on the “*word-of-mouth*” believing this would help to reduce the time of research and cost of information. Ivković and Weisbenner (2007) found that individuals are likely to rely on “*word-of-mouth*” delivered by people around them for their financial decisions to reduce the cost of seeking information. They found a positive relationship between the stocks purchased by households and the stock purchased by their neighbours in the US, according to their suggestion; they refer this to the “*word-of-mouth*” among individual investors in the US. Besides, interpersonal ties describe the level of ties that link one person to another and the connection’s degree of transmitting information between them. These ties are classified according to three degrees: Strong, weak, and absent. Granovetter (1973) reported that through a “*weak social tie*”, the information could be diffused to more people and transferred to greater social groups than when it passes through a “*strong social tie*”.<sup>23</sup> He also said that “*If one tells a rumor to all his close friends, and they do likewise, many will hear the rumor a second and third time, since those linked by strong ties tend to share friends. If the motivation to spread the rumor is dampened a bit on each wave of retelling, then the rumor moving through strong ties is much more likely to be limited to a few cliques than that going via weak ones ....*” (Granovetter, 1973). Hence, the investors’ behaviour is not necessarily to be always following financial and fundamental facts.

Regarding the trading activity, individual investors usually tend to be short-term investors and experience larger exposure to risk compared to institutional investors (Jadwa Investment, 2014; Ulussever and Demirer, 2017). For instance, in the Saudi market, some reports conducted by Jadwa Investment (2014) and Samba (2009) report higher volatility in the stock

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<sup>23</sup> Granovetter (1973) defines the strength of an interpersonal tie as “*a (probably linear) combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie*”. According to him, weak ties have a lower level in social network than strong ties but above the absent ties. According to him, a weak tie is someone within acquaintances (a large circle of known people), and the strong tie is someone within the family and close friends (a closed circle). Whereas the absent ties is the insignificant and negligible relation between people, such as two people know each other only by names and the relation does not go beyond that e.g. one buying from the other a morning coffee.

prices of firms with small market capitalisation than for in the large ones, and justify this characteristic by the fact that individual investors have a propensity to invest in a small industry, which consists of small-cap firms. These small sectors are more volatile to the movement in prices than larger sectors, as the sentiments and beliefs of individual investors are likely to affect the stock prices movements. De Long et al. (1990) and Miller (1977) assumed that the differences of investors' opinions could increase the number of traded stocks, either by heavy buying or selling, as information could attract the investors' attention, leading to a divergence of opinions about a given stock to hold, sell or buy. Also, Lee et al. (1991) found that the individual investors tend to hold small-capitalization stocks and closed-end funds, and when small stocks do well, the discounts on closed-end funds tend to be narrow.<sup>24</sup> They also suggested that the sentiments of these individual investors affect the returns of the securities that they hold and trade-in.

With times, noise traders might tend to improve their financial background in order to comprehend the game of the market. Bender et al. (2013) found that some technical analysis could be used by noise traders. Bloomfield et al. (2009) argued that technical analysis is considered noise-trading strategy as the work is unrelated to the fundamental of firms. Moreover, some authors argued that traders are likely to misjudge their investment decisions due to the overconfidence that is created by the restricted knowledge. Cordell et al. (2011) conducted a study on two different groups of financial professionals; the first group consist of individuals who had high financial skills, and low skills in the second group.<sup>25</sup> They found that the group with the limited knowledge (the less skilled group) faced the "*dual burden phenomenon*" due to the overconfidence, suggesting that the "*individual doesn't know what he doesn't know*" because of the limited knowledge. Others such as Abreu and Mendes (2012) found evidence confirming that overconfidence leads the investors to involve more frequently into the market.

To sum up, many studies used the opinions and investors' sentiments to explain the behaviour or the anomalies existing in the financial market such as (De Long et al., 1990; Lee

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<sup>24</sup> They consider the discounts on closed-end funds as a proxy for the individual investor sentiment.

<sup>25</sup> The financial professionals who were holding both certificates (CFP & CFA) were classified as high skilled group, and who were holding only the (CFP) certificate were classified as the low skilled group.

et al., 1991; Miller, 1977). Hence, the behaviour of individuals may vary due to non-financial factors, which is more likely to be influenced somehow by several characteristics such as the level of education, environment, wealth, culture and religion, age, language, etc. (Abreu and Mendes, 2012; Canepa and Ibnrbubbian, 2014; Cordell et al., 2011; Goetzmann and Kumar, 2008; Grinblatt and Keloharju, 2001; Kim and Venkatachalam, 2011; Peress, 2004).

In respect to the GCC equity markets and their high level of individual investors as well as the assumption of their attitude that is likely to affect the stock market behaviour, several authors have examined the weak-form efficiency in order to understand the behaviour of stock prices in these markets. Dahel and Laabas (1998) used weekly stock prices to examine the weak-form efficiency during the period (1994-1998) in four GCC markets: Saudi Arabia, Kuwait, Bahrain, and Oman. They claimed that the overall of their results could provide evidence of the existence of weak-form efficiency. Al-Khzali et al. (2007) examined the weak-form efficiency in four GCC markets (Bahrain, Kuwait, Oman, and Saudi Arabia) within a study of eight countries in the MENA region during the period 1994-2003. They found that their raw data do not follow a random walk pattern, however, when they correct the data from the biases caused by the thin and infrequent trading, the Random Walk Hypothesis (RWH) was accepted. Nonetheless, within the period when the number of market participants started to increase sharply in GCC markets, some other authors examined the weak-form efficiency in GCC markets, and their overall results rejected the RWH. During the period (2001-2006) Elango and Hussein (2008) used daily data for the seven indices in GCC markets. They did not find evidence to claim a weak-form efficiency in these markets.

Abdmoulah (2010) in his study tented to examine the efficiency in 11 Arab stock markets (including the seven indices in GCC countries) using the daily prices for the available period for each index until 2009. Although some markets had presented some signs of efficiency in some periods, he generally suggested that these markets were considered inefficient, and this inefficiency was not improving through time. He also claimed the reforms in these markets are ineffective, and the nature of these markets (the domination of individual investors and their limited knowledge and noise behaviour) can be taken as a factor of the inefficiency. Bley (2011) conducted an empirical study of the weak-form efficiency on the GCC stock markets for the period from 2000 to 2009 and found a rejection of the Random Walk Hypothesis (RWH) on a daily basis. Also, Al-Ajmi and Kim (2012) examined the seven stock

market indices in GCC countries during the period (Dec 1999 – Feb 2010, for the majority of markets) using daily and weekly observed returns, as well as the corrected returns for thin trading. According to their findings, they considered all the GCC markets during this period as inefficient. They referred the inefficiency to several reasons such as the poor institutional ownership compared to the large government ownership in listed firms, the lack of market makers, the prohibition of short sales, etc.

In the early 2000s, which corresponds to the period during which the participants in the Saudi market have been increasing exponentially as well as in the other GCC markets, there was a huge number of training courses aiming to teach the individuals how to trade in stock markets, focusing on the technical and fundamental analysis. Amongst investors, some of them became overconfident due to the amount of relative knowledge that they had. Hence, some investors could believe that they possess enough knowledge and education to be more and more involved in the markets and to take more and more financial decisions, as a reflection of their overconfidence. Moreover, the basis that these individuals adopted in their decision-making process might be considered irrational and far from fundamentals, as described in the following section.

## 2. The expected behaviour of individual investors in GCC markets

The lack of sophisticated investors who understand the market and the domination of individual investors who are likely to have restricted knowledge in Finance could change the rules of the game in GCC equity markets. The GCC markets are non-mature and new-born markets (less than 40 years old) comparing to the western area.<sup>26</sup> In GCC markets, we assume that the institutional investors (where the majority are local) can be considered as information traders, whereas the individual investors, based on the noise trading definitions by the previous literature, are likely to belong to the term “noise traders”. The assumption is based on the fact that the majority of individual investors trade with a lack of fundamental information and limited professional knowledge, depending on rumours, word-of-mouth information, and following each other’s trades (Adel, 2019; Argaam, 2017; Raghu, 2016; Rahman et al., 2015; Ulussever and Demirer, 2017).

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<sup>26</sup> In Saudi Arabia, the stock market was officially created in mid-1980s. The other GCC markets officially created late 1980s & 1990s, however, no reliable and available data prior the year 2000.

Until recently, the majority of GCC stock markets are considered as heavy speculative markets, and the individual investors (mostly inexperienced and first-time investors) in GCC stock markets usually have a tendency to follow the “large speculators” in order to gain larger profits, as they think, from the speculation over a specific stock. It is said that the majority of large speculators manipulate the market (by heavy selling or buying, large grouping or disposing, spreading rumours, possessing inside information, etc.) in order to control a particular stock and attract the individual investors towards it, and the individual investors usually experience losses in their portfolios at the end of the period (Adel, 2019; Al-Abdulkarim, 2010; Elsiefy and Beshto, 2010; Ibnrubbian, 2012). Accordingly, we refer the term “large speculators” to the local individual investors who can manipulate a stock and drive its price due to the large size of their portfolios. In other words, those who have massive funds and portfolios compared to the daily liquidity, so that they can affect the market through heavy selling, heavy buying, etc.

The herding behaviour was observed in the GCC equity markets and assumed that this behaviour might arise from the domination of individual investors. Balcilar et al. (2013) suggested that the limited level of investment culture amongst the individual investors in GCC markets might induce the tendency towards herding behaviour. This phenomenon of herding behaviour was tested and found to exist in the Saudi Stock Exchange (Ibnrubbian, 2012; Rahman et al., 2015). They referred the existence of this phenomenon to the domination of individual investors, as well as to the Sharia effect, according to Ibnrubbian (2012). In respect to the GCC markets, evidence of herd behaviour was found in all GCC equity markets except in Bahrain and Kuwait during the period 2003-2017 (Youssef and Mokni, 2018). Also, Ulussever and Demirer (2017) found strong evidence of the herd behaviour in all GCC stock markets except in Oman and Qatar during the period 1997-2013.<sup>27</sup> They also found significant effects of oil prices on the herd behaviour phenomenon, indicating that the market participants in these markets may rely on oil prices rather than firms fundamentals to make their investment decisions.

Since the past decade, the authorities in GCC markets have been applying several reforms, transformations, and reshaping of the market regulations regarding the information

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<sup>27</sup> The period of the data set differs from a country to another.

disclosure, transparency, reporting requirements etc. in order to reinforce the market efficiency. The stock prices' adjustment to new information is the principal concept of an efficient market, as said by Fama et al. (1969): An efficient market is "*A market that adjusts rapidly to new information*". Hence, how rapidly the market reacts to new information, would demonstrate the level of efficiency in this market. Nevertheless, the reaction to new information would vary amongst investors according to several reasons such as the significance of information, the source of information, the availability of information and the ability to understand and interpret the information. Therefore, in markets dominated by individual investors (as the GCC equity markets in our case), we assume the language used to diffuse the new information might be considered as a serious issue to achieve the efficiency in these markets as explained in [section \(3\)](#) below.

### **3. The possible effect of English as a Business language**

International corporations usually use the English language as the main language for their news and publications, as it is the most widely spoken language around the world as well as the language of business. Therefore, regarding the GCC markets, the three major credit rating agencies (S&Ps, Moody's and Fitch) publish their announcements, decisions, comments, etc. in English language at first, and then the news is translated by the media into the mother language of the market of interest.

The majority of studies concerning the effects of CRAs' announcements on equity markets were conducted in English spoken countries, or in markets where the majority of influential investors, by the nature of their business, have English knowledge. Indeed, as far to our knowledge, all those studies were performed in an environment where the institutional investors accounted for the greater part of the daily transactions in stock markets, where the individual investors had the smallest fraction.

Concerning the language in the GCC area, Arabic is the mother tongue, and English comes as the second language. The level of English language amongst the locals is noticeably low, if none, in small towns and villages, and it is better spoken in large cities where the corporations and industries are located. A study concerning the English education system was conducted in Saudi Arabia and illustrated that young adults are not able to speak an efficient and fluent English as they should be (Al-Ahdal et al., 2014). In the EF English Proficiency Index, Saudi

Arabia was ranked 68, Kuwait 65, Qatar 63, Oman 58 and emirates 42 out of 70 countries where the English language is not the mother tongue of the population (EF, 2015).

Regarding the speed of the information diffused across countries, it is found that investors in the US react faster to firms' information located in English-speaking countries than firms' information coming from non-English-speaking countries such as European and Asian countries (Huang, 2015). The comparison in the study of Huang (2015) was conducted between two English speaking countries (Canada, UK), two European countries (France, Germany) and two Asian countries (China, Japan). He found that US investors react faster to firms' information located in English speaking countries than European countries and lastly from Asian countries. He said that the rapidity of incorporating foreign information is related to how investors are familiar with the language and the culture of the information source.

### 3.1 Previous studies concerning the effect of the language of publication

There were several studies conducted on the preference of investors toward the firms' characteristics, such as the firm's language. Grinblatt and Keloharju (2001) examined the preference of Finnish and Swedish investors to Finnish firms. One of their findings is that Finnish-speaking investors tend to invest and prefer Finnish-speaking firms, while also Swedish-speaking investors tend to invest and prefer Swedish-speaking firms. A Finnish-speaking firm is classified Finnish when it announces and publishes its report in the Finnish language, and a Swedish-speaking firm when it publishes its reports in the Swedish language. They assumed that when individual investors read a firm report that is announced in a perfectly familiar and understandable language for them, investors will obtain more useful information and better knowledge about the firm, whereas institutional investors seem to be less affected by this aspect.

Imbierowicz and Wahrenburg (2013) conducted a study on four continents North America, Latin America, Europe, and Asia-Pacific regarding the wealth transfer effects. They said that "*Heterogeneity in the results might also derive from regional differences. A potential concern is that we only use English language news to construct our measures of public information and surprise. Although firms with liquid CDS markets are amongst the largest in the world and should consistently be covered in the worldwide press, there may nonetheless be differences with respect to the number of news reports in different languages.*"

(Imbierowicz and Wahrenburg, 2013). Moreover, they stated that one of the unresolved questions in their work is the fact of the influence of geographical location on the effect of ratings.

Huang (2015) examined the market's response to domestic and foreign information about the firms' earnings surprises disclosed by the earnings announcements, where investors have access to both information.<sup>28</sup> He found a lower immediate reaction to firms' earnings announcements that have a higher proportion of foreign operations (abroad), and "*a stronger post-earnings-announcement drift (PEAD)*", referring this to the investors' lack of understanding the foreign information. He argued that the stock prices of a firm react more immediately to foreign information when the firm experiences a high proportion of foreign institutional ownership than a firm with low foreign institutional ownership. He attributed the divergence of investors' reactions to domestic and foreign information to the lack of understanding the foreign information. Generally, Huang (2015) presented two components that might play a role in the investors' reaction to foreign information:

- 1- Inattention, which could occur when the investors' attention is weak about a firm's information in a foreign country, which might be caused by the low visibility in media, creating limited access to this firm's information.
- 2- Lack of understanding: It means the difficulties that investors might confront in interpreting or processing foreign information, even when the information is received at the same time due to the asymmetrical level of linguistic and culture.

Finke and Weigert (2015) extended the study of Huang (2015) and performed their work over multinational firms from 22 countries around the world to investigate whether the foreign information predictability effect is a particular aspect of the US market or if it can be prevalent in other areas. Their findings are in line with Huang (2015). Besides, they showed that there is a gradual diffusion of foreign information due to the dissimilarity in the language between multinational firms' country and their sales countries; suggesting that when the information is diffused in a language that differs from the language of the investors' home country, the investors confront a greater challenge to understand and interpret this

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<sup>28</sup> Foreign firms' earning announcement donated to the announcements received from firms operating abroad and their stocks are traded in US markets.

information. Moreover, they found that firms operating in a foreign country but with the same official language as the firms' resident country, experience weaker return predictability (e.g., UK firms operate in the US).<sup>29</sup> This finding supports their argument about the significant role of language and the speed of information spread across markets.<sup>30</sup>

With respect to credit rating agencies, it is sometimes argued that, for positive events, local CRAs provide a greater informational content in their announcements than the international credit rating agencies, either due to their active position in the market or because they could reduce the informational asymmetry in their markets (Hubler et al., 2019). We also assume that the higher ability of local credit rating agencies to influence the markets' participants may arise from the closer relationship to the market and the procedures followed to announce their decisions. In further details, the larger influence of local agencies might be originated either:

- From the efficiency of the utilized channels in spreading their information, which makes it easier to achieve the targeted participants, such as local newspapers, radio, TV, internet, social media, etc. comparing to the international agencies' channels.
- Or from the language and mode of speech, where the notion of the language used in describing the news and the language used to convey this information makes it easier and faster to be understood by the local market participants. Simply, appointing the

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<sup>29</sup> Weaker return predictability of a stock could indicate a higher market efficiency, as the probability to predict the stock return is low.

<sup>30</sup> In respect to the investors inattention hypothesis, and the effect of institutional ownership, both studies Finke and Weigert (2015) and Huang (2015) are consistent with Nguyen (2012), who examined the link between the stock returns of US multinational firms and the foreign markets where they operate, in respect to the investors' inattention to changes in foreign market conditions. He referred the return predictability to the term "geographic momentum", which is the situation when there is a possibility to predict a firm's future stock market return at home market e.g. in the US, based on the firm's performance abroad e.g. in Asia. Nguyen (2012) suggested that the investors' inattention is expected to delay incorporating the foreign information and changes in foreign market conditions into stock prices. He also emphasised the effect of institutional ownership in these multinational firms over the speed of their stock prices to incorporate foreign information, saying that "*firms with less analyst coverage, lower institutional holdings, or more complex foreign sales compositions exhibit stronger return predictability*"(Nguyen, 2012).

local language, expressions, and their proper vocabulary by the local agencies are likely to deliver the message to the local market in a faster way than the international agencies.

Consequently, it would be interesting to examine the markets that are characterized by a large influence of local agencies with respect to the proportion of individual investors. This suggestion arises from our assumptions and beliefs that markets with a higher number of individual investors regarding the daily transactions could be characterized by a higher sensitivity to local agencies (due to the used language and channels as discussed above). We argue that there might be a language effect, as soon as international agencies only disclose their information in English, whereas the local agencies disclose their information in the local language. Unfortunately, according to our case study, it would be impossible to check the accuracy of our assumption in GCC markets, because, as we recall that until recently, there have been no local credit rating agencies operating in GCC countries, which means no enough events "for now" to run empirical tests.

**Therefore,**

- We assume the language used for the disclosure of the credit rating agencies' announcements to the markets characterized by a high proportion of individual investors, e.g. the GCC stock markets, is likely to affect the time needed to incorporate this information into the stock prices.

### 3.2 The possible impact of the English language on the GCC equity markets

Individual investors dominate the GCC equity markets while the institutional investors have the least proportion of the daily trading. Thus, we assume that individual investors are more likely to have difficulties in receiving, digesting, and understanding news coming from foreign sources, for instance, CRAs' announcements, due to the low level of English knowledge in the region. On the contrary, institutional investors are likely to have an advantage in receiving information, as they have, without any doubt, better access to foreign sources such as Bloomberg, Reuters, etc., and better competences, which arise from efficient human resources such as translators, financial analysts, etc. who possess larger information

processing capacities than individuals. It implies that the cost of acquiring this type of information would be higher for individuals than institutional investors.

To the best of our knowledge, we believe that previous studies regarding the CRAs' announcements examined the reaction of markets by considering the markets as one type of investors, without referring to institutional nor individuals. This might be due to the fact that previous studies were performed on markets where the institutional investors are dominant. This is also true for the studies that were conducted on non-Anglophone countries, which assumed implicitly that the market is dominated by institutional investors. In the case of Anglophone countries, where the assumed dominance still prevails for institutional investors, it is reinforced by the fact that individual investors are English native speakers who could more quickly understand and react to the news that is delivered.

**Therefore**, all the previous comments justify why our first research question is:

- ❖ How may the domination of individual investors in GCC equity markets affect the market reaction to CRAs' announcements?

Before aiming to answer this first research question, we need to come back to the pre-supposed role of the CRAs, as considered in the theoretical literature, and to reconsider it at the light of the GCC environment.

### 3.3 Reconsidering the role of CRAs in light of the GCC investors' environment

As already mentioned in **Chapter (2) Section (1)**, it is often said that one of the roles played by the credit rating agencies is to help to reduce the information asymmetry amongst the market participants (Bank of England, 2007, pp.56; Elkhoury, 2008). However, we argue that this claim has a matter of relativity when applied to markets characterized by high domination of individual investors, such as the GCC equity markets.

Credit Rating Agencies (CRAs) could reduce the information asymmetry amongst institutional investors, given that all of them have the same opportunity to access, possess, and understand the news that is disclosed. However, this is not the case amongst the entire investors in the GCC markets, as we explained above, because of the different proportion of institutional and individual investors. Consequently, we consider that the assumption of the

role of CRAs in reducing the information asymmetry may be overestimated and needs to be placed in context to take into account the investors' environment. Hence, it could be claimed that CRAs' announcements may fail to reduce the information asymmetry in the GCC markets due to several reasons; one of them being the difficulties in understanding the language used to publish the announcements (the English language), at least for the individuals.

**Therefore**, our assumption in this part is:

- Credit rating agencies may fail to significantly reduce the information asymmetry in GCC equity markets due to the disclosure of information in English language.

#### **4. Our hypotheses: The expected effect of the English language and individuals' domination on GCC markets**

It is said that the magnitude of stock prices changes is affected positively by several variables such as the firm's size, the proportion of institutional ownership, the analysts' coverage and the trading volume (Badrinath et al., 1995; Brennan et al., 1993; Chordia and Swaminathan, 2000; Hou, 2007; Lo and MacKinlay, 1990; Nguyen, 2012). Interestingly, Badrinath et al. (1995) also found a positive relationship between the speed of a firm's stock price adjustment and the proportion of the institutional ownership, concluding that not only the firms' size variable could have an incidence on the lead-lag effect. This finding is in line with our assumption regarding how institutional investors play a role in the market and how the lack of such sophisticated investors might affect "the game playing" on the market.

Considering the proportion of individuals and institutional investors in the GCC equity markets, their relative pre-supposed access to information and their financial "skills", we can assume that:

- **The market would experience two different reaction periods, in case of a CRA's announcements: the earliest arising from the sophisticated investors, and the latest one from individual investors.**

It is argued that new information diffused to a community through the mass media may have a negligible influence on people unless the information is spread through personal ties;

otherwise, the news is not likely to be taken seriously into consideration (Katz and Lazarsfeld, 1955; Rogers, 1962 - cited by Granovetter, 1973). Based on the fact of individuals' domination in GCC markets, we could back-up our assumption that there will be a lag between institutional and individual investors' reactions due to the necessary time required for the information to be transmitted amongst the individual traders to be influential (if CRAs affect the market).

Furthermore, under the assumption the market reacts to the CRAs' decisions, it can be assumed that institutional investors also have a better reactivity due to their ability to understand and digest the information provided by CRAs in the English language. On the contrary, the majority of individuals would start reacting to information only once it is announced in local media after being translated into their mother language (the Arabic).<sup>31</sup> This presumption is supported by the results of (Finke and Weigert, 2015; Huang, 2015; Nguyen, 2012) who found that institutional investors react more immediately to foreign information than individuals. Therefore, this lag occurring between the disclosure and the understanding of the news could impact the reaction time of the stock market, as follows:

- a) The reaction of institutional investors starts occurring at a period  $t$  ( $t$  is likely to happen before, at, or shortly after the rating event, depending on the level of efficiency on the market).
- b) The reaction of individual investors starts occurring at a period  $t + d$  ( $d$  is being the delay, corresponding to the time required for receiving and understanding the CRAs' news).

Thus, to illustrate more clearly the possible difference in the time of reaction, we are going to separate the investors into two categories:

- Institutional investors, and
- individual once

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<sup>31</sup> This presumption is supported by the results of Finke and Weigert (2015), Huang (2015), and Nguyen (2012) who found that institutional investors react more immediately to foreign information than individuals.

- **Institutional investors**

Under the condition of a market response to CRAs' decisions, there are three possible scenarios, regarding the institutional investors' reaction:

- 1) If we assume that institutional investors care about the CRAs' decisions, and have both immediate access and understanding of the CRAs' announcements, they will react at the event day  $t= [0]$ .
- 2) In case the level of market efficiency is lower, their reaction could occur a few days later after the rating event  $t= +1, +2$ .
- 3) We may also assume that if the "sophisticated institutional investors" are qualified enough so that they can anticipate or interpret the information. Thus, they could decide to act on the market prior the announcements by the CRAs ( $t= -1, -2, \dots -n$ ). This is in line with Ory and Raimbourg (2015), who consider that some investors do not need the CRAs' announcements to build up the decision, and that the need for CRAs' announcements is more a matter of confirmation or refutation for some others.

We consider the third scenario is not likely to happen frequently on the GCC markets as the sophisticated local investors may be concerned by the mimicry, and are more likely to adopt the same behaviour than individuals in case there is no fundamental information until a CRA's announcement is made. Thus, and according to our knowledge regarding how sophisticated the institutional investors are in GCC markets, and as the majority of the institutional investors are local, we back-up our first assumption that,<sup>32</sup>

- If we assume the institutional investors care about the CRAs' decisions, they should more probably react at the event day  $t= [0]$ .

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<sup>32</sup> Based on the previous study of Huang (2015), he illustrated that the reaction of foreign institutional investors differs than local institutional investors to foreign information, due to the difference in languages and culture. Also it is presumed that local investors are likely to react less than foreign investors to global rating agencies (Han et al., 2009).

- **Individual investors**

According to what mentioned earlier, we assume there should be a lag between the reaction of institutional investors and that of individual investors. We also presume that this lag in the reaction is likely to shrink in recent years comparing to previous years, due to the improvement, enhancement and development of the information conveyed by media in the region.<sup>33</sup> As well as due to the technological progress and tools available to the “simple investors” to help them in a decision-making process (buying or selling a stock). Assuming that, individual investors should be able to understand and interpret the news faster than before due to the speed of receiving the translated news. Consequently, we can also assume that in recent years the reaction for both investors (institutional and individuals) is likely to converge towards a shorter period.<sup>34</sup> The assumption of a “media effect” arises from the finding of Huang (2015) who claimed that the foreign information takes time to reach the market when the foreign news is less visible to investors. Also from the results of Fang and Peress (2009) who found that firms with no media coverage show higher return than firms with mass media coverage, suggesting that the media have an impact on the price of securities, by attracting or driving away the investors who are not “aware” of all the stocks.

Furthermore, we assume that the lag of reaction between the institutional and individual investors, which is assumed to arise from the lack of understanding the language, is not likely to be experienced similarly in all GCC equity markets, as they differ according to the proportion of individuals’ domination. Therefore, we assume the lag is likely to be larger in Saudi Arabia and the UAE stock markets, whereas the lag might be observed shorter in Qatar, Kuwait, Bahrain, and Oman stock markets.<sup>35</sup>

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<sup>33</sup> Media such as newspapers, TV, social-media etc., also including the official sources of the GCC stock markets.

<sup>34</sup> For further research that may investigate this case, if in recent years the reaction between institutional and individual investors happened to occur on the same day, we may assume or expect the lag in reaction to exist during the intraday prices of a stock.

<sup>35</sup> It is based on the individuals’ proportion for each of the GCC markets.

Our assumptions for this part are:<sup>36</sup>

**Assumption (1):** The lack of understanding amongst the individual investors is likely to cause a lag in reaction between their reaction and that of institutional one.

**Assumption (2):** The lag between institutional and individual investors' reaction is likely to shrink with time, especially in recent years, due to the improvement, enhancement of the media in the region, as well as the technological progress and tools availability.

- **The difficulty in effectively testing the assumptions 1 and 2**

To be able to test the reaction time of individuals and institutional investors, we attempted to obtain accurate and specific data directly from the official authorities in Saudi Arabia and the United Arab Emirates and the other GCC countries, but unfortunately, we failed to get an authorisation.

We tried to obtain the daily trading percentages of individuals and institutional investors for each firm's stock of our sample, during the event window, in order to capture who traded on the event day [t], prior to [t-1 ... -n] or after the announcement [t+1 ... n], and to prove the different reaction time for each of these two categories.

Consequently, our hypothesis regarding the domination of individuals and the effect of the English language on the stock market after CRAs' announcements cannot be tested directly. To deal with this problem, we tried to check whether there may be a longer reaction time associated with rating events in GCC markets characterized with a large proportion of individual domination as in Saudi Arabia and UAE than in the other GCC countries. We consider this classification as high individual domination (Saudi Arabia and UAE) and low individual domination (Qatar, Kuwait, Bahrain, and Oman) to present the empirical results.<sup>37</sup>

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<sup>36</sup> We call them assumptions instead of hypotheses because we cannot prove them empirically due to some difficulties in obtaining the needed data. See the next section ([The difficulty in effectively testing the assumptions 1 and 2](#)) for more information and for our hypotheses about this part.

<sup>37</sup> As mentioned in [chapter \(1\)](#) the daily transactions addressed by individual investors in Saudi Stock Exchange is around 85%, and 74% in UAE, whereas in Qatar, Kuwait, Bahrain, and Oman the proportion is lower with 55%, 49%, 43% and 34% respectively.

If confirmed, this outcome may be seen as an insight of two subsequent responses of the stock market, corresponding to the two different categories of investors. In order to do so, we have implemented a two-step procedure: first is running an event study on the GCC countries in order to capture the length of the reaction time (if any) – **chapter (7) section (2)**. Then, we aimed to compare it to that of other event studies led on other markets and countries - **chapter (7) section (3)**. **Therefore**, we reform our third hypothesis as:

### Hypothesis 3

**H3:** In GCC countries, the markets with a larger proportion of individual investors will experience a relative delay to react to the foreign information (CRAs' announcements) compared to the markets with a lower level of individual investors.

- **Questionnaire part – the individuals' behaviour in Saudi Arabia**

Considering previous literature results on the existence of a foreign language effect, we decided to run a questionnaire to check whether the English language may be an issue for individual investors.<sup>38</sup> Based on our assumptions and previous literature about the impact of the English language over the individual investors, we hypothesize that:

### Hypothesis 4

**H4-1:** Higher level of speaking the English language influences positively the awareness to CRAs' announcements.

**H4-2:** Higher level of speaking the English language influences positively the investors to follow the financial news in English language.

**H4-3:** “Non-English speaker investors” tend to rely on news from Arabic sources more than “English speaker investors” do.

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<sup>38</sup> Due to the fact that the Saudi market is characterized with the largest individual investors' proportion amongst the GCC markets, as well as the difficulties to reach the individual investors in the other GCC markets, we conducted our survey amongst the Saudi individual investors only. See **chapter (5) - section (1)** for further information.

## Chapter 4: Literature review and hypotheses regarding the influence of religion and Imams' announcements

In this chapter, we concentrate on the importance of religion amongst the market participants, especially the individual investors, and how the Islamic instructions may affect the market behaviour. We assume the religion factor (Sharia instructions) is likely to have a serious influence on the individual investors' investment decisions in GCC markets. We also assume this influence might lead to affect the financial health of firms, leading to reconsider the religion factor to be taken into account when assigning a credit rating in these countries.

Therefore, we investigate the impact of religion on stock markets, and, by extent, how religion may affect the market response to CRAs' announcements in GCC markets. We describe the Imams' announcements (Islamic scholars' announcements) and their role and influence on the market (case study – Saudi Arabia). Subsequently, we formulate our second set of questions, how are the Imams' announcements going to affect the stock prices for the re-classified firms? Which would be the dominant factor over the individual investors' decisions: the default risk (CRAs' announcements) or the religion (the Imams' announcements)? In such markets characterised with a high proportion of religious individual investors, should credit rating agencies take into consideration the religion factor in the rating determinants?

The structure of this chapter is that we begin to shed light on the influence of religion on stock markets and investors' attitude towards risk. Then, we demonstrate the influence of religion with a particular focus on its possible influence on the GCC investors' behaviour and extensively on the reaction to credit rating agencies' decisions. After that, we illustrate the role of Imams and their announcements in Saudi Arabia. And finally, we formulate our **hypotheses (H5) and (H6)** concerning the influence of religion.

The next three subsections will allow us to have a clear image about the effect of religious announcements that are delivered by the Islamic scholars (Imams) to the market about the religious status of the listed firms, over the stock prices. Arguing that the religious announcements may affect the stock prices and financial health of firms, hence, it could raise the issue that Imams' decisions may influence the credit rating assignments to firms.

## 1. The influence of religion on stock markets and investors' attitude towards risk

Religion is known as being an active factor in various domains such as economy, at both macro and micro-economic level. At a microeconomic level, there is a large number of studies conducted on the influence of religion on individuals' decisions, for example, marriage, divorce, crime, drug, and alcohol, etc. Considering the macroeconomic one, various studies have already investigated the link between religion and economic growth, such as economic development, risk, income per capita etc.

Islamic finance has already been investigated by researchers regarding various features and aspects. Particularly, in the world of finance, it has to be noticed that despite the existing opportunities to invest in some profitable investments with potentially high returns, the effective participation into this type of investments may be forbidden for some of the market participants, due to religious barriers. It is said that despite possible higher market returns for "sin stocks", these securities are being highly neglected by some of the investors due to the social norms (Hong and Kacperczyk, 2009). They argued that some investors tend to take into consideration the social norms more than financial profitability. Also, it implies that market participants are likely to introduce non-financial factors in their investment decisions (Kim and Venkatachalam, 2011). Moreover, Kumar (2009) found that socioeconomic characteristics, such as religion, influence the individuals' investment decisions to "lottery-type" stocks. Borgers et al. (2015) also suggested that "*fund managers do not tilt heavily towards controversial stocks because of social considerations and practical constraints*".

There are already many studies that have investigated the individuals' behaviour towards risk. It is claimed that religious beliefs have a remarkable influence on people, and one of the main influences is the attitude towards risk. Previous studies mainly suggested a positive correlation between religiosity and the risk aversion amongst individuals. For instance, Miller and Hoffmann (1995) discovered a negative relationship between the religiosity of individuals and their willingness to bear risks.<sup>39</sup> Osoba (2003) conducted a panel regression and used

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<sup>39</sup> They used risk and danger to measure the risk tendency, and they examined the reaction to risk and danger to illustrate the tendency of risk amongst respondents. For example, the occupational choices, monetary investments, and other forms belong to the adventure seeking.

several financial and non-financial indicators to measure the level of risk acquired by individuals. They highlight that the individuals who frequently attend the church are less risk-seeking.<sup>40</sup> Furthermore, it is found that the frequency and the amount of gambling amongst Las Vegas residents are negatively correlated with the religiosity (Diaz, 2000). Also, others such as Barsky (1997), Dehejia et al., (2007), and Halek and Eisenhauer (2001) found an influence of religion on the individuals' attitude towards risk.

In addition to the influence on individuals, it is suggested that religiosity also has an influence on the organizational behaviour regarding the risk attitude. Hilary and Hui (2009) found that US companies that located in areas recognized with a high level of religiosity; tend to reduce their exposure to risk.

Consequently, we assume that religion and culture play an important role in business ethics as some investors may be driven by legal and moral considerations to trade and deal on the markets. As a result, religious beliefs and cultural commitments are strong determinants and important guidelines at least for a particular type of investors.

## 2. How religion may affect the market response to CRAs

The GCC countries have several common points, with the main one being the religion. Both governments' orientations and citizens are following the Islamic religion. For information, the Islamic religion applies some restrictions to the investment choices. For example, there are stocks, called Haram stock (Sin Stocks), which are the stocks that belong to companies involved in prohibited fields of investments or suspicious money transaction such as alcohol, gambling, tobacco and drugs, usury (Riba), etc., and they are also called "non-Sharia compliant stocks/firms". As religion plays a significant role in these countries, especially over the individuals' behaviour, we believe this characteristic is likely to affect the individuals' reaction towards information conveyed to the financial market.

Although it is legally allowed to invest in non-Sharia compliant firms (Haram stock), there are ethical norms and cultural influence that induce a large proportion of the society to follow the Islamic instructions in the business field and avoid the non-Sharia compliant firms.

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<sup>40</sup> It is a working paper, cited by several authors such as (Abedifar et al., 2016; Chen et al., 2014; Hilary and Hui, 2009).

Ibnrubbian (2012) found that investors in the Saudi market prefer investing in Sharia-compliant firms (Halal stocks) despite how profitable the non-Sharia compliant firms (Haram stocks) could be. He also found that investors tend to avoid investing in non-Sharia compliant stocks (Haram stocks) during the holy month (Ramadan), as it is considered as a despicable action during this period.

Some investors might look first at the legitimacy of a stock from a religious point of view prior to invest or even digest an announcement. If the stock belongs to a Sharia-compliant firm, the investor may begin to analyse the information in order to react; otherwise, the investor may disregard the information that is disclosed, as the company may be regarded as a non-Sharia compliant firm. Accordingly, the importance of investing in a Sharia-compliant firm might exceed the importance of the risk situation of a firm. Hence, the announcement from credit rating agencies may have little effect on a certain type of firms, as their religious status are likely to prevail first.

Focusing on this characteristic, we are going to examine the reaction of individuals to a particular type of information in Saudi Arabia, such as CRAs' announcements and Imams' announcements.<sup>41</sup> Regarding this study, this country can be seen as an ideal context for several reasons. Firstly, the majority of the population is known as a highly conservative Islamic society, and the country is considered as the centre of Islamic community by hosting the two holy mosques in Makkah and Medina. Secondly, the local individual investors are accounted for approximately 85% of the daily transactions in the stock market. Furthermore, there is a rapid growth in the field of Islamic financial market and services; despite the conventional market also exists, leading to the situation that the investors have the right and no restrictive legal obligation to choose between Sharia-compliant and non-Sharia compliant investments.

Therefore, one of the tools we used to assess the importance of religiosity has been the design and the distribution of a questionnaire to individual investors on the Saudi market in

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<sup>41</sup> Imams' announcements = Islamic scholars' announcements are the announcements published by the authorised Imams about the religious status of the listed companies in the Saudi stock market (Tadawul). This part is described in details in [chapter \(8\)](#).

order to discover the investors' priority between religion and risk.<sup>42</sup> This survey would help to understand the orientation and the probability for these individuals to react to a specific type of information, e.g. Imams' announcements (religious) and CRAs' announcements (risk). In addition, we may generalise the results of Saudi Arabia regarding the questionnaire to the other GCC markets, based on the common points that have been argued previously.

### 3. Imams' announcements In Saudi Arabia

In Saudi Arabia there are authorised Imams (Islamic scholars) who analyse the balance sheets and the firms' core business in order to categorize the listed firms into three types of lists (Halal, Haram, mixed):

1. Halal firms: are fully Sharia-compliant firms in a level of core business and source of funds.
2. Haram firms: are the firms that are considered as non-Sharia compliant in a level of core business and source of funds, which is forbidden by religion, but not legally, to invest or speculate in these firms.
3. Mixed firms: it reflects the situation of the firms that are Sharia-compliant for their core business and source of funds; nevertheless, the source of funds is not entirely following the Sharia laws, regarding some of its activities or some of its subsidiaries. Which means that a small fraction of the funds in these firms contain or deal with Riba (non-Islamic interest).<sup>43</sup> According to some Imams, the investment in this type is allowed, but the investor has to relinquish a part of the dividends to purify the earnings, in case if the investor receives dividends. However, if the investor earns profits only from speculating on a stock (i.e. to benefit from the difference in stock prices), then the investor does not need to relinquish any of the profits as long as the profits do not come from the dividends during the hold of the stock.<sup>44</sup>

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<sup>42</sup> The methodology and results of our questionnaire are illustrated in chapter (5) and (6), respectively.

<sup>43</sup> The Imams consider the company as a mixed company if the suspicious funds do not exceed a certain percentage of the capital; some use 5% as a proxy. Hence, the company might be reclassified to be non-Sharia compliant if the percentage of the suspicious funds exceeded their proxy.

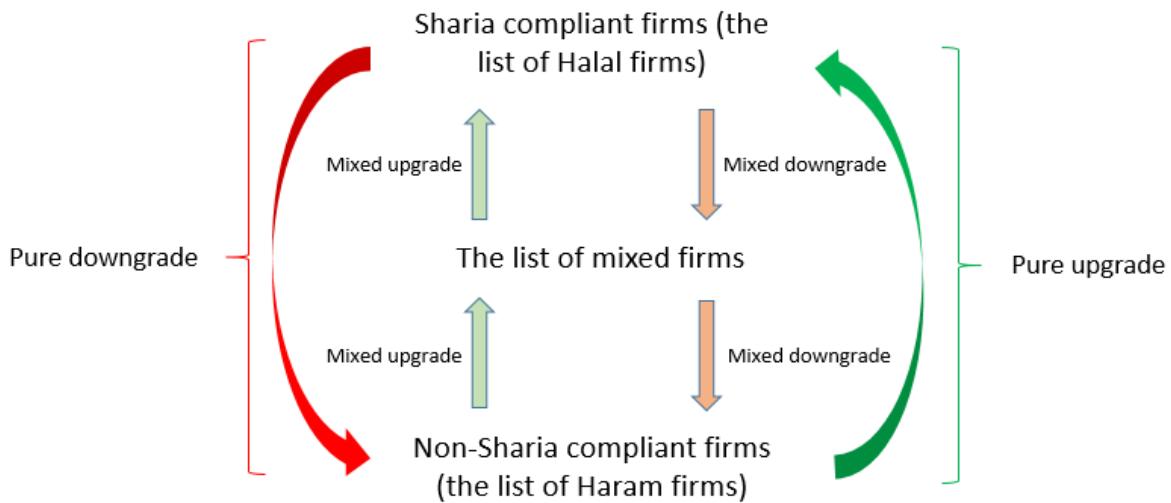
<sup>44</sup> Some other Imams believe that investing in this type of firms (mixed firms) are not religiously allowed, even if the investors are only speculating and not earning dividends.

This type of classifications exists only in the Saudi Stock Exchange, according to our knowledge, where there are three main authorised Imams Al-Shoubaily, Al-Osaimy, and Al-Fouzan who classify the listed firms in the Saudi Stock Exchange (Tadawul), approximately in an annual basis, relying on the Islamic financial laws (Sharia laws). The classification of the listed firms in the Saudi Stock Exchange started in 2004. Then during the following years, some banks and associations have started to classify firms similar to the three Imams. However, some investors believe that there is a conflict of interest when banks and associations classify the companies, leading them to doubt the credibility of these lists, comparing to the Imams' ones. Hence, in our study, we have decided to consider the three Imams as the main and only source of announcements.

In a general picture, the Imams are used to announce the lists almost on an annual basis for the entire listed companies in Tadawul "Saudi All Shares Index (TASI)". Hence, each year, some companies are removed from the Sharia-compliant firms' list (Halal list) and added to the list of non-Sharia compliant firms (the list of Haram firms), and vice-versa. Additionally, there are listed companies that are removed from Sharia-compliant firms' list (Halal list) to be placed into the list of mixed firms, or/and from the non-Sharia compliant firms (the list of Haram firms) to the list of mixed firms, and vice-versa.

Therefore, in the following pages, we have considered the re-classification from being in the list of Sharia-compliant firms (Halal list) to the list of non-Sharia compliant firms (Haram list), as a "pure downgrade" (from a religious point of view), and the re-classification from being in the list of non-Sharia-compliant firms (Haram list) to the list of Sharia-compliant firms (Halal list), a "pure upgrade". Additionally, we consider the re-classification from the list of Sharia-compliant firms (Halal list) to the mixed list as a "mixed downgrade", and the re-classification from the list of non-Sharia compliant firms (Haram list) to the mixed list as a "mixed upgrade", and vice-versa. See **figure (3)** below:

Figure 3: A chart explains the Imams' re-classifications of the listed firms in the Saudi Stock Exchange (Tadawul).



**Note:**

Despite the detailed classification mentioned above that are used to illustrate the differences between the pure and mixed downgrades/upgrades, in the further empirical study, [chapter \(8\)](#), we will simplify the used terms because we only take into account the “pure” events. Thus, we call the “pure downgrade” > “downgrade”, and the “pure upgrade” > “upgrade”, because we are not going to consider the mixed re-classifications in our study. Indeed, these words have neither “ideological” nor “pejorative” meaning, it is only employed to identify the direction of each announcement.

Our further investigation into the Imams' announcements is designed to discover the influence of these announcements on the individual investors' decisions. Indeed, the results of our study will allow us to build another assumption in order to go further, whether or not these announcements could also affect the financial health of the re-classified firms. The idea behind reporting the effects of Imams' announcements is to conclude whether or not the credit rating agencies should also consider the religion as a determinant when assessing the risk of an issuer. At this stage, we hypothesize that the religion factor plays an essential role in the investors' decisions and market reactions, which might subsequently influence the business field of the companies, positively or negatively.

**Therefore**, all the previous comments justify why our second set of research questions is:

- ❖ How are the Imams' announcements going to affect the stock prices for the reclassified firms?
- ❖ Which would be the dominant factor over the individual investors' decisions: the default risk (CRAs' announcements) or the religion (the Imams' announcements)?
- ❖ In such markets characterised with a high proportion of religious individual investors, should credit rating agencies take into consideration the religion factor in the rating determinants?

#### **4. Our hypotheses: The expected effects of Imams' announcements on stock markets**

In the Saudi Stock Exchange, the volume of shares traded in sectors with a lower number of Sharia-compliant firms is less than the sectors with a higher number of Sharia-compliant firms (Ibnrubbian, 2012, pp.63). This finding can demonstrate the importance of the Sharia concept amongst investors, and as mentioned before, the majority of these investors are individuals. In this part, we aim to examine the reaction of the firms' stocks that were "upgraded" to Sharia-compliant firms and that for those being "downgraded" to non-Sharia compliant firms. This examination is going to illustrate the influence of Sharia (Islamic instructions) on listed firms, which might lead us to enhance the determinants of CRAs decisions in this type of markets. More precisely, to suggest them adding the religion factor to the determinants elements of issuers' risk assessment.

To clarify this point, let us precise that if the stock price of a company (A) in Saudi Arabia drops significantly after an Imam's downgrade announcement, this is likely to affect the investors' wish to keep holding the bond/Sukuk of this firm, as well as the firm stock, with a subsequent possible effect on prices, earnings, and also other financial indicators. Moreover, in case this company (A) is a bank, we expect this effect being larger, as some of its clients (e.g. high religious individuals, Islamic corporations, Islamic organisations, etc.) might move their wealth from bank (A) to any other Sharia-compliant bank.

The problems that were addressed in the Agency Theory, with respect to the existence of the moral hazard could also exist in Islamic finance: when a firm becomes suspicious in its transactions or business model in order to maximise its wealth, meanwhile, it could jeopardize the Islamic status of this company, with a threat to become a non-Sharia compliant firm. The occurrence of such a situation is then likely to affect the firm.

Hence, we suggest that CRAs should also take into consideration the effect of religion and culture. This problematic is grounded in the behavioural finance, as a psychological reaction of the market.

Moreover, some individual investors have their stock portfolios provided by some market institutions that are affiliated to Islamic banks such as Al-Rajhi Capital, Albilad Capital, and Alinma Investment in Saudi Arabia, and these banks/institutions do not allow the investors to trade in shares that are classified as non-Sharia compliant firms, based on the decision of their “Sharia Board” (Al Rajhi capital, 2020; Albilad Capital, 2019; Alinma Investment, 2020b).<sup>45</sup> Also, some other investment funds and institutional investors do not invest in non-Sharia compliant firms. This is due to the banks’ and investment funds’ regulations and requirements to avoid the Intervention into any suspicious transactions or business that may threaten the banks or the investment funds orientation towards being Islamic. Thus, we assume that after an “upgrade” of a company from non-Sharia compliant firm (Haram) to Sharia-compliant firm (Halal), the probability for its stocks being of interest for a larger number of individual investors and investment funds is higher, and vice-versa.

Regarding the influence of religion, we may expect the religion factor to play an essential role on the Saudi Stock Exchange; thus, we assume that the Imams’ announcements may produce a signalling effect, as follows:

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<sup>45</sup> For example, in Al Rajhi capital, the investment account opening agreement for individuals states that: “(25-1) ... Moreover, the Company, shall have the right, to suspend the trading in any stock that does not fulfil or abide by the sharia controls. (25-2) The Customer acknowledges that he / she is certainly aware that, the Company prohibits trading in the shares of the companies that are not approved by the Company’s Shariah Board as per the list issued by it in this regard, and which the Board updates periodically on quarterly basis, and that he / she can review the same through the Company’s website or at any of the investment centers” (Al Rajhi capital, 2020).

## Hypothesis 5

- H5-1:** The announcements of “downgrades” by the authorised Imams will be followed by negative abnormal returns, as the market considers this information as valuable bad news from a religious point of view.
- H5-2:** The announcements of “upgrades” by the authorised Imams will be followed by positive abnormal returns, as the market considers this information as valuable good news from a religious point of view.

- **Questionnaire part – the individuals’ behaviour in Saudi Arabia**

We diffused a survey amongst the individual investors in the Saudi Stock Exchange in order to understand better the individuals’ behaviour towards several subjects; one of them is being the influence of religion.<sup>46</sup> According to previous literature about the effect of religion on the decision-making of individuals, and based on our assumptions, we tend to test the following hypotheses:

## Hypothesis 6

- H6-1:** The higher religiosity is likely to lead the investors to follow the Imams’ announcements.
- H6-2:** The religion factor is likely to affect the desire to buy and keep in portfolios some financial securities, based on their religious status.
- H6-3:** In case CRAs’ and Imams’ opinions lead to a conflict in investors’ perception regarding the firms’ situation, then high religious investors are likely to pay more attention to Imams’ announcements than to CRAs’ to take their investment decisions.

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<sup>46</sup> See chapter (5) – section (1) for the data and methodology used for the questionnaire, and chapter (6) for the results.

## Chapter 5: Data and Methodology

In this chapter, we are going to present the methodological approaches that we used in order to test our hypotheses. Firstly, we applied a questionnaire in order to examine the behaviour of individual investors in Saudi Arabia. This survey will allow us to examine the hypotheses that we already formulated in previous chapters regarding the reaction to CRAs' announcements, the effect of English language, and the possible influence of religion on the individual investors' decision making (**H4 & H6**). In this part, we will describe the distribution process, the data of our sample, and the methods used to analyse our data.

The second methodological approach is the event study. We applied the event study methodology to examine the stock prices' reaction towards two main events: the CRAs' announcements and the Imams' announcements. This approach will allow us to examine the hypotheses that we already formulated in previous chapters (**H1, H2, H3, and H5**). We will describe the estimation procedures, the excess return measurements, and the data set that we used for both events.

### 1. The questionnaire methodology

A questionnaire is applied in order to discover the individual investors' opinion in the Saudi Stock Exchange (Tadawul) about the CRAs' announcements, the possible influence of the English language, and the impact of Imams' announcements over the investors' behaviour. The first goal beyond the questionnaire is to achieve answers for the following points and questions:

- The English level of traders: the survey tends to allow us to test our hypothesis regarding how fast the investors are able to understand the announcement of CRAs.
- The information channel: this part will help us to understand better how the individual investors reach and receive foreign information.
- The CRAs' knowledge: this part of the questionnaire aims to capture the individuals' knowledge about CRAs.

**Q1. To what extent may the English language affect the reaction of individual investors to CRAs' announcements?**

After answering the first part of the questionnaire, we move to the other part, which is the possible influence of religion on the decision-making amongst the individual investors. This part will allow us to find out how the religion can affect the investment decisions, as well as the critical factor for the individual investors, either they pay more attention to the default risk of the firm or the legitimacy of the firm from the Sharia point of view. Thereby, this part is likely to reinforce our assumption of whether the religion factor should be taken into consideration within the rating determinants. The second goal beyond the questionnaire is to achieve answers for the following points and question:

- The role of religion: this part tends to illustrate the possible impact of religion on the investment decision-making amongst individual investors.
- The religious attitude: the questionnaire will allow us to examine our hypotheses concerning the Sharia and non-Sharia compliant firms, and help us to support our assumptions regarding the possible influence of religious information on the listed firms.
- Religion vs. CRAs: the questionnaire will attempt to illustrate whether the individual investor pays more attention to the credit rating of the firm or the religious position.

**Q2. To what extent the religious announcements (the information announced by Imams) are likely to influence the investors' behaviour and their attitude towards risk?**

A. Distribution process

The questionnaire is designed to collect quantitative data by using “close-end answers” as believed that this type of questionnaire is easier for the participants to encourage them to participate. This questionnaire has been distributed through the new media channels such as Forums on the internet (specialised in Saudi Stock Exchange), WhatsApp, and Twitter. Regarding social media, it should be precise that they have taken a huge place in Saudi society, even amongst the elderly people, explaining why it is one of our main channels.

Using the electronic channels and emphasising that all responses would be treated anonymously is believed to decrease the level of bias and fake answers, especially for the questions touching the line of religion, customs and traditions. Klein et al. (1967) examined the possible distortion in a questionnaire that could occur from differences between

identified and non-identified participants. They found that a considerable probability of faking answers and distortion might appear if the participants' answers are not treated anonymously, even if they are promised with confidentiality. In addition, it is said that unlike interviewing in person, questionnaires will not have any influence that may create biasing effects over the participants' answers, such as visual, verbal, social distance, etc. (Barath and Cannell, 1976; Collins, 1970; Dohrenwend et al., 1968). For the use of the internet to diffuse the survey, several studies used the internet as a channel to reach their target audience such as (Chianasta and Wijaya, 2014; Jothi et al., 2011; Kayam and Hirsch, 2012).

Therefore, by answering through the internet with anonymous identity, the participants would not have any external influence or pressures for choosing a specific answer, and would not hesitate to disclose their private opinion, mostly for what concerns the religious options.

For the questionnaire, we activated the cookies to avoid as possible the multiple participations from the same participant. We also controlled the timing, which is going to provide us with the time spent on each section, allowing us to identify whether the participants spent enough time answering the questions, or if they only jumped through sections in order to finish the questionnaire. The best way to find out the least needed time to complete the survey is to take the time spent by the creator of the survey to answer all the questions. We considered it as the lowest limit of time needed to answer the questionnaire.<sup>47</sup> Furthermore, as the questionnaire was delivered by the social network, we activated the identification of the IP address to ensure that all the responses were coming from Saudi Arabia and not from other countries, as we aim to examine the opinion of Saudi individual investors.

Diffusing the survey though the social media will help to reach the largest proportion of our target segment, and usually people will not participate on such a questionnaire that

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<sup>47</sup> We assume that the creator of the survey already knows the questions and the answers without the need to re-read in order to understand or think. Thus, if the participant spent lower time than the time of the creator, we assume the participant did not spend enough time to answer, which we believe the participants started to jump through questions in order to finish the survey. Consequently, we removed this type of participants' answers from our sample. Furthermore, we apply another filtering process regarding the time for each section separately, look at the next section ([B. The sample](#)).

consumes around 10 minutes of their time unless they are interested in the subject. Thus, we assume all the completed responses (after cleaning the sample) are completed with full freedom and without any pressure to participate.

As the questionnaire is distributed through the internet, some specific sites and applications have been used to enhance our accurate choice of participants. First, we spread the questionnaire in forums specialised in the Saudi Stock Exchange, where approximately the entire members of these forums are trading and/or investing on Tadawul. Second, we spread the survey on twitter, with specialised Hashtags about the Saudi Stock Exchange each day.<sup>48</sup> Also, our questionnaire was re-tweeted by professionals that most of their tweets are about the Saudi Stock Exchange, finance, and economy. Moreover, these professionals have a large number of followers, and the majority of these followers are likely to be interested in the Saudi Stock Exchange. Third, we managed to distribute the survey through specialised groups in WhatsApp, as we believe interested people may participate in the survey.<sup>49</sup>

## B. The sample

The questionnaire was spread through internet (the channels mentioned above) with a third party specialised in online surveys (LimeSurvey). It was spread in the Arabic language after translating it from the English language to ensure that all the participants may understand it clearly (and then to avoid the misleading) and to encourage the participants who do not speak English to participate. At first, a pilot test was conducted to ensure the questions are understandable and related to the market. Then, the period of spreading the questionnaire through the chosen channels was from 11 January 2017 to 1st April 2017.

We also calculated the minimum number of participants that were required for this questionnaire to reach a sample size that may be considered as representative. We applied two different methods in order to find the minimum sample size that is needed:

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<sup>48</sup> We spread the survey on twitter with specialised Hashtags in the Saudi stock market, such as #TASI (#تاسي), #Saudi\_market (#السوق\_السعودي), and #Tadawul (#تداول).

<sup>49</sup> We had an interview with Tadawul (the Saudi Stock Exchange) in order to diffuse the survey through their official channels, as they have the authority to reach the entire population, but unfortunately they refused to cooperate.

The first approach is the one that was used in the study of Chianasta and Wijaya (2014), who also spread their questionnaire through the internet. It states that the minimum number of participants is at least:

$$(N > 50 + 8m)$$

Where,

N = the needed sample size

m= number of questions in our questionnaire

As there are 29 questions in our questionnaire; hence, the sample size has to contain over 282 participants.

$$(N > 50 + 8*29) = N > 282$$

The second approach is a statistical method introduced by Creative Research Systems (2016) to which calculates the minimum sample size needed to have a representative sample, by determining the level of confidence, margin error, and population:

$$\text{Sample size (ss)} = \frac{Z^2 * (p) * (1 - p)}{C^2}$$

$$\text{Sample size by considering the population} = \frac{ss}{1 + \frac{ss - 1}{pop}}$$

Where,

Z = is the critical value of the standard normal distribution. To set 95% as a confidence level, we choose the Z-score 1.96

p = is the percentage that the sample picks a particular answer or choice. In order to increase the accuracy, we should maximise the term ( $p*(1-p)$ ); thus, we use the worst-case percentage (50% = 0.5)

c = margin error (confidence interval 0.05 = ±5)

Pop = population

$$\text{sample size} = \frac{1.96^2 * 0.5 * (1 - 0.5)}{0.05^2} = 385 \text{ participants}$$

$$\text{Sample size by considering the population} = \frac{385}{1 + \frac{385 - 1}{4,626,732}} = 385 \text{ participants}$$

According to Capital Market Authority in Saudi Arabia, the total number of individual investors for the 1<sup>st</sup> quarter 2017 in the Saudi Stock Exchange (Tadawul) is 4,626,732 as approximately 21% of them are female and 79% males (Capital Market Authority, 2017a). The number of investors participating in online trading is 1,8 million, which is approximately 41% of the total investors registered in Tadawul in 2015 (SAMA, 2016). As a result, 385 responses to our questionnaire are required to achieve a 95% confidence level and 5% margin error. Regarding the population size, the model (in the way that is built) ignores the population size exceeding 1,000,000 as the sample size generated by the model will keep giving 385 for 95% confidence level and 5% margin error (Creative Research Systems, 2016).

**Note:**

Regarding the tests of questionnaire in [chapter \(6\)](#), we ran the tests again over a corrected sample to match the mother population and we found the same results. As the women percentage in our sample is around 4.5% whereas the women in the mother population (the women who have portfolios in the Saudi stock market) is about 21%, according to the report of the Capital Market Authority, we doubled the answers of women 5 times and we reached approximately 22%, and then we ran the same tests in order to find out whether the results persist or not. We found the same results prior and after the correction. See [appendix \(15\)](#) for the results after the correction of women percentage, and see [chapter \(6\)](#) for the actual tests prior the correction.

In respect to the filtering process, we eliminated the participants' answers who spent a short time to answer the questionnaire in total or for specific parts. For example, if the shortest responding time to a question is 30 seconds and the next answer promptly is 90 seconds and raise steadily (94, 97, 102 etc.), the answer of 30 seconds is eliminated due to the abnormality in the answering time. We also deleted the participants' answers who do not

invest in the stock market and who invest only in IPOs. At the end of the filtering process, we kept only 427 participants in our final sample.<sup>50</sup>

### C. Methods to analyse the questionnaire

In order to analyse the answers to the questionnaire, we applied two methods:

1- The comparison test: We compared between two groups in order to find out whether they differ than each other or not. The respondents to our survey are categorised into the following groups:

- a. English speakers vs non-English speakers
- b. High religious investors vs less religious investors.

2- Logistic regression: We used the SPSS software to run the logistic regression over two models in order to explain the relationship between the dependant variable and the independent variables. We attempt to find out the independent variables that influence the following dependant variables (explained in details in [chapter \(6\) section \(2\)](#)):

- a. The interest to the CRAs' announcements
- b. The tendency to follow the translated news

Precisely, we used the results of the questionnaire by splitting the answers into two different subsamples, in order to analyse the individuals' behaviour towards the announcements of credit rating agencies and Imams. For that, we took into consideration specific individuals' characteristics, such as the religiosity and the knowledge of the English language. The results are presented in [chapter \(6\)](#).

The religiosity in this survey is measured by a question that shows whether the investor invests/trades only in Sharia-compliant firms or in any firm either Sharia or non-Sharia compliant (Question 9 – [See appendix 2](#)). We classified who choose “I trade only in Sharia-compliant firms” as a high religious investor, while for those answering “I trade only in non-Sharia compliant firms” or “I trade in both Sharia and non-Sharia compliant” we considered

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<sup>50</sup> We received 930 responses to the survey, with only 454 of them fully completed. Due to the filtering process, we eliminated 27 responses.

them as less religious investors. The level of English language is measured by a Likert scale question from 1 to 5 to precise the level of English language (Question 23 – [See appendix 2](#)).

The questionnaire consists of 29 closed questions ([see appendix 2](#)), and the choices for each question are measured as follows:

- 1- Likert scale, 5 and 7 points (the majority are five-points)
- 2- Binary scale [0, 1]
- [Test of normality](#)

The test of a normal distribution is essential on several statistical procedures in order to be able to apply parametric tests such as t-test, regression, correlation, analysis of variance etc. These tests are based on the assumption that the data follow the normal distribution. Therefore, we conducted two normality tests through SPSS on our sample (Kolmogorov-Smirnova and Shapiro-Wilk) as presented on [table \(15\)](#) below.

These tests assume as a null hypothesis that the data are fitting with the normal curve; therefore, a significance level  $\alpha < 0.05$  means rejecting the null hypothesis and accepting the alternative, which assumes the data are significantly different from a normal distribution (Field, 2009, p.144). Although some argue that parametric tests have more power than non-parametric tests, De Winter and Dodou (2010) find that t-test and Mann-Whitney-Wilcoxon have similar power.

The test was conducted on the summed scores of Likert-scales for the entire sample, as the Likert scales (ordinal scales 5-point, 7-point, etc.) are never normally distributed, since they are discrete variables not continuous. Therefore, we ran the test on the summed scores of all individual Likert items, as proposed by Carifio and Perla (2008) and De Winter and Dodou (2010).

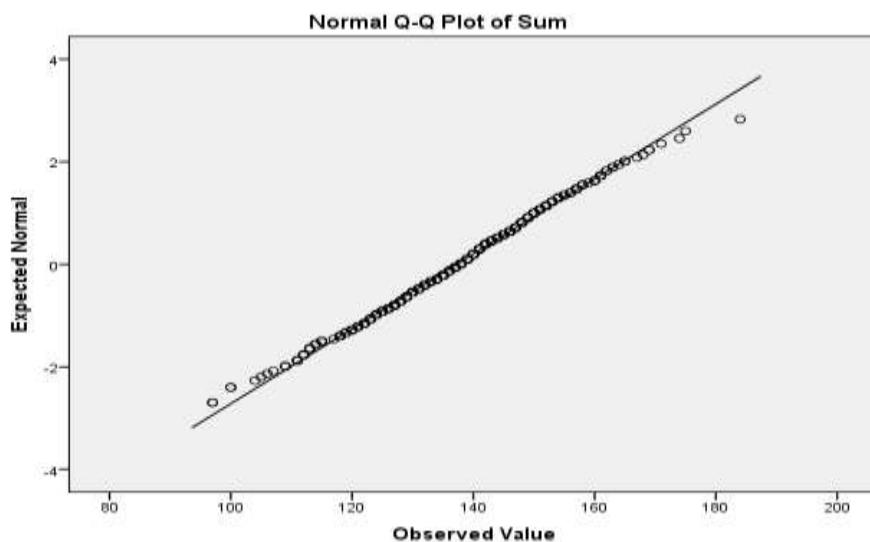
*Table 15: The test of normality conducted on SPSS 22.0*

	Tests of Normality					
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Sum	.040	427	.112	.997	427	.496

a. Lilliefors Significance Correction

Both tests show non-significant results with p-values > 0.05, meaning that accepting the null hypothesis according to which the data are fitting the normal curve can be accepted. In addition, in [figure \(4\)](#) below, we present a graph of Normal plot Q-Q to display the data points of our sample against normally distributed data (represented by the diagonal line). It can be seen that our data are normally distributed and fall along the diagonal line.

*Figure 4: Normal plot Q-Q of our sample generated by SPSS 22.0*



We also ran a W/S Normality test following the below formula introduced by Kanji (2006, p.74):

$$q = \frac{W}{S}$$

Where,

$q$  = The test statistic,

$w$  = the range of the data. After we summed the Likert scores for each participant, we find the range of the data by calculating the difference between the highest and lowest Likert score ( $184 - 97 = 87$ ).

$s$  = the standard deviation of the summed Likert scores.

$$q = \frac{87}{13.69} = 6.35$$

By choosing  $\alpha = 0.05$  as the level of significance, the critical values of w/s normality test for a sample size of 500 are from 5.47 to 6.94. As the test statistic ( $q$ ) is within its critical

values, we accepted the  $H_0$  that the sample distribution of our data is normal ([see appendix 3](#)).

As we conducted the normality tests that show our data are normally distributed, it was possible to apply a parametric test (*t-test*) to compare two means of two different groups by a comparison test. However, as several articles mentioned that Likert scale is ordinal and cannot be normally distributed, we also applied non-parametric tests such as Wilcoxon rank-sum test/Mann-Whitney U test (MWW test), Kruskal-Wallis test, and Chi-square test. We used Excel to conduct these tests except for the Chi-square, which was implemented on R software.

## 2. The event-study methodology

When an event, especially a corporate event (i.e. mergers & acquisitions, rating changes, investment decisions, earning announcements, stock splits, etc.), occurs on a firm, it is likely to affect the market value of the firm, e.g. changes on the firm's stock and bond prices. Hence, investors are in need to examine the effect of a specific event on a firm, in order to find out whether this event adds value to the firm, destroys it, or has no effect. Subsequently, they are expected to adapt their behaviour to the information that is conveyed by the market prices. The event-study methodology is particularly adapted to evaluate the effect of an event on a firm's value. It is an empirical analysis which aims to examine the market reaction related to a specific event by capturing abnormal returns.

### A. An overview of the event study methodology

The methodology was explained by various authors such as Dolley (1933), MacKinlay (1997), and Mitchell and Mulherin (1994). MacKinlay (1997) said that by using the financial market data and "*..., given rationality in the marketplace, the effects of an event will be reflected immediately in security prices. Thus a measure of the event's economic impact can be constructed using security prices observed over a relatively short time period*". There is a wide range of events that use the event-study methodology to illustrate the influence of the relevant events, one of these events are the CRAs' announcements.

The event-study methodology, although designed as an empirical approach, is grounded on the market model (or sometimes the Capital Asset Pricing Model "CAPM") when used to capture abnormal returns on the stock market. The abnormal return is the difference

between the actual return of a stock and the expected return (normal return) within a chosen event window (Brooks, 2014, p. 636). Hubler et al. (2019) say that “*This normal return is an estimation of what the return would be if the influence of the event were excluded*”. Those normal returns can be calculated from a specific period outside the event window, either prior or after, and it is called an estimation period. The estimation period is employed to estimate the parameters of the model, and there are several methods applied to estimate the parameters of the model used to calculate the normal returns, such as OLS, GLS, ARCH, and GARCH regression. Moreover, according to Hubler et al. (2019), the most commonly used model in the literature to calculate the normal returns is the simple market model.

The underlying assumption behind the unifactorial market model ([equation 8](#) below) is that the return of a security ( $R_{it}$ ) is formulated by a systematic factor ( $\beta_i$ ) and unsystematic one  $\varepsilon_{it}$ , wherein the first ( $\beta_i$ ) has a linear relationship with the return of the market  $R_{mt}$ , whereas the second ( $\varepsilon_{it}$ ) is uncorrelated to the market return  $R_{mt}$ , therefore, the error term  $\varepsilon_{it}$  can be considered to be an abnormal return (Coutts et al., 1994) if significantly different from zero.

*Equation 8: the single-factor market model*

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

Where,

$R_{it}$  = the return of the security  $i$  on date  $t$

$R_{mt}$  = the return of the market index on date  $t$

$\varepsilon_{it}$  = the error terms

$\alpha$  and  $\beta$  = are the intercept and slope coefficients for the security  $i$

We argue that the use of the unifactorial market model in our work instead of other more developed models such as CAPM is assumed to be more appropriate. Based on Hubler et al. (2019), we report that the majority of rating event studies that have been published until now rely on the conventional and the most simple market model to calculate the normal returns. Besides, three reasons can question the use of CAPM in our case study:

- Firstly, what is the free-risk rate that should be applied in the model? For example, with respect to Saudi Arabia, there are several risk-free rates have been used, such as:
  - a. The Saudi interbank average (Alinma Investment, 2020a),
  - b. The 12 months SAMA Bills rate "Saudi Arabia Monetary Authority Bills Rate" (Alkhareif, 2016),
  - c. Saudi Arabian Interbank Offered Rate (SAIBOR) 12 months (Almazaur, 2019),
  - d. Foreign bonds or bills such as American treasury bills, etc.
- Secondly, if we consider either local or foreign treasury bills as an example, we could not reasonably assume that the individual investors, who dominate the markets in GCC countries, would be able to reach this kind of securities as another investment opportunity without risk? It should be recalled that debt markets are weak in these countries. For example, in Saudi Arabia, it is announced that in April 2018 government bonds and Sukuk were commenced to be listed and available for trading on the secondary market for the first time (Alarabiya Net, 2018; Tadawul, 2018), which means that government debt securities have not been available for investors on the secondary market.<sup>51</sup> Moreover, we believe that institutional investors have better access, knowledge, and competence to deal with such debt securities in international markets, unlike the individuals. In addition, we argue that the exchange rate risk may reinforce the market risk and, if we consider a foreign Treasury bill or bond as an opportunity without risk, it could turn such securities into risky ones.
- Finally, if we believe hypothetically that all investors (individuals and institutional) in GCC markets consider government bonds or bills as a not risky asset and they can reach these debt instruments easily, another issue would arise from a religious point of view. Bonds are non-Sharia compliant securities; hence, it would also be contradictory to use such bonds or bills to calculate the free risk-rate in markets where religious investors hold the majority of equities, in other words “dominate the market”.

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<sup>51</sup> In 2011, The Governor of Qatar Central Bank announced the completion of procedures to commence listing and trading government debt securities (Treasury Bills) for trading on the secondary markets on the Qatar Exchange, and government bonds and Sukuk would be listed at a later stage (Mubasher, 2011).

Altogether, these facts lead us to assume that the “conventional” and simple unifactorial market model was the most appropriate one to run, in order to implement our event-study analysis. Accordingly in this part, we used the event study, as developed by Brown and Warner (1985) and Fama et al. (1969), in order to examine the stock market reaction and capture the abnormal returns, if any, as a response to the credit rating agencies’ announcements and Imams’ announcements.

### B. Excess return measurement

We calculated the daily stock returns using the logarithmic return instead of the arithmetic as adopted in several studies, such as the study of Sehgal and Mathur (2013), which is presented in the following formula in ([equation 9](#)):

*Equation 9: the logarithmic return to calculate the daily stock returns*

$$R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right)$$

Where,

$R_{i,t}$  = the return on day t for the stock i

$P_{i,t}$  = the closing price on day t for the stock i

$P_{i,t-1}$  = the closing price on previous day t-1 for the stock i

Regarding the market returns, the daily logarithmic returns were calculated for each of the reference indices of the GCC countries. Then we calculated the abnormal returns using the market model ([Equation 10](#)):

*Equation 10: The market model to estimate the abnormal returns*

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

Where,

$AR_{it}$  = the abnormal return of security i on date t,

$R_{it}$  = daily return of security i on date t,

$R_{mt}$  = daily return of the market on date t, and

$\alpha_i$  and  $\beta_i$  = are the estimated parameters by GARCH (p, q) model from the estimation period [-140, -21].

### C. Estimation procedures

Wrong estimation of the standard error could occur if the errors are assumed to be homoskedastic (the variance of the errors is constant), while in fact, they are heteroskedastic (the variance of the errors is not constant) (Brooks, 2014, p. 423). He also adds that "*It is unlikely in the context of financial time series that the variance of the errors will be constant over time, and hence it makes sense to consider a model that does not assume that the variance is constant, and which describes how the variance of the errors evolves*" (Brooks, 2014, p. 423). Another characteristic of the financial series is that may time series exhibit volatility clustering, which means that "*the current level of volatility tends to be positively correlated with its level during the immediately preceding periods*" (Brooks, 2014, p. 423).<sup>52</sup> Therefore, ARCH models (AutoRegressive Conditional Heteroscedasticity) were developed by Engle (1982) in order to deal with heteroskedasticity problems, and to allow the variance of financial series being not constant over time (see [equation 11](#) below) (Lardic and Mignon, 2002, p. 289). In other words "*The ARCH process introduced by Engle (1982) explicitly recognizes the difference between the unconditional and the conditional variance allowing the latter to change over time as a function of past errors*" (Bollerslev, 1986).

[Equation 11: ARCH \(q\) model introduced by \(Engle, 1982\)](#)

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^q \alpha_i \epsilon_{t-i}^2 = \alpha_0 + \alpha(L) \epsilon_t^2$$

Where,  $\alpha_0 > 0$  and  $\alpha_i \geq 0$   $(L)$  = the lag operator

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<sup>52</sup> "Volatility clustering describes the tendency of large changes in asset prices (of either sign) to follow large changes and small changes (of either sign) to follow small changes. In other words, the current level of volatility tends to be positively correlated with its level during the immediately preceding periods" (Brooks, 2014, p. 423). In French, "Des regroupements de volatilité : les fortes variations ont tendance à être suivies par de fortes variations, et les faibles variations par de faibles variations" (Lardic and Mignon, 2002, p. 305).

Then the initial model of Engle (1982) was generalised and developed by Bollerslev (1986) to introduce the GARCH model (Generalised Auto-Regressive Conditionally Heteroscedastic). GARCH (p,q) model is a conditional variance model taking into account the past values of squared errors and the past conditional variances, which allows the lag structure to be more flexible (see [equation 12](#) below).

*Equation 12: GARCH (p,q) model introduced by (Bollerslev, 1986)*

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^q \alpha_i \epsilon_{t-i}^2 + \sum_{j=1}^p \beta_j \sigma_{t-j}^2 = \alpha_0 + \alpha(L) \epsilon_t^2 + \beta(L) \sigma_t^2$$

Where,

$\sigma_t^2$  = the conditional variance,

$$\alpha_0 > 0, \quad \alpha_i \geq 0, \quad i = 1, \dots, q$$

$$\beta_j \geq 0, \quad i = 1, \dots, p$$

$$p \geq 0, \quad q > 0$$

$p$  in GARCH (p,q) presents the number of GARCH terms, which is the number of lagged conditional variances, whereas  $q$  presents the number of ARCH terms, which is the lags of the squared error. The GARCH (p,q) process become ARCH (q) process when  $p = zero$ . So, the lagged conditional variances are allowed to enter by GARCH (p,q) model. On the other hand, the error terms in the OLS model are assumed to have constant variance and to be uncorrelated one with each other.

We chose to introduce GARCH (p,q) process in our work in order to ensure that the parameters of the market model we implemented would be more precisely estimated than with conventional OLS method, as the assumption of normal Gauss distribution of residuals may be violated with financial time series (which may alter the precision of OLS estimates). The financial literature, such as (Akgiray, 1989, 1989; Balaban and Constantinou, 2006; French et al., 1987; Hilliard and Savickas, 2002; Savickas, 2003), also support the application of GARCH process, as it is better proposed to fit the behaviour of the returns in time series. It is also suggested that adjusting the market model for GARCH effects leads to more efficient estimators (Corhay and Rad, 1996). Besides, recent studies concerning the event-study

methodology tend to use the ARCH/GARCH model, and with respect to the effect of CRAs' decisions, some of them introduced a GARCH process in their empirical work (Abad-Romero and Robles-Fernandez, 2006, 2006; Barron et al., 1997; Daadaa, 2016; Elayan et al., 2003; Hubler et al., 2014; Hui Li et al., 2004). Furthermore, the returns of equity markets in GCC countries present volatility clustering (see appendix 18 for the graphs), and it is said that the volatility clustering describes a phenomenon that suggests an adaptation of process ARCH/GARCH to model the series (Brooks, 2014, p. 423; Lardic and Mignon, 2002, p. 305).

In order to select the optimal order of the GARCH (p,q) process, we followed the different steps explained by (Brooks, 2014, pp. 253:437; Enders, 2015, pp. 68-69; Lardic and Mignon, 2002, pp. 298-311; Ruppert and Matteson, 2015, p. 413). We first ran an ARCH test on the residuals of the market model (extracted from the estimation period of the stock returns and market returns). In case the test rejects the null hypothesis and accepts the alternative, then there is an existence of ARCH effect.<sup>53</sup>

Secondly, when we ran the model GARCH over the residuals of the market model, we started with an ARCH (1) then GARCH (1,1) models and so on until GARCH (4,4), in order to find the optimal fit of GARCH (p,q) order. More precisely, for the comparison purposes, once the GARCH model is estimated, several tests were applied on residuals and squared residuals in order to select the appropriate number of lags for  $p$  and  $q$ . We adopted the following criteria to choose the most appropriate order of the GARCH process:

- Log-Likelihood, Akaike Information Criterion, Schwartz Bayesian Criterion, Hannan-Quinn information criterion, and Shibata information criterion.
- We also carried out some additional checks in our comparison procedure, to ensure that the GARCH (p,q) model which we finally selected, is also the one that allows the residuals to behave as best as possible as a white noise process once implemented. To do so, the correlogram of residuals and the Q-test statistics (considering 10 lags) were compared for each of the GARCH (p,q) models.

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<sup>53</sup> We used software R and reinforced by E-views to check that the order selection of GARCH process leads to the same results on the two software.

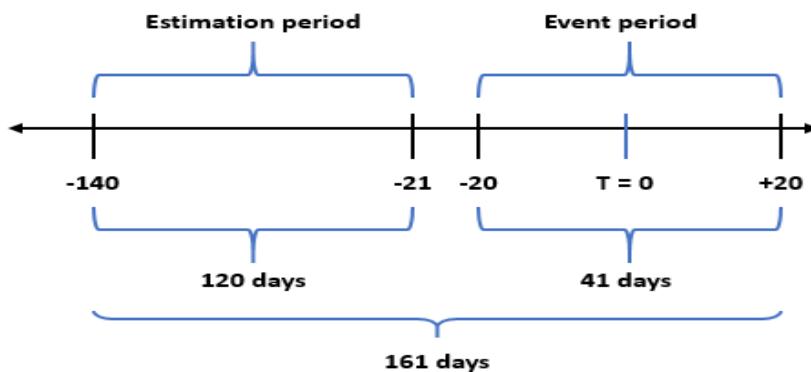
In case the existence of an ARCH/GARCH process is rejected by the tests, then we consider the residuals of the market model are “white noise” distributed. Consequently, it allows an OLS procedure to be implemented at the starting point of the procedure, in order to estimate the parameters of the market model.

#### D. Estimation and event windows

For each stock of a specific issuer, we used 161 daily returns observation for the period surrounding the event ([figure 5 below](#)). We started with 120 days as an estimation period [-140, -21] in order to estimate the parameters of the market model. Then, 41 days [-20, +20] is considered as the event period, where day “0” is defined as the event day  $t=0$ .<sup>54</sup>

It should be noticed that the choice we made regarding the estimation and event period is slightly similar to other previous studies, although there is no perfect consensus regarding their length, in academic literature. For example, Elayan et al. (2003) used -25,+25 as an event period and (-177, -26) as an estimation period. 100 days was used as an estimation period in the study of Abad-Romero and Robles-Fernández (2007). Additionally, 120 days was applied as an estimation period in the study of the Swedish market by Hui Li et al. (2004) and the Israeli market by Afik et al. (2014). Consequently, we chose to select similar periods due to the small number of rating events and the small gap between announcements.

*Figure 5: the estimation and event periods*



<sup>54</sup> Concerning the event day, we also take into consideration the event window [0, +1] and the next day [+1] when we analyse the actual event day [0], assuming that these windows can be seen as an event day as well. Knowing that there are no local offices of CRAs in GCC area (until recently in some countries), the rating agencies announce their decisions in their local time, where the local time in GCC countries might be several hours ahead. Consequently, some decisions are likely to reach the GCC markets after the market close (after the working hours). Therefore, we take into consideration these windows when we analyse the event day.

We also need to highlight several limitations regarding the event day. For example, some announcements occurred when the market was closed due to days off, for instance during weekends, national days or holidays. Worth to mention, the weekend in GCC countries was previously on Thursdays and Fridays, and then it was changed to be on Fridays and Saturdays. This alteration occurred in some countries during our study period: it happened in 2007 in the UAE and Kuwait, and at mid-2013 in Saudi Arabia. Therefore, in case of rating announcements occurring during a day-off or a weekend, we considered those rating events as if they were announced on the first upcoming trading day. In other words, the first trading day following the announcement day by the credit rating agency is effectively considered as the event day  $t=0$ .

### E. The calculation of CARs, CAARs

After using the market model to estimate the abnormal returns by using GARCH model to better estimate the value of the parameters, we calculated the Average Abnormal Returns ([equation 13-a](#)), Cumulative Abnormal Returns ([equation 13-b](#)) and Cumulative Average Abnormal Returns ([equation 13-c](#)).

*Equation 13:*

a- *Average Abnormal Returns (AARs)*

$$AAR_t = \frac{\sum_{i=1}^N AR_{it}}{N}$$

Where,

$AAR_t$  = average abnormal returns for the whole sample on day  $t$

$AR_{it}$  = abnormal return of stock  $i$  on day  $t$

$N$  = the sample size

b- *cumulative abnormal returns (CARs)*

$$CAR_{iT} = \sum_t^T AR_{it}$$

Where,

$CAR_{iT}$  = cumulative abnormal return of stock  $i$  from date  $t$  to date  $T$ , and

$AR_{it}$  = abnormal return of stock  $i$  on date  $t$ .

c- *Cumulative Average Abnormal Returns (CAARs)*

$$CAAR = \overline{CARs}_{t,T}$$

Where,

$\overline{CARs}_{t,T}$  = the average of the cumulative abnormal returns from date t to date T.

- *Testing the significance of the CAARs*

After computing the average abnormal returns, cumulative abnormal returns, and cumulative average abnormal returns, we ran the parametric and non-parametric tests in order to test the null hypothesis, which states that there are no abnormal returns  $H_0: \mu = 0$ , versus the alternative hypothesis, which states that there are abnormal returns, where the mean of the abnormal returns are significantly different from zero:  $H_1: \mu \neq 0$ .

For the parametric test, we run a cross-sectional t-test for the cumulative average abnormal returns (CAARs) over a specific window ([equation 14](#)):

*Equation 14: cross-sectional t-test*

$$t - test = \frac{\overline{CARs}}{SD_{CARs}} * \sqrt{N}$$

where,

$\overline{CARs}$  = Cumulative average abnormal returns for a specific window e.g. [+1, +10]

$SD_{CARs}$  = Standard deviation of the cumulative abnormal returns for a specific window, e.g. [+1, +10]

$\sqrt{N}$  = Square root for the sample size

The test is run by SPSS using the One-sample t-test procedure, which in brief is designed to determine whether the mean of the sample is statistically different from a known or hypothesized population mean. For the abnormal returns, the hypothesized population mean is (zero).

To ensure that the results of the t-test are not affected by outliers, we removed the outliers of each of the considered windows manually and re-ran the t-test. If both tests (t-test and t-test with outliers being removed) present significant results; hence, we can ensure that the significance of the abnormal returns comes effectively from the behaviour of the data.

Then, we ran two different non-parametric tests using QI-Marcos, which is an Excel add-in to provide several tests and data analysis:

- 1- One-sample sign test: it is applied to determine whether the CAARs are equal to a given value, or not. The direction (positive or negative) is the base of the test instead of the numerical magnitude.
- 2- One-sample Wilcoxon signed-rank test: it is an alternative non-parametric test to the parametric test “one-sample t-test”. It is a rank based test to determine whether the median of the CAARs is statistically different from a given value.

In our case, the given value is zero, which means these tests determine whether the median is statistically different from zero:

$$H_0: \eta = 0$$

$$H_a: \eta \neq 0$$

## F. Data

Concerning the credit rating events, the study period starts from January 2000 to July 2018. We cannot include the events prior to 2000 due to the unavailability of data. However, the beginning of the study period may differ from a market to another, according to the data availability. **Table (16)** shows the number of rated listed companies in GCC countries. There are other companies which are rated, but not listed in equity markets. Therefore, they are not included in the sample.

*Table 16: the number of the listed companies in GCC equity markets that have been rated by at least one of the three major credit rating agencies (S&P's, Moody's, and Fitch) during the period 2000 to 2018.*

Stock market	Ticker	country	Number of rated listed companies*
Tadawul All Share Index	TASI	Kingdom of Saudi Arabia	24
Abu Dhabi Securities Exchange	ADX	United Arab Emirates	23
Kuwait Stock Exchange	KSE	Kuwait	21
Dubai Financial Market	DFM	United Arab Emirates	19
Bahrain Bourse	BHB	Bahrain	19
Qatar Exchange	QE	Qatar	18
Muscat Securities Market	MSM	Oman	13

\*= all the rated and listed firms including delisted, suspended, merged etc.

Source: Bloomberg

### *Sample size*

Table (17) below shows the size of our final sample for each of the GCC markets. It is quite a small sample, compared to the conducted studies in the US (i.e. the sample of Holthausen and Leftwich (1986) exceeded 1000 rating changes). However, it should be noticed that there are other studies which have been conducted on even smaller sample size: for example, the sample size of the work of Elayan et al. (2003) was 178 rating announcements (34 downgrades, 27 upgrades, 27 negative placements, 6 positive placements, 35 assignments, and 49 affirmation). Also, Matolcsy and Lianto (1995) examined 72 rating actions (34 upgrades and 38 downgrades), Abad-Romero and Robles-Fernández (2007) 67 rating changes (34 upgrades and 33 downgrades). 83 credit rating announcements were included in the study of Hui Li et al. (2004), and Barron et al. (1997) kept 87 rating changes in their final sample.

Table 17: The filtered and final sample size in our study for the GCC countries (2000-2018).

Countries	Upgrades	Positive credit watches	Downgrades	Negative credit watches	Total
Saudi Arabia	68	17	55	24	164
Qatar	31	2	18	21	72
Oman	13	2	37	5	57
UAE	19	4	8	18	49
Kuwait	17	3	11	18	49
Bahrain	3	1	11	4	19

Source: Bloomberg

### *Source and filtration*

We extracted our data from Bloomberg; however, we first had to resolve a problem due to the fact that this database is suffering from a coding problem (which is admitted by the IT service of Bloomberg after we mentioned it). The problem is arising from the used calendar, where, in the GCC countries, the weekend was previously on Thursdays and Fridays, which has been changed recently, to be on Fridays and Saturdays. As an example, for the Saudi market, the weekend was on Thursdays and Fridays until mid-2013 then became on Fridays and Saturdays.<sup>55</sup> Before mid-2013, Bloomberg considered Saturdays as weekend days for the Saudi Stock Exchange (Tadawul), which means that Bloomberg considered Fridays and Saturdays as the weekend days, instead of Thursdays and Fridays. Consequently, Bloomberg included only four trading days per week instead of five days, which generates missing days

<sup>55</sup> In UAE, the weekend was changed in September 2006. In Kuwait was changed around 2007.

in the time series we used in our study. Therefore, this coding problem enforced us to seek the missing data from other sources in order to complete the time series we used for each of the rating events. The other sources we used beside Bloomberg are the official websites of the GCC stock markets, and a financial website called "*investing.com*".

Besides, some events were eliminated due to a large number of missing days, even in other sources. More specifically, we decided to eliminate an event if the missing day(s) occurred during the event period, and/or if the number of missing days is higher than 12 days during the estimation period (e.g. 10% of the estimation period).

### ***Sample construction***

The sample was built according to the following standards:

1. The rating actions must be assigned to listed companies in GCC stock markets, which are:
  - a. Saudi Stock Exchange (Tadawul) (TASI),
  - b. Dubai Financial Market (DFM),
  - c. Abu Dhabi Securities Exchange (ADX),
  - d. Qatar Exchange (QE),
  - e. Kuwait Stock Exchange - Boursa Kuwait (KSE),
  - f. Muscat Securities Market (MAM),
  - g. Bahrain Bourse (BSE).
2. Companies' stocks must exhibit available 161 daily returns, (minus 10% maximum, when not possible).
3. No missing returns during the event window [-20, +20].

The following events have been considered in the study:

- Rating changes: Upgrades
- Rating changes: Upgrades and positive credit watches taken all together
- Rating changes: Downgrades
- Rating changes: Downgrades and negative credit watches taken all together

### ***Contamination***

In order to ensure that the estimated abnormal returns are accurate and not biased, we had to take into account a possible contamination problem. As often in the literature, we

considered a contamination in events may arise if another rating event (for the same issuer) is announced during the event window [-20, +20], as it would be impossible to distinguish the effect of a specific event from another one, all being constant. In other words, the purpose behind controlling for sample contamination is to reduce the possibilities of having other events that may cause abnormal returns simultaneously with the observed events. Moreover, the power of the statistical test is likely to be reduced by the contaminated news (Hui Li et al., 2004).

There is no consensus in the literature regarding the way to capture this contamination phenomenon, as some authors consider a rating event being contaminated when it is preceded or followed by another rating event for the same issuer, while others also include as a possible source of contamination other types of market or firm events (Afik et al., 2014; Goh and Ederington, 1993; Holthausen and Leftwich, 1986; Hull et al., 2004; Micu et al., 2006).

Regarding the relatively small size of our sample, we attempted to apply the most appropriate solution, the one that seemed optimal. Thus, we are aware that we did not consider the most “harshly” meaning of “contamination”, which would have led to take into consideration all the market or firm events that may cause abnormal returns. As a result, a specific event is classified “contaminated” if:

- There is another rating event announced by any of the three major CRAs during the event window [-20, +20].

In the empirical parts concerning the event study, we present the tables of our results with two sub-samples:

- a) Full sample: it contains the contaminated and uncontaminated events altogether.
- b) Uncontaminated sample: it contains only the uncontaminated events according to our criterion above.

**Note:**

The data, filtration, and sample construction regarding the Imams' announcements are slightly the same as in this part, however, there are few changes that are illustrated in [chapter \(8\) section \(1.1\)](#).

## Chapter 6: Questionnaire - Results and discussion

This chapter is going to analyse the data set extracted from the questionnaire that was distributed amongst the individual investors in Saudi Arabia (c.f. [Appendix \(2\)](#) for the complete questionnaire). It is worth recalling that this questionnaire aims first to examine the individual investors' behaviour concerning the possible effect of the English language on the individuals' reaction to CRAs' announcements. It is to investigate whether the English language as the language used to announce the CRAs' decisions has an influence on the reaction time amongst the individual investors or not. Secondly, it intends to examine the influence of religion on investment decision making amongst individual investors. In other words, it tends to find out what is the factor that is considered as the significant factor for the individual investors, the religiosity of the firm or its credit rating which presents the default risk. Thus, we tend in this chapter to test our [hypotheses \(H4\)](#) and [\(H6\)](#) and find whether we support or reject them. The examination of these hypotheses will help us to reinforce our analysis and interpretation in the upcoming chapters, as well as to robust the other hypotheses.

In order to examine the formulated hypotheses [\(H4\)](#) and [\(H6\)](#), we firstly run a comparison test between the groups of who ("speak English" and "do not speak English"), and between the groups of ("high religious investors" and "less religious investors"). Then, we run two different binomial logistic regressions to find out whether our two depended variables "*Care about CRAs*" (which is the probability that the survey respondents declare that they care about CRAs' announcements, versus the probability not to care about CRAs' announcements) and "*Translated news*" (which is the probability that the survey respondents declare that they rely on news that is translated into the Arabic language to build their investment decisions, versus the probability not relying on translated news) depend differently on some independent variables or not.

Our findings briefly suggest that the knowledge regarding the possibility to speak the English language may affect the individual investors' behaviour towards foreign news. And concerning the religion factor, we find that religion plays an essential role in the Saudi Stock Exchange, as the religion factor is likely to influence the market as much as the other financial indicators could do.

## 1. Comparison test

We are going to run the comparison test over the information collected from the questionnaire in order to find out whether the English language (as the language of CRAs' announcements) and the religiosity have an impact over the individual investors' behaviour in Saudi Arabia.

First, we identify our groups in order to categorise and run the test on each group. According to what we mentioned before, we categorise the population into two groups:

- a- English speakers vs. non-English speakers
- b- High religious investors vs. less religious investors.

### 1.1 English speakers vs. non-English speakers

The foreign information takes time to reach the market when the foreign news is less visible to investors. It is claimed that multinational companies should increase their visibility in media by providing information suitable to the investors in order to decrease the obstacles of the language and culture (Huang, 2015). According to what has been mentioned earlier in literature and our hypotheses concerning the effect of language, we are going to examine the influence of the English language on individuals' behaviour regarding the financial news.

In our sample, there are approximately 56% of the participants declared not speaking English very well, whereas nearly 44% are considered speaking English very well. Therefore, we run the tests on these two groups to find out whether speaking the English language influence the participants to follow the news in the English language or not (**question 19** below).

Question 19:

Do you follow any foreign sources (or local sources) but in English language regarding the Saudi stock market?

- a) Always.
- b) Often.
- c) Sometimes.
- d) Seldom.
- e) Never: I do not follow the sources in English language

**Table (18)** shows that the English speakers have a median of 3 and a mean of 2.51 on a Likert scale of 5 points to follow the news in English, while the non-English speakers have a median of 1 and a mean of 1.65. The table presents significant t-test with p-value < 0.05; hence, we reject the null hypothesis and accept the alternative, that there is statistically a significant difference between the means and medians of these two groups. It indicates that the investors who speak English tend to follow the financial news in the English language concerning the Saudi Stock Exchange more than the investors who do not speak English. The non-parametric tests confirm the t-test result with significant  $\alpha < 0.05$  for the chi-square test and significant Z score and H score for MWW test and Kruskal-Wallis test, respectively.

The outcomes state a difference in behaviour between the participants who speak English and who do not. **The result supports our hypothesis (H4-2)** that higher level in speaking the English language influences positively the investors to follow the financial news in English language.

*Table 18: Parametric and non-parametric tests of the two groups who speak English and who do not, concerning whether they follow the news in the English language or not. The mean and median are referred to a Likert scale of 5 points. In the question, 5 on a Likert scale is referred to "always" whereas 1 is referred to "Never".*

SPEAK ENGLISH	NO	YES	ALL
MEAN	1.65	2.51	2.03
STANDARD ERROR OF MEAN	0.06	0.09	0.06
MEDIAN	1	3	2
STANDARD DEVIATION	0.98	1.30	1.21
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
CHI SQUARE TEST	0.00 *	p-value	< 0.05
MWW TEST	6.80 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	46.18 *	H Critical	> 3.84

\* Significant result

Secondly, we run the tests on the two groups regarding **question (14)** below, which is to discover whether speaking the English language induce their interest of the CRAs' announcements or not. We do not find any significant result; therefore, we accept the null hypothesis stating that there is no difference between the two groups (**Table 19**).

Question 14:

To which extent do you care about the announcements of credit rating agencies concerning the listed companies in the stock market?

- a) I extremely care.
- b) I moderately care.
- c) Neutral.
- d) I slightly care.
- e) I do not care at all.

Thus, **this result leads us to reject our hypothesis (H4-1)** according to which a higher level in speaking the English language influences the awareness positively to CRAs' announcements. Stating whether the investors speak English or not, they have similar interest to the announcements of credit rating agencies.

*Table 19: Parametric and non-parametric tests of the two groups who speak English and who do not, concerning whether they care about CRAs announcements or not. The mean and median are referred to a Likert scale of 5 points. In the question, 5 on a Likert scale is referred to "I extremely care" whereas 1 is referred to "I do not care at all".*

SPEAK ENGLISH	NO	YES	ALL
MEAN	2.64	2.83	2.72
STANDARD ERROR OF MEAN	0.09	0.09	0.07
MEDIAN	3	3	3
STANDARD DEVIATION	1.35	1.29	1.35
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.15	p-value	> 0.05
CHI SQUARE TEST	0.13	p-value	> 0.05
MWW TEST	1.48	Z Critical	< 1.96
THE KRUSKAL-WALLIS TEST	2.19	H Critical	< 3.84

\* Significant result

Then, we conduct the tests on the two groups regarding whether they rely only on the Arabic sources to reach their investment decisions or not (**question 20d below**).

## Question 20:

Do you rely on the foreign sources (announced in English language) regarding the Saudi stock market to obtain information and build up your investment decisions:

To which extent do you agree or disagree with each of the following answers?

	Strongly disagree	Disagree	Neuter	Agree	Strongly agree
a. I mainly rely on the foreign sources to reach my investment decisions.	o	o	o	o	o
b. I follow the foreign sources but I do not rely on them to reach my investment decisions.	o	o	o	o	o
c. I do not follow the foreign reports regarding the Saudi stock market. However, if I received any, even accidentally, it may affect my investment decision.	o	o	o	o	o
d. I rely only on the Arabic sources to reach my investment decisions.	o	o	o	o	o

The tests show significant results leading to reject the null hypothesis and accept the alternative that there is statistically a significant difference between the two groups (**Table 20**). In a Likert scale of 5 points, the median of who rely only on Arabic sources to reach their investment decisions and do not speak English is 4 whereas the median of who speak English is 3. These medians and means are statistically significant at 1%, for both parametric and non-parametric tests. **This finding supports our hypothesis (H4-3)** that “Non-English speaker investors” tend to rely on news from Arabic sources (more than the “English speaker investors” do).

The results of the test suggest that the majority of individual investors tend to rely more on Arabic sources than on other foreign sources announced in the English language. We assume the tendency to rely on Arabic sources is likely to arise from the difficulties of understanding and interpreting the English language. This outcome is likely to influence the reaction time of the market, when dominated by the individual investors, to news such as CRAs’ announcements. The difference in reaction time, as mentioned earlier, is expected to arise from the delay of receiving the announced news in an understandable language “the Arabic”.

*Table 20 Parametric and non-parametric tests of the two groups who speak English and who do not, concerning whether they rely only on Arabic source to reach their investment decisions or not. The mean and median are referred to a Likert scale of 5 points. In the question, 5 on a Likert scale is referred to “strongly agree” whereas 1 is referred to “strongly disagree”.*

SPEAK ENGLISH	NO	YES	ALL
<b>MEAN</b>	3.39	3	3.22
<b>STANDARD ERROR OF MEAN</b>	0.09	0.1	0.07
<b>MEDIAN</b>	4	3	3
<b>STANDARD DEVIATION</b>	1.36	1.37	1.38
	p-value ( $\alpha$ )	Significance level	
<b>T-TEST (TWO-TAIL)</b>	0.00 *	p-value	< 0.05
<b>CHI SQUARE TEST</b>	0.046 *	p-value	< 0.05
<b>MWW TEST</b>	2.89 *	Z Critical	> 1.96
<b>THE KRUSKAL-WALLIS TEST</b>	8.38 *	H Critical	> 3.84

\* Significant result

## 1.2 High religious investors vs. less religious investors

In this part, we are going to examine whether the group of “high religious investors” significantly differ from the group of “less religious investors” concerning their behaviour on the stock market. We consider that the group of “high religious investors” includes the participants who have answered “*I trade only in Sharia-compliant firms*”, while the group of “less religious investors” refers to who have chosen “*I trade only in non-Sharia compliant firms*” or “*I trade in both type of firms*”.<sup>56</sup> This classification is built on the fact that high religious investors are the ones who trade and invest only in Sharia-compliant firms and refuse to invest in non-Sharia compliant firms, in line with the announcements of the authorised Imams. Hence, the proportion of high religious investors in our sample is 64%, whereas that of the less religious investors is 36%.<sup>57</sup>

First, we run the tests on these two subgroups with respect to their answers to **question (10)** below, which clarifies whether they seek (or not) for the announcements of the authorised Imams prior to the IPOs and purchasing shares.

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<sup>56</sup> Question (9), see [appendix \(2\)](#).

<sup>57</sup> For the distribution of the sample, see [appendix \(4\)](#).

Question 10:

Prior the IPOs or purchasing shares, to which extent do you seek the announcements of the authorised Imams regarding the list of Shariah compliant firms?

- a) Always.
- b) Often.
- c) Sometimes.
- d) Seldom.
- e) Never.

The outcomes of the comparison tests ([table 21 below](#)) show significant results at 1% for parametric and non-parametric tests (with a mean 4.53 and median 5 on a Likert scale of 5 points for the “high religious group”, comparing respectively to 2.64 and 3 for the “less religious group”. It leads us to reject the null hypothesis and accept the alternative one, and to conclude that high religious investors clearly pay attention to the Imams’ announcements before purchasing any stock.

**This finding supports our hypothesis (H6-1)**, which states that higher religiosity leads the investors to follow the Imams’ announcements. **It also supports our hypothesis (H6-2)** according to which the religion factor is likely to affect the desire to buy and keep in portfolio some financial securities, based on their religious status.

*Table 21: Parametric and non-parametric tests of the two groups, high religious investors and less religious investors, concerning whether they seek (or not) for the announcements of the authorised Imams prior to the IPOs and purchasing shares. The mean and median are referred to a Likert scale of 5 points. In this question, 5 on a Likert scale is referred to “always” whereas 1 is referred to “Never”.*

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	4.53	2.64	3.85
STANDARD ERROR OF MEAN	0.05	0.10	0.06
MEDIAN	5	3	4
STANDARD DEVIATION	0.85	1.31	1.38
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
CHI SQUARE TEST	0.00 *	p-value	< 0.05
MWW TEST	12.73 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	161.96 *	H Critical	> 3.84

\* Significant result

Second, the participants were asked hypothetically *if they were investing and trading in a firm, and this firm was delisted from the list of the Sharia-compliant firms by the authorised Imams even though the investment in this company is still profitable, what would they do?*<sup>58</sup> The participants had to precise their choice for each scenario, on a Likert scale from 1 to 5, where 5 refers to “absolutely yes” and 1 refers to “absolutely not”:

- a) To keep investing in this firm,
- b) Sell the shares of this firm and buy in another Sharia-compliant firm,
- c) Sell the shares of this firm and buy in any other firm either Sharia or non-Sharia compliant firm.

The test presents significant statistical results, leading to reject the null hypothesis and accept the alternative that the two groups (“high religious” versus “less”) are different from each other (**table 22 a, b, c**). The result in (**table 22 A**) shows a mean of 1.63 and median 1 for high religious investors, which illustrates their remarkable rejection of holding the stocks when the firm turns to be non-sharia compliant. On the contrary, less religious investors show a lower level of rejection, with a mean of 3.47 and 3 as a median. In (**table 22 B**) the high religious investors demonstrate their obvious tendency to replace the stocks of the “downgraded firm by Imams” with other Sharia-compliant stocks, which differs from the less religious investors, with a mean of 4.21 and a median of 5, compared respectively with 2.25 and 2. In (**table 22 C**) the high religious investors present a lower tendency for the third scenario, which is to sell the “Sharia stock” and buy in any other firm, either Sharia or non-Sharia. However, less religious investors tend to have the same behaviour as well. Nevertheless, this might be justified by their choice of scenario A, according to which they tend to keep investing in the firm (even after being delisted from the Sharia list).

In line with our previous findings, **these results support our hypothesis (H6-1)**, which states that higher religiosity leads the investors to follow the Imams’ announcements. **It also supports our hypothesis (H6-2)** that the religion factor is likely to affect the desire to buy and keep in portfolio some financial securities, based on their religious status.

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<sup>58</sup> Question 11a, b, and c, **see appendix (2)**.

*Table 22: A) Parametric and non-parametric tests of the two groups, high religious investors and less religious investors, concerning scenario A, question 11 (to keep investing). The mean and median are referred to a Likert scale of 5 points. In this question, 5 on a Likert scale is referred to "absolutely yes" whereas 1 is referred to "absolutely not".*

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	1.63	3.47	2.30
STANDARD ERROR OF MEAN	0.06	0.11	0.07
MEDIAN	1	3	2
STANDARD DEVIATION	1.06	1.32	1.46
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
CHI SQUARE TEST	0.00 *	p-value	< 0.05
MWW TEST	11.85 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	140.46 *	H Critical	> 3.84

\* Significant result

*B) Parametric and non-parametric tests of the two groups, high religious investors and less religious investors, concerning scenario B, question 11 (to sell and buy in another Sharia firm)*

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	4.21	2.25	3.50
STANDARD ERROR OF MEAN	0.07	0.10	0.07
MEDIAN	5	2	4
STANDARD DEVIATION	1.15	1.19	1.50
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
CHI SQUARE TEST	0.00 *	p-value	< 0.05
MWW TEST	12.58 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	158.21 *	H Critical	> 3.84

\* Significant result

*C) Parametric and non-parametric tests of the two groups, high religious investors and less religious investors, concerning scenario C, question 11 (to sell and buy in any firm Sharia or non-Sharia)*

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	1.35	2.08	1.62
STANDARD ERROR OF MEAN	0.05	0.09	0.05
MEDIAN	1	2	1
STANDARD DEVIATION	0.91	1.12	1.05
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
CHI SQUARE TEST	0.00 *	p-value	< 0.05
MWW TEST	7.13 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	50.86 *	H Critical	> 3.84

\* Significant result

Then we run the tests over the answers of question 17.<sup>59</sup> This question proposes a hypothetical situation with three scenarios. The hypothetical case was to suppose that they were trading/investing in Sharia-compliant firms and, at one time, all the Sharia-compliant firms are downgraded by the Credit Rating Agencies (Standard & Poor's, Moody's, Fitch), due to an increase in the risk of these companies. We aimed to know how the participants would react, with three possible scenarios as an answer. The participants had to precise their choice for each scenario, on a Likert scale from 1 to 5, where 5 refers to "absolutely yes" and 1 refers to "absolutely not":

1. To keep investing in these firms.
2. Sell the shares of these firms and move the investments to non-Sharia compliant firms, that did not experience the same downgrade by the CRAs.
3. To leave the stock market and change the investment field.

Regarding the first scenario ([table 23 a](#)), it should be mentioned that high religious investors exhibit a slightly higher propensity to keep investing in these firms regardless of the downgrades, comparing to the less religious investors. Nevertheless, both groups answer with some hesitation between holding or leaving these firms, as illustrated with a median of 3 for both sub-groups, and a mean of 3.28 versus 2.78 for high and less religious investors, respectively.

For the second scenario ([table 23 b](#)), high religious investors are clearly rejecting the scenario (switching the investment portfolio to non-sharia compliant firms), comparing to less religious investors who are statistically less reluctant to invest into non-sharia compliant firms, given that the latter ones would not be downgraded.

In the third scenario ([table 23 c](#)), high religious investors present a significantly higher probability to leave the stock market and change the investment field, comparing to the less religious investors.

The results show that, in case of downgrading of all Sharia-compliant firms by the CRAs, the high religious investors would tend to keep investing in these firms despite the increasing default risk, or slightly leave the stock market (rather than switching their investments to non-

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<sup>59</sup> For further information, [see appendix 2](#).

Sharia firms). In contrast, the less religious investors would have a higher tendency to leave the investment in Sharia-compliant firms and switch to non-Sharia compliant firms. In other words, less religious investors would have a higher propensity to move to non-Sharia compliant firms than high religious investors.

**These results support our hypothesis (H6-3)** according to which, in case CRAs' and Imams' opinions lead to a conflict in investors' perception regarding the firms' situation, then high religious investors are likely to pay more attention to Imams' announcements than to CRAs' to take their investment decisions. Moreover, **this finding also supports previous hypotheses (H6-1 and H6-2).**

Table 23:

A) Parametric and non-parametric tests of the two groups, high religious investors and less religious investors, concerning scenario A – Q17. The mean and median are referred to a Likert scale of 5 points. In this question, 5 on a Likert scale is referred to "absolutely yes" whereas 1 is referred to "absolutely not".

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	3.28	2.78	3.10
STANDARD ERROR OF MEAN	0.08	0.10	0.06
MEDIAN	3	3	3
STANDARD DEVIATION	1.33	1.30	1.34
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
CHI SQUARE TEST	0.00 *	p-value	< 0.05
MWW TEST	3.69 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	13.65 *	H Critical	> 3.84

\* Significant result

B) Parametric and non-parametric tests of the two groups, high religious investors and less religious investors, concerning scenario B – Q17. The mean and median are referred to a Likert scale of 5 points. In this question, 5 on a Likert scale is referred to "absolutely yes" whereas 1 is referred to "absolutely not".

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	1.61	2.53	1.94
STANDARD ERROR OF MEAN	0.06	0.09	0.06
MEDIAN	1	3	1
STANDARD DEVIATION	1.03	1.10	1.14
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
CHI SQUARE TEST	0.00 *	p-value	< 0.05
MWW TEST	7.93 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	62.81 *	H Critical	> 3.84

\* Significant result

C) Parametric and non-parametric tests of the two groups, high religious investors and less religious investors, concerning scenario C – Q17. The mean and median are referred to a Likert scale of 5 points. In this question, 5 on a Likert scale is referred to "absolutely yes" whereas 1 is referred to "absolutely not".

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	2.62	2.02	2.40
STANDARD ERROR OF MEAN	0.08	0.09	0.06
MEDIAN	3	2	3
STANDARD DEVIATION	1.32	1.08	1.27
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
CHI SQUARE TEST	0.00 *	p-value	< 0.05
MWW TEST	4.30 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	18.49 *	H Critical	> 3.84

\* Significant result

### 1.3 Key results of the comparison test

The results about the effect of the English language highlight that the investors who speak English very well tend to follow the financial news in English language more than the ones who do not speak English. Moreover, the investors who do not speak English rely more on Arabic sources than the investors who speak English.

These findings suggest that individual investors rely more on Arabic sources than foreign ones, which is likely to emerge from the difficulty of understanding and interpreting the English news. Hence, the domination of individual investors in the Saudi market is likely to influence the reaction time of the market to news such as CRAs' announcements.

On the other hand, the results illustrate no difference between the individual investors, who speak English very well and who do not, regarding their interest in CRAs' announcements. Therefore, we assume that investors who have better knowledge in the English language would be able to receive, digest, and understand more quickly the information conveyed by the international CRAs.

**The findings in this part support hypotheses H4-2 & H4-3, and allow to reject H4-1:**

- **H4-1 (rejected):** A higher level of speaking the English language influences the awareness positively to CRAs announcements.
- **H4-2 (supported):** A higher level of speaking the English language influences positively the investors to follow the financial news in English language.

- **H4-3 (supported):** “Non-English speaker investors” tend to rely on news from Arabic sources (more than the “English speaker investors” do).

Hence, these outcomes provide some insights to support our assumption, mentioned in **chapters (3)**, according to which the English language, used by the CRAs to publish their announcements, may affect the time required to have this information entirely incorporated into the stock prices of the GCC equity markets.

- **Therefore, we suggest that CRAs should consider announcing their decisions in English and simultaneously in the official language of the market of interest.**

With respect to the religious influence, our results show that the individual investors who are “highly religious” would tend to keep investing in sharia-compliant firms, despite a credit rating downgrade, or would slightly prefer to leave the stock market rather than investing into a non-sharia compliant share. This reaction is less often encountered amongst the less religious investors, as some of them would accept to move to non-Sharia compliant firms. The outcomes also show that the high religious investors seek for the Imams’ announcements prior to investing in the stock market.

**These findings support the following hypotheses:**

- **H6-1:** The higher religiosity leads the investors to follow the Imams’ announcements.
- **H6-2:** The religion factor is likely to affect the desire to buy and keep in portfolio some financial securities, based on their religious status. This “religious” behaviour may lead to affect the market value of these securities, as much as other financial indicators could do.
- **H6-3:** In case CRAs’ and Imams’ opinions lead to a conflict in investors’ perception regarding the firms’ situation, then high religious investors are likely to pay more attention to Imams’ announcements than to CRAs’ to take their investment decisions.

Consequently, we can state that religion plays an essential role in the Saudi Stock Exchange. **Therefore**, we suggest that in GCC markets, especially in Saudi Arabia, which are simultaneously characterized by a high proportion of individual investors and a high degree of religiosity:

- CRAs should consider the religion factor as one of the determinants of a rating. Indeed, the religious behaviour of the investors may affect not only the market price of a stock but also the ability of an issuer to easily find funding, which may subsequently affect the financial health and thus the credit risk of a firm.

## 2. Logistic regression

In this part, we formulated two logistic models to describe the independent variables that influence our chosen dependent variables, which are: the interest in CRAs' announcements and the importance of the translated news into the Arabic language. These two dependant variables are going to be presented in our first and second models below, where we use SPSS as our software to conduct the logistic regression.

We used a binomial logit model that is run over several independent variables to identify, firstly, the variables that influence the probability ( $p$ ) of our first dependent variable "*Care about CRAs*", which is the survey respondents to declare that they care about CRAs' announcements, versus the probability not to care about CRAs' announcements ( $1 - p$ ). And secondly, to identify the variables that influence the probability ( $p$ ) of the second dependent variable "*Translated news*", which is the survey respondents to declare that they rely on news that is translated into the Arabic language to build their investment decisions, versus the probability not relying on translated news ( $1 - p$ ). The model can be written as follows (Liu, 2016, pp. 105-114):

$$\text{Log} \frac{p}{(1-p)} = \alpha + [\beta_i X_i]$$

Where,

$\text{Log} \frac{p}{(1-p)}$  being the estimated Logit, and  $\frac{p}{(1-p)}$  being the estimated Odds.

$X_i$  being a set of 12 explanatory variables (also called "predictor variables"), described below.

$\alpha$  is the intercept, and  $\beta_i$  is the estimated regression coefficient, and  $\exp \beta_i$  is the exponentiated logit coefficient whose value can be interpreted as an Odds Ratio (OR).

Therefore, in our first model, the variable “*Care about CRAs*” is a binary variable that allows to build the dependent variable in the first logit model we implemented. “*Care about CRAs*” is built as the probability that the survey respondents declare they care about CRAs’ announcements ( $p$ ), which we coded one, versus the probability that they do not care about CRAs’ announcements ( $1 - p$ ), which we coded zero. See [table \(24-a\)](#) below for the survey question concerning the variable “*Care about CRAs*”.

Concerning the first model, for a specific variable  $X_i$ , when the odds ratio is larger than 1, it means that the odds for the survey respondents to declare that they care about CRAs’ announcements increases, for one-unit increase in the predictor variable. Symmetrically, if odds ratio is less than one, it indicates that the odds for the survey respondents to declare that they care about CRAs’ announcements decreases for a one-unit increase in the predictor variable (Liu, 2016, p. 114).

Our first model is introduced as:

$$\text{Care about CRAs} = f(\text{Self-trading} + \text{Short-term} + \text{Risk} + \text{Religiosity} + \text{Know CRAs} + \text{English news} + \text{Fundamental} + \text{Technical})$$

Where;

Self-trading = is a Likert scale of 5 points to illustrate how regularly the survey respondents are accustomed to stock portfolio management and trade by themselves.<sup>60</sup>

Short-term = is a Likert scale of 5 points to illustrate how often the participants do short-term trading.<sup>61</sup>

Risk = is a Likert scale of 5 points to measure the risk tolerance of the participants to choose one of five scenarios.<sup>62</sup>

Religiosity = is a dummy variable that takes value 1 if the participants are high religious investors (who have chosen: “*I trade only in Sharia-compliant firms*”), and take zero if the

<sup>60</sup> Question 4a, see [appendix \(2\)](#).

<sup>61</sup> Question 6c, see [appendix \(2\)](#).

<sup>62</sup> Question 7, see [appendix \(2\)](#).

participants are less religious investors (who have chosen “*I trade only in non-Sharia compliant firms*” or “*I trade in both type of firms*”).<sup>63</sup>

**Know CRAs** = is a dummy variable that takes value 1 if the survey respondents know any of these names (Standard & Poor's, Moody's, or Fitch), and zero otherwise. See **table (24-b)** below for question (13).

**English news** = is a Likert scale to show how often the participants follow the news in the English language. See **table (24-c)** below for question (19).

**Fundamental** = is a Likert scale to illustrate how often the participants use fundamental analysis to take a decision on the stock market. See **table (24-d)** below for question (22-a).

**Technical** = is a Likert scale to illustrate how often the participants use technical analysis to take a decision on the stock market.<sup>64</sup>

The test result in **table (25)** below shows three significant independent variables “*Know CRAs*”, “*English news*”, and “*Fundamental*”. At a preliminary step, we checked for multicollinearity by calculating a VIF indicator on the different independent variables, and the test shows that all the VIFs are around 1, which suggest no multicollinearity problem. The questions concerning the significant variables are presented below in **table (24)**:

*Table 24:*

a- Question (14) concerning the dependent variable “Care about CRAs”:<sup>65</sup>

To which extent do you care about the announcements of credit rating agencies concerning the listed companies in the stock market?

- a) I extremely care
- b) I moderately care
- c) Neutral
- d) I slightly care
- e) I do not care at all

<sup>63</sup> Question 9, [see appendix \(2\)](#).

<sup>64</sup> Question 22b, [see appendix \(2\)](#).

<sup>65</sup> For the dependent variable in our binomial model, we transform the Likert scale into a binary variables by coding the choices “a” and “b” as 1, and the rest as zero.

b- Question (13) concerning the independent variable "Know CRAs":

Do you know any of these names (Standard & Poor's, Moody's, or Fitch)?

- a) Yes
- b) No

c- Question (19) concerning the independent variable "English news":

Do you follow any foreign sources (or local sources) but in English language regarding the Saudi stock market?

- a) Always
- b) Often
- c) Sometimes
- d) Seldom
- e) Never: I do not follow the sources in English language

d- Question (22-a) concerning the independent variable "Fundamental":

Which of the following approaches you take in evaluating a stock and/or reaching investment decisions?

	Never	Seldom	Sometimes	Often	Always
By myself :Technical Approach, i.e. charts and statistical analysis of market factors such as stock price movements, volumes, support and resistance level, moving averages, etc.	o	o	o	o	o

Concerning the first significant variable "Know CRAs", the survey shows that around two-thirds of the participants know at least one of the three major international CRAs (Standard & Poor's, Moody's, Fitch). The regression shows that the independent variable "Know CRAs" is significant at 1% threshold. It can be said that when the individual investor knows at least one of the three major international CRAs, the odds for the survey participants to care about CRAs' announcements (versus not to care about CRAs' announcements) are 5.12 times higher.

The second significant independent variable is "English news", which is significant at 5%, threshold. It can be said that the odds for the survey respondents to care about CRAs' announcements (versus not to care about CRAs' announcements) are multiplied by 1.19 for

each one unit of an increase in following the news in the English language. It indicates that the more individual investors follow the news in the English language, the more likely they are to care and pay attention to CRAs' decisions.

The variable "*Fundamental*" is significant at 10% threshold, which indicates that when the use of fundamental analysis increases by 1 unit, the probability for the survey respondents to care about CRAs' announcements (versus not to care about) will increase by 1.20 times. This indicates that when the use of fundamental analysis by the individual investors increases by 1 unit, then the odds to care and pay attention to CRAs announcements (versus not paying attention) are 1.20 times higher.

*Table 25: logistic regression conducted as the variable CRAs (question 14) as the dependant variable. First model.*

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	494.175 <sup>a</sup>	.142	.194
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	18.556	8	.017

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	Self-trading	-.129	.086	2.255	1	.133	.879	.743	1.040
	Short-term	-.008	.078	.010	1	.921	.992	.852	1.156
	Risk	-.085	.089	.915	1	.339	.918	.771	1.094
	Religiosity	.225	.229	.969	1	.325	1.253	.800	1.962
	Know CRAs	1.633	.300	29.664	1	.000	5.121	2.845	9.218
	English news	.177	.092	3.685	1	.055	1.194	.996	1.431
	Fundamental	.187	.100	3.488	1	.062	1.205	.991	1.466
	Technical	.025	.084	.084	1	.772	1.025	.868	1.209
	Constant	-2.033	.823	6.103	1	.013	.131		

a. Variable(s) entered on step 1: Self-trading, Short-term, Risk, Religiosity, Know CRAs, English news, Fundamental, Technical.

For the second model, the variable “*Translated news*” is a binary variable that allows to build the dependent variable in the second logit model we implemented. “*Translated news*” is built as the probability that the survey respondents declare that they rely on translated news from foreign sources into the Arabic language to build investment decisions ( $p$ ), which we coded one, versus the probability that they do not rely on translated news from foreign sources into the Arabic language ( $1 - p$ ), which we coded zero. See [table \(26-a\)](#) below for the question concerning the dependent variable “*Translated news*”.

Concerning the second mode, for a specific independent variable  $X_i$ , when the odds ratio is larger than 1, it means that the odds for the survey respondents to declare that they rely on translated news from foreign sources into the Arabic language to build investment decisions increases, for one-unit increase in the predictor variable. Symmetrically, if odds ratio is less than one, it indicates that the odds for the survey respondents to declare that they rely on translated news from foreign sources into the Arabic language to build investment decisions decreases for a one-unit increase in the predictor variable (Liu, 2016, p. 114).

The second model is introduced as:

$$\text{Translated news} = f(\text{Self-trading} + \text{Short-term} + \text{Seek announcement} + \text{Media source} + \\ + \text{Professional source} + \text{Arabic source})$$

Where,

Self-trading = is a Likert scale of 7 points to illustrate how regular the participants are accustomed to use a shares portfolio and trade by themselves. See [table \(26-b\)](#) below for question (4a).

Short-term = is a Likert scale of 5 points to illustrate how often the participants do short-term trading.<sup>66</sup>

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<sup>66</sup> Question 6c, see [appendix 2](#).

Seek announcements = is a Likert scale of 5 points to measure how often the participants seek the CRAs' announcements prior to IPOs or purchasing shares. See [table \(26-c\)](#) below for question (15).

Media source = is a Likert scale of 5 points to illustrate how important the (TV channels, Newspapers, and Radio) as a source of information for the participants. See [table \(26-d\)](#) below for question (18c).

Professional source = is a Likert scale of 5 points to illustrate how important are the banker advisers or financial analysts as a source of information for the individual investors answering the inquiry.<sup>67</sup>

Arabic source = is a Likert scale of 5 points to measure to what extent the participants rely only on Arabic sources to reach investment decisions. See [table \(26-e\)](#) below for question (20d).

The result of the second model ([table 27](#)) below shows four significant independent variables “*self-trading*”, “*seek announcements*”, “*media source*”, and “*Arabic source*”. At a preliminary step, we checked for multicollinearity by calculating a VIF indicator on the different independent variables, and the test shows that all the VIFs are around 1, which suggest no multicollinearity problem. The questions concerning the significant variables are presented below in [table \(26\)](#):

*Table 26:*

a- Question (21) concerning the dependant variable “Translated news”:<sup>68</sup>

If you read or hear in the Saudi Media or in the Arabic Media in general some information about the listed firms in the Saudi stock market translated from foreign Media into the Arabic language, do you rely on this type of information (translated information from foreign sources) to build your investment decisions?

- a- Always
- b- Often
- c- Sometimes
- d- Seldom
- e- Never

<sup>67</sup> Question 18d, [see appendix 2](#).

<sup>68</sup> For the dependent variable in our binomial model, we transform the Likert scale into a binary variables by coding the choices “a” and “b” as 1, and the rest as zero.

b- Question (4a) concerning the independent variable "Self-trading":

Which of the methods below you use regularly?

(Please choose on a scale from 1 to 7, where 1 means you do not use this method at all, and 7 means you use this method mainly)

Methods	1 I do not use at all	2	3	4	5	6	7 I use mainly
a. A shares portfolio and I trade by myself	o	o	o	o	o	o	o

c- Question (15) concerning the independent variable "Seek announcements":

Prior IPOs or purchasing shares, to which extent do you seek the announcements and decisions of the Credit Rating Agencies regarding the credit rating/creditworthiness of the company you want to trade/invest in?

- a) Always
- b) Often
- c) Sometimes
- d) Seldom
- e) Never

d- Question (18c) concerning the independent variable "Media source":

Please rate the importance of the following sources of information in terms of using them to build your decisions on buying or selling stocks:

The source	Not important at all	Slightly important	Moderately important	Important	Very important
c. TV channels, Newspapers and radio.	o	o	o	o	o

e- Question (20d) concerning the independent variable “Arabic source”:

Do you rely on the foreign sources (announced in English language) regarding the Saudi stock market to obtain information and build up your investment decisions:

To which extent do you agree or disagree with each of the following answers?

	Strongly disagree	Disagree	Neuter	Agree	Strongly agree
d. I rely only on the Arabic sources to reach my investment decisions.	o	o	o	o	o

First, the variable “*self-trading*” is significant at 10% threshold, indicating that when the self-trading increase by 1 unit, the odds of relying on translated news from foreign sources into the Arabic language to build investment decisions (versus not relying on translated news) are 1.14 times higher. Hence, we can assume that individual investors who have portfolios and trade by themselves tend to rely more on translated news into the Arabic language than not relying on this type of news.

Secondly, the variable “*seek announcements*” is significant at 1%, stating that when the research of CRAs’ announcements increases by 1 unit, then the odds for the individual investors to rely on translated news into the Arabic language (versus not relying on translated news) increase by 1.23 times. Thus, it seems that investors tend to follow the translated news as their interest of CRAs’ announcements increase.

The variable “*media source*” is significant at 1% threshold. Hence, the odds for the individual investors to rely on translated news into the Arabic language to build investment decisions (versus not relying on translated news) are multiplied by 1.42 for each 1 unit of an increase in “*media source*”. It indicates that when the individual investors rely on the (TVs, Newspapers, and Radios) as their primary sources of information, their interest to follow the translated news increases.

The variable “*Arabic sources*” is significant at 5% threshold, stating that the odds for the individual investors to rely on translated news to build investment decisions (versus not relying on this type of news) are multiplied by 1.19 for each 1 unit of an increase in “*Arabic sources*”. It indicates that the individual investors who rely only on Arabic sources to build their decisions also rely on foreign news translated into the Arabic language. This might be

justified by the fact of the difficulty to follow the news directly in English due to their low level of English knowledge.

*Table 27: logistic regression conducted as the variable translated news (question 21) dependant variable. Second model*

Model Summary			
Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	518.269 <sup>a</sup>	.092	.126
a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.			

Hosmer and Lemeshow Test			
Step	Chi-square	df	Sig.
1	26.638	8	.001

Variables in the Equation									
		B	S.E.	Wald	df	Sig.	95% C.I.for EXP(B)		
						Exp(B)	Lower	Upper	
Step 1 <sup>a</sup>	Self-trading	.131	.077	2.889	1	.089	1.140	.980	1.327
	Short-term	-.117	.074	2.482	1	.115	.890	.770	1.029
	Seek announcements	.203	.082	6.192	1	.013	1.225	1.044	1.437
	Media source	.353	.098	12.988	1	.000	1.424	1.175	1.726
	Professional source	.084	.086	.947	1	.330	1.087	.919	1.287
	Arabic source	.173	.077	5.002	1	.025	1.189	1.022	1.383
	Constant	-2.024	.725	7.804	1	.005	.132		

a. Variable(s) entered on step 1: Self-trading, Short-term, Seek announcements, Media source, Professional, Arabic source.

- Key results of the logistic regression regarding the effect of English language

The result of the first logistic regression illustrates that the interest of the individual investors for the CRAs' announcements increases if they know at least one of the major three credit rating agencies, and when they tend to follow the English news as well as when they use the fundamental analysis approach to build investment decisions in the stock market.

And regarding the second model, the test results show that the interest of the individual investors for the foreign news being translated into the Arabic language to build investment decisions increases when the investors tend to trade by themselves, search for the CRAs'

announcement, rely mainly on the (TVs, Newspapers, and Radios), or rely only on Arabic sources to build their investment decisions. Moreover, when the interest of individual investors for the CRAs' announcements increases, the tendency to seek and follow the translated news increases as well. This might be justified by the lack of English knowledge amongst the individual investors, which drives them to seek the translated news. The same explanation also prevails for the individual investors who rely only on the Arabic sources to reach their investment decisions, as their interest in the translated news increases when they rely only on the Arabic sources.

These findings enhance and support our assumption regarding the possible effect of the English language over the individual investors to receive, absorb, and understand the CRAs' announcements. Therefore, in the next chapter, we are going to present the event-study, which is meant to capture the stock market reaction to the announcements of the three major credit rating agencies. The results of this investigation would allow us to find out whether there is a delay in the market reaction or not. As mentioned earlier, we assume that the market with a higher level of individuals domination may encounter a delay in the market reaction to CRAs' announcements due to the lack of English knowledge amongst the individual investors in GCC equity markets.

## Chapter 7: Event study - Results and discussions of the impact of CRAs' announcements on stock prices

This chapter is going to report the results of the event study performed on the stock markets of the six GCC countries in order to investigate whether the credit rating agencies' announcements contain informational value and affect the stock prices in these countries or not. This part of the empirical work allows us to verify the relevance of our hypotheses ([H1](#), [H2](#), and [H3](#)) regarding the impact of CRAs' announcements on stock prices, as well as examining the time of reaction of the market over the post-event windows, in order to confirm a possible influence of the English language due to the individual investors' dominance over these markets. Therefore, our work will analyse in details the reaction over the post-event windows, and briefly the pre-event period. The results are presented as follows:

- 1- Case study: Saudi Arabia
- 2- Case study: All the six GCC countries combined (Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Bahrain, Oman)

We are going to present first the study conducted on the rating changes (upgrades) and (downgrades) only, then on the positive rating events (upgrades and positive credit watches taken together) and, finally on the negative rating events (downgrades and negative credit watches taken together). In respect to the methodology previously described (cf. [chapter 5](#)), we run the market model to calculate the abnormal returns using a GARCH process (p,q) in order to properly estimate the parameters of the market model. Then we calculate the Average Abnormal Returns (AARs), Cumulative Abnormal Returns (CARs), and the Cumulative Average Abnormal Returns (CAARs). In addition, we use the cross-sectional t-test as a parametric test besides non-parametric tests, in order to check for the significance of the abnormal returns. As a robustness check, we also present in tables the (t-test after removing the outliers), to ensure that the significance of the results is not due to an abnormality within the data.<sup>69</sup>

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<sup>69</sup> For further information, please return to [chapter \(5\) - section \(2\)](#) for the methodological part.

## 1. Case study: Saudi Arabia

We first examine whether or not the rating changes (Upgrade – Downgrade – credit watches) have an influence on stock prices, and then aim to pinpoint the time needed for the market to react after the event day. The empirical results are going to be presented in two sections, where each section respectively consist of the event-study implemented on the full sample, and then on the uncontaminated sample (in order to check for possible differences). The two sections are presented as follows:

1.1 Rating changes: a- Upgrades b- Positive rating events

1.2 Rating changes: a- Downgrades b- Negative rating events

### 1.1 The stock market reaction to upgrades and positive rating events

#### *a. Upgrades*

Table (28) below shows the empirical results of 68 rating changes (upgrades) in the case of the full sample, and 55 rating changes (upgrades) in the case of the uncontaminated sample.<sup>70</sup> The results of the full sample and uncontaminated sample present statistically significant results over the post-announcement windows and pre-announcement windows. As the results are slightly similar for both samples, our discussion will refer to the uncontaminated sample.

The post-event windows [+1, +5] [+1, +8] [+4, +8] show statistically significant positive Cumulative Average Abnormal Returns (CAARs) of 0.97%, 1.60% and 1.17% respectively, all of them are being significant at 5% threshold for the t-test, also the non-parametric tests confirm the result being significant at 5% for the post-event windows [+1, +5] [+1, +8]. The post-announcements windows including the event day [0, +5] [0, +10] are also showing significantly positive CAARs.

The entire pre-announcement window [-20, -1] exhibits positive stock reaction with CAARs of 2.57% with a significant p-value, but only at 10% threshold for the t-test,<sup>71</sup> while significant at 5% for the Wilcoxon 1-sample test.

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<sup>70</sup> Full sample means the contaminated sample.

<sup>71</sup> With the outliers being removed, the t-test becomes significant at 1%.

If we take into consideration the symmetric windows  $[-10, +10]$   $[-5, +5]$ , searching for a cumulative reaction surrounding the rating announcements, we also denote positive CAARs of 2.98% and 2.04%, significant at 5% and 1% for the t-test respectively, with all these results being significant at 5% for the non-parametric tests.<sup>72, 73</sup>

*Table 28: results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. Saudi Arabia case study – Rating changes: Upgrades (full sample and uncontaminated sample).*

Windows	Full Sample						Uncontaminated sample					
	N	CAARs	t-test	t-test	Sign	Wilcoxon	N	CAARs	t-test	t-test	Sign	Wilcoxon
				(removed outliers)	test 1-sample	1-sample test				(removed outliers)	test 1-sample	1-sample test
$[-20, +20]$	68	2.24%	1.390		**	**	55	2.93%	1.653			**
$[-10, +10]$	68	1.94%	1.529			**	55	2.98%	2.132 **	3.169 ***	**	**
$[-5, +5]$	68	1.65%	2.628 ***	4.002 ***	**	**	55	2.04%	2.778 ***	4.665 ***	**	**
$[-1, +1]$	68	0.51%	1.829 *	1.216			55	0.56%	1.795 *	1.131		
$[-20, -1]$	68	2.18%	1.844 *	3.254 ***		**	55	2.57%	1.947 *	2.560 ***		**
$[-10, -1]$	68	0.71%	0.764				55	1.31%	1.285			
$[-5, -1]$	68	0.67%	1.535			**	55	0.82%	1.647			**
$[-1, 0]$	68	0.40%	1.653				55	0.41%	1.532			
$[0]$	68	0.23%	1.141				55	0.25%	1.058			
$[0, +1]$	68	0.34%	1.498				55	0.40%	1.552			
$[0, +5]$	68	0.98%	2.201 **	1.944 *		**	55	1.22%	2.312 **	3.143 ***		**
$[0, +10]$	68	1.24%	1.876 *	2.361 **			55	1.67%	2.148 **	2.148 **		
$[0, +20]$	68	0.06%	0.074				55	0.36%	0.396			
$[+1, +3]$	68	0.32%	1,040				55	0.42%	1,136			
$[+1, +5]$	68	0.76%	1.854 *	1.859 *	**	**	55	0.97%	2.001 **	2.107 **	**	**
$[+1, +8]$	68	1.22%	2.086 **	1.884 *	**	**	55	1.60%	2.288 **	3.601 ***	**	**
$[+4, +8]$	68	0.90%	1.924 *	1.839 *			55	1.17%	2.118 **	2.557 ***		

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

<sup>72</sup> The event window  $[-1, +1]$  is significant at 10%, whereas the t-test after removing the outliers and the non-parametric tests show no significant results. As the significance of tests is not persistent through the different tests, then we do not consider this window to have a significantly positive reaction to the CRAs' announcements.

<sup>73</sup> With the outliers being removed, the t-test becomes significant at 1%.

***b. Positive rating events***

Table (29) below shows the empirical results for 85 positive rating events (68 upgrades and 17 positive credit watches) in the case of a full sample, and 69 positive rating events (55 upgrades and 17 positive credit watches) in the case of an uncontaminated sample. The full and the uncontaminated samples present statistically significant results during the post-announcement windows. If we have a closer look at the positive announcements taken together (upgrades and positive credit watches), our conclusion does not differ than the one we have highlighted for the upgrades regarding the post-announcement windows, whereas the results of the pre-announcements windows are slightly different.

More in details, both samples illustrate significantly positive stock reactions to positive events over the post-announcement windows and symmetric windows surrounding the announcement date. Despite the fact that there is no remarkable difference regarding the existence of abnormal returns after including the positive credit watches to the upgrades, mostly for the post-announcement windows and symmetric windows surrounding the announcement date, we denote, however, a slight difference in the magnitude of the cumulative average abnormal returns. The greater magnitude of the abnormal returns for the positive events in post-announcement windows [0, +10], [+1, +8], and [+4, +8] might indicate that the positive credit watches are, at least as informative as the upgrades, or even more (as shown by the increase of the average magnitude of the market reaction, when merging the events together, compared to the abnormal returns of the upgrades only).

On the contrary to upgrades, the pre-announcement windows show no significant abnormal returns. The lack of reaction over the pre-announcement windows might indicate that the stock market does not fully anticipate or pre-empt the positive credit watches as much as the upgrades themselves.

*Table 29: results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. Saudi Arabia case study – Positive events: Upgrades merged with positive credit watches (full sample and uncontaminated sample).*

Windows	Full Sample						Uncontaminated sample					
	N	CAARs	t-test	t-test	Sign	Wilcoxon	N	CAARs	t-test	t-test	Sign	Wilcoxon
				(removed outliers)	test 1-sample	1-sample test				(removed outliers)	test 1-sample	1-sample test
[-20, +20]	85	2.57%	1.789 *	2.364 **	**	**	69	2.90%	1.831 *	2.146 **	**	**
[-10, +10]	85	2.00%	1.890 *	3.733 ***	**	**	69	2.81%	2.406 **	3.382 ***	**	**
[-5, +5]	85	1.14%	2.120 **	2.758 ***	**	**	69	1.37%	2.163 **	2.788 ***	**	**
[-1, +1]	85	0.28%	1.154				69	0.26%	0.939			
[-20, -1]	85	1.61%	1.546				69	1.92%	1.642			
[-10, -1]	85	0.34%	0.437				69	0.76%	0.884			
[-5, -1]	85	0.41%	1.093				69	0.49%	1.163			
[-1, 0]	85	0.26%	1.285				69	0.21%	0.944			
[0]	85	0.14%	0.820				69	0.14%	0.700			
[0, +1]	85	0.16%	0.773				69	0.19%	0.804			
[0, +5]	85	0.74%	1.897 *      1.782 *      *				69	0.88%	1.939 *      2.732 ***			
[0, +10]	85	1.66%	2.944 ***      2.944 ***	**	**		69	2.05%	3.115 ***      3.115 ***	**	**	
[0, +20]	85	0.96%	1.306				69	0.97%	1.206			
[+1, +3]	85	0.27%	1,006				69	0.34%	1,061			
[+1, +5]	85	0.60%	1.716 *      1.624				69	0.74%	1.815 *      2.532 **	**	**	
[+1, +8]	85	1.70%	3.410 ***      2.419 **	**	**		69	2.05%	3.469 ***      4.562 ***	**	**	
[+4, +8]	85	1.43%	3.330 ***      3.255 ***		**		69	1.71%	3.360 ***      3.201 ***			**

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

### Discussion part 1.1

- Observations regarding the magnitude and the reaction period

In respect to the results of positive rating events (table 29), we can see that the stock market response to the CRAs' announcements starts to be significant over the six days post-event window [0, +5] with CAARs 0.88%. However, the magnitude of the abnormal keeps increasing with time, over the post-event window (i.e. 2.05% on the [0, +10] period, and more specifically on the [+1, +8] window). Interestingly, the event window [+4, +8] is the one that exhibits the larger reaction, compared to the [+1; +5], with respectively positively significant

CAARs of 1.71% (at 1% threshold) compared to 0.74%. This is likely to indicate that most of the market reaction is occurring during the post-event window [+4, +8], which is not the nearest from the announcement date.

This finding is likely to boost our assumption that, considering a market characterised with the domination of individual investors (versus institutional investors), the former would need a longer period of time to receive, digest, and understand the CRAs' information, due to the barrier of language. Let us recall that, relying on our survey, around 62% of the individual investors in the Saudi Stock Exchange need to have the English news translated, before being able to understand and react to the disclosure of information. This result is also in line with Huang (2015) who concluded that the speed required by a "foreign information" to be incorporated into decisions is linked with how understandable and familiar are the language and source of disclosure to the local investors.

Additionally, we hypothesized that the market would possibly exhibit two periods of reaction, the first one being the reaction coming from the sophisticated investors and the second one mainly from the individual investors. This assumption might also be supported by our results (i.e., the increase in the magnitude of abnormal returns over the large post-event windows), which can be referred to the late reaction of individuals. Whereas the significant abnormal returns either anticipated or occurring close to the announcement date, could be originated from the sophisticated investors.

- Partial conclusion: Key results of the Event-Study dedicated to upgrades and positive rating events in Saudi Arabia

The previous tables demonstrate that the positive announcements (upgrades only, or with positive credit watches included) are followed with positive abnormal returns indicating that the market considers these announcements as good news, and that this type of announcements conveys an informational content. The fact that the pre-announcement windows also show significant and positive abnormal returns, suggest that at least some investors can anticipate the credit rating decisions, or are able to have a good knowledge of the market, in order to predict the good news about the issuers.

The absence of significant results over the pre-event windows for the positive rating events (upgrades merged with positive credit watches), comparing to the upgrades only also

suggests that the market participants tend to anticipate better the upgrades than they do for the positive credit watches. On the other hand, the magnitude of cumulative average abnormal returns over the post-announcement windows for the positive rating events (upgrades merged with positive credit watches) is larger in some post-event windows than for the upgrades only, thus it may suggest that positive watchlisting is a rating event that is at least as informative as an upgrade (or even more), once it has been disclosed.

Our findings exhibit the pre-dominance of a signalling effect and **support** our **hypothesis (H1-1)** that the announcements of positive rating events (upgrades merged with positive credit watches) will be followed by a positive stock market reaction, as the market considers this information as good news. In addition, the results also **support part of our hypothesis (H2)**, which states that the announcements of upgrades merged with positive credit watches will be followed by a positive and greater magnitude of abnormal returns, compared to the reaction associated to upgrades only.

Comparing our results to previous literature, we first can say that they are consistent with those of Barron et al. (1997), Chakravarty et al. (2009), Jorion et al. (2005), and Sehgal and Mathur (2013) who found significant and positive market reaction to upgrades and positive credit watches. If we focus more specifically on previous studies conducted on relatively small stock markets, the results are consistent with Elayan et al. (2003) who found significantly positive reaction in New Zealand stock market to positive rating events. However, they are not in line with Afik et al. (2014) who found no reaction to rating changes on the Israeli market, and with Abad-Romero and Robles-Fernández (2007) who found negative reaction to upgrading on the Spanish market.

As individuals account for around 85% of the daily transactions in the Saudi Stock Exchange, our conclusions also differ from the assumption of Field and Lowry (2009), who claimed that individuals are more likely to ignore or misread the public information regarding the firms' value. On the other hand, our findings are likely to go along with Hess (2012), Hilary and Hui (2009), and Miller and Hoffmann (1995), who suggested that the religiosity is correlated positively with the risk-averse attitude. More precisely, we suggest, *ceteris paribus*, that if the market is characterized by a great proportion of individual investors who are "religious", they would be more likely to perceive the positive CRAs' announcements as a

sign of low risk, leading them to react positively in the stock market (in case there is no contradiction with the Imams' announcements on the firm concerned by the events).

## 1.2 The stock market reaction to downgrades and negative rating events

### *a. Downgrades*

**Table (30)** below shows the empirical results of 55 rating changes (downgrade) in the case of the full sample, and 28 rating changes ( downgrade) in the case of the uncontaminated sample. As the size of the uncontaminated sample is quite small (28 observations), we consider the results of non-parametric tests as important as the parametric test. Therefore, the results are taken into consideration when both parametric and non-parametric tests are significant.

There is clear evidence that the post-announcement windows [+1, +3] [+1, +5] [+1, +8] present significantly negative stock reactions. The event window [+1, +3] present negative CAARs of -0.53% and -0.99% for the full sample and uncontaminated sample respectively, with a t-test significant at 10% for the full sample and at 1% for the uncontaminated sample, and non-parametric tests confirming these results, being significant at 5% in both samples. For the event window [+1, +5] the magnitude of CAARs is slightly lower with -0.83% for the uncontaminated sample, where the t-test and non-parametric tests show significance at 10% and 5% respectively. The magnitude of CAARs for the event window [+1, +8] is even larger than it is for the two post-event windows considered above, with respectively -1.15% and -1.65% for the full and uncontaminated samples, with a t-test statistically significant at 5%,<sup>74</sup> as well as non-parametric tests.

By contrast, based on the observance of the pre-event windows, there is enough evidence to say either the downgrades are not anticipated by the market participants, or no valuable information is conveyed to the investors before the CRAs' announcement.

Regarding the event day [0], there is not enough evidence to confirm a significant stock market reaction. The event-study denotes a small positive stock reaction with average abnormal returns "AARs" 0.37%, statistically significant at 5% for the t-test, but the non-

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<sup>74</sup> The t-test after removing the outliers in the uncontaminated sample is significant at 1% threshold and 5% for the full sample.

parametric tests do not confirm this significance. In addition, the uncontaminated sample presents insignificant results.

Finally, there is no evidence for abnormal returns over the whole symmetric windows surrounding the announcement date, which is not surprising as our previous comments suggest that the most of reactions occur after the announcement date, and not before.

*Table 30: results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. Saudi Arabia case study – Rating changes: downgrades (full sample and uncontaminated sample).*

Full Sample							Uncontaminated sample						
Windows	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	
[-20, +20]	55	-0.63%	-0.555				28	-0.49%	-0.261				
[-10, +10]	55	-0.28%	-0.387				28	-1.09%	-0.986				
[-5, +5]	55	-0.13%	-0.265				28	-1.01%	-1.616			**	
[-1, +1]	55	-0.02%	-0.063				28	-0.06%	-0.141				
[-20, -1]	55	-1.10%	-1.286				28	-1.16%	-0.807				
[-10, -1]	55	-0.10%	-0.202				28	-0.36%	-0.514				
[-5, -1]	55	0.01%	0.016				28	-0.59%	-1.899	-1.899	*	*	
[-1, 0]	55	0.22%	1.070				28	0.27%	0.759				
[0]	55	0.37%	2.010 **	1.727 *			28	0.40%	1.487				
[0, +1]	55	0.13%	0.569				28	0.08%	0.215				
[0, +5]	55	-0.13%	-0.354				28	-0.43%	-0.718				
[0, +10]	55	-0.18%	-0.270				28	-0.73%	-0.810			**	
[0, +20]	55	0.48%	0.609				28	0.67%	0.512				
[+1, +3]	55	-0.53%	-1.702 *      -1.679 *	**      **			28	-0.99%	-2.697 ***      -2.629 ***		**	**	
[+1, +5]	55	-0.50%	-1.431		**	**	28	-0.83%	-1.744 *      -1.744 *		**	**	
[+1, +8]	55	-1.15%	-2.402 **      -2.402 *	**      **			28	-1.65%	-2.560 **      -3.916 ***		**	**	
[+4, +8]	55	-0.62%	-1.652 *      -1.652 *				28	-0.66%	-1.216		**		

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

### b. Negative rating events

Regarding the negative rating events (downgrades and negative credit watches all taken together), **table (31)** below shows the empirical results for 79 negative rating events (55 downgrades and 24 negative credit watches) in the full sample, and 37 negative rating events (28 downgrade and 9 negative credit watches) in the uncontaminated sample. The results of different tests do not present enough evidence to conclude to a stock market reaction to negative rating events (downgrades and negative credit watches taken together). It suggests that the negative credit watches are not as informative as the downgrades themselves seem to be.

*Table 31: results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. Saudi Arabia case study – Rating changes: downgrades and negative credit watches (full sample and uncontaminated sample).*

Windows	Full Sample					Uncontaminated sample					
	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample
[-20, +20]	79	-1.26%	-1.014				37	-2.03%	-0.830		
[-10, +10]	79	-0.33%	-0.439				37	-1.56%	-1.164		
[-5, +5]	79	-0.13%	-0.220				37	-1.34%	-1.321		
[-1, +1]	79	0.02%	0.071				37	-0.35%	-0.814	**	
[-20, -1]	79	-1.62%	-1.661*	-0.738			37	-3.39%	-1.780*	-0.670	
[-10, -1]	79	-0.39%	-0.607				37	-1.80%	-1.615		
[-5, -1]	79	-0.19%	-0.361				37	-1.43%	-1.518		
[-1, 0]	79	0.05%	0.172				37	-0.35%	-0.707		
[0]	79	0.10%	0.507				37	-0.05%	-0.132		
[0, +1]	79	0.07%	0.310				37	-0.05%	-0.111		
[0, +2]	79	0.03%	0.134				37	-0.09%	-0.201		
[0, +5]	79	0.07%	0.185				37	0.09%	0.148		
[0, +10]	79	0.06%	0.112				37	0.24%	0.273		
[0, +20]	79	0.37%	0.529				37	1.36%	1.147		
[+1, +3]	79	-0.11%	-0.391				37	-0.22%	-0.557	**	
[+1, +5]	79	-0.03%	-0.105				37	0.14%	0.273		
[+1, +8]	79	-0.47%	-0.845	**			37	0.01%	0.011		
[+4, +8]	79	-0.36%	-0.767				37	0.24%	0.281	**	

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

### ***Discussion part 1.2***

- Observations regarding the magnitude and the reaction period

The event-study results on downgrade announcements show significant abnormal returns over small post-event windows comparing to upgrade announcements, thus indicating that the market reacts to the downgrade announcements faster than it does after upgrade announcements. Worth to mention, around 95% of the downgrade announcements were released during the last previous years 2015 to 2018, while nearly 98% of the upgrade announcements occurred during or before 2010. According to us, this difference regarding the period, between the more recent and older announcements, might also explain the faster response to downgrades, comparing to upgrades. Indeed, we assume that the time needed to translate the information for the individual investors who do not speak the language used by the rating agencies for the disclosure of the information is more likely to decrease with time. We also believe that the recent social media channels and the facility for the individual investors to reach the information, thanks to the new technology, are likely to shrink the time of response when the market reacts to CRAs' decisions.

Our explanation above suggests that the quick reaction of the market to downgrades is likely to emerge because of a change in the period required for releasing the information and not specifically because bad news is interpreted as more important than good news, and thus should be associated with a faster reaction from the investors. Despite our explanation is not corroborated by an empirical proof, we may argue that if the downgrades were being intrinsically considered as more important news than upgrades, then the market response should be expected not only faster, but also larger in magnitude. However, as shown previously, this is not the case in the Saudi market, which seems a bit contradictory.

On the contrary, some might also argue that the larger magnitude of the market reaction for the upgrades could be explained by momentum effects, especially if the size of the market was narrower and characterised with smaller liquidity in periods of upgrades, compared to recently, in times of downgrades. However, this argument could hardly be upheld, as the turnover ratio of the stock market before 2010 was relatively larger than in recent years.

Indeed, as mentioned earlier, around 95% of the downgrades were assigned during the last previous years 2015 to 2018, and nearly 98% of the upgrades occurred on and before

2010. Hence, and unfortunately, the small number of data does not allow us to split the sample into old rating events and recent rating events in order to empirically test **assumption (2)**, which is the possible influence of the period of announcing over the market reaction. However, this outcome of the event-study, regarding the reaction time, may provide insights to **support assumption (2)** that the lag between institutional and individual investors' reaction, and thus the whole reaction period, is likely to shrink with time, mostly in the recent years, thanks to the improvement and the development of the media in the region, as well as the technological progress and tools availability.<sup>75</sup>

- Partial conclusion: key results of the Event-Study dedicated to downgrades and negative rating events in Saudi Arabia

Our analysis shows that downgrade announcements are followed significantly with negative abnormal returns, indicating that these announcements contain informational value and confirming that the market generally considers these announcements as bad news.

**Hence,**

- This finding **supports part of our hypothesis (H1-2)** that the announcements of downgrades will be followed by a negative stock market reaction, as the market considers this information as bad news (but not with negative credit watches included).

Compared to previous literature, it should be mentioned that our results are consistent with the findings of many previous studies such as Choy et al. (2006), Dichev and Piotroski (2001), Elayan et al. (1996), Gropp and Richards (2001), Hand et al. (1992), Li et al. (2006), and Poon and Chan (2008) who found negative stock reaction to rating downgrades.

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<sup>75</sup> We suggest for further research that researchers (who could study a market with a high proportion of individuals) can examine the reaction of upgrades or downgrades (mostly if they have enough events through time for the same direction e.g. upgrades only or downgrades only) prior and after a certain period such as 2010. The idea beyond is to find out whether the factor of the announcement date (prior and after a specific date) influence the time of reaction by reducing the time needed to receive and digest the information. We believe the time to respond to the announcement shrink with time due to the facility to reach the sources through the new channels of media.

Conversely, the fact that the negative rating events altogether (downgrades and negative credit watches) present no stock reaction suggests that the negative credit watches are not as informative as the downgrades on the Saudi market.

**Hence,**

- This finding **rejects part of our hypothesis (H2)**, which states that the announcements of downgrades merged with negative credit watches will be followed by a negative and greater magnitude of abnormal returns, compared to the reaction associated to downgrades only.

### 1.3 Conclusion of the case study: Saudi Arabia

In conclusion, the results of our event-study prove that positive rating events are followed significantly with positive abnormal returns, and that downgrades are followed significantly with negative abnormal returns. The positive rating events (upgrades and positive credit watches all taken together) are found to have higher informational content than the negative rating events (downgrades and negative credit watches all taken together), where the market has stronger reaction and larger magnitude to good news than bad news. Moreover, the market tends to anticipate the good news but not the bad news.

Consequently, our first **hypothesis (H1) is partly supported**. It relies on the signalling hypothesis, which states that the announcements of positive (negative: only downgrades) events will be followed by a positive (negative) stock market reaction, as the market considers this information as good (bad) news. Also, a **part of the second hypothesis (H2) is supported**, which states that the announcements of upgrades merged with positive credit watches will be followed by a positive and greater magnitude of abnormal returns, compared to the reaction associated to upgrades by themselves.

In addition, the results of the tests show that the market reaction mostly occurs during large post-event windows, unlike short ones. We justify the lack of reaction right after the rating announcement (i.e. [0], [+1], [0, +1]) by the time needed for the individuals to receive, absorb, and understand the conveyed information by CRAs in order to react. In this regard, we believe the language barrier may be an essential cause of this lag.

## 2. Case study: All the six GCC countries combined (Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Bahrain, Oman)

In this section, we examine whether or not the positive rating events (upgrades and positive credit watches all taken together) and the negative rating events (downgrades and negative credit watches all taken together) have an influence on stock prices over the GCC stock markets. The reason behind combining the entire events of the GCC countries is to search for common features, regarding the stock market reaction to CRAs' events, between these countries that are linked one to each other with the Gulf Cooperation Council. Moreover, our methodological approach will be reinforced by the fact that the size of the observed sample will be larger.

For example, with respect to the positive rating events ([see appendix 14](#)), four panels show the results of our event study applied to positive rating events for each of the GCC markets, excluding Bahrain.<sup>76</sup> It can be seen that, for each of the GCC markets considered separately, the number of available observations kept in our analysis is quite low, due to the low number of events and the filtration process that was required.<sup>77</sup> Likewise in the case of negative rating events, ([see appendix 15](#)). At first glance, and regardless of the low number of observations, it seems that the positive rating events in Kuwait are rather associated with a positive stock market reaction, while it is the opposite in UAE, Qatar, and Oman. On the contrary, the negative rating events seem to be associated with negative stock reaction in UAE, Oman, and Kuwait, while the opposite is true in Qatar and Bahrain. However, for further analysis, we have decided to combine all the events of the six GCC countries, in order to reinforce the reliability of the results.

We are going to present the results of this section in two parts:

- a) Positive rating events (upgrades merged with positive credit watches)

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<sup>76</sup> Bahrain is excluded from the positive rating events because there are only 4 observations out of 27 positive rating events that have been kept in our sample, following the process of our methodology. The main obstacle for including Bahrain in our analysis is the illiquidity of the stock market, which leads to having many zero returns.

<sup>77</sup> See the methodological part in [chapter \(2\) section \(2\)](#) for further information with respect to the filtration process.

- a. All countries
  - b. Saudi Arabia and the United Arab Emirates (UAE)
  - c. Qatar, Kuwait, and Oman
- b) Negative rating events (downgrades merged with negative credit watches)
- a. All countries
  - b. Saudi Arabia and the United Arab Emirates (UAE)
  - c. Qatar, Kuwait, Oman, and Bahrain

The idea of merging Saudi Arabia with the UAE in a sample and the other GCC countries (Qatar, Kuwait, Oman, and Bahrain) in another sample is based on our assumption that individuals are driving the market. As mentioned earlier (cf. [chapter 1](#)), the daily transactions addressed by individual investors in Saudi Stock Exchange is around 85%, and 74% in UAE, whereas in Qatar, Kuwait, Bahrain, and Oman the proportion is lower with 55%, 49%, 43% and 34% respectively. Therefore, we consider this classification as high individual domination (Saudi Arabia and UAE) and low individual domination (Qatar, Kuwait, Bahrain, and Oman).

## 2.1 Positive rating events (upgrades merged with positive credit watches)

### *a. All countries*

[Table \(32\)](#) below presents the results of positive events (upgrades and positive credit watches all taken together) for the five GCC countries Saudi Arabia, United Arab Emirates, Qatar, Kuwait, and Oman<sup>78</sup>. Both samples (Full and uncontaminated) show that positive events are followed by significantly positive abnormal returns. The number of observations consists respectively of 176 and 131 events for the full and uncontaminated samples.

In both samples, full and uncontaminated samples, the post-event windows [0, +10], [+1, +8], and [+4, +8] present significant and positive abnormal returns, whose significance was validated by the parametric and non-parametric tests. For the uncontaminated sample, the event window [0, +5] presents significant CAARs of 0.57%, and the event window [0, +10] shows CAARs of 1.12% with significant parametric and non-parametric tests. The post-event window [+1, +8] show slightly higher magnitude than [0, +10] with CAARs of 1.19% and significant at 1% for the t-test and 5% for the non-parametric tests. The five days event

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<sup>78</sup> Bahrain is excluded from the case study (all countries) because it has only four positive events.

window [+4, +8] show CAARs of 0.88% significant at 5% for the t-test and Wilcoxon 1-sample test.<sup>79</sup>

Considering the pre-event period, only the whole pre-event window [-20, -1] shows significantly positive CAARs of 1.28% for the uncontaminated sample and significant at 10% threshold.<sup>80</sup> Regarding symmetrical windows surrounding the event day, there are also insights of abnormal returns on the stock market. The event window [-20, +20] and [-10, +10] respectively shows CAARs of 2.06% and 1.54% for the uncontaminated sample, at (5% threshold) for the t-test and Wilcoxon1-sample test.<sup>81</sup>

*Table 32:* results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. GCC countries case study (except for Bahrain) – positive rating events (Upgrades merged with positive credit watches).

#### Positive events: SA, UAE, QA, OM, KW

Windows	Full Sample						Uncontaminated sample					
	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test
[-20, +20]	176	1,26%	1,508				131	2,06%	2,114 **	2,713 ***		**
[-10, +10]	176	0,79%	1,330				131	1,54%	2,216 **	2,601 ***		**
[-5, +5]	176	0,54%	1,463		**		131	0,70%	1,568		**	
[-1, +1]	176	0,10%	0,608				131	0,11%	0,556			
[-20, -1]	176	0,95%	1,600				131	1,28%	1,804 *	2,127 **		
[-10, -1]	176	0,14%	0,317				131	0,42%	0,810			
[-5, -1]	176	0,20%	0,764				131	0,13%	0,426			
[-1, 0]	176	0,08%	0,510				131	0,10%	0,552			
[0]	176	0,09%	0,789				131	0,16%	1,068			
[0, +1]	176	0,12%	0,856				131	0,17%	1,014			
[0, +5]	176	0,34%	1,371				131	0,57%	1,956 *	2,307 **	**	**
[0, +10]	176	0,65%	1,809 *	2,409 **			131	1,12%	2,549 **	3,440 ***	**	**
[0, +20]	176	0,31%	0,623				131	0,79%	1,358			
[+1, +3]	176	0,24%	1,356				131	0,31%	1,481			
[+1, +5]	176	0,25%	1,120				131	0,41%	1,597		**	**
[+1, +8]	176	0,84%	2,452 **	3,602 ***			131	1,19%	2,754 ***	4,903 ***	**	**
[+4, +8]	176	0,61%	1,967 **	2,891 ***			131	0,88%	2,267 **	3,459 ***		**

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

<sup>79</sup> With the outliers being removed, the t-test becomes significant at 1%.

<sup>80</sup> With the outliers being removed, the t-test becomes significant at 5%.

<sup>81</sup> With the outliers being removed, the t-test becomes significant at 1%.

It should be highlighted that for all countries, the post-event period illustrates that the market positively and significantly reacts to the positive rating events (upgrades merged with positive credit watches). It confirms that the positive decisions of Credit Rating Agencies “CRAs” convey valuable information to the market. In addition, the larger is the observed event-window, the larger is the stock market reaction. This could be justified by the fact that the market participants, mostly individuals, need time to receive, absorb and understand the information. On the other hand, the reaction in the large pre-event window [-20, -1] may indicate anticipation of this type of announcements, where the reaction prior the announcements is likely to arise from the sophisticated investors.

### ***b. Saudi Arabia and the United Arab Emirates (UAE)***

**Table (33)** below shows the stock market reaction to positive events in Saudi Arabia and the United Arab Emirates, with 108 events in the full sample and 81 events in the uncontaminated sample. The results are slightly similar to the results of all countries together (mentioned above in **part a**). However, we notice that the magnitudes of CAARs are larger than for the outcomes coming from the analysis performed on all countries.

### ***c. Qatar, Kuwait, and Oman***

**Table (34)** below shows the stock market reaction to positive events (upgrades merged with positive credit watches) in Qatar, Kuwait, and Oman, with 68 events in the full sample and 50 events in the uncontaminated sample. Globally speaking, it should be highlighted a remarkably faster reaction (on the event day), with a smaller magnitude, comparing to the sample of Saudi Arabia and UAE. In the full sample, the event day [0] presents positive average abnormal returns “AARs” of 0.35% with t-test significant at 5%. Considering the uncontaminated sample, the event day [0] shows “AARs” of 0.38% and significant at 10% for the t-test.

The event-study demonstrates that stock markets in Qatar, Kuwait, and Oman react positively to positive rating events conveyed by credit rating agencies, which indicates that these announcements contain valuable information. Interestingly, the reactions in these markets occur faster (on the event day) than those reported for Saudi Arabia and UAE. We assume this faster reaction may be due to the fact of lower importance of individuals on these markets, and conversely, a higher weight of institutional investors. Consequently, it would

shorten the time needed to receive, digest, and understand the information conveyed by the CRAs announcements.

*Table 33:* results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. Saudi Arabia and the United Arab Emirates case study – positive rating events (Upgrades merged with positive credit watches).

#### Saudi Arabia and United Arab Emirate

	Full Sample						Uncontaminated sample					
	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test
Windows												
[-20, +20]	108	1,88%	1,602		**	**	81	2,48%	1,803 * ***	2,895 *** ***	**	**
[-10, +10]	108	1,39%	1,620		**	**	81	2,30%	2,239 ** ***	3,042 *** ***	**	**
[-5, +5]	108	0,86%	1,765 * **	2,556 ** **	**	**	81	1,04%	1,723 * ***	3,731 *** ***	**	**
[-1, +1]	108	0,11%	0,468				81	0,11%	0,406			
[-20, -1]	108	1,50%	1,806 * **	2,482 ** **			81	1,96%	1,951 * ***	2,003 ** **		
[-10, -1]	108	0,30%	0,485				81	0,70%	0,954			
[-5, -1]	108	0,41%	1,268			**	81	0,37%	0,948			
[-1, 0]	108	0,02%	0,092				81	0,01%	0,051			
[0]	108	-0,07%	-0,412				81	0,02%	0,095			
[0, +1]	108	0,03%	0,139				81	0,12%	0,562			
[0, +5]	108	0,45%	1,276				81	0,67%	1,622			
[0, +10]	108	1,10%	2,217 ** **	2,594 *** ***		**	81	1,59%	2,628 *** ***	2,628 *** ***	**	**
[0, +20]	108	0,38%	0,600				81	0,51%	0,706			
[+1, +3]	108	0,21%	0,894				81	0,32%	1,127			
[+1, +5]	108	0,52%	1,697 * **	2,245 ** **			81	0,65%	1,826 * **	2,511 ** **	**	**
[+1, +8]	108	1,31%	3,046 *** ***	4,322 *** ***	***	***	81	1,67%	3,158 *** ***	4,371 *** ***	***	***
[+4, +8]	108	1,09%	2,863 *** ***	3,520 *** ***		**	81	1,35%	2,912 *** ***	3,139 *** ***		**

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

*Table 34:* results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. Qatar, Kuwait, and Oman case study – positive rating events (Upgrades merged with positive credit watches).

#### Qatar, Kuwait, and Oman

	Full Sample						Uncontaminated sample					
	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test
<i>Windows</i>												
<i>[-20, +20]</i>	68	0,26%	0,243				50	1,39%	1,097			
<i>[-10, +10]</i>	68	-0,18%	-0,270				50	0,33%	0,441			
<i>[-5, +5]</i>	68	0,02%	0,041				50	0,14%	0,222			
<i>[-1, +1]</i>	68	0,09%	0,396				50	0,12%	0,393			
<i>[-20, -1]</i>	68	0,07%	0,094				50	0,17%	0,189			
<i>[-10, -1]</i>	68	-0,11%	-0,180				50	-0,03%	-0,044			
<i>[-5, -1]</i>	68	-0,14%	-0,337				50	-0,26%	-0,567			
<i>[-1, 0]</i>	68	0,17%	0,867				50	0,25%	1,017			
<i>[0]</i>	68	0,35%	2,039 **	1,974 **			50	0,38%	1,746 *	1,587		
<i>[0, +1]</i>	68	0,27%	1,270				50	0,25%	0,909			
<i>[0, +5]</i>	68	0,16%	0,524				50	0,40%	1,099			
<i>[0, +10]</i>	68	-0,07%	-0,153				50	0,36%	0,600			
<i>[0, +20]</i>	68	0,19%	0,240				50	1,23%	1,278			
<i>[+1, +3]</i>	68	0,27%	1,102				50	0,29%	0,973			
<i>[+1, +5]</i>	68	-0,18%	-0,612				50	0,02%	0,065			
<i>[+1, +8]</i>	68	0,11%	0,194				50	0,41%	0,565		**	
<i>[+4, +8]</i>	68	-0,16%	-0,318				50	0,12%	0,179			

\*= significant at 10%, \*\*= significant at 5%, \*\*\* = significant at 1%, sign= significant.

#### *d. Synthesis and Key results for positive rating events experienced by the GCC issuers*

The GCC stock markets react positively to positive rating events (upgrades merged with positive credit watches) conveyed by Credit Rating Agencies.<sup>82</sup>

#### Thus,

- The outcomes **support** our **hypothesis (H1-1)**, which states that the announcement of positive rating events (upgrades merged with positive credit watches) will be followed

<sup>82</sup> Bahrain is excluded from the sample because it has only four positive events.

by a positive stock market reaction, as the market considers this information as good news.

It is noticeable that the stock markets in Qatar, Kuwait, and Oman react faster than in Saudi Arabia and the United Arab Emirate, with significant abnormal returns reported on the event day [0]. This finding is in line with our assumption that markets with a higher level of individual investors will react differently than markets with a lower one, due to the time needed by individuals to receive, absorb, and understand the information announced by a foreign language.

**Hence,**

- The findings **support** our **hypothesis (H3)** and tend to confirm that the markets characterized by a lower presence of individual investors (Qatar, Kuwait, and Oman) react faster than the markets where the proportion of individual investors is larger (Saudi Arabia and United Arab Emirates).

## 2.2 Negative rating events (downgrades merged with negative credit watches)

### a. All countries

Table (35) below presents the results of negative rating events (downgrades merged with negative credit watches) for the six GCC countries Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Oman, and Bahrain. The full sample consists of 230 events and 143 events for the uncontaminated sample. We report that the full sample shows significant results only during the post-announcement windows, with negative cumulative average abnormal returns “CAARs”.

The post-announcement window [+1, +4] shows negative CAARs of -0.47% significant at p-value (10% threshold) for the t-test,<sup>83</sup> and (5% threshold) for the Wilcoxon 1-sample test. The post-event window [+1, +7] presents a slightly higher magnitude with CAARs of -0.61% significant at 10% for the t-test and 5% for the Wilcoxon 1-sample.<sup>84</sup> This outcome suggests

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<sup>83</sup> With the outliers being removed, the t-test becomes significant at 5%.

<sup>84</sup> With the outliers being removed, the t-test becomes significant at 1%.

that the signalling hypothesis is prevailing with CRAs' announcements, and that the market participants consider this information as bad news.

*Table 35:* results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. GCC countries case study – negative rating events (downgrades merged with negative credit watches).

Windows	GCC countries											
	Full Sample						Uncontaminated sample					
	N	CAAR	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	N	CAAR	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test
[-20, +20]	230	-0,18%	-0,251				143	-0,16%	-0,157			
[-10, +10]	230	-0,19%	-0,351				143	-0,31%	-0,416			
[-5, +5]	230	-0,12%	-0,262				143	-0,47%	-0,912			
[-1, +1]	230	-0,29%	-1,301				143	-0,34%	-1,115			
[-20, -1]	230	-0,13%	-0,229				143	-0,36%	-0,466			
[-10, -1]	230	0,07%	0,179				143	-0,06%	-0,109			
[-5, -1]	230	0,27%	0,959				143	-0,05%	-0,135			
[-1, 0]	230	-0,15%	-0,956				143	-0,18%	-0,824			
[0]	230	0,00%	0,030				143	-0,10%	-0,570			
[0, +1]	230	-0,13%	-0,663				143	-0,26%	-0,976			
[0, +5]	230	-0,38%	-1,178				143	-0,42%	-1,123			
[0, +10]	230	-0,26%	-0,694				143	-0,25%	-0,521			
[0, +20]	230	-0,06%	-0,113				143	0,21%	0,344			
[+1, +3]	230	-0,39%	-1,596				143	-0,40%	-1,417			
[+1, +4]	230	-0,47%	-1,750 *	-2,260 **		**	143	-0,35%	-1,302			
[+1, +5]	230	-0,39%	-1,278				143	-0,32%	-0,984			
[+1, +7]	230	-0,61%	-1,773 *	-2,600 ***		**	143	-0,50%	-1,136			
[+1, +8]	230	-0,57%	-1,558		**	**	143	-0,37%	-0,806			
[+4, +8]	230	-0,18%	-0,697				143	0,04%	0,105			

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

### b. Saudi Arabia and United Arab Emirates (UAE)

Table (36) below shows the stock market reaction in Saudi Arabia and the United Arab Emirates to negative rating events (downgrades merged with negative credit watches), with 105 events in the full sample and 57 events in the uncontaminated sample. The results are slightly similar to the results of all countries together (mentioned above in part a). However,

we observe a slightly larger magnitude of the stock market reaction. The post-event window  $[+1, +4]$  shows negative CAARs of -0.68% with a significant p-value at 10% threshold for the t-test and 5% for the Wilcoxon 1-sample test.

*Table 36:* results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. Saudi Arabia and the United Arab Emirates case study – negative rating events (downgrades merged with negative credit watches).

Windows	SA & UAE											
	Full Sample						Uncontaminated sample					
	N	CAAR	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	N	CAAR	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test
$[-20, +20]$	105	-1,42%	-1,173				57	-1,18%	-0,605			
$[-10, +10]$	105	-0,29%	-0,385				57	-0,35%	-0,292			
$[-5, +5]$	105	-0,21%	-0,359				57	-0,54%	-0,605			
$[-1, +1]$	105	-0,07%	-0,222				57	-0,43%	-0,780		**	
$[-20, -1]$	105	-1,32%	-1,419				57	-2,16%	-1,420			
$[-10, -1]$	105	-0,24%	-0,397				57	-0,80%	-0,880			
$[-5, -1]$	105	0,07%	0,142				57	-0,53%	-0,716			
$[-1, 0]$	105	0,00%	-0,005				57	-0,39%	-1,012			
$[0]$	105	0,15%	0,803				57	-0,11%	-0,426			
$[0, +1]$	105	0,08%	0,278				57	-0,15%	-0,325			
$[0, +5]$	105	-0,27%	-0,685				57	-0,01%	-0,019			
$[0, +10]$	105	-0,05%	-0,092				57	0,45%	0,607			
$[0, +20]$	105	-0,09%	-0,131				57	0,98%	0,938			
$[+1, +3]$	105	-0,55%	-1,494				57	-0,43%	-0,949		**	
$[+1, +4]$	105	-0,68%	-1,874*	-1,575		**	57	-0,16%	-0,376			
$[+1, +5]$	105	-0,42%	-1,051				57	0,10%	0,207			
$[+1, +7]$	105	-0,75%	-1,627			**	57	-0,08%	-0,128			
$[+1, +8]$	105	-0,73%	-1,334			**	57	0,03%	0,041			
$[+4, +8]$	105	-0,18%	-0,433				57	0,46%	0,696			

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

### c. Qatar, Kuwait, Oman, and Bahrain

**Table (37)** below shows the stock market reaction in Qatar, Kuwait, Oman, and Bahrain to negative rating events (downgrades merged with negative credit watches all taken together), with 125 events in the full sample and 90 events in the uncontaminated sample. The analysis does not show any evidence to declare a stock market reaction to negative rating events in these markets.

*Table 37:* results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests. Qatar, Kuwait, Oman, and Bahrain case study – negative rating events (downgrades merged with negative credit watches).

QA,KW,OM, BH

Windows	Full Sample						Uncontaminated sample					
	N	CAAR	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test	N	CAAR	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-sample test
[-20, +20]	125	0,86%	0,994				90	0,59%	0,561			
[-10, +10]	125	-0,11%	-0,139				90	-0,30%	-0,324			
[-5, +5]	125	-0,04%	-0,062				90	-0,17%	-0,265			
[-1, +1]	125	-0,47%	-1,587				90	-0,42%	-1,141			
[-20, -1]	125	0,88%	1,384				90	1,06%	1,352			
[-10, -1]	125	0,34%	0,646				90	0,43%	0,650			
[-5, -1]	125	0,44%	1,305				90	0,38%	1,051			
[-1, 0]	125	-0,28%	-1,317				90	-0,10%	-0,378			
[0]	125	-0,12%	-0,681				90	-0,11%	-0,476			
[0, +1]	125	-0,30%	-1,140				90	-0,43%	-1,270			
[0, +5]	125	-0,48%	-0,957				90	-0,55%	-1,012			
[0, +10]	125	-0,44%	-0,817				90	-0,73%	-1,193			
[0, +20]	125	-0,02%	-0,034				90	-0,48%	-0,658			
[+1, +3]	125	-0,26%	-0,788				90	-0,30%	-0,817			
[+1, +4]	125	-0,29%	-0,756				90	-0,35%	-0,887			
[+1, +5]	125	-0,36%	-0,802				90	-0,44%	-0,934			
[+1, +7]	125	-0,49%	-0,976				90	-0,72%	-1,183			
[+1, +8]	125	-0,44%	-0,885				90	-0,65%	-1,118			
[+4, +8]	125	-0,18%	-0,558				90	-0,35%	-0,876			

\* = significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%, sign = significant.

#### *d. Synthesis and Key results for negative rating events experienced by the GCC issuers*

The event study performed on GCC stock markets all together brings to the conclusion that the negative rating events (downgrades merged with negative credit watches) are followed by negative abnormal returns. It indicates that the market participants consider the information announced by Credit Rating Agencies (CRAs) as bad news. However, we believe the negative reaction observed on the GCC markets all together mostly arises from the reaction of the Saudi and UAE markets.

The stock reaction to CRAs is in line with the signalling hypothesis theory and tends to confirm that the negative CRAs' announcements contain an informational value. The lack of evidence of abnormal returns over the pre-announcement window infers that the stock reaction is due to the CRAs' announcements, and does not arise from other expected or anticipated news.

The findings for all of the GCC countries examined together **support** our **hypothesis (H1-2)** that the announcements of negative rating events (downgrades merged with negative credit watches) will be followed by a negative stock market reaction, as the market considers this information as bad news.

**Hence,**

- The **hypothesis (H1)** concerning the positive and negative rating events is supported by our findings.

### **3. Key learning from previous studies regarding the reaction time to CRAs' announcements and language effect**

Recalling from our arguments in **chapter (3)** concerning the possible effect of English language (which is the language in which CRAs' announcements are published) on the reaction time of stocks in non-speaking English countries, there are some authors who believe that the geographical location influences the effects of rating announcements. For example, Imbierowicz and Wahrenburg (2013) conducted a study on four continents North America, Latin America, Europe, and Asia-Pacific regarding the wealth transfer effects. They say that

*"Heterogeneity in the results might also derive from regional differences. A potential concern is that we only use English language news to construct our measures of public information and surprise. Although firms with liquid CDS markets are amongst the largest in the world and should consistently be covered in the worldwide press, there may nonetheless be differences with respect to the number of news reports in different languages."* (Imbierowicz and Wahrenburg, 2013). Moreover, they state that one of the unresolved questions in their work is the fact of the influence of geographical location on the effect of ratings.

Therefore, we decided to collect information from a large part of the rating events studies that were previously released all over the world, in order to compare the authors' outcomes with our own findings in respect to the time of reaction. The analysis might be able to provide insights to support our hypothesis concerning the effect of the English language over the time of reaction in GCC markets.

- Assessing the reaction time reported in previous literature to support our hypotheses: a methodological approach

#### *a- Previous literature and length of "post rating event" reaction*

In this part, our analysis is based on the raw data of the work of Hubler et al. (2019).<sup>85</sup> Their study collected nearly all the articles concerning the reaction to CRAs' announcements over the period 1978-2016. Their database will allow us to investigate the reaction time of the significant post-event windows reported by the primary authors.

If we filter the sample by choosing only the significant post-event windows (reported by the primary authors) between day zero and day +20,<sup>86</sup> we find that the majority of significant stock market responses are occurring within the first five days from the event date.

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<sup>85</sup> The purpose of their work is "*to examine how credit rating agencies' decisions impact the stock market using a systematic and quantitative review of existing empirical studies, to implement a meta-analysis*". And I would like to warmly thank all the professors Jérôme Hubler, Patrice Laroche, Christine Louargant, and my director of thesis Jean-Noël Ory who allow me to use the raw data of their work for the sake of my PhD thesis, which helped me to gain time and to strengthen my work.

<sup>86</sup> Sometimes, an article shows four times a specific event window e.g. [+1, +10] as significant, where the difference lies in the filtration process (e.g. contaminated and uncontaminated sample ...) and classification process (subsamples such as banking sector ... etc.). In this case, to avoid giving too much weight to a specific window and to the same article, we took into account this event window [+1, +10] only once, in our methodological approach.

For the positive events, **table (38)** below shows that around 34% of the significant results are reported over larger event windows such as +10 and +15, while the rest (66%) occurs over a shorter period, from day 0 to +5. Which means 15 out of 44 significant post-event windows present significant abnormal returns in large post-event windows between day [+6 to +20], whereas 29 out of 44 significant post-event windows present abnormal returns in shorter event windows, between day [0 to +5].

For the negative events, **table (38)** below shows that only 7% of the significant results reported in previous literature are located in large post-event windows (up to +10, +11, and +15) while the vast majority of the abnormal returns (93%) are reported between days 0 to +5. Which means, 10 out of 148 significant post-event windows reported that there are significant abnormal returns as a reaction to negative CRAs' announcements in large post-event windows between [+6 to +20], while 138 out of 148 significant post-event windows show significant abnormal returns in shorter event windows between day [0 to +5].

*Table 38: the frequency of the end of significant post-event windows between day 0 and +20 according to the raw data of Hubler et al. (2019).*

Positive events			Negative events		
End of window	frequency	%	End of window	frequency	%
0	14	32%	0	35	24%
+1	10	23%	+1	85	57%
+5	5	11%	+2	9	6%
+10	9	20%	+3	2	1%
+15	4	9%	+5	7	5%
+20	2	5%	+10	6	4%
			+11	2	1%
			+15	2	1%
<b>Total</b>	<b>44</b>	<b>100%</b>	<b>Total</b>	<b>148</b>	<b>100%</b>

Source: the raw data of the work of Hubler et al. (2019).

Consequently, we can see that in previous rating events-studies reported in the literature, the majority of significant post-event windows occurred during early and short post-event windows. By contrast, if we compare these outcomes with our results concerning the GCC stock markets, we find that the reaction of the stock markets of Qatar, Oman, and Kuwait also

occurred on a short period after the rating announcements, whereas that of Saudi Arabia and UAE were taking place over larger post-event windows.

**This finding contributes to strengthen our assumption that** stock markets characterized by a domination of individual investors will react differently than markets with a large number of institutional investors, which may be due to several effects, one of the main ones being “the English language effect”.

On the basis of this finding, we chose to separate each of the positive and negative event-studies reported in this meta-analysis ((Hubler et al., 2019), *op. cit.*) into two subsamples :

1. The ones that have been conducted on markets located in Anglophone countries,  
and
2. Those in non-Anglophone countries.

We classified the different articles according to these two characteristics (Anglophone countries vs. non-Anglophone countries), and removed from our field of investigation the articles that cover more than one geographical area and do not separate their results.<sup>87</sup> Also, we considered only the significant post-event windows.<sup>88</sup> In this procedure, we took into account all the entire post-event windows that were reported in the raw data, from day [0] to day [+90].<sup>89</sup> We separated the small post-event windows as from day [0] to day [+5], from the large ones with a possible length from day [+6] to day [+90].<sup>90</sup>

**Table (39)** below presents the results of the two subsamples sorted out according to the “English language” criterion. For positive rating events **table (39) panel A**, we notice that in

<sup>87</sup> Some articles performed their event study over many countries. We eliminated from the sample all the articles that do not distinguish their test results by the country where the examination was performed. On the contrary, some other articles conducted a study over many countries and they separated the results by countries, which allowed us to differentiate between the results that come from English speaking countries, and the results that come from non-English speaking countries.

<sup>88</sup> Sometimes, an article shows four times a specific event window e.g. [+1, +10] as significant, where the difference lies in the filtration process (e.g. contaminated and uncontaminated sample ...) and classification process (subsamples such as banking sector ... etc.). In this case, to avoid giving too much weight to a specific window and to the same article, we took into account this event window [+1, +10] only once, in our methodological approach.

<sup>89</sup> The reason behind taking into account the entire post-event windows that were reported, and not only until [+20], is due to the decrease in the simple size after separating the main simple into two sub-simples: English and non-English speaking countries.

<sup>90</sup> Regarding the post-event windows, a length such as [+90] is very uncommon in previous literature; most of the time the post-event windows are designed to end after 20 to 30 days

non-English speaking countries the majority of significant results occurred in large post-event windows (67%), more precisely between day [+6] and [+90]. While in English speaking countries half of reported abnormal returns occurs over short event- windows (between [0] and [+5]) and the other half occurs over larger ones (between [6] and [+90]).

For negative events **table (39) panel B**, it can be seen that in English speaking countries the majority of significant abnormal returns are reported to occur over small post-event windows (with 63% of the significant abnormal returns reported between day [0] and day [+5], while only 37% of them occurring over larger event windows, between day [+6] and day [+90]). By contrast, in non-English spoken countries, those respective proportions are equally distributed.

*Table 39: the frequency of the end of significant post-event windows between day [0] and day [+90] according to the raw data of Hubler et al. (2019). The results are classified into two subsamples: English countries and non-English countries.*

A- Positive events

non-English speaking countries			English speaking countries		
End of window	Frequency	%	End of window	Frequency	%
<b>0</b>	3	25%	<b>0</b>	1	6%
<b>+5</b>	1	8%	<b>+1</b>	7	39%
<b>+10</b>	2	17%	<b>+5</b>	1	6%
<b>+15</b>	1	8%	<b>+10</b>	2	11%
<b>+20</b>	2	17%	<b>+30</b>	3	17%
<b>+30</b>	1	8%	<b>+45</b>	1	6%
<b>+60</b>	1	8%	<b>+60</b>	1	6%
<b>+90</b>	1	8%	<b>+90</b>	2	11%
<b>Total</b>	12	100%	<b>Total</b>	18	100%
<b>from 0 to +5</b>	4	33%	<b>from 0 to +5</b>	9	50%
<b>from +6 to +90</b>	8	67%	<b>from +6 to +90</b>	9	50%
<b>Total</b>	12	100%	<b>Total</b>	18	100%

Source: the raw data of the work of Hubler et al. (2019).

*B- Negative events*

non-English speaking countries			English speaking countries		
End of window	Frequency	%	End of window	Frequency	%
<b>0</b>	4	25%	<b>0</b>	6	22%
<b>1</b>	3	19%	<b>2</b>	6	22%
<b>5</b>	1	6%	<b>3</b>	2	7%
<b>10</b>	2	13%	<b>5</b>	3	11%
<b>15</b>	2	13%	<b>10</b>	1	4%
<b>30</b>	3	19%	<b>11</b>	2	7%
<b>90</b>	1	6%	<b>23</b>	1	4%
			<b>30</b>	2	7%
			<b>60</b>	2	7%
			<b>90</b>	2	7%
<b>Total</b>	16	100%	<b>Total</b>	27	100%
<b>from 0 to +5</b>	8	50%	<b>from 0 to +5</b>	17	63%
<b>from +6 to +90</b>	8	50%	<b>from +6 to +90</b>	10	37%
<b>Total</b>	16	100%	<b>Total</b>	27	100%

Source: the raw data of the work of Hubler et al. (2019).

*b- Synthesis and Key results for the possible effect of the English language*

An important lesson to draw is that after controlling the sample, by separating the significant results of studies that were conducted in Anglophone countries from those in non-Anglophone countries, it is obvious that the significant abnormal returns tend to occur shortly after the rating announcements in English speaking countries, and maybe distributed over larger post-event windows in non-English speaking countries.

These findings are considered as an insight about the possible effect of the English language (as the language of publishing the CRAs' announcements) on the reaction time of the market participants. We believe the English language effect is likely to exist in non-English speaking countries when individuals dominate the stock market, because they may encounter some problems to receive, absorb, and understand the announced information in a foreign language.

We are aware that this outcome (stock markets in non-Anglophone countries need more time to react) relying on previous literature, cannot prove or robust our conclusion without any remaining doubt. To do so, it would have been necessary to implement different models

and tests, in order to assess the market efficiency, with a lot of control variables to be included (such as liquidity, regulations, market size etc.). This was not the main goal of this verification process, but to reinforce our empirical findings regarding GCC countries.<sup>91</sup>

#### 4. Conclusion of chapter (7): CRAs' announcements and Event-Study

To sum up, we conducted an event study (with GARCH process introduced to better estimate the parameters of the market model) over the GCC stock markets, in order to show whether the stock markets react to credit rating agencies' announcements or not. We considered two types of events, positive rating events (rating changes upgrades merged with positive credit watches) and negative rating events (rating changes downgrades merged with negative credit watches). The study was implemented on two phases, with a first one on the Saudi Stock Exchange only, and a second one on the entire GCC stock markets.

Firstly, in Saudi Stock Exchange (Tadawul), positive (negative) rating events are followed by positive (negative) abnormal returns, indicating that the market considers these announcements as good (bad) news. The evidence proves that the CRAs' announcements deliver valuable information to the market. Moreover, regarding the positive events, the late reaction and the higher magnitude in larger post-event windows could indicate that the majority of the market participants need time to absorb and digest the CRAs' information due to the barrier of language.

Secondly, in GCC stock markets, excluding Bahrain, the positive rating events are followed significantly by positive abnormal returns.<sup>92</sup> After separating the different markets according to a criterion related to the domination of individuals' proportion, we find that stock markets in Qatar, Kuwait, and Oman react faster than in Saudi Arabia and the United Arab Emirate.

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<sup>91</sup> Additionally, we run a multiple regression for the English language effect and the year effect. We are aware that this model is not robust and misses several control variables that need to be introduced to the model. Due to the fact that introducing other variables to our model will lead our work to deviate and to enter another area of studies (market efficiency), we decided to introduce only three variables that may give us an insight about the effect of language and time. The results are depicted briefly: we find that the market reaction in English speaking countries occurs in shorter post-event windows, while the reaction is in larger post-event windows for the market in non-English speaking countries. Furthermore, we find that over time, the markets tend to react faster (see appendix 16).

<sup>92</sup> Bahrain is excluded from the positive case study due to the low number of positive events.

This finding is in line with our assumption that markets with a higher level of individual investors will react differently than markets with a lower level of individual investors. Concerning the negative rating events, the results show that negative rating events are followed significantly by negative abnormal returns during the post-announcement windows. It indicates that the stock markets follow the signalling hypothesis theory and consider these announcements as bad news, where this news convey valuable information to the market. The results generally show that the market reaction in Saudi Arabia and the United Arab Emirates are greater than the market reaction in Qatar, Kuwait, and Oman. Globally speaking, we also noticed that the reaction of GCC markets to negative rating events is weaker than the reaction to positive rating events.

In conclusion, the GCC stock markets react to positive rating events (upgrades and positive credit watches) and negative rating events (downgrades and negative credit watches) announced by the three major credit rating agencies S&P's, Moody's, and Fitch. The findings present evidence that positive rating events contain greater informational value than negative rating events. Moreover, our outcomes suggest that stock markets that experience obvious domination of individuals, such as the stock market in Saudi Arabia and the United Arab Emirates, need more time to respond to the CRAs' announcements. In addition, the reaction of these markets is lasting and increasing in magnitude over the post-event window, while stock markets characterised with a lower existence of individuals react faster and over a shorter time.

Regarding the previous studies concerning the reaction to CRAs' announcements, we find that the markets in non-English speaking countries tend to react in larger post-event windows comparing to markets in English-speaking countries. We argue that the lag of reaction in non-English speaking markets comparing to English speaking countries might arise from the fact of the language barrier.

As the first and official language to diffuse the CRAs' announcements is the English language, we believe the market participants in non-English speaking countries, mostly the individual investors, need longer time to receive, digest, and understand the information in order to react if needed. Hence, diffusing the rating announcements in the English language in non-Anglophone countries, when the market is dominated by individual investors, does not

help to properly reduce the information asymmetry. By doing so, CRAs tend to convey important information to a specific type of investors, who speak English, leading to create an opportunity of investment for who are able to understand and digest the news at first (from a language point of view).

**Therefore,**

- We believe that credit rating agencies should announce their decisions in the official language of the market and in the English language simultaneously, in order to increase the efficiency by providing information to the entire market participants at once.
- **Our findings support:**
  - **Hypothesis (H1)** that the announcements of positive events (negative events) will have signalling effect, which will be followed by a positive (negative) stock market reaction, as the market considers this information as good (bad) news.
  - **Hypotheses (H3)** that in GCC countries, the markets with a larger proportion of individual investors will experience a relative delay to react to the foreign information (CRAs' announcements) comparing to markets with a lower level of individual investors.

## Chapter 8: Event study - Results and discussion of the impact of Imams' announcements on stock prices

### 1. The event study over the Imams' announcements

This section studies the possible influence of Imams' announcements on stock prices in the Saudi Stock Exchange (Tadawul). Indeed, regarding the result of our questionnaire, the majority of individual investors are expected to be highly related to the Islamic orientation, which is to invest in Sharia-compliant firms, and avoiding the "sin stocks". Moreover, it seems they follow the Imams' announcements concerning the classification of firms. Therefore, we run an event study on the Imams' announcements to discover whether there will be some abnormal returns coming from either "downgrading" from Sharia-compliant firms to non-Sharia compliant firms, or "upgrading" from non-Sharia compliant firms to Sharia-compliant firms.<sup>93</sup> This study will allow us to support or reject our **hypothesis (H5)** concerning the impact of the religious announcements on stock prices at the Saudi market, and to find out whether the religion factor plays an important role at the Saudi market as we expected or not.

To the best of our knowledge, this type of study has never been done in the literature dedicated to Islamic finance. The reason behind not being performed and investigated might arise from the fact that this type of announcements exists only in the Saudi stock market. Where in this market there are specialists in the Islamic finance laws who analyse the financial sheets and the core business of firms, approximately in annual basis, to decide and announce publicly whether classify each of the listed companies as a Sharia-compliant firm or not.

According to our data, there is no clear evidence of a causality link between the Imams' announcements and the fact, for an issuer, to experience credit rating changes from the three major international credit rating agencies (CRAs). As mentioned earlier (cf. [chapter 7](#)) there are 68 rating changes (upgrades) and 55 rating changes (downgrades) published by the three major credit rating agencies to 24 listed firms in Tadawul. Among these rating events, we find only three upgrades from CRAs occurring no more than one year after the Imams' re-

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<sup>93</sup> As mentioned in [chapter \(4\) section \(3\)](#), we call the "pure downgrade" > "downgrade", and the "pure upgrade" > "upgrade", because we are not going to consider the mixed re-classifications in our study. Indeed, these words have neither "ideological" nor "pejorative" meaning, it is only employed to identify the direction of each announcement.

classifications “upgrade”. Regarding the (downgrades from CRAs), we find eight of them occurring no more than one year after Imams’ re-classifications “upgrade”, and only one downgrade by CRAs which happened no more than one year after Imams’ re-classifications “downgrade”.

The existence of a link between religious announcements and CRAs’ decisions will be questioned later in this thesis. However, this first observation does not prove by itself that there is no link between the religious announcements and the behaviour of the investors on the financial market. On the contrary, it is worth to recall that the outcomes of our questionnaire lead us to expect a stock market response to the Imams’ opinion.

Hence, this chapter aims to show whether the Imams’ announcements may affect the investors’ behaviour and influence their financial decisions, leading to enhance the research line to further investigate the possible link between Imams’ announcements and credit rating agencies’ decisions. Indeed, we a priori assume the religious status of a firm is likely to affect the investors’ decisions to hold, buy, or sell its securities. According to the literature, the religion is a factor that can affect the investors’ decisions, and thus, we suggest that the religion factor should take a place into the determinants of credit rating agencies’ decisions in Islamic countries.

The results are going to be presented in two main parts:

- 1- Downgrade announcements by Imams: this part contains the “pure downgrades” from Sharia-compliant firms to non-Sharia compliant firms, through two types of samples:
  - a. Full sample (with possible contaminated data)
  - b. Uncontaminated sample
- 2- Upgrade announcements by Imams: this part contains the “pure upgrades” from non-Sharia compliant firms to Sharia-compliant firms, through two types of samples:
  - a. Full sample (with possible contaminated data)
  - b. Uncontaminated

### 1.1 Study period, methods and data

The study period is from 2004 to 2016 for the list of the three main Imams Al-Shoubaily, Al-Osaimy, Al-Fouzan who classify the listed firms regarding the Islamic orientation in the Saudi Stock Exchange (Tadawul). The lists of Al-Osaimy and Al-Shobaily contain three categories: 1- pure Halal (Sharia-compliant firms) 2- prohibited/Haram (non-Sharia compliant firms) 3- mixed firms<sup>94</sup>. Al-Fouzan's lists contain only two categories: 1- pure (Halal) 2- prohibited (Haram). Therefore, in our sample we consider only the pure re-classifications, which means the “upgrades” from non-Sharia compliant firms (Haram) to Sharia-compliant firms (Halal) and “downgrades” from Sharia-compliant firms (Halal) to non-Sharia compliant firm (Haram).

The mixed classification is not taken into account in our sample because it is neither a pure signal or a religious “ downgrade” nor a pure “upgrade”, but rather considered as a “grey area”, possibly leading to a divergence between the investors’ decisions. In other words, the Imams either downgrade the firm from a pure Sharia-compliant firm (Halal) to a less pure Sharia-compliant firm (mixed), or upgrade the firm from a fully non-Sharia compliant firm (Haram = prohibited) to less prohibited non-Sharia compliant firm. Thus, the mixed decisions are not taken into account in our sample, in order to find out the genuine effect of the pure classifications, without going into the grey area. Hence, our final full sample consists of 133 upgrades and 74 downgrades.

The event-study methodology we adopt in this part is exactly the same than the one we used for the event-study applied on the CRAs’ announcements.<sup>95</sup> Regarding the contamination process, we consider an event as contaminated if there is another Imam’s announcement (pure upgrade, pure downgrade, mix upgrade, mix downgrade) occurring

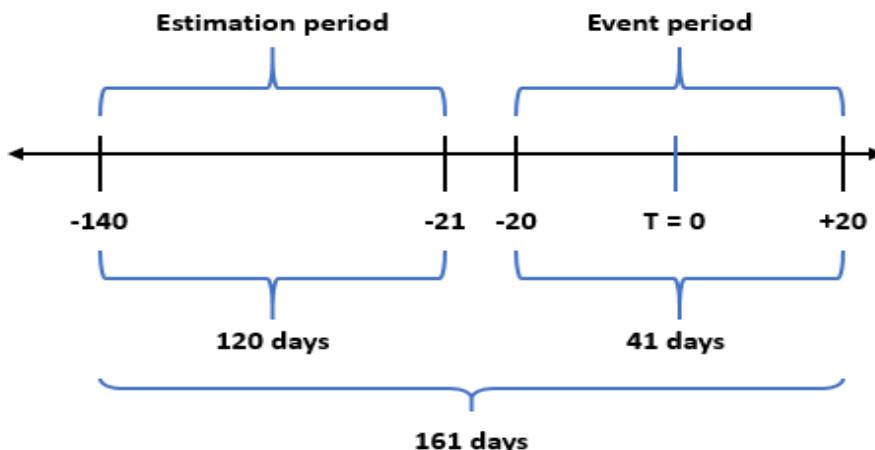
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<sup>94</sup> Mixed firms: is the case when the firm is a Sharia-compliant in a level of core business and source of funds, nevertheless, the sources of funds in some of its activities or some of its subsidiaries are not following the Sharia laws, which means some of the funds contain or deal with “Riba” (non-Islamic interest). The investment in mixed firms is allowed according to some Imams, whereas other Imams do not allow it. The Imams who allow investing in mixed firms require that the investor must relinquish a part of the dividend to purify the earnings; however, the investor does not need to relinquish any of the profits if the investor is only speculating and did not earn the dividends during the hold of the stock.

<sup>95</sup> See chapter (5) - section (2) for more information.

during the event period  $[-20, +20]$ . The estimation period and the event period are also the same than the ones we used for the event study on CRAs' announcements ([figure 6](#)).

*Figure 6: Estimation and event period*



## 1.2 Downgrade announcements

[Table \(40\)](#) below presents the results of the event study performed on the Imams' announcements concerning the downgraded firms (the re-classified firms from Sharia-compliant firms to non-Sharia compliant firms). By looking into the two samples, the full sample and uncontaminated sample, we can conclude that these announcements are followed by a negative stock reaction. The uncontaminated sample contains 58 events and presents slightly similar results than those presented in the full sample. Thus, we focus our explanation on the full sample.

The full sample presents 74 negative events that show negative stocks reaction over the post-announcement windows. The event day [0] shows no significant results. On the contrary, day [+1] is showing statistically significant results (at 1% threshold for the t-test) with Average Abnormal Returns “AARs” of -0.82%, where this significant result is also confirmed with Wilcoxon 1-sample test at 5%. The post-event window [+1, +3] also presents a negative stock reaction with CAARs of -1.65%, where the t-test and Wilcoxon 1-sample test are significant at

5% threshold.<sup>96</sup> The CAARs in the event window [+1, +7] are -3.40% with a t-test significant at 5%.

In the pre-announcement windows as well as the symmetric windows surrounding the announcement day, the analysis shows no significant stock market reaction. Therefore, we can first infer from these results that the stock market reaction over the post-event period is due to the Imams' announcements, and not from another expected or anticipated news. Secondly, the Imams' announcements do not seem anticipated by the investors.

- ***Key results and discussion for the downgrade announcements by Imams***

The results demonstrate that the Imams' announcements regarding the downgrades from Sharia-compliant firms to non-Sharia compliant firms are considered as bad news to the market participants, from a religious point of view. As a consequence, these announcements are followed by a negative stock reaction.

As the test results illustrate, on the one hand, no stock market response in the pre-announcement windows, while on the other hand, a clear negative stock reaction over the post-announcement windows. We can conclude that the Imams' announcements convey important information to the market. Considering these negative abnormal returns, we can assume that individual investors as well as institutional investors, who are interested in the legitimacy of the stock from a religious perspective, tend to sell the firms' stocks classified as non-Sharia compliant firms, as soon as they receive a downgrade.

These results are in line with the signal theory and the information content. **Thus,**

- This finding **supports** our **hypothesis (H5-1)** that the announcements of "downgrades" by the authorised Imams will be followed by negative abnormal returns, as the market considers this information as valuable bad news from a religious point of view.

This finding is in line with the work of (Ibnrubbian, 2012) who concluded that the investors in Saudi Arabia have a preference to invest in Halal sectors where the majority of firms in these sectors are Sharia-compliant firms (Halal).

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<sup>96</sup> With the outliers being removed, the t-test becomes significant at 1%.

*Table 40: test result of cumulative average abnormal returns (CAARs) of Imams' announcements – downgrades from Sharia compliant firms to non-Sharia compliant firms.*

	FULL SAMPLE						UNCONTAMINATED SAMPLE						
	WINDOWS	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-Sample test	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-Sample test
[-20, +20]	74	-1.02%	-.489					58	-2.76%	-1.106			
[-10, +10]	74	-2.09%	-1.452		*			58	-2.48%	-1.410			
[-5, +5]	74	-1.20%	-1.101					58	-0.68%	-.517			
[-1, +1]	74	-0.33%	-.734					58	0.14%	.270			
[-20, -1]	74	-0.19%	-.172					58	-1.08%	-.864			
[-10, -1]	74	0.93%	1.139					58	0.70%	.694			
[-5, -1]	74	1.04%	1.555					58	1.07%	1.281			
[-1, 0]	74	0.49%	1.192					58	0.67%	1.294			
[0]	74	0.33%	1.297					58	0.46%	1.452			
[0, +1]	74	-0.48%	-1.282					58	-0.06%	-.154			
[0, +2]	74	-0.95%	-2.006 **	-1.431				58	-0.63%	-1.131			
[0, +5]	74	-2.24%	-2.011**	-.611				58	-1.75%	-1.272			
[0, +7]	74	-3.07%	-2.147 **	-1.345				58	-3.19%	-1.777 *	-.397		
[0, +10]	74	-3.03%	-1.835 *	-1.153				58	-3.18%	-1.525			
[0, +15]	74	-3.07%	-1.804 *	-1.113				58	-3.62%	-1.702 *	-.931		
[0, +20]	74	-0.83%	-.610					58	-1.68%	-1.020			
[+1]	74	-0.82%	-3.051 ***	-3.051 ***		**		58	-0.53%	-1.853 *	-1.853 *		
[+1, +3]	74	-1.65%	-2.257 **	-2.639 ***		**		58	-1.57%	-1.738 *	-2.111 **		
[+1, +5]	74	-2.58%	-2.201 **	-.832				58	-2.21%	-1.520			
[+1, +7]	74	-3.40%	-2.274 **	-1.631				58	-3.65%	-1.939 *	-.706		
[+1, +10]	74	-3.36%	-1.913 *	-1.333				58	-3.64%	-1.639			
[+1, +15]	74	-3.40%	-1.887 *	.178				58	-4.09%	-1.811 *	.613		

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively.

### 1.3 Upgrade announcements

**Table (41)** below presents the test results of the event study performed on the Imams' announcements concerning the upgraded firms (the re-classified firms from non-Sharia compliant firms to Sharia-compliant firms). By looking into the two samples, the full and uncontaminated sample, it can be seen that these announcements are slightly followed by a positive stock reaction. However, the reaction seems to be weaker than the one occurring after Imams' downgrades.

The full sample consists of 133 events and presents no clear statistical significant stock reaction, as there are no strong and persistent results confirmed by the different tests. On the other hand, the uncontaminated sample consists of 83 events and shows slightly more obvious stock reaction results comparing to the full sample, where the significance is persistent all over the tests.

For the post-announcement windows, the two days event window  $[0, +1]$  shows positive cumulative average abnormal returns of 0.54% and statistically significant at 5% threshold. Similar results are shown for the day after the event  $[+1]$ .

There is no evidence of significant abnormal returns in the pre-announcement windows for the uncontaminated sample. We could only report significant abnormal returns during the pre-event window  $[-10, -1]$  with significant CAARs of 0.89% at (5% threshold), which may indicate anticipation of the Imams' announcements. However, this market reaction is only noticed for the full sample, which leads to be cautious about the robustness.

Regarding the symmetric windows surrounding the announcement day, the analysis shows no significant stock market reaction, which is logically expected, as there is no strong reaction during the pre-announcement windows.

- ***Key results and discussion for the upgrade announcements by Imams***

The table below presents the stocks' reaction to Imams' upgrade announcements (re-classification) from non-Sharia compliant firms to Sharia-compliant firms. There is positive and significant stock reaction during the first two days after the event  $[0, +1]$  and  $[+1]$ , which denotes that the market participants consider these announcements as valuable information. The positive market reaction also indicates that these announcements are interpreted as a positive signal about the firms' Islamic orientation.

- This finding **supports** our **hypothesis (H5-2)** that the announcements of "upgrades" by the authorised Imams will be followed by positive abnormal returns, as the market considers this information as valuable good news from a religious point of view.

*Table 41: test result of cumulative average abnormal returns (CAARs) of Imams' announcements – upgrade from Sharia-compliant firm to non-Sharia compliant firm.*

WINDOWS	FULL SAMPLE						UNCONTAMINATED SAMPLE					
	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-Sample test	N	CAARs	t-test	t-test (removed outliers)	Sign test 1-sample	Wilcoxon 1-Sample test
[-20, +20]	133	0.46%	0.508				83	0.56%	0.487			
[-10, +10]	133	0.33%	0.480				83	-0.59%	-0.785			
[-5, +5]	133	0.02%	0.040				83	-0.02%	-0.043			
[-1, +1]	133	0.12%	0.450				83	0.50%	1.401			
[-20, -1]	133	0.70%	1.019				83	0.01%	0.014			
[-10, -1]	133	0.89%	1.984 **	1.036			83	0.13%	0.256			
[-5, -1]	133	0.07%	0.241				83	0.03%	0.067			
[-1, 0]	133	0.00%	0.002				83	0.12%	0.359			
[0]	133	-0.01%	-0.045				83	0.16%	0.737			
[0, +1]	133	0.11%	0.540				83	0.54%	2.036 **	2.179 **		
[0, +5]	133	-0.05%	-0.138				83	-0.05%	-0.102			
[0, +7]	133	-0.30%	-0.608				83	-0.47%	-0.757			
[0, +10]	133	-0.57%	-1.161				83	-0.72%	-1.202			
[0, +15]	133	-0.61%	-1.046				83	-0.53%	-0.790			
[0, +20]	133	-0.23%	-0.370				83	0.54%	0.738			
[+1]	133	0.12%	0.864				83	0.38%	2.112 **	1.844 *		
[+1, +3]	133	0.27%	0.978				83	0.09%	0.240			
[+1, +5]	133	-0.05%	-0.126				83	-0.21%	-0.422			
[+1, +7]	133	-0.29%	-0.627	**			83	-0.63%	-1.004	**		
[+1, +10]	133	-0.56%	-1.217				83	-0.88%	-1.485		**	
[+1, +20]	133	-0.22%	-0.376				83	0.38%	0.526			

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively.

#### 1.4 Conclusion of the event-study implemented on the Saudi Imams' announcements

The results of the tests illustrate that the downgrade announcements are received by the market participants as bad news. Thus, they are followed significantly by a negative stock reaction in the post-announcement windows. This reaction is in line with the signal theory and the information content hypothesis, which suggest that this news convey valuable information to the market about the firms. Also, this news can be seen as a signal of the firms' orientation regarding the Sharia-compliant status, which informs the market participants, who are interested in the investment legitimacy from a religious point of view.

This finding can support the importance of the Islamic concept amongst investors in the Saudi Stock Exchange. Our finding is in line with Ibnrubbian (2012) who found that, in the

Saudi market, the volume of shares traded in sectors with a high number of Sharia-compliant firms is larger than the sectors with lower Sharia-compliant firms. He also concludes that the investors in the Saudi Stock Exchange prefer to invest in the sectors where the majority of firms are Sharia-compliant firms.

On the other hand, the upgrade announcements are considered as good news and followed by a positive stock reaction just after the event day. However, the stock market reaction to upgrades seems to be weaker than the ones to downgrades. We believe that the upgraded firms were not on the table of choices of the high religious investors prior the upgrades, because they were not Sharia-compliant firms. However, after the re-classification, the religious investors started to look at these stocks as new available opportunities in the market. Nevertheless, they might also need time to start studying the securities after the disappearance of the religious barrier. On the contrary, the strong reaction to downgrades is assumed to be directly coming from the religious barrier where some investors will not care anymore about the profitability of the stock, as soon as the stocks become religiously prohibited. Thus, they start to quickly drop the prohibited stocks from their portfolios.

Finally, we conclude that our work confirms that the Imams' announcements convey valuable information to the stock market, and that religion plays an essential role into the investments' decisions of the majority of the investors in the Saudi Stock Exchange (Tadawul). In addition, our evidence may also provide insights to support our assumption that the religion factor can perhaps influence the market as much as other financial indicators could do. **Therefore, our findings support hypothesis (H5), which states that:**

- **H5:** the announcements of upgrades (downgrades) by the authorised Imams confirms the signal hypothesis, in that the announcements will be followed by positive (negative) abnormal returns, as the market considers this information as valuable good (bad) news from a religious point of view.

## 2. Is there an effect of Imams' announcements over the firms' financial health?

In previous sections, we documented two different types of reactions on the Saudi stock market: firstly, abnormal returns following CRAs' announcements; secondly, abnormal returns to the Imams' announcements (for downgrading to non-Sharia compliant firms, as well as for upgrading to Sharia-compliant firms). In both cases, the event-study methodology allows to report a short-term effect. Moreover, the questionnaire we implemented over a panel of individual investors confirmed that a large part of them are not willing to invest anymore in the market, in case the firms are not in line with the Sharia principles.

In this part, we aim to shed light upon a possible influence of the Saudi Imams' announcements on the "financial health" of a firm, which might be captured by a set of different financial indicators. In other words, we try to investigate whether the quick reaction of the investors on the stock market to the Imams' opinion may also induce other and deeper changes for the stakeholders of the firm. If such a long-term effect exists, then it would reinforce our assumption according to which the credit rating agencies should also take into consideration the religion factor into their rating assessments, when applied to religious countries.

### 2.1 Our assumptions behind a possible impact of the religion factor over the firms' financial health

Regarding the effects of the Imams' announcements on stock prices, we found significant abnormal returns related to the upgrades and downgrades conveyed by the Islamic scholars. As a consequence, in case of an active bond market as well as with a presence of individual investors, we could argue that these religious announcements may generate an impact over the desire to retain bonds, which may consequently influence the value of bonds.

We could also argue that in the Saudi market, the firms' financial indicators may encounter an influence arising from the Islamic orientations of a firm. To clarify the point, suppose there is a firm that might need to cut off an asset, a production line, or a specific source of funds in order to meet the Sharia-compliant requirements. Or the opposite that the firm might need to take on an asset, a production line, or a specific source of funds in order to maximise the wealth, however, this new action might withdraw the firm from the list of

Sharia-compliant firms, which might induce the high religious investors to neglect the firm. Generally speaking, any of these actions (cut off or take on assets, production lines, or a specific source of funds, etc.) may influence the value of the firm.

According to the religiosity environment in Saudi Arabia, several scenarios might arise from such a change in the Islamic orientations of a firm. We hypothesize that the Imams' announcements may have an impact not only on the capacity of the issuer to raise funds, but also on the behaviour of other stakeholders.

First, an Imam announcement (according to which a company would not be considered as "sharia-compliant" anymore) is likely to affect the desire of the investors of retaining the stocks in their portfolio, or even their agreement to acquire shares of this company in the future. Second, we may also postulate that not only the shareholders, but also some of the creditors who feel concerned by the firm's "religious downgrade", will become reluctant to lend. This could be the case, both for banks or bondholders (provided that the bond/Sukuk market is active, then the price of the bonds could drop). Moreover, should this "downgraded" company be a bank, then the clients of the bank (e.g. high religious clients, Islamic corporations, Islamic organisations, Islamic funds, etc.) might move their wealth from this "sin" bank to another Sharia-compliant bank, which might affect its strength and solvency.

Furthermore, the problems that were addressed in the agency theory and the moral hazard may exist when the agent (e.g. the company executives) is going for suspicious transactions or specific business in order to maximise the wealth. Meanwhile, these actions could jeopardize the Islamic status of this company, which may be contrary to the desire of stakeholders. In this case, if the company is not well managed by the agent from a religious point of view, then the Imams "monitors" could assess and withdraw the firm from the Sharia-compliant list, conveying a religious signal to the principals. Additionally, it might also change the behaviour of the customers of the company, or even its suppliers, if they feel concerned by this religious opinion. As a consequence, not only the ability of financing, but also the company's turnover, its business, and its profitability may be affected by an Imam downgrade announcement.

Hence, the firms experiencing religious re-classifications by the Imams are likely to encounter some risks related to the ability to meet the debt obligations, to fulfil the financial commitments, to maintain or grow their activity. Thus, in respect to some financial indicators such as total assets, long-term debt, revenue, EBIT etc. we believe that if these indicators found to be significantly affected by the religious announcements, then the religion factor should be counted as one of the determinants of the credit rating decisions, mainly in markets characterised by high religious participants.

Therefore, we are investigating whether some of the main financial indicators (Total assets, Long Term Debt, Short and Long Term Debt, Net Income, Revenue, EBIT, Instit Owner # of Shares Held,<sup>97</sup> Financial Leverage,<sup>98</sup> Profit Margin, Assets/Equity, Total Debt to Total Equity, Comment Equity to Total Assets) have been affected by the Imams' announcements, or not.

## 2.2 Data and filtration

The study period is from 2004 to 2016 for the list of the three main Imams Al-Shoubaily, Al-Osaimy, and Al-Fouzan who classify the listed firms regarding the Islamic orientation in the Saudi Stock Exchange (Tadawul). We consider only the clear re-classifications, which are pure upgrades and pure downgrades.<sup>99</sup>

The event is considered as contaminated and is removed from the sample if there is another announcement with different direction occurred during the period of observation. For example, suppose an Imam re-classifies a company to be in the non-Sharia compliant list (pure downgrade) after being in the Sharia-compliant list, while another Imam re-classifies the same company to be in the mixed list (mixed downgrade) after being in the Sharia-compliant list. In this case, we remove both events due to the contamination caused by two announcements with different directions. In addition, if two Imams announced the same opinion (the same direction) for the same firm with a difference in time less than a quarter, we consider these two events as a single one, this is in case of the study period of six months.

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<sup>97</sup> "Instit Owner # of Shares Held" is a Bloomberg abbreviation for the number of shares that are held by institutional investors.

<sup>98</sup> Financial leverage = average total assets/ average total common equity

<sup>99</sup> The mixed classification are not taken into account. For further information, see section 1.1 in this chapter.

And regarding the study period of one year, if there is an Imam announcement for a company on the first quarter of 2014, and then another Imam announcement for the same company on the second or third quarter of 2014, we consider only the first event in our sample and we remove the second event. However, if the second announcement occurs in the fourth quarter of 2014, we take both events.

### 2.3 Methodology

Based on the first part of this chapter, we found evidence of an impact generated from the Imams' announcements on stock prices. This evidence (the significant abnormal returns) proves the impact on a short-term (e.g. 1 to 15 days after the event). Therefore, we aim to investigate whether Imams' announcements affect the firms also on a long-term or if it is just limited to a short-term impact. Thus, we examine the financial indicators evolution, respectively after a period of six months and one year after the Imams' announcements. Indeed, this type of indicators are not expected to change on a daily basis (as it is for the market returns), but rather over a larger period. This is why we assume the indicators we observed may experience a change after six months or one year from the Imams' announcements. We decided not to collect the indicators more than one year after a religious announcement, in order to avoid as much as possible the contamination problems (cf. [section 2.2 above](#)).

Due to the limited original sample size as well as the final size after the contamination process, we implemented a simple methodology such as the comparison test, and not any other sophisticated method. Hence, we ran a comparison test to compare the mean of the financial indicators between the two groups as follows:

1. upgraded firms vs. downgraded firms: We compare the financial indicators of the upgraded firms with the downgraded firms in four periods, as follows:<sup>100</sup>
  - a. six months (2 quarters) prior the announcement “first sample”
  - b. At the event date “second sample”
  - c. six months (2 quarters) after announcement “third sample”

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<sup>100</sup> The calculations of the eight samples are explained in details in [sections \(2.3.1\)](#) and [\(2.3.2\)](#) below.

- d. one year (4 quarters) after the announcement "fourth sample"

**Note:**

The previous four samples are performed in order to find out whether the significant results (if any) exist in all the four periods or only in the periods after the event as a cause of the Imams' announcements.

2. We compare the financial indicators of only the upgraded firms by themselves and the downgraded firms by themselves in different periods, as follows:
  - a. Upgraded firms: we compare the financial indicators of the upgraded firms in the following periods:
    - i. At the event date vs. six months after the event "fifth sample"
    - ii. At the event date vs. one year after the event "sixth sample"
  - b. Downgraded firms: we compare the financial indicators of the downgraded firms in the following periods:
    - i. At the event date vs. six months after the event "seventh sample"
    - ii. At the event date vs. one year after the event "eighth sample"

We run two statistical tests to demonstrate the level of significance:

- Parametric test: T-test (one-tail and two-tails).
- Non-parametric tests: Wilcoxon signed rank and Mann-Whitney.

### *2.3.1 The first group (upgraded firms vs. downgraded firms): calculations and results for the samples 1 to 4*

#### a. Calculations of the first group (samples 1 to 4)

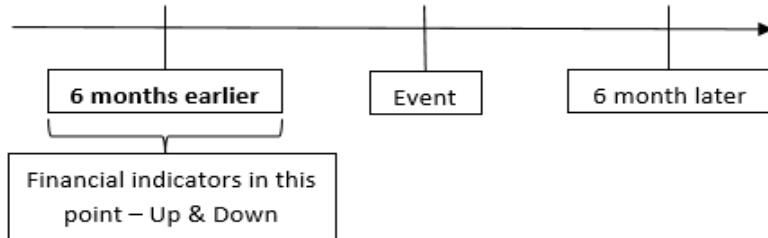
Regarding the financial indicators (Total assets, Long Term Debt, Short and Long Term Debt, Net Income, Revenue, Earnings Before Interest and Taxes "EBIT", number of shares held by institutional owners) we decide to compare their evolution. For this, we calculate the percentage changes of the financial indicators 6 months before the event occurred (the Imams' announcements). For example, if the event occurred on 25 September 2015, the percentage change for the total assets in this period will be calculated as follows:

*Equation 15*

$$\frac{\text{Total assets in Q1}^{2015} - \text{Total assets in Q3}^{2014}}{\text{Total assets in Q3}^{2014}}$$

Whereas for the ratios (Financial Leverage, Profit Margin, Assets/Equity, Total Debt to Total Equity, Current Equity to Total Assets) we take their value directly on the quarter under examination (*Quarter 1<sup>2015</sup>*). Then we perform the test on the first sample:

- 1- Upgrade vs. Downgrade 6 months prior the event: we compare the mean of each of the financial indicators (percentage changes and ratios) between the firms that received upgrades to Sharia compliant and those experiencing downgrades to non-Sharia compliant six month (2 quarters) prior the Imams' announcements (the event). For example, we check whether, six months (2 quarters) before the event, the mean of the financial leverage ratios for the firms that received upgrades differs from the mean of the financial leverage ratios for the firms that received downgrades.



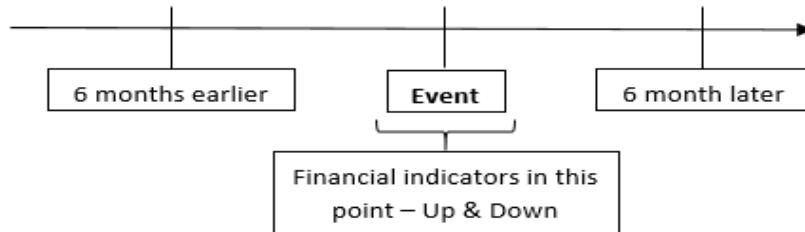
For the second sample, we calculate the percentage changes of the financial indicators (Total assets, Long Term Debt, Short and Long Term Debt, Net Income, Revenue, EBIT, number of shares held by institutional owners) between the quarter in which the event occurred (the Imams' announcements) and two quarters earlier. For example, if the event occurred on 25 September 2015, the percentage change for the total assets in this period will be calculated as follows:

*Equation 16*

$$\frac{\text{Total assets in Q3}^{2015} - \text{Total assets in Q1}^{2015}}{\text{Total assets in Q1}^{2015}}$$

Whereas for the ratios (Financial Leverage, Profit Margin, Assets/Equity, Total Debt to Total Equity, Comment Equity to Total Assets) we take their value directly on the quarter under examination (*Quarter 3<sup>2015</sup>*). Then we perform the test on the second sample:

- 2- Upgrade vs. Downgrade at the event date: we compare the mean of each of the financial indicators (percentage changes and ratios) between the firms that received upgrades to Sharia compliant and those experiencing downgrades to non-Sharia compliant on the quarter of event date (the Imams' announcements). For example, we check whether, on the event date, the mean of the financial leverage ratios for the firms that received upgrades differs from the mean of the financial leverage ratios for the firms that received downgrades.



For the third sample, we calculate the percentage changes of the financial indicators (Total assets, Long Term Debt, Short and Long Term Debt, Net Income, Revenue, EBIT, number of shares held by institutional owners) 6 months after the event (Imams' announcements). For example, if the event occurred on 25 September 2015, the percentage change for the total assets in this period will be calculated as follows:

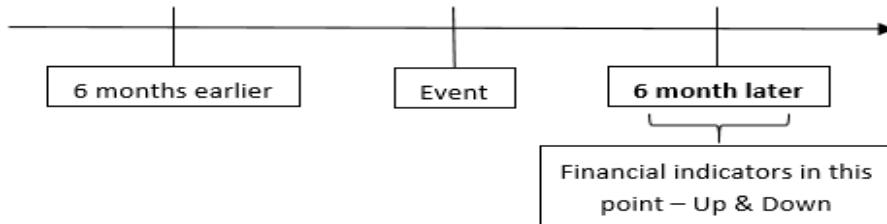
*Equation 17*

$$\frac{\text{Total assets in Q1}^{2016} - \text{Total assets in Q3}^{2015}}{\text{Total assets in Q3}^{2015}}$$

Whereas for the ratios (Financial Leverage, Profit Margin, Assets/Equity, Total Debt to Total Equity, Comment Equity to Total Assets) we take their value directly on the quarter under examination (*Quarter 1<sup>2016</sup>*). Then we perform the test on the third sample:

- 3- Upgrade vs. Downgrade 6 months after the event: we compare the mean of each of the financial indicators (percentage changes and ratios) between the firms that received upgrades to Sharia compliant and those experiencing downgrades to non-Sharia compliant six months (2 quarters) after the Imams' announcements (the event). For

example, we check whether, six months (2 quarters) after the event, the mean of the financial leverage ratios for the firms that received upgrades differs from the mean of the financial leverage ratios for the firms that received downgrades.



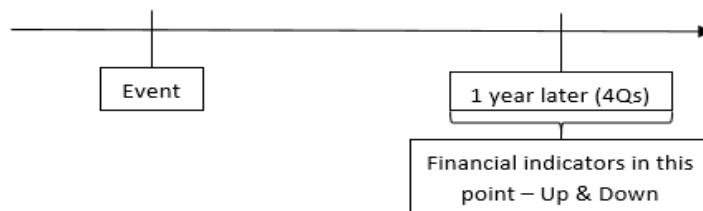
For the fourth sample, we calculate the percentage changes of the financial indicators (Total assets, Long Term Debt, Short and Long Term Debt, Net Income, Revenue, EBIT, number of shares held by institutional owners) 1 year after the event (Imams' announcements). For example, if the event occurred on 25 September 2015, the percentage change for the total assets in this period will be calculated as follows:

*Equation 18*

$$\frac{\text{Total assets in Q3}^{2016} - \text{Total assets in Q3}^{2015}}{\text{Total assets in Q3}^{2015}}$$

Whereas for the ratios (Financial Leverage, Profit Margin, Assets/Equity, Total Debt to Total Equity, Current Equity to Total Assets) we take their value directly on the quarter under examination (*Quarter 3<sup>2016</sup>*). Then we perform the test on the fourth sample:

- 4- Upgrade vs. Downgrade one year after the event: we compare the mean of each of the financial indicators (percentage changes and ratios) between the firms that received upgrades to Sharia compliant and those experiencing downgrades to non-Sharia compliant one year (4 quarters) after the Imams' announcements (the event). For example, we check whether, 1 year (4 quarters) after the event, the mean of the financial leverage ratios for the firms that received upgrades differs from the mean of the financial leverage ratios for the firms that received downgrades.



The previous four samples are built in order to find out whether significant results (if any) exist over all the four periods, or can be reported only in the post “religious announcements” periods, which would more clearly suggest a link with the Imams’ announcements.

#### b. Results and discussion regarding the first group (sample 1 to 4)

We compare the mean of the ratios and percentage changes of each of the financial indicators for the companies that received upgrades and downgrades from Imams. The periods of comparison will be six months prior the event, on the quarter of the event, six months after the event, and one year after the event (**samples 1, 2, 3, and 4 mentioned above**). We conducted the comparison tests during these periods in order to find out whether the mean of the financial indicators significantly differs between the group of companies that received upgrades from the group of companies that received downgrades.

The **tables (42, 43, 44, and 45)** below present the results of the comparison tests for **the samples 1 to 4**, mentioned previously. **Table (44)** present the test results for the period of 6 months after the event (**sample 3**). The results show that the mean of percentage changes in total assets for the upgraded and downgraded firms present statistically significance two-tail t-test at 10%. Indicating that the average changes in total assets for downgraded firms is significantly differ from the average changes in total assets for upgraded firms. Where the mean for the downgraded firms is 5.53% while it is 2.05% for the upgraded firms. Arguing that after six months of the announcement, the total assets for the firms that received downgrades increase more than the firms that received upgrades. Nevertheless, the significant result of the total assets disappears in the study period of one year after the event (**table 45**).

Regarding the financial leverage ratio, the mean of financial leverage ratios for the third sample, which presents the mean of ratios after six months of event (**table 44**), and the fourth sample, which presents the mean of ratios after one year of event (**table 45**), show significant t-test results. Indicating that the mean of financial leverage ratios between the two groups, firms that received upgrades and firms received downgrades, significantly differs from each other after six months and one year of the Imams’ announcement. The period of six month after the event (**table 44**) shows a mean in financial leverage ratio for downgraded firms which is higher than that of the upgraded firms, 2.21 and 1.69 respectively with 5% significance of

one tail t-test. Consistently, the period of one year after the event ([table 45](#)) also shows a mean of financial leverage ratio for downgraded firms higher than the upgraded firms, 2.10 and 1.76 respectively with 5% significance of one tail t-test.

The results point out that the financial leverage ratios for the downgraded firms are likely to be significantly higher than the financial leverage ratios of the upgraded firms after six months and one year of being rated by the Imams. The results may indicate that downgraded firms use larger debt to finance their assets, where we can assume that these firms are likely to start adopting all type of debts, either Islamic or non-Islamic debts, after being downgraded.

Regarding the other financial indicators, we report that, either they do not show significant results, or they show significant results during the four periods, which means that the significant results do not only come from the announcements.

*Table 42: comparison test for sample 1- Upgrade vs. Downgrade six months before the event: the test results of comparing the mean of each of the financial indicators (percentage changes and ratios) for the firms that received upgrades to Sharia compliant (referred to "Up" in the table) and downgrades to non-Sharia compliant (referred to "Down" in the table) six month (2 quarters) before the Imams' announcements.*

	Indicators	mean		sample size		T-test		P-value : non-parametric tests	
		Up	Down	Up	Down	t-test2	t-test1	Wilcoxon Signed Rank	Mann-Whitney
%	Total Assets	4.43%	6.73%	134	76	0.265	0.132	0.227	0.636
	Long Term Debt	-5.60%	-0.74%	131	75	0.191	0.095	0.036 **	0.564
	Short and Long Term Debt	3.38%	25.06%	132	75	0.032 **	0.016 **	0.004 ***	0.007 ***
	Net Income	65.11%	50.70%	134	75	0.857	0.428	0.690	0.551
	Revenue	10.63%	-6.80%	131	75	0.304	0.152	0.815	0.871
	EBIT	54.15%	-26.35%	130	75	0.275	0.137	0.968	0.887
	Instit Owner # of Shares Held	7.29%	5.51%	72	55	0.846	0.423	0.291	0.389
Ratio	Financial Leverage	1.622	1.804	132	74	0.160	0.080	0.000 ***	0.060 *
	Profit Margin	15.843	16.425	128	71	0.926	0.463	0.016 **	0.622
	Assets/Equity	1.580	1.801	135	75	0.075 *	0.038 **	0.000 ***	0.041 **
	Total Debt to Total Equity	24.882	47.529	133	74	0.003 ***	0.002 ***	0.421	0.006 ***
	Comment Equity to Total Assets	70.308	62.416	135	77	0.008 ***	0.004 ***	0.000 ***	0.023 ***

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively

*Table 43: comparison test for sample 2- Upgrade vs. Downgrade at the event date: the test results of comparing the mean of each of the financial indicators (percentage changes and ratios) for the firms that received upgrades to Sharia compliant and downgrades to non-Sharia compliant on the event date.*

	Indicators	mean		sample size		T-test		P-value : non-parametric tests	
		Up	Down	Up	Down	t-test2	t-test1	Wilcoxon Signed Rank	Mann-Whitney
%	Total Assets	2.86%	3.21%	135	74	0.791	0.395	0.595	0.116
	Long Term Debt	5.83%	5.96%	131	74	0.988	0.494	0.060 *	0.052 *
	Short and Long Term Debt	17.59%	1.63%	132	74	0.214	0.107	0.864	0.744
	Net Income	-2.79%	-17.51%	133	76	0.668	0.334	0.874	0.547
	Revenue	-0.57%	6.31%	131	72	0.775	0.387	0.607	0.469
	EBIT	-13.75%	-41.35%	129	73	0.296	0.148	0.449	0.294
	Instit Owner # of Shares Held	10.62%	46.73%	73	53	0.225	0.113	0.815	0.492
Ratio	Financial Leverage	1.654	1.860	136	74	0.113	0.056	0.000 ***	0.014 **
	Profit Margin	18.806	16.316	131	69	0.657	0.329	0.001 ***	0.299
	Assets/Equity	1.609	1.792	136	74	0.126	0.063	0.000 ***	0.008 ***
	Total Debt to Total Equity	26.151	46.198	136	74	0.003 ***	0.002 ***	0.340	0.003 ***
	Comment Equity to Total Assets	69.300	61.831	136	75	0.010 ***	0.005 ***	0.000 ***	0.011 **

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively

*Table 44: comparison test for sample 3- Upgrade vs. Downgrade six months after the event: the test results of comparing the mean of each of the financial indicators (percentage changes and ratios) for the firms that received upgrades to Sharia compliant (referred to "Up" in the table) and downgrades to non-Sharia compliant (referred to "Down" in the table) six month (2 quarters) after the Imams' announcements.*

	Indicators	mean		sample size		T-test		P-value : non-parametric tests	
		Up	Down	Up	Down	t-test2	t-test1	Wilcoxon Signed Rank	Mann-Whitney
%	Total Assets	2.05%	5.53%	135	75	0.069 *	0.034 **	0.867	0.190
	Long Term Debt	6.93%	6.88%	133	74	0.996	0.498	0.122	0.180
	Short and Long Term Debt	6.80%	8.50%	135	73	0.795	0.398	0.158	0.030 **
	Net Income	-2.26%	5.62%	135	78	0.923	0.461	0.784	0.280
	Revenue	5.09%	9.81%	133	73	0.577	0.288	0.561	0.290
	EBIT	199.00%	53.23%	134	76	0.580	0.290	0.295	0.160
	Instit Owner # of Shares Held	-5.85%	-4.76%	77	56	0.855	0.428	0.784	0.740
Ratio	Financial Leverage	1.692	2.213	135	77	0.055 *	0.028 **	0.000 ***	0.030 **
	Profit Margin	17.478	15.793	130	74	0.737	0.369	0.009 ***	0.760
	Assets/Equity	1.647	2.170	136	77	0.052 *	0.026 **	0.000 ***	0.030 **
	Total Debt to Total Equity	28.669	52.287	135	76	0.005 ***	0.003 ***	0.429	0.010 ***
	Comment Equity to Total Assets	68.490	61.691	136	77	0.022 **	0.011 **	0.000	0.040

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively

*Table 45: comparison test for sample 4- Upgrade vs. Downgrade one year after the event: the test results of comparing the mean of each of the financial indicators (percentage changes and ratios) for the firms that received upgrades to Sharia compliant (referred to "Up" in the table) and downgrades to non-Sharia compliant (referred to "Down" in the table) 1 year (4 quarters) after the Imams' announcements.*

	Indicators	mean		sample size		T-test		P-value : non-parametric tests	
		Up	Down	Up	Down	t-test2	t-test1	Wilcoxon Signed Rank	Mann-Whitney
%	Total Assets	4.28%	9.74%	118	60	0.189	0.094	0.882	0.259
	Long Term Debt	16.19%	33.78%	118	59	0.527	0.264	0.190	0.333
	Short and Long Term Debt	16.74%	10.85%	118	59	0.686	0.343	0.190	0.192
	Net Income	-37.44%	-18.40%	116	59	0.571	0.285	0.138	0.980
	Revenue	1.66%	-1.95%	116	58	0.638	0.319	0.312	0.372
	EBIT	57.40%	30.82%	116	60	0.797	0.399	0.593	0.925
	Instit Owner # of Shares Held	-4.97%	5.09%	61	42	0.519	0.260	0.733	0.933
Ratio	Financial Leverage	1.759	2.104	118	59	0.072 *	0.036 **	0.000 ***	0.012 ***
	Profit Margin	13.514	7.313	112	57	0.217	0.109	0.001 ***	0.265
	Assets/Equity	1.721	2.043	118	59	0.097 *	0.048 **	0.000 ***	0.011 **
	Total Debt to Total Equity	30.168	64.968	118	59	0.002 ***	0.001 ***	0.275	0.002 ***
	Comment Equity to Total Assets	67.587	58.243	118	60	0.007 ***	0.003 ***	0.000 ***	0.010 ***

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively

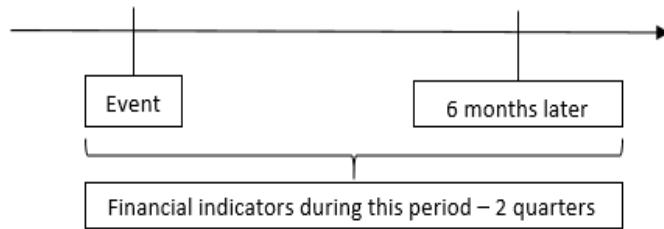
### 2.3.2 The second group (upgraded firms/downgraded firms): calculations and results for the samples 5 to 8

#### a. Calculations of the second group (samples 5 to 8)

For the fifth sample, we consider only the firms that received upgrades, and we calculate the percentage changes of the financial indicators (Total assets, Long Term Debt, Short and Long Term Debt, Net Income, Revenue, EBIT, number of shares held by institutional owners) at the event date (*cf. equation 16 above*) and six months after the event (*cf. equation 17 above*). For the ratios (Financial Leverage, Profit Margin, Assets/Equity, Total Debt to Total Equity, and Comment Equity to Total Assets) we take their value directly on the quarter under examination, at the event date and six months after the event. Then we perform the test on the fifth sample:

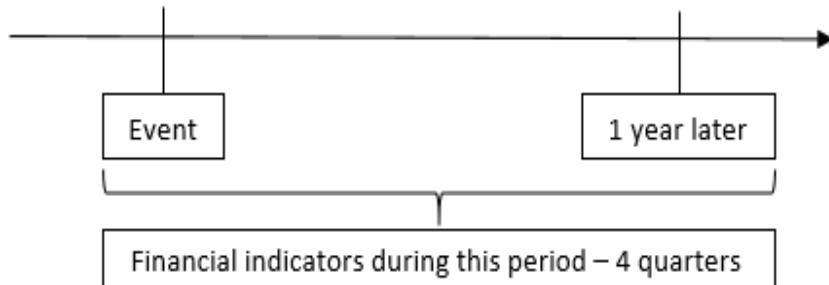
- 5- At the event date vs. six months after the event - upgraded firms: for the firms that received upgrades, we compare the mean of each of the financial indicators (percentage changes and ratios) at the event date versus six months (2 quarters) after the event. For example, for the firms that received upgrades, we check whether the mean of the

financial leverage ratios at the event date differs from the mean of the financial leverage ratio for the same firms after six months (2 quarters) of event.



For the sixth sample, we consider only the firms that received upgrades, and we calculate the percentage changes of the financial indicators (Total assets, Long Term Debt, Short and Long Term Debt, Net Income, Revenue, EBIT, number of shares held by institutional owners) at the event date ([see equation 16 above](#)) and one year after the event ([see equation 18 above](#)). For the ratios (Financial Leverage, Profit Margin, Assets/Equity, Total Debt to Total Equity, and Current Equity to Total Assets) we take their value directly on the quarter under examination, at the event date and one year after the event. Then we perform the test on the sixth sample:

- 6- At the event date vs. one year after the event - upgraded firms: for the firms that received upgrades, we compare the mean of each of the financial indicators (percentage changes and ratios) at the event date versus one year (4 quarters) after the event. For example, for the firms that received upgrades, we check whether the mean of the financial leverage ratios at the event date differs from the mean of the financial leverage ratio for the same firms after one year (4 quarters) of event.



The seventh and eighth samples follow exactly the process of the fifth and sixth samples above, respectively, but we consider only the firms that received religious downgrades.

b. Results and discussion regarding the second group (sample 5 to 8)

Tables (46, 47, 48, and 49) below show the results of the samples 5 to 8 mentioned above. Table (46) presents the test results of sample 5, which compares the means of the financial indicators for the upgraded firms between two periods (at the event date versus six months after the event). And table (47) presents the test results of sample 6, which compares the means of the financial indicators for the upgraded firms between two periods (at the event date versus one year after the event). The parametric tests do not allow to conclude significant results, regarding these two periods.

Regarding the downgraded firms, table (48) presents the test results of sample 7, which compares the means of the financial indicators for the downgraded firms between two periods (at the event date versus six months after the event). And table (49) presents the test results of sample 8, which compares the means of the financial indicators for the downgraded firms between two periods (at the event date versus one year after the event). The test applied on these two samples (table 48 and 49) shows only one financial indicator with significant one-tailed t-test at 5%, regarding the change in the proportion of shares held by institutional owners. The test results of the seventh sample table (48) demonstrates that the mean of percentage changes of number of shares held by institutional owners has an increase by 46.73% on event, while the mean of six months after the event presents a decrease by -4.76%. For a longer period, the test results of the eighth period table (49) demonstrates that the mean of percentage changes of number of shares held by institutional owners has an increase by 69.69% on event, while the mean after one year of the event presents a weak increase by 5.09%.

The results may indicate that the number of shares held by institutional owners for the firms that received pure downgrades from Sharia-compliant firms to non-Sharia compliant firms experience a drop during six months and one year after the Imams' announcements. The decrease in the mean of the number of shares held by institutional owners might be generated from some possible scenarios. For example, some portfolios and funds' policies require investing only in Sharia compliant securities and do not allow these portfolios and funds to hold non-Sharia compliant shares. Hence, these portfolios and funds usually tend to get rid of these stocks as soon as they receive a downgrade by Imams.

*Table 46: comparison test for sample 5- at the event date vs. six months after the event – upgraded firms: the test results of comparing the mean of each of the financial indicators (percentage changes and ratios) at the event date versus six months (2 quarters) after the event. Only firms that received upgrades.*

	Indicators	mean		sample size		T-test		P-value : non-parametric tests	
		On event	After	On event	After	t-test2	t-test1	Wilcoxon Signed Rank	Mann-Whitney
%	Total Assets	2.86%	2.91%	135	136	0.975	0.487	0.577	0.846
	Long Term Debt	5.83%	17.39%	131	135	0.294	0.147	0.732	0.824
	Short and Long Term Debt	17.59%	6.80%	132	135	0.283	0.142	0.763	0.671
	Net Income	20.80%	-2.26%	134	135	0.677	0.338	0.379	0.472
	Revenue	3.79%	5.09%	128	133	0.814	0.407	0.841	0.513
	EBIT	4.33%	16.17%	130	133	0.814	0.407	0.521	0.642
	Instit Owner # of Shares Held	10.62%	-0.45%	73	78	0.497	0.248	0.750	0.600
Ratio	Financial Leverage	1.654	1.692	136	135	0.744	0.372	0.701	0.853
	Profit Margin	17.380	17.478	132	130	0.983	0.491	0.270	0.723
	Assets/Equity	1.609	1.647	136	136	0.725	0.362	0.085 *	0.756
	Total Debt to Total Equity	26.151	28.669	136	135	0.654	0.327	0.998	0.689
	Comment Equity to Total Assets	69.300	68.490	136	136	0.729	0.364	0.194	0.723

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively

*Table 47: comparison test for sample 6- at the event date vs. one year after the event – upgraded firms: the test results of comparing the mean of each of the financial indicators (percentage changes and ratios) at the event date versus 1 year (4 quarters) after the event. Only firms that received upgrades.*

	Indicators	mean		sample size		T-test		P-value : non-parametric tests	
		On event	After	On event	After	t-test2	t-test1	Wilcoxon Signed Rank	Mann-Whitney
%	Total Assets	2.94%	4.28%	117	118	0.563	0.281	0.764	0.358
	Long Term Debt	7.17%	16.19%	113	118	0.481	0.240	0.448	0.488
	Short and Long Term Debt	20.67%	16.74%	114	118	0.783	0.391	0.152	0.311
	Net Income	-3.10%	-37.44%	117	116	0.218	0.109	0.122	0.211
	Revenue	4.21%	-1.49%	114	115	0.187	0.093	0.308	0.217
	EBIT	-11.30%	-0.95%	112	115	0.726	0.363	0.599	0.682
	Instit Owner # of Shares Held	-2.74%	-11.97%	56	60	0.116	0.058	0.252	0.468
Ratio	Financial Leverage	1.697	1.759	118	118	0.654	0.327	0.258	0.889
	Profit Margin	14.282	13.514	115	112	0.871	0.435	0.053 *	0.389
	Assets/Equity	1.647	1.721	118	118	0.578	0.289	0.136	0.845
	Total Debt to Total Equity	26.958	30.168	118	118	0.621	0.311	0.799	0.974
	Comment Equity to Total Assets	68.304	67.587	118	118	0.783	0.391	0.281	0.875

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively

*Table 48: comparison test for sample 7- at the event date vs. six months after the event – downgraded firms: the test results of comparing the mean of each of the financial indicators (percentage changes and ratios) at the event date versus six months (2 quarters) after the event. Only firms that received downgrades.*

	Indicators	mean		sample size		T-test		P-value : non-parametric tests	
		On event	After	On event	After	t-test2	t-test1	Wilcoxon Signed Rank	Mann-Whitney
%	Total Assets	4.53%	7.96%	75	76	0.341	0.171	0.308	0.849
	Long Term Debt	5.96%	6.88%	74	74	0.909	0.454	0.931	0.740
	Short and Long Term Debt	1.63%	8.50%	74	73	0.283	0.141	0.058 *	0.247
	Net Income	-17.51%	5.62%	76	78	0.768	0.384	0.552	0.209
	Revenue	6.31%	9.81%	72	73	0.737	0.368	0.202	0.668
	EBIT	-41.35%	53.23%	73	76	0.404	0.202	0.915	0.259
Ratio	Instit Owner # of Shares Held	46.73%	-4.76%	53	56	0.063 *	0.031 **	0.690	1.000
	Financial Leverage	1.860	1.912	74	76	0.746	0.373	0.396	0.990
	Profit Margin	16.316	15.793	69	74	0.935	0.467	0.837	0.945
	Assets/Equity	1.792	1.869	74	76	0.619	0.309	0.396	0.997
	Total Debt to Total Equity	46.198	52.287	74	76	0.554	0.277	0.475	0.985
	Comment Equity to Total Assets	61.831	61.691	75	77	0.969	0.485	0.650	0.987

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively

*Table 49: comparison test for sample 8- at the event date vs. one year after the event – downgraded firms: the test results of comparing the mean of each of the financial indicators (percentage changes and ratios) at the event date versus one year (4 quarters) after the event. Only firms that received downgrades.*

	Indicators	mean		sample size		T-test		P-value : non-parametric tests	
		On event	After	On event	After	t-test2	t-test1	Wilcoxon Signed Rank	Mann-Whitney
%	Total Assets	5.29%	9.74%	59	60	0.322	0.161	0.464	0.614
	Long Term Debt	6.78%	1.87%	57	58	0.630	0.315	0.827	0.432
	Short and Long Term Debt	3.59%	10.85%	57	59	0.421	0.210	0.246	0.617
	Net Income	-22.28%	-42.38%	56	58	0.484	0.242	0.336	0.504
	Revenue	6.73%	-1.95%	56	58	0.276	0.138	0.877	0.698
	EBIT	-50.60%	-24.41%	57	57	0.489	0.245	0.877	0.885
Ratio	Instit Owner # of Shares Held	69.69%	5.09%	40	42	0.093 *	0.046 **	0.582	0.525
	Financial Leverage	1.969	2.104	58	59	0.526	0.263	0.320	0.939
	Profit Margin	10.852	7.313	54	57	0.575	0.287	0.676	0.654
	Assets/Equity	1.887	2.043	58	59	0.453	0.226	0.488	0.948
	Total Debt to Total Equity	53.988	64.968	58	59	0.426	0.213	0.239	0.980
	Comment Equity to Total Assets	58.464	58.243	59	60	0.957	0.478	0.624	0.979

\*\*\*, \*\*, \* significance at 1%, 5%, 10% respectively

## 2.4 Conclusion of the possible effect of Imams' announcements over the firms' financial health

From the previous tables, we can conclude that there is no clear evidence of an impact of the religious announcements from the Imams on the financial indicators of the firms, except for the financial leverage ratio and the number of shares that are held by institutional investors. The financial leverage ratio of the downgraded firms is found to be significantly higher than the upgraded firms during the period of six months and one year after the Imams' announcements. And the number of institutional shareholders is found to be significantly decreasing amongst the downgraded firms than the upgraded firms, also during the period of six months and one year after the Imams' announcements, which can be justified by the Islamic orientations, as some portfolios and funds' policies require investing only in Sharia-compliant securities.

Although the majority of financial indicators do not present evidence about a difference in the performance of companies except for financial leverage ratio and the number of shares that are held by institutional investors, these findings could be considered as an insight for a possible effect of the Imams' announcement on the firms' financial health.

As mentioned earlier, the limited size of our sample, is a limiting factor to our analysis, and we still assume that the methodology and the set of data could be reinforced in the future, which would allow more sophisticated methodologies to be conducted, and the possible link between Imams and CRAs in religious countries to be better investigated.

To sum up, according to us, we suggest that Imams' announcements should be taken into consideration when credit rating agencies tend to assess the credit rating of an issuer in markets where religion is essential for the market participants, mostly when the individual investors dominate the market as in Saudi Arabia.

## Chapter 9: Final conclusion

Our research is mainly dedicated to the analysis of stock markets in GCC countries (Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Oman, and Bahrain) and their financial environment, and more specifically, the behaviour of investors and their characteristics. We specifically investigate the stock market response to the international credit rating agencies' (CRAs') and Imams' (religious) announcements. The reason behind this analysis is that, although financial literature linked with Islamic finance is quite large, it is not yet extensively covering GCC financial markets. Furthermore, almost none of the previous studies have been dedicated to the CRAs' influence in the GCC financial market, nor the impact of Imams' announcements. Indeed, the majority of previous studies concerned the effects of oil prices, the co-movement between oil and stock markets, the influence of financial crises, the efficiency of the markets, the spill-over effects, Sukuk and Sharia stocks, etc.

From an economical and financial angel of view, GCC markets may be distinguished from other mature and non-mature markets. One common feature is that bond markets are still quite narrow, which may be paradoxical to explain the increasing role of CRAs. Moreover, the majority of private issuers seem to ask for rating services, but do not issue bonds and Sukuk. Therefore, we first aimed to conduct a closer investigation to justify this increase in demand (*cf. chapter 2*). We have reported that, given the institutional features, the increase in demand for CRAs' services might be triggered by a mimicry behaviour amongst corporations. We also aimed to examine several determinants to find out which ones may influence the odds of a firm to be rated. We mostly found that financial institutions, big size companies, and firms that issue debt instruments, etc. have higher odds to be rated.

The second interesting characteristic we point out is the domination of individual investors in the equity markets, as approximately 90% of the daily transactions are placed by individuals in some of the GCC markets. Thus, the differences in the behaviour of the individual investors and institutional investors are likely to affect the stock markets' behaviour. The individual investors may act differently than institutional investors, not only because of their low level in technical knowledge in finance, but also because of their lower knowledge in English language and their "religiosity", which is one of our assumptions. Given these specificities, the financial knowledge, as well as the English knowledge amongst the

individual investors are assumed to affect the market reaction to CRAs' announcements ([cf. chapter 3](#)). Concerning the religiosity, we consider that religion is likely to play an essential role, which may affect the financial market at least as much as the financial indicators could do. More specifically, we assume that religion may influence the investors' behaviour and their investment decisions, which might lead to affect the firms' financial health ([cf. chapter 4](#)).

Therefore, in order to support (or reject) and reinforce our assumptions, we firstly built and implemented a large survey, via the internet. The main aim of this inquiry was to collect more information about the individual investors and to acquire a better knowledge of their behaviour. Secondly, we built an exhaustive financial database regarding the credit rating events using Bloomberg and other financial sources for the six GCC countries, in order to further check for our hypotheses. This database also contains stocks and markets returns, as well as a set of financial indicators. Besides these financial observations, we also collected data regarding the Imams' announcements, which includes the religious events (in order to further calculate possible abnormal market returns). These two different databases are worth building to create a more comprehensive set of information covering the GCC financial markets. Moreover, it can be useful for further academic researchers who aim to further investigate the GCC financial markets.

Regarding our assumptions, we postulate that announcing the rating decisions in the English language may induce an asymmetry of information in GCC markets, to the detriment of the individual investors, due to their lower level of English language, as the mother language in these countries is Arabic. We also assume that the religion factor plays an essential role in financial markets, where the Imams' announcements could have an impact on the individuals' investments decisions.

For a better illustration of our findings, we present our synthesis subdivided into two parts:

- 1- The stock market reaction to CRAs' announcements
  - The effect of English language over the market participants
- 2- The stock market reaction to Imams' announcements
  - The effect of religion factor over the investors' decisions

## 1. The stock market reaction towards CRAs' announcements

We applied an appropriate event study methodology (with parametric and nonparametric tests, relying on a GARCH (p,q) process to better estimate the parameters of the market model) to capture whether the credit rating agencies' announcements affect the firms' stock prices in GCC countries. For the Saudi market, our findings show that positive events (upgrades and positive credit watches) are followed by a positive stock market reaction, and the negative events (only downgrades) by a negative stock market reaction ([cf. chapter 7, section 1](#)). The findings confirm that CRAs' announcements have an informational value, thus confirming the information content hypothesis and the signal hypothesis.

The other GCC stock markets show a similar reaction to the Saudi market, where the positive events (upgrades and positive credit watches) are followed by a positive market reaction, and negative events (downgrades and negative credit watches) are followed by a negative market reaction ([cf. chapter 7, section 2](#)). However, we find out some dissimilarities between countries, regarding the reaction time: the market response to the positive rating events occurring within large post-event windows for Saudi Arabia and the United Arab Emirates, whereas the reaction happens quickly on the event day, for Qatar, Kuwait, and Oman. We believe one of the main reasons that may explain these differences is the proportion of individual investors, by stating that a large proportion of individual investors in a stock market increases the probability to also have a longer reaction to foreign information.

According to the questionnaire we built and implemented ([cf. chapter 6](#)), we find that individual investors in Saudi Arabia rely on Arabic sources and the translated news (to the Arabic language) more than foreign sources to take their decisions, where we believe is due to the low level of English knowledge amongst the individual investors. This feature suggests that the sophisticated investors may receive the foreign information (CRAs' announcements) prior the individual investors due the time needed by the individuals to receive, absorb, and understand the language of publishing this information. Thus, the findings support our assumption that individual investors need a longer time to receive, digest, and understand the information announced in a foreign language (English language) comparing to institutional investors.

Regarding the previous studies concerning the reaction to CRAs' announcements (the raw data of a previous meta-analysis study) (cf. chapter 7, section 3), we find that the markets in non-Anglophone countries react in larger post-event windows comparing to the markets in Anglophone countries. We argue that the lag of reaction in non-English speaking markets comparing to English speaking markets might arise from the fact of the language barrier. As the first and official language to diffuse the CRAs' announcements is the English language, we believe the market participants in non-English speaking countries, mostly the individual investors, may need longer time to receive, digest, and understand the information in order to react if needed.

These findings lead us to conclude that credit rating agencies may fail to reduce the information asymmetry in some financial market, such as the GCC markets, because they release their important information in a specific language (English) that is not the mother language in some markets (the Arabic in GCC markets). While some studies support the idea that CRAs' services may improve the market efficiency, this effect could be questioned, in that the reduction in the information asymmetry could be larger for the markets where the majority of investors are "sophisticated" and easily understand the language of the disclosed information. On the contrary, if a market is dominated by individual investors, who do not speak the same language of the published announcements, we assume that the information is not efficiently released since the minority (sophisticated investors) benefit from a comparative advantage over the majority.

**Therefore,**

- Credit rating agencies should take into consideration the domination of individuals and their educational background in each market, in order to find out whether they announce only in English language, or they should announce simultaneously in English and in the mother language of the market of interest (in Arabic language in our case).

## 2. The stock market reaction towards Imams' announcements

In this part, our work attempts to find out whether the Imams' announcements have an impact on the financial market in Saudi Arabia or not. The study period is from 2004 to 2016. It focuses only on the Imams' pure upgrades (re-classification from non-Sharia compliant firms to Sharia-compliant firms) and the Imams' pure downgrades (re-classification from Sharia-compliant firms to non-Sharia compliant firms), to investigate whether these announcements affect the investors' decision to hold, buy or sell the stocks.

Our questionnaire finds out that two-third of the individual investors are highly religious and pay close attention to the Imams' announcements. They tend to get rid of the stocks once classified non-Sharia compliant ([cf. chapter 6](#)). We also find that the high religious investors are likely to leave the stock market and change the investment field in case there is no longer listed Sharia-compliant firms.

Regarding the empirical results of the event-study applied over the Imams' announcements, we find that the Imams' downgrades are followed by negative stock market reaction just after the event day, where this information is seen as bad news. And the Imams' upgrades are followed by positive stock market reaction just after the event day, where this information is seen as good news. It indicates that these announcements convey valuable information to the market ([cf. chapter 8, section 1](#)).

Moreover, we find that the market reaction to Imams' downgrades is greater than Imams' upgrade. We assume the reason behind the difference in reaction is that the non-Sharia compliant firms prior the upgrade were out of the investment options amongst the religious investors, due to the religious status of the firms (i.e. it was considered as religiously forbidden to invest in). Hence, after a firm being upgraded (which means the religious barrier is removed) the investors may need time to properly analyse the "new available securities" from a financial point of view, in order to decide a purchase, or not. On the contrary, the larger reaction to the Imams' downgrades is assumed to be due to the fact that these securities are no longer desired by the religious investors, which leads them to sell "get rid of" the downgraded stocks.

We also investigate the possible effect of Imams' announcements on the long-term ([cf. chapter 8, section 2](#)). We examine the financial indicators for the re-classified listed firms and

find no clear influence on the financial indicators except for two indicators, the financial leverage ratio and the number of shares that are held by institutional investors. The financial leverage ratio of the downgraded firms is found to be significantly higher than the upgraded firms. And the number of institutional shareholders is found to be significantly decreasing amongst the downgraded firms than the upgraded firms, which can be occurred due to the Islamic orientation amongst some of the institutional investors.

**Therefore,**

- Our findings prove that the religion plays an essential role amongst the market participants in Saudi market, where this factor may affect the investment decisions as much as other financial indicators could do. Hence, we suggest that credit rating agencies should take into consideration the religion factor and apply it into their rating determinants when assessing companies in religious countries with high level of individual proportion in the financial market.

- **Suggestions for further research**

Some of the issues that we encountered for obtaining specific data may be resolved with time and should be possibly collected for further examination. For example, we tried to obtain particular data about the daily trading percentages for each of the market participants (individual investors and institutional investors); such a data would have been worth to more clearly confirm/infirm some of our assumptions. Still, unfortunately, we couldn't acquire authorisation from the market regulators for this type of information, nor cooperation. This type of data will allow the researcher to find out what kind of investors precisely reacted first to the credit rating agencies' announcements, and more specifically when the individual investors started to react. Hence, the availability of this data would enable the researchers to enhance and develop our assumptions and hypotheses regarding the reaction time and the effect of language.

Our research could also be applied over other markets characterised with high-level of individual domination, where the issue of the language and the influence of religion may exist. Regarding the English effect in non-Anglophone countries, we reported insights of an effect

of the English language on the market reaction time that ([chapter \(7\) section \(3\)](#)), but we couldn't in this stage precise this effect and implement a more robust methodology. We were restricted in our investigation by a lack of observations and variables, to reach more accurate results and to better capture the language effect. Besides, spending more time in searching for additional variables and models may deviate our work from our main research topic, and would have led our PhD thesis to investigate too many fields of finance. Therefore, further researches could investigate the language effect with more variables and additional approaches that would reinforce the accuracy of the results.

At last, but not least, further researches could also investigate more closely the possible relationship between the CRAs' and Imams' announcements. Moreover, it would also be interesting to examine the potential links between the financial analysts and Imams' announcements, and how they may affect the firms and the market reaction.

## Synthèse de la thèse en Français

### Chapitre 1 : Introduction

Plusieurs études ont déjà été consacrées aux pays du Conseil de coopération du Golfe (CCG) (à savoir l'Arabie saoudite, les Émirats arabes unis, le Qatar, le Koweït, Oman et Bahreïn) ou à leurs marchés financiers, portant notamment les effets des variations des prix du pétrole sur les marchés boursiers, l'influence des crises financières, l'efficience des marchés, les produits financiers compatibles avec les préceptes de la Charia, dont les obligations Sukuk, etc. Cependant, la prédominance des investisseurs individuels sur les marchés boursiers du CCG et son impact possible sur comportement du marché en réaction à la transmission d'information, en particulier aux annonces des agences de notation de crédit (CRAs) et aux opinions religieuses émanant des Imams (savants islamiques) n'ont pas encore été analysés.

Cette recherche examinera donc de manière approfondie la réaction des marchés boursiers des pays du CCG à l'annonce des agences de notation de crédit (CRAs) et des Imams. L'intérêt de cette question de recherche est renforcée par certaines spécificités propres à ces pays, telles que la prédominance des investisseurs individuels, leurs caractéristiques (principalement leur religion et leur méconnaissance de l'anglais), des marchés obligataires étroits ce qui peut paraître a priori contradictoire avec l'intérêt croissant porté envers l'activité des agences de notation sur ces marchés).

Nous commençons ainsi par dépeindre le rôle joué par les agences de notation dans les pays du CCG et cherchons à expliquer ce renforcement de la demande pour les services de notation, bien le marché secondaire des obligations soit restreint et peu actif (Il y a d'ailleurs des émetteurs qui ont demandé à être notés malgré le fait qu'ils n'émettent pas d'obligations). Nous postulons que le comportement de mimétisme entre les sociétés peut être un facteur explicatif de cette montée en puissance des agences de notations.

La prédominance des investisseurs individuels sur les marchés boursiers du CCG est une caractéristique essentielle, qui distingue les marchés financiers de ces pays de tous les autres à travers le monde, matures ou non matures. Généralement, environ 90% des transactions quotidiennes en actions sont traitées par des investisseurs institutionnels dans les grandes

bourses de l'OCDE (Samba Group, 2009). Par opposition, sur les marchés boursiers du CCG, ce sont les investisseurs individuels qui dominent dans le volume des transactions quotidiennes. La proportion des transactions quotidiennes effectuées par les investisseurs individuels sur certains marchés boursiers du CCG est ainsi d'environ 88%, tandis que la part restante émane des investisseurs institutionnels. Or, le comportement des investisseurs individuels est susceptible d'affecter le comportement des marchés boursiers du CCG à l'égard des annonces des agences de notation et des annonces des Imams, en raison notamment de l'influence de la religion et du niveau d'éducation (financière et linguistique). C'est ce qui nous amène à formuler deux des premières et principales hypothèses de recherche :

Premièrement, nous supposons que la réaction du marché boursier aux annonces des agences de notation de crédit sur les marchés du CCG sera différente de celles constatée sur les autres marchés matures et non matures. Nous soutenons que pour les marchés des pays du CCG caractérisés par la plus forte proportion d'investisseurs individuels, le délai de réaction des cours des actions aux annonces des agences de notation sera plus important. Ce qui résulterait notamment des difficultés de réception, d'absorption et de compréhension de la langue anglaise utilisée par les agences pour diffuser leurs annonces. Nous postulons en effet que la majorité des investisseurs individuels dans ces pays ne maîtrise pas suffisamment la langue anglaise pour interpréter les informations directement à la source. Par conséquent, ils auront probablement besoin d'attendre que les nouvelles soient traduites dans la langue maternelle (l'arabe), ce qui amènerait alors les investisseurs les plus « avertis » (qui comprennent la langue) à bénéficier en premier des nouvelles annoncées. Ainsi, nous suggérons que la capacité des agences de notation à pouvoir réduire l'asymétrie d'information dans ce type de marchés n'est que partielle et imparfaite.

Deuxièmement, nous nous concentrons sur le facteur religieux et comment il peut affecter le comportement boursier des investisseurs, en particulier « individuels ». Nous faisons ainsi l'hypothèse que la religion est susceptible de jouer un rôle essentiel sur le marché saoudien, et avoir un impact sur les décisions d'investissement des investisseurs religieux, au même titre, voire davantage, que des indicateurs d'ordre financier. Nous envisageons notamment que les cours des actions puissent réagir aux annonces des Imams, qui prenant la forme de « reclassification », et plus particulièrement de « rehaussements » d'entreprises

non-conformes à la charia vers des entreprises conformes à la charia, ou de « déclassements » d'entreprises conformes à la charia vers des entreprises non-conformes à la charia. Nous soutenons également que les investisseurs religieux peuvent être fortement incités à suivre les décisions des Imams et quitter le marché, en l'absence d'entreprises conformes à la charia sur le marché. Par conséquent, nous suggérons que, dans les pays où les marchés sont caractérisés par une importance forte du « facteur religieux », ce dernier devrait être pris en considération par les agences de notation de crédit dans leur processus d'attribution de note à une entreprise, car il pourrait également affecter la santé financière des entreprises.

En accord avec les hypothèses énoncées ci-dessus, notre recherche doctorale vise à répondre aux questions suivantes :

1. Comment la prédominance des investisseurs individuels sur les marchés boursiers du CCG peut-elle affecter la réaction du marché aux annonces des agences de notation ?
2. Comment les annonces des Imams vont-elles affecter les cours des actions des entreprises « re-classifiées » ?
3. Quel serait le facteur prédominant dans les décisions des investisseurs individuels : le risque de défaut (annonces des agences de notation) ou la religion (les annonces des Imams) ?
4. Dans les marchés caractérisés par une forte proportion d'investisseurs individuels religieux, les agences de notation devraient-elles prendre en compte le facteur religieux dans les déterminants de la notation ?

Pour pouvoir répondre avec précision à nos questions de recherche, nous avons mis en œuvre deux méthodologies principales. Tout d'abord, nous avons conçu et appliqué un questionnaire et l'avons diffusé auprès des investisseurs individuels en Arabie saoudite.<sup>101</sup> Le but est d'examiner la réaction des investisseurs « religieux » et « moins religieux », maîtrisant « bien » ou « mal » l'anglais) à plusieurs scénarios et situations. L'identification de ces groupes nous permet alors de mieux comprendre le comportement de chacun de ces groupes, en réaction aux annonces religieuses et aux annonces des agences de notation. En outre,

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<sup>101</sup> L'enquête n'a été diffusée que parmi les investisseurs individuels en Arabie saoudite, voir [chapitre \(5\) section \(1\)](#) pour plus d'informations.

l'enquête permettra de faire ressortir lequel des types d'annonces (émanant des agences de notation de crédit ou des Imams) est susceptible d'avoir une plus grande influence sur les investisseurs individuels. Le traitement de ce questionnaire peut ainsi permettre de mieux appréhender le comportement des investisseurs et confirmer une partie de nos hypothèses, au regard de la probable influence possible de la langue et de la religion.

Dans un second temps, nous appliquons une méthodologie d'étude des événements appropriée pour examiner la réaction des cours boursiers des actions aux annonces des agences de notation et des Imams. La réaction aux décisions des agences de notation est déjà étudiée pour tous les marchés boursiers du CCG, dans leur ensemble. Nous examinons ensuite le temps de réaction propre à chaque marché, en accord avec notre hypothèse selon laquelle les marchés caractérisés par une grande proportion d'investisseurs individuels réagiront plus tardivement, ou plus longuement que ceux où la proportion d'investisseurs individuels est moindre. Pour corroborer nos résultats, nous utilisons les données brutes d'une précédente étude de méta-analyse permettant de comparer la période de réaction dans marchés boursiers aux annonces des agences de notation dans les pays anglophones et non anglophones. En ce qui concerne les annonces des imams, nous avons également mené une étude d'événements pour connaître la réaction des cours des actions et la rapidité avec laquelle le marché réagit. Ensuite, dans une perspective plus longue que celle caractérisant une étude d'événement, nous examinons également l'évolution de certains indicateurs financiers afin de voir si d'entre eux sont affectés à plus long terme par les décisions des Imams, et montrer ainsi s'ils peuvent ou non influencer la santé financière des entreprises. Dans l'affirmative, cela pourrait tout à fait justifier pourquoi les agences de notation devraient prendre en compte le « facteur religion » lorsqu'elles opèrent dans un tel environnement religieux.

Au regard de notre hypothèse relative au comportement du marché boursier en réaction aux annonces des agences de notation, nos résultats montrent que les marchés boursiers du CCG réagissent positivement (négativement) aux événements de notation positifs (négatifs), et que les marchés considèrent ces annonces comme respectivement une bonne (mauvaise) nouvelle. Fait intéressant, nous constatons que la réponse survient effectivement plus rapidement sur les marchés caractérisés par une plus faible proportion d'investisseurs. Nous faisons également le constat que les investisseurs individuels qui « ne parlent pas anglais »

ont tendance à se fier aux nouvelles traduites en arabe tandis que le groupe qui « parle très bien l'anglais » a effectivement tendance à suivre les nouvelles directement à la source d'information étrangère.

Eu égard à notre deuxième hypothèse portant sur l'influence de la religion, nos résultats témoignent d'une réaction immédiate du cours des actions sur le marché boursier saoudien aux annonces des imams, positivement aux rehaussements et négativement aux déclassements. Nous constatons également que les investisseurs « hautement religieux » déclarent suivre largement les annonces des imams et à tenir compte de leurs opinions avant d'investir sur le marché financier. De plus, ces mêmes investisseurs déclarent également être susceptibles de quitter le marché des actions et modifier substantiellement leurs choix d'investissement en l'absence d'entreprises respectant la charia sur le marché boursier.

La structure de notre thèse dans les prochains chapitres est présentée comme suit : dans le **chapitre (2)**, nous étudions le rôle joué par les agences de notation sur les marchés financiers. Dans un premier temps, nous nous appuyons sur les théories relatives au rôle des agences de notation de crédit sur les marchés boursiers (appliquées aux pays du CCG), et les justifications possibles à l'intérêt porté aux agences de notation de crédit, alors même que certains émetteurs n'émettent pas d'instruments de dette, et que le marché secondaire obligataire est particulièrement étroit. Dans un deuxième temps, nous appliquons une régression logistique pour identifier certains déterminants possibles de la probabilité (pour une entreprise) d'être noté. Après cela, nous nous référons aux études précédentes étudiant l'impact des annonces des agences de notation sur les marchés financiers (principalement les marchés boursiers), pour nous concentrer sur l'effet des annonces des agences sur les marchés boursiers étroits et/ou non-matures. Pour terminer ce chapitre, nous formulons explicitement nos **hypothèses (H1)** et **(H2)** relatives à l'impact des annonces des agences de notation sur les marchés boursiers du CCG.

Dans le **chapitre (3)**, nous mettons en exergue le possible effet des investisseurs individuels sur les marchés boursiers. Nous nous concentrons sur l'influence possible de la prédominance des investisseurs individuels sur les marchés boursiers du CCG et sur la manière dont leur comportement peut affecter celui des marchés. Ensuite, nous étudions en détail comment la langue anglaise (la langue utilisée pour publier les annonces des agences

de notation) pourrait affecter le temps de réaction sur les marchés boursiers du CCG, en raison d'un éventuel manque de compréhension de l'information parmi les investisseurs individuels. Enfin, nous réexaminons le rôle des agences de notation de crédit à la lumière de l'environnement des investisseurs du CCG. À la fin de ce chapitre, nous formulons nos **hypothèses (H3)** et **(H4)** relatives à l'influence de la prédominance des investisseurs individuels et de la langue anglaise comme véhicule de transmission d'information financière.

Dans le **chapitre (4)**, et nous fondant sur la prédominance des investisseurs individuels sur les marchés boursiers du CCG, nous mettons en évidence l'une de leurs principales caractéristiques dans l'environnement des pays du CCG, à savoir l'importance conférée à la religion. Nous examinons l'influence possible de la religion sur les marchés boursiers et les attitudes des investisseurs à l'égard du risque, ainsi que l'incidence possible de la religion sur la réponse du marché aux annonces des agences de notation. Ensuite, nous étudions les annonces des imams (savants islamiques) et décrivons la raison d'être de ces annonces, qui classent les entreprises cotées à la Bourse de l'Arabie saoudite en fonction de la « religiosité » des entreprises. Nous cherchons alors à expliquer comment ce type d'annonces peut affecter les cours des actions de la bourse saoudienne « Tadawul ». À la fin de ce chapitre, nous formulons nos **hypothèses (H5)** et **(H6)** relatives à l'influence possible de la charia.

Dans le **chapitre (5)**, nous décrivons les données et exposons les méthodologies que nous adoptons dans notre thèse. Notre première démarche méthodologique repose sur questionnaire, et la seconde prend appui sur celle des études d'événement. Dans le **chapitre (6)**, nous présentons les résultats empiriques tirés du questionnaire, et dans le **chapitre (7)** nous rendons compte des résultats de l'étude d'événement appliquée aux annonces des agences de notation de crédit sur les marchés boursiers du CCG. Pour conforter nos résultats, nous étendons notre travail en examinant les articles précédents déjà publiés (en utilisant les données brutes d'une précédente étude de mété-analyse) portant sur l'effet des annonces des agences de notation afin de mettre en exergue si la langue anglaise pourrait expliquer le délai et le temps de réaction des marchés. Dans le **chapitre (8)**, nous rendons compte des résultats de l'étude d'événement relative aux annonces des Imams et leurs effets sur les cours des actions. En complément, nous nous consacrons à évaluer l'impact possible des annonces des Imams sur la santé financière des entreprises cotées, à plus long-terme. Enfin, le **chapitre (9)** est dédié à la présentation de notre conclusion finale.

## Chapitre 2 : Revue de littérature et hypothèses concernant le rôle et l'impact des agences de notation sur les marchés boursiers du CCG

Dans ce chapitre, nous nous référons tout d'abord aux théories étudiant le rôle et les effets des décisions des agences de notation sur les marchés boursiers et obligataires, telles que celles reposant sur l'hypothèse de « *contenu informationnel* », « *de signal* », ou de « *redistribution de la richesse* ». Ensuite, nous essayons de comprendre pourquoi certaines entreprises exerçant leur activité dans les pays du CCG demanderaient à être notées par les agences de notation, alors même qu'elles n'émettent pas d'obligations. Nous supposons que l'une des raisons pour lesquelles elles recourent aux services aux agences de notation reposent sur un phénomène d'imitation, car les entreprises du même secteur sont susceptibles d'adopter des comportements mimétiques. À la fin de ce développement, nous appliquons une régression de type logit binomial afin de mettre en évidence les caractéristiques des entreprises des marchés du CCG pouvant expliquer la probabilité d'être notées (par rapport à ne pas être notées). En bref, nous constatons que les entreprises du secteur financier, ou qui ont émis des titres de créance ou les grandes entreprises sont celles qui ont la plus forte probabilité d'être notées, que ce ne soit l'être.

Dans un deuxième temps, sur la base d'études antérieures, nous rendons compte de l'impact des annonces des agences de notation sur les cours des actions. Nous concentrons notre revue de la littérature sur les marchés actions « étroits et non-matures », qui sont les plus proches dans leurs caractéristiques financières de notre étude de cas (marchés actions du GCC). Nous formulons alors nos **hypothèses (H1)** et **(H2)**, comme mentionné ci-dessous, en présupposant que les annonces des agences de notation aient un contenu informationnel à destination du marché, et que les cours des actions réagissent positivement (négativement) aux bonnes (mauvaises) nouvelles qu'elles publient.

### Hypothèse 1

**H1-1** : L'annonce d'événements de notation positive (améliorations de note, fusionnées avec les mises sous surveillance positive) sera suivie d'une réaction positive du marché boursier, ce dernier considérant cette information comme une « bonne nouvelle ».

**H1-2 :** L'annonce d'évènements de notation négatifs (dégradations de note fusionnées avec des mises sous surveillance négatives) sera suivie d'une réaction boursière négative, le marché considérant cette information comme une « mauvaise nouvelle ».

## Hypothèse 2

**H2 :** Les annonces de rating « positives » (négative) et se traduisent par une réaction plus importante en termes de rendements anormaux, relativement à ceux associés aux améliorations (dégradations) de note, uniquement.

### Chapitre 3 : Revue de littérature et hypothèses concernant la prédominance des investisseurs individuels et l'effet de la langue anglaise

Dans ce chapitre, nous illustrons l'une des caractéristiques essentielles des marchés boursiers du Conseil de coopération du Golfe (CCG), à savoir l'importance des investisseurs individuels, relativement à celle des investisseurs institutionnels. La prédominance des investisseurs individuels sur les marchés boursiers du CCG peut modifier le comportement des marchés, relativement à ceux caractérisés par une proportion moindre d'investisseurs individuels. Considérant l'environnement propre aux pays du CCG et la prédominance des investisseurs individuels sur ces marchés, nous suggérons que la langue utilisée pour publier les informations étrangères (la langue anglaise utilisée pour diffuser les annonces des agences de notation) peut affecter le comportement des acteurs du marché, et principalement les investisseurs individuels.

Nous supposons ainsi que les investisseurs individuels peuvent ne pas recevoir, absorber et comprendre les informations étrangères (les décisions des agences de notation) au moment même de la diffusion des annonces, en raison de la langue utilisée pour publier ces informations. Après nous être davantage attardés sur le comportement des investisseurs individuels sur les marchés boursiers et en particuliers sur les marchés du CCG, nous expliquons en détail comment l'annonce des agences de notation en langue anglaise pourrait affecter le temps de réaction des investisseurs individuels, et comment cette hypothèse peut nous inciter à reconsiderer le rôle des agences de notation à la lumière de l'environnement des marchés boursiers du CCG. Ce qui nous amène la fin de cette section, à formuler plus précisément notre première question de recherche : comment la prédominance des

investisseurs individuels sur les marchés boursiers du CCG peut-elle affecter la réaction du marché aux annonces des agences de notation ?

Pour rappel, nous présentons tout d'abord le comportement des investisseurs individuels sur les marchés boursiers, puis nous nous concentrerons sur leur comportement sur les marchés du CCG. Par la suite, nous présentons l'influence possible de La langue anglaise comme langue des affaires sur les marchés du CCG, ce qui nous permet de formuler nos **hypothèses (H3)** et **(H4)** comme mentionné ci-dessous :

### **Hypothèse 3**

**H3** : Dans les pays du CCG, les marchés comptant une plus grande proportion d'investisseurs individuels réagiront avec un délai supérieur aux informations des agences de notation, relativement à ceux présentant un niveau inférieur d'investisseurs individuels.

### **Hypothèse 4**

**H4-1** : Un niveau de maîtrise plus élevé de la langue anglaise influence positivement la sensibilité aux annonces des CRAs.

**H4-2** : Un niveau plus élevé de maîtrise de la langue anglaise influence positivement les investisseurs à suivre l'actualité financière en langue anglaise.

**H4-3** : Les « investisseurs non-anglophones » ont tendance à se fier davantage aux nouvelles émanant de sources en langue arabe, relativement aux « investisseurs anglophones ».

## **Chapitre 4 : Revue de littérature et hypothèses concernant l'influence de la religion et les annonces des imams**

Dans ce chapitre, nous nous concentrerons sur l'importance de la religion pour les participants au marché, en particulier les investisseurs individuels, et analysons comment les instructions islamiques peuvent affecter le comportement du marché. Nous supposons que le facteur religion (instructions de la charia) est susceptible d'avoir une influence sérieuse sur les décisions d'investissement des investisseurs individuels sur les marchés du CCG. Nous

supposons également que cette influence pourrait affecter la santé financière des entreprises, conduisant à devoir prendre en compte le facteur « religion » lors de l'attribution d'une notation de crédit dans ces pays.

Par conséquent, nous étudions l'impact de la religion sur les marchés boursiers et, dans une large mesure, comment la religion peut affecter la réponse du marché aux annonces des agences de notation de crédit sur les marchés du CCG. Nous décrivons les annonces des imams (annonces des savants islamiques) ainsi que leur rôle et leur influence sur le marché (étude de cas - Arabie saoudite). Par la suite, nous formulons notre deuxième série de questions de recherche, à savoir : comment les annonces des Imams vont-elles affecter les cours des actions des entreprises « re-classifiées » ? Quel serait le facteur dominant dans la prise de décisions des investisseurs individuels : le risque de défaut (annonces des agences de notation) ou la religion (les annonces des Imams) ? Dans les marchés caractérisés par une forte proportion d'investisseurs individuels « religieux », les agences de notation devraient-elles prendre en compte le facteur religieux dans les déterminants de la notation ?

Nous structurons ce chapitre en commençant par étudier, à la lumière de la littérature existante, l'influence de la religion sur les marchés boursiers et sur l'attitude des investisseurs à l'égard du risque. Ensuite, nous mettons l'accent sur l'influence de la religion sur le comportement des investisseurs du CCG, et en particulier sur la réaction aux décisions des agences de notation. Après cela, nous illustrons le rôle des imams et de leurs annonces en Arabie saoudite. Ce qui nous amène enfin à formuler nos **hypothèses (H5)** et **(H6)**, comme mentionné ci-dessous :

### **Hypothèse 5**

**H5-1** : Les annonces de « déclassements » par les Imams autorisés seront suivies de rendements anormaux négatifs, car le marché considère ces informations comme de mauvaises nouvelles, d'un point de vue religieux.

**H5-2** : Les annonces de « rehaussements » par les Imams autorisés seront suivies de rendements anormaux positifs, car le marché considère ces informations comme de bonnes nouvelles, d'un point de vue religieux.

### **Hypothèse 6**

**H6-1** : Un degré de « religiosité » plus élevé devrait d'autant plus inciter les investisseurs à suivre les annonces des imams.

**H6-2** : Le facteur religieux est susceptible d'affecter le désir d'acheter/vendre ou de conserver en portefeuille certains titres financiers, en fonction du statut « religieux » de l'entreprise qui les a émis.

**H6-3** : Dans le cas où les opinions des agences de notation et des imams conduisent à un conflit dans la perception qu'on les investisseurs sur la situation des entreprises, alors les investisseurs hautement religieux accorderont plus d'attention aux annonces des imams qu'aux agences de notation de crédit, pour prendre leurs décisions d'investissement.

## Chapitre 5 : Données et méthodologie

Dans ce chapitre, nous présentons les approches méthodologiques que nous avons utilisées pour tester nos hypothèses. Tout d'abord, nous avons appliqué un questionnaire afin d'examiner le comportement des investisseurs individuels en Arabie Saoudite. Cette enquête nous permet d'examiner les hypothèses que nous avons déjà formulées dans les chapitres précédents concernant la réaction aux annonces des agences de notation, l'effet de la langue anglaise et l'influence possible de la religion sur la prise de décision des investisseurs individuels (**H4 & H6**). Dans cette partie, nous décrivons le processus de distribution, les données de notre échantillon et les méthodes utilisées pour analyser nos données.

La seconde approche méthodologique que nous mobilisons est celle des études d'événement. Nous l'avons appliquée pour examiner la réaction des cours des actions à deux événements principaux : les annonces des agences de notation de crédit et les annonces des Imams. Cette approche nous permet de vérifier la pertinence des hypothèses que nous avons déjà formulées dans les chapitres précédents (**H1, H2, H3 et H5**). Nous décrivons les procédures d'estimation, les mesures de rendement anormaux et l'ensemble de données que nous avons utilisées pour ces deux types d'événements.

### A. La méthodologie du questionnaire

Un questionnaire est appliqué afin de mieux connaître l'opinion des investisseurs individuels opérant sur le marché boursier d'Arabie saoudite (Tadawul) sur les annonces des agences de notation, l'influence possible de la langue anglaise et l'impact des annonces des imams sur leur comportement. Le questionnaire est conçu pour collecter des données quantitatives en utilisant des « réponses fermées », car ce type de questionnaire est plus facile pour encourager les participants à y participer. Ce questionnaire a été distribué sur les nouveaux médias via Internet. Le premier objectif au-delà du questionnaire est d'obtenir des réponses aux questions suivantes :

**Q1.** Dans quelle mesure la langue anglaise peut-elle affecter la réaction des investisseurs individuels aux annonces des agences de notation ?

**Q2.** Dans quelle mesure les annonces religieuses (les informations annoncées par les Imams) sont-elles susceptibles d'influencer le comportement des investisseurs et leur attitude face au risque ?

Après avoir collecté et filtré les réponses des participants, nous n'avons retenu que 427 participants dans notre échantillon final. Afin d'analyser les réponses au questionnaire, nous avons appliqué deux méthodes :

1. Le test de comparaison : Nous avons comparé entre eux deux sous-groupes afin de savoir s'ils diffèrent significativement ou non. Les répondants à notre enquête sont classés dans les groupes suivants :

- A. Anglophones vs non anglophones
- B. Investisseurs religieux élevés vs investisseurs moins religieux.

2. Régression logistique : Nous avons utilisé le logiciel SPSS pour exécuter la régression logistique sur deux modèles afin d'expliquer la relation entre la variable dépendante et les variables indépendantes (expliquées en détail dans le [chapitre \(6\) section \(2\)](#)).

Le questionnaire comprend 29 questions fermées et les possibilités de réponse pour chaque question sont classifiées comme suit :

- A. Selon une échelle de Likert 5 et 7 points
- B. Selon une échelle binaire [0, 1]

## B. La méthodologie d'étude d'événements

La méthodologie a été expliquée par divers auteurs tels que Dolley (1933), MacKinlay (1997), ou Mitchell and Mulherin (1994). Nous avons utilisé la méthode d'étude d'événements, développée par Brown and Warner (1985) and Fama et al. (1969), afin d'examiner la réaction du marché boursier et de capter d'éventuels rendements anormaux, en réponse aux annonces des agences de notation et aux annonces des Imams. Nous avons appliqué le modèle de marché uni-factoriel et un processus GARCH (p,q) pour estimer les paramètres du modèle de marché.

La période d'estimation utilisée pour estimer les paramètres du modèle comprend 120 jours [-140, -20], alors qu'une période de 41 jours [-20, +20] est considérée comme la période d'événement. Ceci étant défini, nous avons calculé les rendements anormaux moyens, les rendements anormaux cumulés et les rendements anormaux moyens cumulés (RAACs). Ensuite, pour tester la signification des RAACs, nous avons appliqué un t-test comme test paramétrique ainsi que deux tests non paramétriques (one-sample sign test & one-sample Wilcoxon signed-rank test).

## Chapitre 6 : Questionnaire - Résultats et discussion

Ce chapitre analyse l'ensemble des données extraites du questionnaire qui a été distribué aux investisseurs individuels en Arabie saoudite (cf. annexe (2) pour le questionnaire complet). Il convient de rappeler que ce questionnaire vise tout d'abord à examiner le comportement des investisseurs individuels concernant l'effet possible de la langue anglaise sur la réaction des individus aux annonces des agences de notation. Il s'agit de déterminer si la langue anglaise comme langue utilisée pour annoncer les décisions des agences de notation a une influence sur le temps de réaction des investisseurs individuels ou non. Deuxièmement, il a pour objectif de mieux comprendre l'influence de la religion sur la prise de décisions d'investissement parmi les investisseurs individuels. En outre, il vise également à révéler quel est le facteur considéré comme le plus important pour les investisseurs individuels, la « religiosité » de l'entreprise ou sa note de crédit, illustrant son risque de défaut. Nous ambitionnons de tester nos **hypothèses (H4)** et **(H6)**, pour les accepter ou au contraire les

rejeter. L'examen de ces hypothèses nous aidera à renforcer notre analyse et notre interprétation dans les chapitres à venir, ainsi qu'à renforcer d'autres hypothèses.

Afin d'examiner les hypothèses formulées (**H4**) et (**H6**), nous effectuons d'abord un test de comparaison entre les sous-groupes des investisseurs qui « parlent anglais » et ceux qui « ne parlent pas anglais », puis entre les sous-groupes des « investisseurs hautement religieux » et ceux qui sont « moins religieux ». Ensuite, nous effectuons deux régressions logistiques binomiales différentes pour savoir si nos deux variables dépendantes «*Care about CRAs*» (qui est la probabilité que les répondants au sondage déclarent qu'ils se soucient des annonces des agences de notation, par rapport à la probabilité de ne pas se soucier des annonces des agences de notation) et les «*Translated news*» (qui représente la probabilité que les répondants au sondage déclarent s'appuyer sur des nouvelles traduites en arabe pour prendre leurs décisions d'investissement, relativement à la probabilité de ne pas s'appuyer sur des nouvelles traduites) dépendent significativement d'un ensemble de variables collectées et construites à cet effet.

## Chapitre 7 : Étude d'événement - Résultats et discussions de l'impact des annonces des agences de notation sur les cours des actions

Ce chapitre présente les résultats de l'étude d'événements réalisée sur les marchés boursiers des six pays du CCG afin de déterminer si les annonces des agences de notation de crédit contiennent une valeur informative et affectent ou non en réponse les cours des actions dans ces pays. Ce développement nous permet de vérifier la pertinence de nos hypothèses (**H1**, **H2** et **H3**) concernant l'impact des décisions des agences sur les cours des actions, mais également de caractériser le temps de réaction du marché après l'événement, corroborant ainsi une éventuelle influence de la langue anglaise liée à la prédominance des investisseurs individuels sur ces marchés. Par conséquent, notre travail analyse en détail la réaction du marché boursier sur les fenêtres post-événement et plus brièvement sur la période pré-événement. Les résultats sont présentés comme suit :

1. Étude de cas : Arabie saoudite
2. Étude de cas : les six pays du CCG réunis (Arabie saoudite, Émirats arabes unis, Qatar, Koweït, Bahreïn, Oman)

## Chapitre 8 : Etude d'événement - Résultats et discussion de l'impact des annonces des Imams sur les cours des actions

Ce chapitre étudie l'influence possible des annonces des Imams sur les cours des actions à la Bourse saoudienne (Tadawul). En effet, si l'on se rapporte aux réponses apportées à notre questionnaire, la majorité des investisseurs individuels devraient être fortement liés à l'orientation islamique, ce qui consisterait à investir dans des entreprises conformes à la charia et à éviter les « actions impures ». De plus, il semble qu'ils suivent majoritairement les annonces des Imams portant sur la re-classification des entreprises. Par conséquent, nous menons une étude d'événement sur les annonces des Imams pour mettre en évidence l'existence de rendements anormaux provenant soit des « déclassements » des entreprises conformes à la charia vers des entreprises non-conformes à la charia, soit des « sur classements » des entreprises non-conformes à la charia vers entreprises conformes à la charia. Cette étude nous permettra de confirmer ou de rejeter notre **hypothèse (H5)** concernant l'impact des annonces religieuses sur les cours des actions sur le marché saoudien, et de savoir si le facteur religion joue un rôle important sur le marché saoudien comme on s'y attendait ou non.

À notre connaissance, ce type d'étude n'a jamais été réalisé dans la littérature consacrée à la finance islamique. La raison de cette inexistence pourrait provenir du fait que ce type d'annonces n'existe que sur le marché boursier saoudien. Il s'agit du seul marché, où il y a des spécialistes des lois de la finance islamique qui analysent l'activité principale des entreprises, ainsi que leurs décisions de nature financière, sur une base annuelle, pour décider et annoncer publiquement si chacune des sociétés cotées doit être classée comme entreprise conforme à la charia ou non.

Ce chapitre questionne également l'existence d'un lien à plus long terme entre les annonces de nature religieuse et l'activité de notation : il cherche à montrer à travers une démarche statistique simple si les annonces des Imams peuvent affecter à plus long terme le comportement des investisseurs et leurs décisions financières, et par là-même, la santé financière des entreprises. Pour finir, nous suggérons que le facteur religion devrait prendre une place dans les déterminants des décisions des agences de notation, dans les pays islamiques.

## Chapitre 9 : Conclusion finale

Nos recherches sont principalement dédiées à l'analyse des marchés boursiers des pays du CCG (Arabie Saoudite, Emirats Arabes Unis, Qatar, Koweït, Oman et Bahreïn) et de leur environnement financier, et plus spécifiquement, du comportement des investisseurs et de leurs caractéristiques. Nous étudions spécifiquement la réaction du marché boursier aux annonces des agences internationales de notation de crédit (CRAs) et des Imams (religieux). La raison de cette analyse est que, bien que la littérature financière liée à la finance islamique soit assez importante, elle ne couvre pas encore largement les marchés financiers du CCG. En outre, presque aucune des études précédentes n'a été consacrée à l'influence des agences de notation sur le marché financier du CCG, ni à l'impact des annonces des Imams.

D'un point de vue économique et financier, les marchés du CCG peuvent être distingués des autres marchés matures et non-matures. Une caractéristique commune est que les marchés obligataires sont encore assez étroits, ce qui peut être paradoxal pour expliquer le rôle croissant des agences de notation de crédit. De plus, la majorité des émetteurs privés semblent demander des services de notation, mais n'émettent pas d'obligations. Par conséquent, nous avons d'abord cherché à mener une enquête plus approfondie pour justifier cette augmentation de la demande (cf. [chapitre 2](#)). Nous avons signalé que, compte tenu des caractéristiques institutionnelles, l'augmentation de la demande de services des agences de notation pourrait être déclenchée par un comportement de mimétisme parmi les sociétés. Nous avons également cherché à examiner plusieurs déterminants pour découvrir ceux qui peuvent influencer les cotes d'une entreprise à évaluer. Nous avons principalement constaté que les institutions financières, les grandes entreprises et les sociétés qui émettent d'obligations, etc. ont des cotes plus élevées à évaluer.

La deuxième caractéristique intéressante que nous soulignons est la prédominance des investisseurs individuels sur les marchés boursiers, car environ 90% des transactions quotidiennes sont effectuées par des particuliers sur certains des marchés du CCG. Ainsi, les différences de comportement des investisseurs individuels et des investisseurs institutionnels sont susceptibles d'affecter le comportement des marchés boursiers. Les investisseurs individuels peuvent agir différemment des investisseurs institutionnels, non seulement en raison de leur faible niveau de connaissances techniques en finance, mais également en

raison de leur faible connaissance de la langue anglaise et de leur religiosité, qui est l'une de nos hypothèses. Compte tenu de ces spécificités, la connaissance financière ainsi que la connaissance de l'anglais des investisseurs individuels sont supposées affecter la réaction du marché aux annonces des agences de notation (cf. [chapitre 3](#)). Concernant la religiosité, nous considérons que la religion est susceptible de jouer un rôle essentiel, qui peut affecter le marché financier au moins autant que les indicateurs financiers pourraient le faire. Plus précisément, nous supposons que la religion peut influencer le comportement des investisseurs et leurs décisions d'investissement, ce qui pourrait conduire à affecter la santé financière des entreprises (cf. [chapitre 4](#)).

Ainsi, afin de confirmer (ou rejeter) et renforcer nos hypothèses, nous avons d'abord construit et mis en œuvre une grande enquête, via Internet. L'objectif principal de cette enquête était de collecter plus d'informations sur les investisseurs individuels et d'acquérir une meilleure connaissance de leur comportement. Deuxièmement, nous avons construit une base de données financière exhaustive concernant les événements de notation de crédit en utilisant Bloomberg et d'autres sources financières pour les six pays du CCG, afin de vérifier davantage nos hypothèses. Cette base de données contient également les rendements des actions et des marchés, ainsi qu'un ensemble d'indicateurs financiers. Outre ces observations financières, nous avons également collecté des données concernant les annonces des Imams, qui incluent les événements religieux (afin de calculer les éventuels rendements anormaux du marché). Ces deux bases de données différentes présentent une valeur intrinsèque, au sens où elles constituent un ensemble d'informations complet couvrant les marchés financiers du CCG. En outre, elles peuvent être utiles ultérieurement pour d'autres chercheurs qui visent à approfondir les recherches sur les marchés financiers du CCG.

Concernant nos hypothèses, nous postulons que l'annonce des décisions de notation en langue anglaise peut induire une asymétrie d'information sur les marchés du CCG, au détriment des investisseurs individuels, en raison de leur niveau d'anglais inférieur, car la langue maternelle de ces pays est Arabe. Nous supposons également que le facteur religion joue un rôle essentiel sur les marchés financiers, où les annonces des imams pourraient avoir un impact sur les décisions d'investissement des individus.

Pour une meilleure illustration de nos découvertes, nous présentons notre synthèse subdivisée en deux parties :

1. La réaction du marché boursier aux annonces des agences de notation
  - L'effet de la langue anglaise sur les acteurs du marché
2. La réaction du marché boursier aux annonces des Imams
  - L'effet du facteur de religion sur les décisions des investisseurs

### **1. La réaction du marché boursier aux annonces des agences de notation**

Nous avons appliqué une méthodologie d'étude d'événements appropriée (avec des tests paramétriques et non paramétriques, en nous appuyant sur un processus GARCH (p,q) pour mieux estimer les paramètres du modèle de marché) afin de déterminer si les annonces des agences de notation de crédit affectent les cours des actions des entreprises en Pays du CCG. Pour le marché saoudien, nos résultats montrent que les événements positifs (améliorations et de mises sous surveillances positifs) sont suivis d'une réaction positive du marché, et les événements négatifs (uniquement les dégradations) par une réaction négative du marché (voir [chapitre 7, section 1](#)). Les résultats confirment que les annonces des agences de notation ont une valeur informative, confirmant ainsi l'hypothèse de « information content hypothesis » et « signal hypothesis ».

Les autres marchés boursiers du CCG montrent une réaction similaire au marché saoudien, où les événements positifs (améliorations et mises sous surveillances positifs) sont suivis d'une réaction positive du marché, et les événements négatifs (dégradations et mises sous surveillances négatives) sont suivis d'une réaction négative du marché ([cf. chapitre 7, section 2](#)). Cependant, nous constatons certaines différences entre les pays, en ce qui concerne le temps de réaction : la réponse du marché aux événements positifs se produisant dans les grandes fenêtres post-événement pour l'Arabie Saoudite et les Émirats Arabes Unis, tandis que la réaction se produit rapidement le jour de l'événement, pour Qatar, Koweït et Oman. Nous croyons que l'une des principales raisons de qui peuvent expliquer ces différences est la proportion des investisseurs individuels, en déclarant qu'une grande proportion d'investisseurs individuels dans un marché boursier augmente la probabilité d'avoir également une réaction plus longue aux informations étrangères.

Selon le questionnaire que nous avons construit et mis en œuvre ([cf. chapitre 6](#)), nous constatons que les investisseurs individuels en Arabie saoudite s'appuient davantage sur des sources arabes et les nouvelles traduites (vers la langue arabe) que sur des sources étrangères pour prendre leurs décisions. Nous pensons que c'est en raison du faible niveau de connaissance de l'anglais parmi les investisseurs individuels. Cette caractéristique suggère que les investisseurs sophistiqués peuvent recevoir les informations étrangères (annonces des agences de notation) avant les investisseurs individuels en raison du temps nécessaire aux individus pour recevoir, absorber et comprendre la langue de publication de ces informations. Ainsi, les résultats confirment notre hypothèse selon laquelle les investisseurs individuels ont besoin de plus de temps pour recevoir, digérer et comprendre les informations annoncées dans une langue étrangère (langue anglaise) à comparer aux investisseurs institutionnels.

En ce qui concerne les études précédentes concernant la réaction aux annonces des agences de notation (les données brutes d'une précédente étude de métanalyse) ([cf. chapitre 7, section 3](#)), nous constatons que les marchés des pays non anglophones réagissent dans des fenêtres post-événement plus longues, par rapport aux marchés des pays anglophones. Nous soutenons que le retard de réaction des marchés non anglophones par rapport aux marchés anglophones pourrait résulter de cette barrière linguistique.

Ces résultats nous amènent à conclure que les agences de notation de crédit peuvent ne pas réduire sensiblement l'asymétrie d'information sur certains marchés financiers, tels que les marchés du CCG, car elles publient leurs informations importantes dans une langue spécifique (l'anglais) qui n'est pas la langue maternelle des intervenants sur ces marchés (l'arabe sur les marchés du CCG). Bien que certaines études soutiennent l'idée que les services des agences de notation de crédit peuvent améliorer l'efficience du marché, cet effet pourrait être remis en question, dans la mesure où la réduction de l'asymétrie d'information pourrait être plus importante pour les marchés où la majorité des investisseurs sont « sophistiqués » et comprennent facilement le langage des informations divulguées. Au contraire, si un marché est dominé par des investisseurs individuels, qui ne parlent pas la même langue que les annonces publiées, nous supposons que les informations ne sont pas diffusées efficacement car la minorité (les investisseurs « sophistiqués ») bénéficie d'un avantage comparatif sur la majorité.

Par conséquent, les agences de notation crédit devraient tenir compte de la prédominance des investisseurs individuels, afin de savoir s'il est pertinent d'effectuer leurs annonces uniquement en anglais ou si elles doivent annoncer simultanément en anglais et dans la langue maternelle du marché d'intérêt (en arabe dans notre cas).

## 2. La réaction du marché boursier aux annonces des Imams

Dans cette partie, notre travail tente de montrer si les annonces des Imams ont un impact sur le marché financier en Arabie Saoudite ou non. La période d'étude s'étend de 2004 à 2016. Il se concentre uniquement sur les rehaussements purs (reclassification des entreprises non conformes à la charia vers des entreprises conformes à la charia) et les déclassements purs (reclassification des entreprises conformes à la charia vers des entreprises non conformes à la charia), à vérifier si ces annonces affectent la décision des investisseurs de détenir, d'acheter ou de vendre les actions.

Notre questionnaire révèle que deux tiers des investisseurs individuels sont très religieux et prêtent attention aux annonces des imams. Ils ont tendance à se débarrasser des actions une fois classées non-conformes à la charia (cf. chapitre 6). Nous constatons également que les investisseurs très religieux sont susceptibles de quitter le marché boursier et de modifier leurs choix d'investissement au cas où il n'y aurait plus d'entreprises cotées conformes à la charia sur le marché financier.

En ce qui concerne les résultats empiriques de l'étude des événements appliquée aux annonces des Imams, nous constatons que les déclassements des Imams sont suivis d'une réaction négative du marché boursier juste après le jour de l'événement, et que cette information est considérée comme une mauvaise nouvelle. Symétriquement, les rehaussements des imams sont suivis d'une réaction positive du marché boursier juste après le jour de l'événement, et cette information est considérée comme de bonne nouvelle. Notre étude indique donc que ces annonces ont un réel contenu informationnel à destination du marché (cf. chapitre 8, section 1).

De plus, nous constatons que la réaction du marché aux déclassements des Imams est supérieure aux rehaussements des Imams. Nous supposons cette différence de réaction est due au fait que les entreprises non-conformes à la charia avant les rehaussements étaient

exclus des possibilités d'investissement pour les investisseurs religieux (c'est-à-dire qu'il était considéré comme religieusement interdit d'acheter ces titres). Par conséquent, après le rehaussement d'une entreprise (ce qui signifie que la barrière religieuse est supprimée), les investisseurs peuvent avoir besoin de temps pour analyser correctement les « nouveaux titres disponibles », cette fois-ci d'un point de vue financier, afin de décider d'un achat ou non. Au contraire, la réaction rapide aux déclassements des imams est peut être due au fait que ces titres ne sont brutalement plus souhaités par les investisseurs religieux, ce qui les conduit à vendre et à «se débarrasser » rapidement des actions « déclassées ».

Nous étudions également l'effet possible des annonces des Imams sur le long terme ([cf. chapitre 8, section 2](#)). Nous examinons ainsi l'évolution des indicateurs financiers pour les sociétés cotées en bourse et reclasées par les Imams. Nous ne trouvons aucune influence claire sur les indicateurs financiers considérés, à l'exception de deux d'entre eux : le ratio de levier financier et le nombre d'actions détenues par les investisseurs institutionnels. Le ratio de levier financier des entreprises déclassées s'avère ainsi nettement supérieur à celui des entreprises réhaussées. Et le nombre d'actionnaires institutionnels diminue considérablement parmi les entreprises déclassées par rapport aux entreprises réhaussées, ce qui peut être dû à l'orientation islamique de certains des investisseurs institutionnels.

**Par conséquent**, nous suggérons aux agences de notation de crédit de prendre en considération le facteur religieux et de l'appliquer dans leurs déterminants de notation lors de l'évaluation des entreprises dans les pays religieux présentant une forte proportion d'investisseurs individuels sur le marché financier.

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## Appendices

*Appendix 1: Yearly Closing Values of the Tadawul All Share Index (TASI) Since 1994*

End of year	Value	End of year	Value
1994	1282.87	2005	16712.64
1995	1367.56	<b>25/02/2006</b>	<b>(MAX) 20634.86</b>
1996	1531	2006	7933.29
1997	1957.8	2007	11038.66
1998	1413.1	2008	4802.99
1999	2028.53	2009	6121.76
2000	2258.29	2010	6620.75
2001	2430.11	2011	6417.73
2002	2518.08	2012	6801.22
2003	4437.58	2013	8535.6
2004	8206.23	2014	8333.3

Source: Bloomberg

*Appendix 2: The survey*

- **The stock market:** this part is to discover the financial background of the investor/ trader. This part consists of 7 questions.
  1. Do you trade or have you ever traded in stock market?
    - a. Yes.
    - b. I trade/invest only through the IPOs.
    - c. No.
  2. In which period did you start your first trading in the stock market?
    - a. In or before the year 2006.
    - b. After 2006.
    - c. I have never traded in stock market.
  3. When you started for the first time in stock market, did you have any financial background about how to trade or invest in stock market? Please choose on the scale below: Where (Novice) indicate that you did not have any financial background about how to trade in stock market, and (Expert) indicate that you had an advanced financial background to trade efficiently in stock market.

	Novice	Less than intermediate	intermediate	proficient	Expert
How was your financial background regarding how to trade or invest when you started for the first time in stock market?	0	0	0	0	0

4. Which of the methods below you use regularly?

*(Please choose on a scale from 1 to 7, where 1 means you do not use this method at all, and 7 means you use this method mainly)*

Methods	1 I do not use at all	2	3	4	5	6	7 I use mainly
a. A shares portfolio and I trade by myself	o	o	o	o	o	o	o
b. A shares portfolio and it is managed by professionals	o	o	o	o	o	o	o
c. Investing through investment funds	o	o	o	o	o	o	o
d. Trading/investing in IPOs	o	o	o	o	o	o	o

5. How often do you sell or buy in stock market?

	Never	Seldom	Sometimes	Often	Always
a. In a daily basis	o	o	o	o	o
b. In a weekly basis	o	o	o	o	o
c. In a monthly basis	o	o	o	o	o
d. In a yearly basis	o	o	o	o	o

6. Which type of trading you tend to follow usually?

	Never	Seldom	Sometimes	Often	Always
a. Long-term trading (to keep the stocks more than 3 year)	o	o	o	o	o
b. Medium-term trading (to keep the stocks from 1 to 3 years)	o	o	o	o	o
c. Short-term trading (to keep the stocks less than a year)	o	o	o	o	o

7. If there is an investment opportunity where you pay 1000 SR and you get the capital + profits within a year, which level of risk and return you prefer?

- a. You pay 1000 SR now and you get back 1100 SR in a year with 95% probability of success in the investment.
- b. You pay 1000 SR now and you get back 1250 SR in a year with 75% probability of success in the investment.
- c. You pay 1000 SR now and you get back 1500 SR in a year with 50% probability of success in the investment.
- d. You pay 1000 SR now and you get back 1750 SR in a year with 25% probability of success in the investment.
- e. You pay 1000 SR now and you get back 2000 SR in a year with 5% probability of success in the investment.

- **Individuals' interests:**

This part consists of 4 questions concerning the individuals' interests.

8. Do you care whether the company that you are going to trade in is a Shariah compliant firm or not?

- I extremely care.
- I moderately care.
- Neutral.
- I slightly care.
- I do not care at all.

9. In which type of companies do you trade?

- I trade only in Shariah compliant firms.
- I trade only in non-Shariah compliant.
- I trade in both types Shariah compliant and non-Shariah compliant firms.

10. Prior the IPOs or purchasing shares, to which extent do you seek the announcements of the authorised Imams regarding the list of Shariah compliant firms?

- Always.
- Often.
- Sometimes.
- Seldom.
- Never.

11. If you are trading in a company and one of the authorised Imams announced that this firm became non Shariah compliant this year due to suspicious transaction; however, you know that the investment in this company is profitable, what would you do?

		Absolutely not	Probably not	Possibl e	Probably yes	Absolutely Yes
a.	You keep investing in this company.	<input type="radio"/>				
b.	You sell this company's shares and buy in another Shariah compliant firm.	<input type="radio"/>				
c.	You sell this company's shares and buy in any firm, either Shariah compliant or not.	<input type="radio"/>				

- **Credit Rating Agencies:** this part consists of 6 questions.

12. Do you know what the Credit rating agencies are?

- Yes
- No

13. Do you know any of these names (Standard & Poor's, Moody's, or Fitch)?

- a. Yes
- b. No

14. To which extent do you care about the announcements of credit rating agencies concerning the listed companies in the stock market?

- a. I extremely care.
- b. I moderately care.
- c. Neutral.
- d. I slightly care.
- e. I do not care at all.

15. Prior IPOs or purchasing shares, to which extent do you seek the announcements and decisions of the Credit Rating Agencies regarding the credit rating/creditworthiness of the company you want to trade/invest in?

- a. Always.
- b. Often.
- c. Sometimes.
- d. Seldom.
- e. Never.

16. If you are trading in a company in the stock market, and one of the international Credit Rating Agencies downgraded this company (e.g. due to fears of not being able to meet its financial obligations), what would you do?

		Absolutely not	Probably not	Possibl e	Probably yes	Absolutely Yes
a.	Keep investing in this company.	o	o	o	o	o
b .	You sell the company's shares and invest in another stock with better rating.	o	o	o	o	o
c.	You sell the company's shares and invest in other stocks despite their rating.	o	o	o	o	o

17. Hypothetically, if you are investing/trading in Sharia-compliant firms and at one time all the Sharia firms were downgraded by the Credit Rating Agencies (Standard & Poor's, Moody's, Fitch), due to an increase in the risk of these companies, what would you do?

		Absolutely not	Probably not	Possibl e	Probably yes	Absolutely Yes
a.	You keep your investments in these firms (Sharia-compliant firms).	<input type="radio"/>				
b.	You move your investments to non-Sharia compliant firms, that did not experience the same downgrade by the CRAs.	<input type="radio"/>				
c.	You may leave the stock market and change the investment field.	<input type="radio"/>				

**The information source and Decisions making:** this part consists of 5 questions

18. Please rate the importance of the following sources of information in terms of using them to build your decisions on buying or selling stocks:

The source	Not important at all	Slightly important	Moderately important	Important	Very important
a. The official websites (Tadawul, Mubasher, Argaam).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. The forums on the internet and Social Media.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. TV channels, Newspapers and radio.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Banker advisers or financial analysts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Advices from family, friends and relatives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Do you follow any foreign sources (or local sources) but in English language regarding the Saudi stock market?

- a. Always.
- b. Often.
- c. Sometimes.
- d. Seldom.
- e. Never: I do not follow the sources in English language.

20. Do you rely on the foreign sources (announced in English language) regarding the Saudi stock market to obtain information and build up your investment decisions: To which extent do you agree or disagree with each of the following answers?

	Strongly disagree	Disagree	Neuter	Agree	Strongly agree
a. I mainly rely on the foreign sources to reach my investment decisions.	<input type="radio"/>				
b. I follow the foreign sources but I do not rely on them to reach my investment decisions.	<input type="radio"/>				
c. I do not follow the foreign reports regarding the Saudi stock market. However, if I received any, even accidentally, it may affect my investment decision.	<input type="radio"/>				
d. I rely only on the Arabic sources to reach my investment decisions.	<input type="radio"/>				

21. If you read or hear in the Saudi Media or in the Arabic Media in general some information about the listed firms in the Saudi stock market translated from foreign Media into the Arabic language, do you rely on this type of information (translated information from foreign sources) to build your investment decisions?

- a. Always.
- b. Often.
- c. Sometimes.
- d. Seldom.
- e. Never.

22. Which of the following approaches you take in evaluating a stock and/or reaching investment decisions?

		Never	Seldom	Sometimes	Often	Always
a.	By myself: Fundamental Approach, i.e., analysis of such fundamental factors as general business conditions, industry and economy outlook, earnings, dividends, quality of management, etc.	o	o	o	o	o
b.	By myself :Technical Approach, i.e. charts and statistical analysis of market factors such as stock price movement, volume, support and resistance level, moving averages, etc.	o	o	o	o	o
c.	Rely primarily on brokerage firm or investment counsellors' advice	o	o	o	o	o
d.	Rely primarily on recommendations from family, friends or relative	o	o	o	o	o

Meant by the term (By myself) is to use and apply the approach personally.

- **Participant information:** This part is only to know the characteristics of the participant on this study (anonymously), and consists of 8 questions.

23. How do you rate your level in English language?

The level	I do not speak English at all	Beginner	Intermediate	Upper-intermediate	advanced
How is your level in English language	o	o	o	o	o

24. Age:

- Less than 25
- 26 to 35
- 36 to 45
- 46 to 55
- 56 or over

25. Sex:

- Male
- Female

26. Education:

- Less than High school
- High school
- Diploma or Bachelor degree
- Master's degree
- Doctorate

27. Occupation:

- a. Public sector.
- b. Private sector.
- c. Self-employed.
- d. Student.
- e. Other.

28. How much is your monthly income:

- a. Less than 5,000 SAR
- b. Between 5,000 SAR and 10,000 SAR
- c. Between 10,000 SAR and 25,000 SAR
- d. Between 25,000 SAR and 50,000 SAR
- e. Over 50,000 SAR

29. How much money have you invested until now in the stock market in total?

- a. 50,000 SAR or less
- b. Between 50,000 SAR and 500,000 SAR
- c. Between 500,000 SAR and 1,000,000 SAR
- d. Between 1,000,000 SAR and 5,000,000 SAR
- e. Over 5,000,000 SAR

*Appendix 3: the critical values of W/S for the normality test*

Columns *a* denote the lower boundaries or the left-sided critical values.  
Columns *b* denote the upper boundaries or the right-sided critical values.

<i>n</i>	Level of significance <i>α</i>											
	0.000		0.005		0.01		0.025		0.05		0.10	
	<i>a</i>	<i>b</i>	<i>a</i>	<i>b</i>	<i>a</i>	<i>b</i>	<i>a</i>	<i>b</i>	<i>a</i>	<i>b</i>	<i>a</i>	<i>b</i>
3	1.732	2.000	1.735	2.000	1.737	2.000	1.745	2.000	1.758	1.999	1.782	1.997
4	1.732	2.449	1.82	2.447	1.87	2.445	1.93	2.439	1.98	2.429	2.04	2.409
5	1.826	2.828	1.98	2.813	2.02	2.803	2.09	2.782	2.15	2.753	2.22	2.712
6	1.826	3.162	2.11	3.115	2.15	3.095	2.22	3.056	2.28	3.012	2.37	2.949
7	1.871	3.464	2.22	3.369	2.26	3.338	2.33	3.282	2.40	3.222	2.49	3.143
8	1.871	3.742	2.31	3.585	2.35	3.543	2.43	3.471	2.50	3.399	2.59	3.308
9	1.897	4.000	2.39	3.772	2.44	3.720	2.51	3.634	2.59	3.552	2.68	3.449
10	1.897	4.243	2.46	3.935	2.51	3.875	2.59	3.777	2.67	3.685	2.76	3.57
11	1.915	4.472	2.53	4.079	2.58	4.012	2.66	3.903	2.74	3.80	2.84	3.68
12	1.915	4.690	2.59	4.208	2.64	4.134	2.72	4.02	2.80	3.91	2.90	3.78
13	1.927	4.899	2.64	4.325	2.70	4.244	2.78	4.12	2.86	4.00	2.96	3.87
14	1.927	5.099	2.70	4.431	2.75	4.34	2.83	4.21	2.92	4.09	3.02	3.95
15	1.936	5.292	2.74	4.53	2.80	4.44	2.88	4.29	2.97	4.17	3.07	4.02
16	1.936	5.477	2.79	4.62	2.84	4.52	2.93	4.37	3.01	4.24	3.12	4.09
17	1.944	5.657	2.83	4.70	2.88	4.60	2.97	4.44	3.06	4.31	3.17	4.15
18	1.944	5.831	2.87	4.78	2.92	4.67	3.01	4.51	3.10	4.37	3.21	4.21
19	1.949	6.000	2.90	4.85	2.96	4.74	3.05	4.56	3.14	4.43	3.25	4.27
20	1.949	6.164	2.94	4.91	2.99	4.80	3.09	4.63	3.18	4.49	3.29	4.32
25	1.961	6.93	3.09	5.19	3.15	5.06	3.24	4.87	3.34	4.71	3.45	4.53
30	1.966	7.62	3.21	5.40	3.27	5.26	3.37	5.06	3.47	4.89	3.59	4.70
35	1.972	8.25	3.32	5.57	3.38	5.42	3.48	5.21	3.58	5.04	3.70	4.84
40	1.975	8.83	3.41	5.71	3.47	5.56	3.57	5.34	3.67	5.16	3.79	4.96
45	1.978	9.38	3.49	5.83	3.55	5.67	3.66	5.45	3.75	5.26	3.88	5.06
50	1.980	9.90	3.56	5.93	3.62	5.77	3.73	5.54	3.83	5.35	3.95	5.14
55	1.982	10.39	3.62	6.02	3.69	5.86	3.80	5.63	3.90	5.43	4.02	5.22
60	1.983	10.86	3.68	6.10	3.75	5.94	3.86	5.70	3.96	5.51	4.08	5.29
65	1.985	11.31	3.74	6.17	3.80	6.01	3.91	5.77	4.01	5.57	4.14	5.35
70	1.986	11.75	3.79	6.24	3.85	6.07	3.96	5.83	4.06	5.63	4.19	5.41
75	1.987	12.17	3.83	6.30	3.90	6.13	4.01	5.88	4.11	5.68	4.24	5.46
80	1.987	12.57	3.88	6.35	3.94	6.18	4.05	5.93	4.16	5.73	4.28	5.51
85	1.988	12.96	3.92	6.40	3.99	6.23	4.09	5.98	4.20	5.78	4.33	5.56
90	1.989	13.34	3.96	6.45	4.02	6.27	4.13	6.03	4.24	5.82	4.36	5.60
95	1.990	13.71	3.99	6.49	4.06	6.32	4.17	6.07	4.27	5.86	4.40	5.64
100	1.990	14.07	4.03	6.53	4.10	6.36	4.21	6.11	4.31	5.90	4.44	5.68
150	1.993	17.26	4.32	6.82	4.38	6.64	4.48	6.39	4.59	6.18	4.72	5.96
200	1.995	19.95	4.53	7.01	4.59	6.84	4.68	6.60	4.78	6.39	4.90	6.15
500	1.998	31.59	5.06	7.60	5.13	7.42	5.25	7.15	5.47	6.94	5.49	6.72
1000	1.999	44.70	5.50	7.99	5.57	7.80	5.68	7.54	5.79	7.33	5.92	7.11

Source: (Kanji, 2006, p.210)

*Appendix 4: the distribution of the sample*

	Features	Frequency	Ratio
Gender	Male	408	95.55%
	Female	19	4.45%
Level of English	Don't speak	43	10.07%
	Beginner	91	21.31%
Age	Intermediate	105	24.59%
	Upper	88	20.61%
Education	Advance	100	23.42%
	Less than 25	15	3.51%
Occupation	26 to 35	89	20.84%
	36 to 45	170	39.81%
Monthly Income	46 to 55	114	26.70%
	56 or over	39	9.13%
Money invested	Less than High School	11	2.58%
	High School	81	18.97%
Channel of participating	Diploma or Bachelor degree	247	57.85%
	Master	67	15.69%
Occupation	PhD	21	4.92%
	Public sector	221	51.76%
Monthly Income	Private sector	104	24.36%
	Self-employed	42	9.84%
Money invested	Student	9	2.11%
	Other	51	11.94%
Monthly Income	a. Less than 5,000 SAR	33	7.73%
	b. Between 5,000 SAR and 10,000 SAR	78	18.27%
Money invested	c. Between 10,000 SAR and 25,000 SAR	232	54.33%
	d. Between 25,000 SAR and 50,000 SAR	54	12.65%
Channel of participating	e. Over 50,000 SAR	30	7.03%
	a. 50,000 SAR or less	54	12.65%
Money invested	b. Between 50,000 SAR and 500,000 SAR	182	42.62%
	c. Between 500,000 SAR and 1,000,000 SAR	90	21.08%
Channel of participating	d. Between 1,000,000 SAR and 5,000,000 SAR	73	17.10%
	e. Over 5,000,000 SAR	28	6.56%
Channel of participating	Forums	328	76.81%
	Other channels	99	23.19%

Type of firms to trade in Q9	Only Sharia	273	63.93%
	Sharia and non-Sharia	154	36.07%
Risk attitude Q7	95% of success	123	28.81%
	75% of success	115	26.93%
	50% of success	124	29.04%
	25% of success	14	3.28%
	5% of success	51	11.94%
Do you know what the CRAs are Q12	Yes	250	58.55%
	No	177	41.45%
Q14 do you care about CRAs announcements	a. I extremely care.	38	8.90%
	b. I moderately care.	117	27.40%
	c. Neutral.	74	17.33%
	d. I slightly care.	85	19.91%
	e. I do not care at all.	113	26.46%
Q8 Do u care about Sharia	a. I extremely care.	202	47.31%
	b. I moderately care.	121	28.34%
	c. Neutral.	37	8.67%
	d. I slightly care.	30	7.03%
	e. I do not care at all.	37	8.67%

## Appendix 5

Coefficients <sup>a</sup>		
Model	Collinearity Statistics	
	Tolerance	VIF
1	Total Assets	.869
	Net Profit	.992
	Long Term Debt	.871
		1.151
		1.008
		1.148

a. Dependent Variable: Rated companies

## Appendix 6

		Coefficients <sup>a</sup>	
		Collinearity Statistics	
Model		Tolerance	VIF
1	Listed	.924	1.082
	Issue debt instruments	.858	1.166
	Bank	.812	1.231
	Other financial sector	.860	1.163
	industry and energy	.888	1.126

a. Dependent Variable: Rated companies

## Appendix 7

		Coefficients <sup>a</sup>	
		Collinearity Statistics	
Model		Tolerance	VIF
1	Onshore	.905	1.105
	Mix	.905	1.105

a. Dependent Variable: Rated companies

## Appendix 8

		Coefficients <sup>a</sup>	
		Collinearity Statistics	
Model		Tolerance	VIF
1	Total Assets	.999	1.001
	Sharia	.999	1.001

a. Dependent Variable: : Rated companies

## Appendix 9

<b>Coefficients<sup>a</sup></b>		
Model	Collinearity Statistics	
	Tolerance	VIF
1 Total Assets	.852	1.173
Net Profit	.991	1.009
Only Offshore	.648	1.544
Mix on, offshore	.657	1.522
Sukuk	.844	1.186

a. Dependent Variable: Rated companies

## Appendix 10

<b>Coefficients<sup>a</sup></b>		
Model	Collinearity Statistics	
	Tolerance	VIF
1 Total Assets	.549	1.823
Net Profit	.929	1.077
Long-Term Debt	.579	1.726
Bank	.606	1.650
Other financial sector	.702	1.424
industry and energy	.916	1.092
Issue debt instruments	.738	1.356
Listed	.910	1.098

a. Dependent Variable: Rated companies

## Appendix 11

<b>Coefficients<sup>a</sup></b>		
Model	Collinearity Statistics	
	Tolerance	VIF
1 Saudi	.583	1.716
Qatar	.791	1.264
Kuwait	.596	1.677
Oman	.802	1.246
Bahrain	.797	1.255
Issue debt instruments	.942	1.062
Listed	.874	1.145

a. Dependent Variable: Rated companies

## Appendix 12: The number of firms that have issued and/or have been rated on

	Saudi			Oman			
	Rated	Not rated	Total		Rated	Not rated	Total
<b>Issued</b>	16	16	<b>32</b>	<b>Issued</b>	13	3	<b>16</b>
<b>Not issued</b>	21	145	<b>166</b>	<b>Not issued</b>	19	20	<b>39</b>
<b>Total</b>	<b>37</b>	<b>161</b>	<b>198</b>	<b>Total</b>	<b>32</b>	<b>23</b>	<b>55</b>
6 of them were not rated by Moody's, Fitch, S&P's				9 of them were not rated by Moody's, Fitch, S&P's			
	Qatar			Bahrain			
	Rated	Not rated	Total		Rated	Not rated	Total
<b>Issued</b>	15	2	<b>17</b>	<b>Issued</b>	13	2	<b>15</b>
<b>Not issued</b>	16	27	<b>43</b>	<b>Not issued</b>	22	22	<b>44</b>
<b>Total</b>	<b>31</b>	<b>29</b>	<b>60</b>	<b>Total</b>	<b>35</b>	<b>24</b>	<b>59</b>
3 of them were not rated by Moody's, Fitch, S&P's				4 of them were not rated by Moody's, Fitch, S&P's			
	Kuwait			UAE			
	Rated	Not rated	Total		Rated	Not rated	Total
<b>Issued</b>	15	19	<b>34</b>	<b>Issued</b>	40	20	<b>60</b>
<b>Not issued</b>	20	118	<b>138</b>	<b>Not issued</b>	49	52	<b>101</b>
<b>Total</b>	<b>35</b>	<b>137</b>	<b>172</b>	<b>Total</b>	<b>89</b>	<b>72</b>	<b>161</b>
9 of them were not rated by Moody's, Fitch, S&P's				10 of them were not rated by Moody's, Fitch, S&P's			

Source: Bloomberg

Appendix 13: results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests, for the positive events (Upgrades and positive credit watch) in GCC countries, excluding Bahrain.

<b>Windows</b>	<b>Positive events - UAE</b>				
	N	CAAR	t-test	Sign test 1-sample	Wilcoxon 1-sample test
<b>[-20, +20]</b>	23	-0,68%	-0,493		
<b>[-10, +10]</b>	23	-0,83%	-0,876		
<b>[-5, +5]</b>	23	-0,19%	-0,168		
<b>[-1, +1]</b>	23	-0,52%	-0,803		
<b>[-20, -1]</b>	23	1,07%	1,813		
<b>[-10, -1]</b>	23	0,15%	0,322		
<b>[-5, -1]</b>	23	0,42%	0,640	*	*
<b>[-1, 0]</b>	23	-0,87%	-1,282	*	
<b>[0]</b>	23	-0,81%	-1,999 *	**	**
<b>[0, +1]</b>	23	-0,46%	-1,085	**	
<b>[0, +5]</b>	23	-0,61%	-0,765		
<b>[0, +10]</b>	23	-0,98%	-1,065		
<b>[0, +20]</b>	23	-1,75%	-1,476		
<b>[+1, +3]</b>	23	-0,01%	-0,021		
<b>[+1, +5]</b>	23	0,20%	0,326		
<b>[+1, +8]</b>	23	-0,15%	-0,204		
<b>[+4, +8]</b>	23	-0,14%	-0,177		

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

<b>Windows</b>	<b>Positive events - Qatar</b>				
	N	CAAR	t-test	Sign test 1-sample	Wilcoxon 1-sample test
<b>[-20, +20]</b>	33	-0,82%	-0,589	*	
<b>[-10, +10]</b>	33	-0,56%	-0,553		
<b>[-5, +5]</b>	33	-0,16%	-0,199		
<b>[-1, +1]</b>	33	-0,09%	-0,300		
<b>[-20, -1]</b>	33	0,54%	0,473		
<b>[-10, -1]</b>	33	0,02%	0,022		
<b>[-5, -1]</b>	33	-0,08%	-0,121		
<b>[-1, 0]</b>	33	-0,05%	-0,216		
<b>[0]</b>	33	0,25%	1,928 *		
<b>[0, +1]</b>	33	0,22%	1,171		
<b>[0, +5]</b>	33	-0,08%	-0,156		
<b>[0, +10]</b>	33	-0,58%	-0,947		
<b>[0, +20]</b>	33	-1,36%	-1,389	**	*
<b>[+1, +3]</b>	33	0,27%	0,635		
<b>[+1, +5]</b>	33	-0,33%	-0,686		
<b>[+1, +8]</b>	33	-0,10%	-0,176		
<b>[+1, +10]</b>	33	-0,83%	-1,424		

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

Windows	Positive events - Oman				
	N	CAAR	t-test	Sign test 1-sample	Wilcoxon 1-sample test
<b>[ -20, +20 ]</b>	15	-0,21%	-0,099		
<b>[ -10, +10 ]</b>	15	-0,79%	-0,646		
<b>[ -5, +5 ]</b>	15	0,05%	0,039		
<b>[ -1, +1 ]</b>	15	0,01%	0,014	**	**
<b>[ -20, -1 ]</b>	15	-0,64%	-0,287		*
<b>[ -10, -1 ]</b>	15	0,14%	0,075		*
<b>[ -5, -1 ]</b>	15	-0,19%	-0,194		*
<b>[ -1, 0 ]</b>	15	0,05%	0,086		
<b>[ 0 ]</b>	15	0,45%	0,677		
<b>[ 0, +1 ]</b>	15	0,40%	0,488		
<b>[ 0, +5 ]</b>	15	0,24%	0,457		
<b>[ 0, +10 ]</b>	15	-0,93%	-0,734		
<b>[ 0, +20 ]</b>	15	0,42%	0,382		
<b>[ +1, +5 ]</b>	15	-0,21%	-0,423		
<b>[ +1, +8 ]</b>	15	-1,24%	-0,697		
<b>[ +1, +10 ]</b>	15	-1,38%	-0,751		

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

Windows	Positive events - Kuwait				
	N	CAAR	t-test	Sign test 1-sample	Wilcoxon 1-sample test
<b>[ -20, +20 ]</b>	20	2,42%	1,021		
<b>[ -10, +10 ]</b>	20	0,90%	0,697		
<b>[ -5, +5 ]</b>	20	0,30%	0,309		
<b>[ -1, +1 ]</b>	20	0,44%	1,313		
<b>[ -20, -1 ]</b>	20	-0,16%	-0,166		
<b>[ -10, -1 ]</b>	20	-0,50%	-0,659		
<b>[ -5, -1 ]</b>	20	-0,21%	-0,320		
<b>[ -1, 0 ]</b>	20	0,62%	2,044 *		*
<b>[ 0 ]</b>	20	0,43%	1,782 *		
<b>[ 0, +1 ]</b>	20	0,25%	1,047		
<b>[ 0, +5 ]</b>	20	0,51%	0,889	**	
<b>[ 0, +7 ]</b>	20	1,71%	1,960 *		
<b>[ 0, +8 ]</b>	20	1,90%	1,971 *		
<b>[ 0, +20 ]</b>	20	2,57%	1,361		
<b>[ +1, +2 ]</b>	20	-0,06%	-0,180		
<b>[ +1, +5 ]</b>	20	0,08%	0,162		
<b>[ +1, +6 ]</b>	20	1,11%	1,464		
<b>[ +1, +8 ]</b>	20	1,47%	1,492		
<b>[ +3, +6 ]</b>	20	1,17%	2,083 **		
<b>[ +4, +6 ]</b>	20	0,65%	1,533		

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

Appendix 14: results of cumulative average abnormal returns (CAARs) and their parametric and non-parametric tests, for the negative events (Downgrades and negative credit watch) in GCC countries, excluding Saudi Arabia.

<b>Windows</b>	<b>Negative events UAE</b>				
	<b>N</b>	<b>CAAR</b>	<b>t-test</b>	<b>Sign test 1-sample</b>	<b>Wilcoxon 1-sample test</b>
<b>[-20, +20]</b>	26	-1,90%	-0,603		
<b>[-10, +10]</b>	26	-0,18%	-0,086		
<b>[-5, +5]</b>	26	-0,45%	-0,290		
<b>[-1, +1]</b>	26	-0,36%	-0,325		
<b>[-20, -1]</b>	26	-0,41%	-0,174		
<b>[-10, -1]</b>	26	0,21%	0,135		
<b>[-5, -1]</b>	26	0,86%	0,952		
<b>[-1, 0]</b>	26	-0,15%	-0,260		
<b>[0]</b>	26	0,30%	0,652		
<b>[0, +1]</b>	26	0,09%	0,104		
<b>[0, +5]</b>	26	-1,31%	-1,120		
<b>[0, +10]</b>	26	-0,39%	-0,309		
<b>[0, +20]</b>	26	-1,49%	-0,755		
<b>[+1, +3]</b>	26	-1,88%	-1,560	*	
<b>[+1, +5]</b>	26	-1,61%	-1,254		
<b>[+1, +15]</b>	26	-2,08%	-1,136		*

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

<b>Windows</b>	<b>Negative events - Qatar</b>				
	<b>N</b>	<b>CAAR</b>	<b>t-test</b>	<b>Sign test 1-sample</b>	<b>Wilcoxon 1-sample test</b>
<b>[-20, +20]</b>	39	1,62%	1,166		
<b>[-10, +10]</b>	39	0,20%	0,142		
<b>[-5, +5]</b>	39	-0,42%	-0,256		
<b>[-1, +1]</b>	39	-0,62%	-1,214		
<b>[-20, -1]</b>	39	0,52%	0,530		
<b>[-10, -1]</b>	39	0,11%	0,155		
<b>[-5, -1]</b>	39	0,12%	0,180		
<b>[-1, 0]</b>	39	-0,54%	-1,748 *	*	
<b>[0]</b>	39	-0,25%	-0,981	*	
<b>[0, +1]</b>	39	-0,33%	-0,606		
<b>[0, +5]</b>	39	-0,54%	-0,454		
<b>[0, +10]</b>	39	0,09%	0,065		
<b>[0, +20]</b>	39	1,10%	0,715		
<b>[+1, +3]</b>	39	-0,41%	-0,530		
<b>[+1, +5]</b>	39	-0,29%	-0,266		
<b>[+1, +8]</b>	39	-0,12%	-0,106		
<b>[+1, +10]</b>	39	0,34%	0,270		
<b>[+4, +6]</b>	39	-0,12%	-0,346		
<b>[+4, +12]</b>	39	0,81%	1,010		

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

<b>Windows</b>	<b>Negative events - Oman</b>				
	<b>N</b>	<b>CAAR</b>	<b>t-test</b>	<b>Sign test 1-sample</b>	<b>Wilcoxon 1-sample test</b>
<b>[-20, +20]</b>	42	-0,42%	-0,362	*	
<b>[-10, +10]</b>	42	-1,12%	-1,420	*	
<b>[-5, +5]</b>	42	-0,37%	-0,615		
<b>[-1, +1]</b>	42	-0,08%	-0,170		
<b>[-20, -1]</b>	42	-0,15%	-0,204		
<b>[-10, -1]</b>	42	-0,64%	-1,475	**	
<b>[-5, -1]</b>	42	-0,05%	-0,145		
<b>[-1, 0]</b>	42	-0,07%	-0,157		
<b>[0]</b>	42	-0,12%	-0,325		
<b>[0, +1]</b>	42	-0,13%	-0,306		
<b>[0, +2]</b>	42	-0,13%	-0,313		
<b>[0, +5]</b>	42	-0,32%	-0,667		
<b>[0, +10]</b>	42	-0,48%	-0,826		
<b>[0, +20]</b>	42	-0,27%	-0,335		*
<b>[+1, +5]</b>	42	-0,20%	-0,655		
<b>[+1, +8]</b>	42	-0,26%	-0,657		
<b>[+1, +10]</b>	42	-0,36%	-0,694	*	*
<b>[+4, +6]</b>	42	0,02%	0,097		
<b>[+4, +12]</b>	42	0,25%	0,505		
<b>[+4, +20]</b>	42	-0,03%	-0,047	*	
<b>[+8, +9]</b>	42	-0,54%	-2,267 **		**
<b>[+8, +18]</b>	42	-0,32%	-0,514	*	

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

<b>Windows</b>	<b>Negative events - Kuwait</b>				
	<b>N</b>	<b>CAAR</b>	<b>t-test</b>	<b>Sign test 1-sample</b>	<b>Wilcoxon 1-sample test</b>
<b>[-20, +20]</b>	29	0,35%	0,153		
<b>[-10, +10]</b>	29	-0,11%	-0,046		
<b>[-5, +5]</b>	29	-0,24%	-0,165	*	
<b>[-1, +1]</b>	29	-0,86%	-1,291		
<b>[-20, -1]</b>	29	1,13%	0,591		
<b>[-10, -1]</b>	29	1,46%	0,820		
<b>[-5, -1]</b>	29	1,28%	1,407		
<b>[-1, 0]</b>	29	-0,41%	-0,814		
<b>[0]</b>	29	-0,05%	-0,125		
<b>[0, +1]</b>	29	-0,50%	-1,040	**	*
<b>[0, +2]</b>	29	-1,13%	-1,716 *	**	**
<b>[0, +5]</b>	29	-1,51%	-1,504	**	**
<b>[0, +7]</b>	29	-2,34%	-1,691 *	**	**
<b>[0, +20]</b>	29	-0,78%	-0,573		
<b>[+1, +2]</b>	29	-1,08%	-1,620	*	
<b>[+1, +5]</b>	29	-1,46%	-1,530	*	**
<b>[+1, +6]</b>	29	-2,21%	-1,847 *	**	**
<b>[+1, +7]</b>	29	-2,28%	-1,672		*
<b>[+3, +6]</b>	29	-1,13%	-1,259	**	**
<b>[+4, +6]</b>	29	-1,42%	-1,698 *	*	
<b>[+4, +20]</b>	29	0,06%	0,042		

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

	Negative events - Bahrain				
Windows	N	CAAR	t-test	Sign test 1-sample	Wilcoxon 1-sample test
[ <b>-20, +20]</b>	15	3,41%	4,013 ***		
[ <b>-10, +10]</b>	15	1,92%	0,422		
[ <b>-5, +5]</b>	15	2,24%	5,659 ***	**	
[ <b>-1, +1]</b>	15	-0,38%	-0,403		
[ <b>-20, -1]</b>	15	4,19%	3,305 ***		**
[ <b>-10, -1]</b>	15	1,48%	1,655	**	
[ <b>-5, -1]</b>	15	1,00%	1,579	**	
[ <b>-1, 0]</b>	15	0,02%	0,050		
[ <b>0</b> ]	15	0,08%	0,233	**	
[ <b>0, +1]</b>	15	-0,32%	-0,422	**	
[ <b>0, +2]</b>	15	0,56%	0,528		
[ <b>0, +5]</b>	15	1,24%	4,242 ***		
[ <b>0, +7]</b>	15	1,01%	1,072		
[ <b>0, +8]</b>	15	0,55%	0,293		
[ <b>+1, +2]</b>	15	0,49%	0,557		
[ <b>+1, +5]</b>	15	1,16%	4,355 ***		
[ <b>+1, +6]</b>	15	1,29%	1,494		
[ <b>+1, +7]</b>	15	0,93%	1,057		
[ <b>+3, +6]</b>	15	0,81%	0,839		
[ <b>+4, +6]</b>	15	0,51%	1,142		
[ <b>+4, +20]</b>	15	-1,64%	-2,991 ***		

\*= significant at 10%, \*\*= significant at 5%, \*\*\*= significant at 1%, sign= significant.

Appendix 15: In this appendix we illustrate the parametric and non-parametric tests of the two groups, (religious investors and less religious investors) and (who speaks English and who does not speak English), after correcting the percentage of women in our sample to match the mother population 20%. The results are similar to the sample prior the correction of the women percentage.

- 1- Q19 - Parametric and non-parametric tests of the two groups who speaks English and who do not concerning whether they follow the news in English language or not (after correcting the sample to 21% of women answers).

SEAPK ENGLISH	NO	YES	ALL
MEAN	1,70	2,42	2,03
STANDARD ERROR OF MEAN	0,06	0,08	0,05
MEDIAN	1	2	2
STANDARD DEVIATION	1,01	1,71	1,45
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
MWW TEST	6.15 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	37.88 *	H Critical	> 3.84

- 2- Q14-Parametric and non-parametric tests of the two groups who speaks English and who do not concerning whether they care about CRAs announcements or not (after correcting the sample to 21% of women answers).

SEAPK ENGLISH	NO	YES	ALL
MEAN	2,6971831	2,71848739	2,70689655
STANDARD ERROR OF MEAN	0,0837666	0,08443553	0,05960317
MEDIAN	3	3	3
STANDARD DEVIATION	1,99278356	1,69678758	1,85442452
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.86	p-value	< 0.05
MWW TEST	0.31	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	0.10	H Critical	> 3.84

- 3- Q20d-Parametric and non-parametric tests of the two groups who speaks English and who do not concerning whether they rely only on Arabic source to reach their investment decisions or not (after correcting the sample to 21% of women answers).

SEAPK ENGLISH	NO	YES	ALL
MEAN	3,38028169	3,08403361	3,24521073
STANDARD ERROR OF MEAN	0,07670892	0,08734394	0,05799153
MEDIAN	4	3	3
STANDARD DEVIATION	1,67112925	1,81569337	1,75549525
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.01 *	p-value	< 0.05
MWW TEST	2.48 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	6.14 *	H Critical	> 3.84

- 4- Q10-Parametric and non-parametric tests of the two groups, religious investors and less religious investors, concerning whether they seek the announcements of Imams (after correcting the sample to 21% of women answers).

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	4,58600583	2,65921788	3,92528736
STANDARD ERROR OF MEAN	0,04362139	0,09477802	0,05898088
MEDIAN	5	3	5
STANDARD DEVIATION	0,65266909	1,60793422	1,81590443
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
MWW TEST	14.44 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	208.65 *	H Critical	> 3.84

5- Q11 A) Parametric and non-parametric tests of the two groups, religious investors and less religious investors, concerning scenario A, question 11 (to keep investing) (after correcting the sample to 21% of women answers).

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	1,56268222	3,45810056	2,21264368
STANDARD ERROR OF MEAN	0,0533918	0,09934121	0,0627655
MEDIAN	1	3	2
STANDARD DEVIATION	0,9777846	1,766493	2,05642332
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
MWW TEST	13.28 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	176.34 *	H Critical	> 3.84

6- Q11 B) Parametric and non-parametric tests of the two groups, religious investors and less religious investors, concerning scenario B, question 11 (to sell and buy in another Sharia firm) (after correcting the sample to 21% of women answers).

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	4,26822157	2,29608939	3,59195402
STANDARD ERROR OF MEAN	0,06928193	0,08935808	0,07095662
MEDIAN	5	2	4
STANDARD DEVIATION	1,21439654	1,38936664	2,14987756
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
MWW TEST	16.98 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	370.81 *	H Critical	> 3.84

7- Q11 C) Parametric and non-parametric tests of the two groups, religious investors and less religious investors, concerning scenario C, question 11 (to sell and buy in any firm Sharia or non-Sharia) (after correcting the sample to 21% of women answers).

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	1,34110787	2,03910615	1,58045977
STANDARD ERROR OF MEAN	0,050813	0,09837782	0,04904481
MEDIAN	1	2	1
STANDARD DEVIATION	0,79266193	1,16138347	1,02710305
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
MWW TEST	5.48 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	31.16 *	H Critical	> 3.84

8- Q17 A) Parametric and non-parametric tests of the two groups, religious investors and less religious investors, concerning scenario A – Q17 (after correcting the sample to 21% of women answers).

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	3,32653061	2,92178771	3,18773946
STANDARD ERROR OF MEAN	0,07766977	0,11162523	0,06443317
MEDIAN	3	3	3
STANDARD DEVIATION	1,66499582	1,88148892	1,77274766
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
MWW TEST	3.46 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	22.50 *	H Critical	> 3.84

9- Q17 B) Parametric and non-parametric tests of the two groups, religious investors and less religious investors, concerning scenario B – Q17 (after correcting the sample to 21% of women answers).

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	1,52769679	2,45810056	1,8467433
STANDARD ERROR OF MEAN	0,05344513	0,10816923	0,05328883
MEDIAN	1	3	1
STANDARD DEVIATION	0,92832421	1,19345929	1,21255175
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
MWW TEST	3.17 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	76.74 *	H Critical	> 3.84

10- Q17 C) Parametric and non-parametric tests of the two groups, religious investors and less religious investors, concerning scenario C – Q17 (after correcting the sample to 21% of women answers).

RELIGIOUS INVESTORS	HIGH	LESS	ALL
MEAN	2,64	1,96	2,41
STANDARD ERROR OF MEAN	0,079	0,083	0,061
MEDIAN	3	2	3
STANDARD DEVIATION	1,67	1,12	1,58
	p-value ( $\alpha$ )	Significance level	
T-TEST (TWO-TAIL)	0.00 *	p-value	< 0.05
MWW TEST	3.87 *	Z Critical	> 1.96
THE KRUSKAL-WALLIS TEST	32.14 *	H Critical	> 3.84

Appendix 16: The results of the multiple regression analysis (liner regression) for the end significant post-event windows for the negative announcements.

$$\text{FEN-FIN} = \alpha + \beta_1 * (\text{Non-English}) + \beta_2 * (\text{PER-DEB}) + \beta_3 * (\text{Size}) + \xi$$

Where;

FEN-FIN = the Log transformation of the end significant post-event windows, in order to transfer the variable to a continuous variable. We consider the post-event windows from day [0] until day [+90] (as reported by the primary sources).

Non-English = is a dummy variable for the language of the country where the market is located; if the significant results occurred in non-English speaking country, then Non-English = 1, and zero otherwise.

PER-DEB = is the year where the study period begun (as reported by the primary sources).

Size = the sample size (as reported by the primary sources).

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.434 <sup>a</sup>	.188	.144	.543638321964229

a. Predictors: (Constant), Size, PER-DEB, Non-English = 1

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.762	3	1.254	4.243	.009 <sup>b</sup>
	Residual	16.255	55	.296		
	Total	20.017	58			

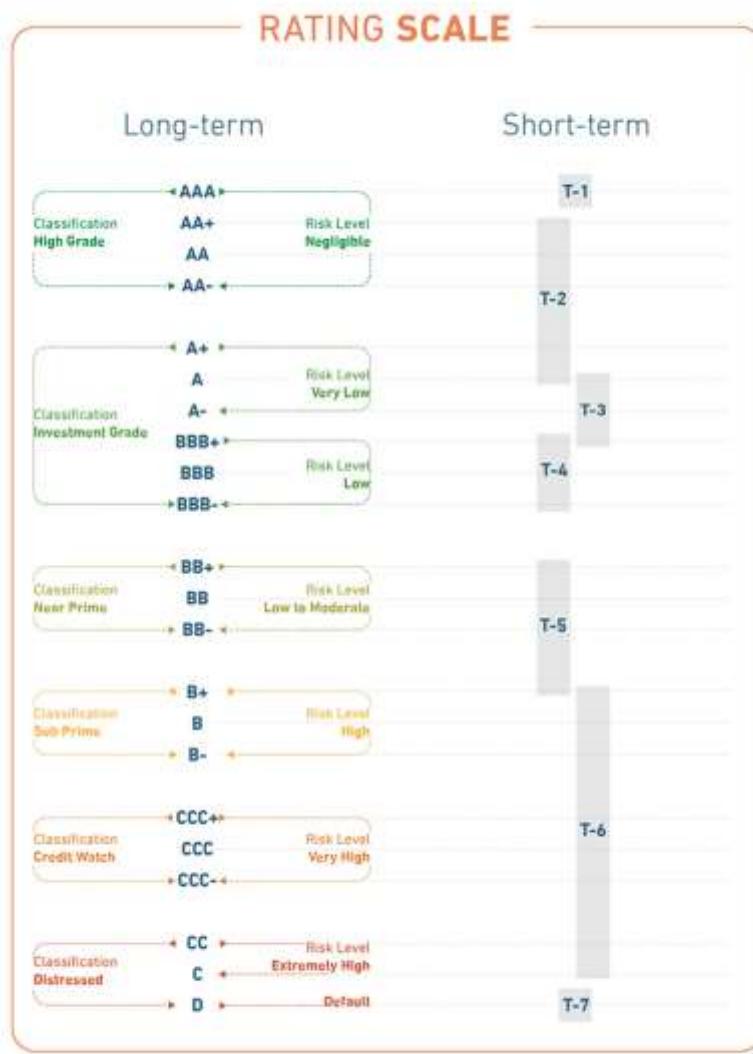
a. Dependent Variable: FEN-FIN

b. Predictors: (Constant), Size, PER-DEB, Non-English = 1

Model	Coefficients <sup>a</sup>						
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	41.100	20.715		1.984	.052	-.413	82.613
Non-English = 1	.489	.202	.373	2.423	.019	.085	.894
PER-DEB	-.020	.010	-.298	-1.961	.055	-.041	.000
Size	.001	.000	.383	3.063	.003	.000	.001

a. Dependent Variable: FEN-FIN

#### Appendix 17: The rating scale used by Tassnief



Source: (TASSNIEF, 2017)

Appendix 18: The daily market returns in GCC countries for the period (2000-2018), and some markets have shorter period. The graphs demonstrate the phenomenon of volatility clustering.

