“The relationship between corporate forward-looking disclosure and stock return volatility”

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ARTICLE INFO
Gehan A. Mousa and Elsayed A. H. Elamir (2018). The relationship between corporate forward-looking disclosure and stock return volatility. Problems and Perspectives in Management, 16(3), 130-149. doi:10.21511/ppm.16(3).2018.11

DOI
http://dx.doi.org/10.21511/ppm.16(3).2018.11

RELEASED ON
Monday, 30 July 2018

RECEIVED ON
Friday, 18 May 2018

ACCEPTED ON
Wednesday, 06 June 2018

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JOURNAL
“Problems and Perspectives in Management”

ISSN PRINT
1727-7051

ISSN ONLINE
1810-5467

PUBLISHER
LLC “Consulting Publishing Company “Business Perspectives”

FOUNDER
LLC “Consulting Publishing Company “Business Perspectives”

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THE RELATIONSHIP BETWEEN CORPORATE FORWARD-LOOKING DISCLOSURE AND STOCK RETURN VOLATILITY

Abstract

The study assesses corporate forward-looking disclosure by measuring four attributes, namely disclosure quantity, disclosure coverage, disclosure concentration and disclosure quality, through a sample of 34 listed firms in the Bahrain Bourse from 2014 to 2017. The study also investigates the relationship between these attributes and stock return volatility. Regression analysis has been employed with five different models to examine the relationship between the four attributes of corporate forward-looking disclosure and stock return volatility. The main finding of this study agrees with the results of Bravo et al. (2009) who found that the selection of a specific disclosure index could influence crucially the results of the analysis. In addition, stock return volatility has a statistically significant negative association with the three attributes of forward-looking disclosure, namely disclosure quantity, disclosure coverage and disclosure quality. In contrast, it has a non-significant association with the fourth attribute of forward-looking disclosure, disclosure concentration. This study provides a novel contribution to disclosure quality studies by being the first study to examine forward-looking disclosure quality attributes in the Kingdom of Bahrain.

Keywords
forward-looking disclosure, stock return volatility, quality of disclosure, quantity of disclosure

JEL Classification M41, M10

INTRODUCTION

Disclosure novels have attracted a great interest in accounting literature. Theoretical arguments in literature (Lang & Lundholm, 1993; Cormier et al., 2010) suggested that the increase of corporate disclosure, in particular, disclosure quality, has a positive influence on capital markets in different ways, such as it reduces cost of capital, information asymmetry, and stock return volatility (SRV). However, questions on the measurement of disclosure quality and types of the information disclosed are still open (Bravo et al., 2009). Hussainey (2004) classified information disclosed in corporate annual report into “backward-looking information” and “forward-looking information”. The first one refers to disclosures on the past financial results. “Forward-looking information is the class of information that refers to future forecasts and current plans that enable different users to assess a future corporate performance” (Aljifri & Hussainey, 2007, p. 882). “The role of corporate forward-looking disclosure in capital markets is today crucial since the economic environment is too dynamic to rely on historical in-
formation only” (Menicucci, 2013, p. 1667). Such disclosure enables users to predict company’s future financial performance (Athanasakou & Hussainey, 2014). Bravo (2016, p. 123) stated that “forward-looking information has become crucial, since historical information could be insufficient for investors. Both organizations and researchers have stated the significance of forward-looking information in order to improve the forecasts about a company and ease decision-making processes in capital markets”. Prior studies offered answers to the question why disclosure can affect SRV. For example, Bushee and Noe (2000) pointed out that more disclosure leads to reduced information asymmetries, consequently, decreases surprises about a firm and helps to make its stock price have low volatility. Easley and O’Hara (2004) showed that disclosure quality affects corporate stock volatility and its cost of capital.

The current study has two objectives. First, it measures a specific type of disclosure, forward-looking disclosure (FLD), by assessing four attributes, namely disclosure quantity, disclosure coverage, disclosure concentration and disclosure quality, for a sample of 34 Bahraini listed firms from 2014 to 2017. Second, it examines the effect of the four attributes of FLD on SRV.

The importance of this study builds on the unique demand for forward-looking information and its impact on critical matters such as SRV. Such importance has two streams. First, several studies documented the importance of future information for investors (AICPA, 1994; FASB, 2001; ICAEW, 2002). For example, AICPA (1994) identifies five categories of information that companies should disclose in their financial reports, such as “the management’s analysis of financial and nonfinancial data; information on managers and stakeholders; forward-looking information; and finally company background”. Other professional bodies (IASB, 2010; ICAEW, 2000, 2002) argued that different users of financial reports need future information that helps them to improve their expectations about business performance. International Accounting Standards Board (IASB) in its study titled “Management Commentary: A Framework for Presentation” pointed out that “forward-looking information might present an over-optimistic picture of the entity” (IASB, 2010, par. BC 39), the IASB points out that “management should disclose the assumptions used in providing forward-looking information” (IASB, 2010, p. 18). Beretta and Bozzolan (2008) argued that FLD can help in explaining future earnings, therefore, such disclosure is considered useful for users of companies’ financial reports. The authors found a significant positive relationship between the quality of corporate disclosure and the analysts’ forecasts for a sample of Italian firms.

Second stream reflects the association between FLD and SRV. Prior studies such as Hussainey and Walker (2009) provided evidence that the quality of disclosure can play a critical role to improve stock market decisions and to provide better expectations about future earnings. In the light of scarcity of studies on emerging markets, the current study has a high value, since it is based on one of these markets, namely the Kingdom of Bahrain as a member of the Gulf Cooperation Council (GCC).

This study contributes to the current literature on FLD by assessing such disclosure in Bahraini capital market. To the best of the authors’ knowledge, this study is the first to assess such disclosure in the Bahraini capital market, as well as it investigates the effect of FLD on SRV. The results of our study imply practical implications for a number of interested parties, such as managers, investors and regulators.

The paper is organized as follows. Section 1 presents an overview on agency theory. Section 2 reviews the relevant literature and develops the hypotheses of the study. Section 3 presents background on Bahraini capital market. The research method is provided in section 4. Last section shows the empirical analysis of the study.
1. AGENCY THEORY 
(AS A THEORETICAL FRAMEWORK OF THE STUDY)

Different theories can be used to explain managers’ motivations for voluntary disclosures. The present study adopted agency theory to explain the potential association between the four attributes of FLD and SRV. From an agency perspective (Core, 2001; Barako et al., 2006; Lundholm & Van Winkle, 2006), the corporate disclosure is a mechanism that can be used by managers to reduce the agency costs. Abraham and Cox (2007) pointed out that firms can show their interest to maximize the benefits of shareholders and investors, consequently, they confirm their accountability by reducing uncertainty and information asymmetry. At the same time, they convince those groups that they are acting in a good way (Watson et al., 2002). Companies can adopt an agency perspective by increasing voluntarily disclosure to reduce conflicts of interest between managers and investors (Jensen & Meckling, 1976). Moreover, a number of studies (Leuz & Verrecchia, 2000; Cormier et al., 2010) used SRV as a proxy for information asymmetry. A company can keep its stock price less volatile by reducing information asymmetry (Bushee & Noe, 2000).

Prior studies (Bushee & Noe, 2000; Rajgopal & Venkatachalam, 2011) argued that the cost of a company and the cost of capital will rise with the increase of SRV. Easley and O’Hara (2004) found a significant relationship between corporate financial reporting quality, cost of capital and SRV.

In line with agency theory, Aljifri and Hussainey (2007) argued that FLD can help decision makers and reduce information asymmetry. Disclosure strategies and selecting specific information to be disclosed can be seen as a corporate mechanism that can reduce the uncertainty about a company and, therefore, can affect SRV. Schleicher and Walker (1999) pointed out that FLD can improve the prediction of future earnings, and the future corporate performance (Hussainey & Aal-Eisa, 2009).

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Corporate forward-looking disclosure studies

Although several academic (Aljifri & Hussainey, 2007; Menicucci, 2013; Bravo, 2016) and professional studies (AICPA, 1994; IASB, 2010; ICAEW, 2000, 2002) have documented the usefulness of FLD for different stakeholder groups that can use it to anticipate future corporate performance. There is no specific classifications for forward-looking information. For example, Aljifri and Hussainey (2007, p. 883) pointed out that “FLD is the class of information that refers to current plans and future forecasts that enable investors and other users to assess a company’s future financial performance. Such FLD involves financial forecasts such as next years earnings, expected revenues, and anticipated cash flows”. At the same time, Hussainey (2004) argued that it is difficult in many cases to classify different types of information into past and future. Some information related to past event may be useful for prediction. Based on previous discussion, the current study has adopted a broad definition for the concept “FLD” that includes different contents of disclosure, such as future events, decisions, analysts’ forecasts, opportunities, and risks, therefore, different studies that include these contents are included in this section of the study as follows.

Prior studies empirically focus on FLD in annual reports, such as Abed et al. (2016) who used different methods to measure the FLD of 30 UK non-financial companies, Hussainey et al. (2003) examined the relationship between FLD and the earnings of the UK-listed firms. While, in China, Tan et al. (2015) found that the quality of FLD improves firms’ investment decisions by using a sample of 926 listed firms from 2005 to 2011. In Spain, Bravo et al. (2009) used three different indices, namely quality index, scope index and quantity index, to measure the FLD through a sample of 36 listed firms. The authors found that the companies’ ranks changed dramatically based on the index.
Moreover, in Italy, Beretta and Bozzolan (2008) reported a significant positive relationship between FLD and the quality of analysts’ forecasts in a sample of 85 industrial listed firms. In the United Arab Emirates, Aljifri and Hussainey (2007) reported a significant positive association between FLD and leverage, in contrast, profitability has a negative association with FLD. In Bahrain, Mousa and Elamir (2018) investigated the factors that affect FLD. The authors showed that some firm characteristics, such as liquidity, sector type and profitability, have no significant relationship with FLD, while firm size and financial leverage have significant relationships with FLD.

2.2. The attributes of forward-looking disclosure (FLD)

Beretta and Bozzolan (2008, pp. 336-337) state that “the quantity and quality of voluntary disclosures are closely intertwined therefore quantity disclosure determines the quality”. A number of studies (as Beattie et al., 2001, 2002a, 2002b, 2004) documented a relationship between quality and quantity of disclosures. For example, Beattie et al. (2004) considered explicitly the richness of disclosure content and its quantity. Beretta and Bozzolan (2008) suggested a number of disclosure quality characteristics such as the richness and coverage dimensions. Following Beretta and Bozzolan (2008), the current study adopted four attributes to measure FLD, namely quantity, coverage, concentration and quality.

2.2.1. Disclosure quantity attribute

The current study followed Bravo (2016, p. 125) who measured the quantity disclosure \( (QUTD) \) “as the amount of forward-looking information disclosed by companies taking into account only number of units (sentences), as a coding unit, with forward-looking information”. Every sentence with forward-looking information is considered (Mousa & Elamir, 2018). The current study used “a simple index that only captures absolute quantity of disclosure” that was suggested by Bravo et al. (2009, p. 264), as shown in the following equation:

\[
QUTD_i = \frac{F_i - \text{Min}_i}{\text{Max}_i - \text{Min}_i},
\]

where \( F_i \) is number of sentences with forward-looking information disclosed by company \( i \). \( \text{Max}_i \) is the maximum number of sentences with forward-looking information disclosed by company \( i \) across the sample. \( \text{Min}_i \) is the minimum number of sentences with forward-looking information disclosed by company \( i \) across the sample (Bravo et al., 2009, p. 264).

2.2.2. Disclosure coverage attribute

Prior studies, such as Beattie et al. (2001, 2002a, 2002b, 2004), Beretta and Bozzolan (2008) reported that the quantity of corporate disclosure is not enough to help different stakeholder groups to make their decision, but also what and how a firm is disclosed. Beretta and Bozzolan (2008, p. 344) suggested the richness dimension as one character of disclosure quality. Beretta and Bozzolan (2008, p. 344) measured this dimension “by considering together the width and the depth of disclosure. Width depends on both the coverage of relevant topics (or subtopics) of the framework and the dispersion of disclosure across different topics (or subtopics)”. The current study used the approach of Beretta and Bozzolan (2008, p. 344) to measure disclosure coverage \( (COVD) \), which “ranges from 0 to 1 and assumes its maximum value when a company makes disclosure over each of the topics (subtopics) considered”.

\[
COVD_i = \frac{1}{\sum_{j=1}^{u} INF_{ij}},
\]

where \( INF_{ij} = 1 : \) the annual report of company \( i \) discloses information about the subtopic, 0 otherwise” (Beretta & Bozzolan, 2008, p. 344; as quoted also by Bravo et al., 2009, p. 260).

2.2.3. Disclosure concentration attribute

At the same time, Beretta and Bozzolan (2008, p. 344) suggested concentration of disclosure \( (COND) \) as another dimension that should be considered in measuring disclosure quality. Beretta and Bozzolan (2008, p. 344) pointed out that \( COND \) “refers to how concentrated disclosed items are and corresponds to the standardized entropy index (COND)’’

\[
COND_i = \frac{-\sum_{j=1}^{u} P_{ij} \ln P_{ij}}{\ln u},
\]

where \( P_{ij} \) is the probability of subtopic \( j \) being included in the report, and \( u \) is the total number of subtopics.
where $P_{ij}$ – number of information disclosed in sub-topic $j$ divided by total disclosure of company $i$, $st$ – number of topics (or sub-topics), $\ln$ is a natural logarithm” (Beretta & Bozzolan, 2008, p. 344; as quoted also by Bravo et al., 2009, p. 260).

### 2.2.4. Disclosure quality attribute

Disclosure quality ($DQA$) is measured as the average of the above three attributes ($QUTD$, $COVD$ and $COND$) as:

$$DQA_{i} = \frac{QUTD_{i} + COVD_{i} + COND_{i}}{3}.$$  (4)

### 2.3. Corporate forward-looking disclosure and stock return volatility

The topic of SRV has attracted the attention of many stakeholder groups in financial markets, as well as researchers and professional associations. Question about whether corporate disclosure can mitigate SRV is still open (Rajgopal & Venkatachalam, 2011). “Disclosure helps to reduce information asymmetry and has an economically important impact on the corporation’s stock returns at time of announcement” (Mohamed & Schwienbacher, 2016, p. 71). In India, Sahore and Verma (2017) reported that voluntary disclosure can help to reduce stock volatility using a sample of listed firms. Bushee and Noe (2000) and Jayshree (2012) showed similar findings.

The literature on the relationship between FLD and SRV lacks any provision of evidence. Such association remains unexplored. Several studies, such as Fama and French (1993, 1996), Coles et al. (1995), argued that SRV can be affected by disclosure level. For example, Hussainey and Mouselli (2010) provided evidence on disclosure quality that can be seen as a useful tool in explaining the variation of UK stock returns. Espinosa and Trombetta (2007) argued that corporate disclosure can help in reducing risks of stocks by increasing the demand on stock, consequently, increase stock liquidity, therefore, returns on the stock can be reduced. Bravo (2016) examined the effect of financial FLD on SRV for 73 USA firms. His results showed that FLD reduces SRV.

Based on the theoretical framework of the study, an agency perspective expects a significant association between SRV and FLD, since it is associated with improving the anticipation of future earnings and reducing information risk, consequently, FLD affects SRV. In the current study, FLD was measured by four attributes ($QUTD$, $COVD$, $COND$ and $DQA$) therefore, the following hypotheses ($H$) are formulated:

$H1$: There is a significant relationship between $QUTD$ and SRV.

$H2$: There is a significant relationship between $COVD$ and SRV.

$H3$: There is a significant relationship between $COND$ and SRV.

$H4$: There is a significant relationship between $DQA$ and SRV.

### 3. WHY BAHRAINI CAPITAL MARKET

The Kingdom of Bahrain has a distinct geographical place between Asia and Europe. It is seen as the financial capital of the Middle East. In 2010, by Law No. 60, Bahrain Bourse\(^1\) (BHB) was established as a shareholding company. Annual Trading Bulletin of BHB (2017, p. 11) reports that “market capitalization of the Bourse stood at BD 8.15 bn by the end of the year, increasing from BD 7.25 bn in 2016 by 12.39%. Bahraini investors accounted for 68.22% of the total value of traded shares in 2017, while the foreign investors accounted for 31.78%”. Since BHB is one of the emerging markets, which seeks efficiently and effectively to achieve progress and to attract several foreign investors, it was selected to be the focus of the current study.

The Central Bank of Bahrain (CBB) has the legislative authority and supervision of BHB in 2002. CBB Capital Market Regulations in 2003 comprise a number of articles on corporate disclosure. For example, Article no. 5 states that “the firm should disclose information on different factors such as the nature of the business in which it is engaged or

\(^1\) Source of all information in this section is Bahrain Bourse (www.bahrainbourse.com.bh).
proposes to engage; the absence of profitable operations in recent periods; the financial position of the issuer and the possible absence of a liquid trading market for the issuer's securities", while, Article no. 7 in CBB (2003) requires “the firm to provide information on operating and financial reviews and prospects which to have a material effect on the issuer's financial conditions and results of operations in the same future period”. It can be noted that previous articles require from companies to disclose information on future performance. A detailed history and description of the BHB is well beyond the scope of this study.

4. RESEARCH METHOD

4.1. Coding, reliability tests and analysis

This study has used two approaches for coding data analysis (manual method and QDA Miner software package). Content analysis categorizes a large amount of qualitative data in order to analyze them based on a specific schema of interest (Bowman, 1984). Applying content analysis approach requires a researcher to select the coding unit. Following several studies, such as Mousa and Elamir (2013, 2014, and 2018), and Linsley and Shrives (2006), the current study selected a sentence as the coding unit.

So, the first objective of the current study is to assess FLD by measuring four attributes (QUTD, COVD, COND and DQA) in annual reports for 34 listed firms in the BHB from 2014 to 2017. The FLD index suggested by Mousa and Elamir (2018) was used to analyze the total number of 136 annual reports. In this index, items were grouped into three main categories, namely “Opportunities and Risks”, “Strategic information” and “Management analysis”. The FLD index (see Appendix A) is an unweighted index, measuring items depends on the dummy variable, item takes one if the firm disclosed it, otherwise zero, in other words, all items have an equal importance (similar to a number of researchers such as Desoky & Mousa, 2012; Aly & Simon, 2008).

Following Linsley and Shrives (2006) and Weber (1990), all sentences that include FLD were considered, while other sentences without reference to FLD were ignored. Any repetition for a FLD is also considered. A preliminary test was conducted by two researchers independently to examine the homogeneity of coding rules among coders (inter-coder reliability) by coding 4 annual reports as an initial sample. A Scott’s measure of inter-rater reliability was calculated with 0.83. Beattie et al. (2004) pointed out that “an estimate of 0.75 or more is considered a satisfactory level of inter-rater reliability for this interclass correlation coefficient”. Moreover, QDA Miner software package is used for coding and large collections of documents.

As the current study used two approaches to analyze forward-looking information, namely QDA Miner software package analysis and the manual content analysis, Pearson and Spearman correlation analyses had been adopted to evaluate the linear correlation between the two approaches. Strong significant positive correlations at 1% level were found between the two types of analyses (Pearson correlation is 0.92 and Spearman correlation is 0.91). Such results provide evidence on the reliability of using the QDA Miner software package.

4.2. Definition of the study’s variables

To investigate the relationship between FLD and SRV as the second aim of the study, multiple regression analyses were conducted. The dependent variable, SRV was measured similar to Bravo (2016). On the other hand, four independent variables were included (QUTD, COVD, COND, DQA) to reflect the attributes of FLD. Moreover, in line with several studies, seven control variables were selected to include in the regression models to control for potentially omitted relationships, namely leverage, foreign ownership, financial performance of the firm, the firm age, firm size and independence of the board. For example, concerning financial leverage (LEV), some studies report a positive association between LEV and SRV (Bushee & Noe, 2000; Rajgopal & Venkatachalam, 2011). Foreign ownership (FOWN), agency theory expects that FOWN has significant positive effects on voluntary disclosure general, which can help to reduce SRV (Bokpin & Isshaq, 2009). In line with Rajgopal and
Venkatachalam (2011) who argued that better financial performance helps to reduce SRV, old firms have experience that can help them to reduce SRV (Xu & Malkiel, 2003), thus, age of firm (AGE) was included as a control variable. Several studies (see, for example, Aljifri & Hussainey, 2007; Desoky & Mousa, 2013) provided evidence with mixed results on the impact of firm size (FSIZE), type of industry (TYPE) and independence of the board (BoD) on corporate disclosure. Therefore, it is expected that these variables affect the FLD, which may influence SRV. The following Table 1 summarizes variables of the study.

### Table 1. Definitions of the study’s variables

| Variables | Description | Measurement |
|-----------|-------------|-------------|
| Dependent variable | | |
| SRV | Stock return volatility | Following Bravo (2016), “SRV is measured as one plus the natural logarithm of the standard deviation of daily stock returns”. |
| Independent variables | | |
| OUTD | Disclosure quantity | \( QUTD_i = \frac{F_i - \text{Min}_i}{\text{Max}_i - \text{Min}_i} \), where \( F_i \) is the number of sentences with FLD. \( \text{Max}_i \) is the maximum number of sentences with FLD, while \( \text{Min}_i \) is the minimum number of sentences with FLD across the sample (Bravo et al., 2009, p. 264). |
| COVD | Disclosure coverage | \( COVD_i = \frac{1}{st} \sum_{j=1}^{st} \text{INF}_{ij} \), where \( \text{INF}_{ij} = 1 \) if the annual report of company \( i \) discloses information about the subtopic, 0 otherwise (Beretta & Bozzolan, 2008, p. 344 as quoted also by Bravo et al., 2009, p. 260). |
| COND | Disclosure concentration | \( COND_i = \frac{-\sum_{j=1}^{st} P_j \ln P_j}{\ln st} \), where \( P_j \) – number of information disclosed in sub-topic \( j \) divided by total disclosure of company \( i \), \( st \) – number of topics (or sub-topics), \( \ln \) is a natural logarithm (Beretta & Bozzolan, 2008, p. 344, as quoted also by Bravo et al., 2009, p. 260). |
| DQA | Disclosure quality | DQA was measured as the average of the three measures as \( DQA_i = \frac{\text{STRQT}_i + \text{COVD}_i + \text{COND}_i}{3} \). |
| Control variables | | |
| LEV | Financial leverage | Total debt/total assets |
| FOWN | Foreign ownership | The percentage of foreign ownership |
| ROA | Firm performance | Net profit to total assets |
| AGE | The age of the firm | Number of years of corporate establishment |
| BoD | Independence of the board | The percentage of external members to total board members |
| FSIZE | Firm size | The natural logarithm of firm total assets |
| TYPE | Type of industry | Takes 1 if a firm belongs to banks and financial firms and zero if it is a nonfinancial firm (such as industrial, tourism and services firms) |

5. Sample and Data Collection

By the end of 2017, 43 companies were listed in the “Bahrain All Share Index” as the main index of the BHB. Table 2 shows the distribution of these firms by sectors. The current study applied a number of criteria to include any company in the sample: (1) companies had to be Bahraini firms that were listed on BHB from 2014 to 2017 continuously; (2) availability of complete annual reports. In addition, closed company sector and non-Bahraini companies are excluded. After applying previous
criteria, the final sample is 34 firms (which represents 85% of total listed firms) divided into 17 banks and financial firms and 17 non-financial firms (such as industrial, tourism and services firms) covering the period 2017–2014. Total observations in the current study is 136 firm-year observations. A list of Bahraini listed firms included in the current study (34 firms) is presented in Appendix C.

Table 2. Summarized firms’ distribution by sectors

| Sectors                | Number of firms |
|------------------------|-----------------|
| Commercial bank        | 7               |
| Investment             | 11              |
| Services               | 10              |
| Insurance              | 5               |
| Industrial             | 3               |
| Hotels and tourism     | 4               |
| Closed company         | 2               |
| Non-Bahraini companies | 1               |
| Total                  | 43              |

6. RESULTS

6.1. Descriptive statistics

The results of the descriptive statistics for the current study are shown in Table 3, the four attributes of FLD, and seven control variables. COND has maximum mean (0.937) among four attributes of FLD, while QUTD has minimum mean (0.533). With respect to the standard deviation, QUTD has the highest variation (0.254) among them, while COVD (0.054) has the lowest variation.

6.2. Correlation analysis

6.2.1. The assessment of FLD across the sample of the study

To achieve the first objective of our study, FLD with four attributes was assessed through 34 listed firms in BHB (from 2014 to 2017), as shown in Table 4 and Tables B1, B2 and B3 in Appendix B. To investigate the effect of using the four attributes of FLD on the rank-orderings of companies, the ranking of companies (year by year) was presented in Table 4, B1, B2 and B3 based on the values of each index. It can be noted that rank-orderings of companies differ among different indices. For example, in Table 4, AUB (United Ahli Bank) comes first in the ranking when using the quantity index (QUTD) and it comes second in other indices, while CPARK (non-financial company) comes number 24 when using QUTD index, number 30 in COVD index, number 34 in COND index and number 18 in DQA index.

In the same vein, in Table B1 (see Appendix B), BANDER comes number 31 in the three indices (QUTD, COND and DQA) and it comes number 22 with COVD. CPARK comes 20 in the ranking when using both QUTD and DQA indices, while it comes 34 and 27 in the COVD and COND indices, respectively. In Table B2, in 2015, NBB (National

Table 3. Descriptive statistics

| Variables | Mean | Standard deviation | Min  | Max  |
|-----------|------|--------------------|------|------|
| SRV       | 1.265| 2.871              | -14.075 | 3.287 |
| QUTD      | 0.533| 0.254              | 0    | 0.868 |
| COVD      | 0.804| 0.157              | 0.462 | 0.997 |
| COND      | 0.937| 0.054              | 0.823 | 0.998 |
| DQA       | 0.708| 0.121              | 0.492 | 0.916 |
| LEV       | 0.452| 0.354              | 0.043 | 2.013 |
| FOWN      | 2.376| 13.579             | 0.0002 | 92.43 |
| ROA       | 3.451| 7.421              | -35.38 | 26.17 |
| AGE       | 31.441| 13.176             | 7    | 61   |
| BoD       | 0.801| 0.169              | 0.300 | 1    |
| FSIZE     | 5.287| 0.964              | 3.158 | 7.107 |

Note: Stock return volatility (SRV), disclosure quantity (QUTD), disclosure coverage (COVD), disclosure concentration (COND), and disclosure quality (DQA), financial leverage (LEV), foreign ownership (FOWN), firm performance (ROA), the age of the firm (AGE), independence of the board (BoD), firm size (FSIZE), type of industry (TYPE). Number of firms 34 covering the period from 2014 to 2017 (136 firm-year observations).
Bahrain Bank) comes first in all four indices. CINAMA comes at the bottom when using COVD index, while the same company comes 17 for QUTD and 18 for both COND and DQA indices.

In Table B3, AUB bank has score 1 for three indices (QUTD, COND and DQA), while it has score 2 in COND. However, some companies have a high score in one index and, at the same time, they have a low score in other indices. Finally, it should be noted that through the ranking in Table 4 and Tables B1, B2 and B3 (see Appendix B for more details), banks and financial firms ranked first in the rankings order within the four different indices of FLD (QUTD, COVD, COND and DQA). Our main finding of the study agrees with the results of Bravo et al. (2009) who found that the selection of a specific disclosure index influences crucially the results of the analysis.

### 6.2.2. Corporate forward-looking disclosure and stock return volatility

#### Correlation analysis

Table 5 presents the correlation coefficients of the variables of the current study. Most correlations are statistically significant. The highest correlation is 0.97, which exists between QUTD and

| Company code | QUTD Rank | COVD Rank | COND Rank | DQA Rank |
|--------------|-----------|-----------|-----------|----------|
| AUB          | 1         | 2         | 2         | 2        |
| SALAM        | 5         | 4         | 4         | 4        |
| BISS         | 2         | 3         | 3         | 3        |
| BBK          | 4         | 4         | 4         | 5        |
| KHCN         | 6         | 8         | 6         | 7        |
| NBB          | 3         | 1         | 1         | 1        |
| ITHMR        | 9         | 7         | 7         | 8        |
| BARKA        | 7         | 6         | 8         | 6        |
| ABC          | 8         | 9         | 9         | 9        |
| BCFC         | 16        | 10        | 10        | 10       |
| BMB          | 14        | 11        | 11        | 11       |
| ESTERAD      | 11        | 15        | 15        | 14       |
| GFI          | 13        | 13        | 14        | 15       |
| INVEST       | 15        | 17        | 17        | 16       |
| INVCORP      | 12        | 13        | 13        | 13       |
| UGB          | 10        | 12        | 12        | 12       |
| UGIC         | 17        | 16        | 16        | 17       |
| BFMA         | 25        | 24        | 24        | 24       |
| POLTRY       | 33        | 32        | 32        | 32       |
| ALBH         | 18        | 33        | 33        | 33       |
| FAMILY       | 32        | 31        | 31        | 31       |
| BANDER       | 28        | 27        | 27        | 27       |
| NCI          | 20        | 29        | 29        | 29       |
| BHOTEL       | 31        | 30        | 30        | 30       |
| BASREC       | 26        | 25        | 25        | 25       |
| CINAMA       | 22        | 21        | 21        | 21       |
| DUTY         | 23        | 22        | 22        | 22       |
| SEEF         | 29        | 28        | 28        | 28       |
| TRAFCO       | 34        | 33        | 33        | 33       |
| BATELCO      | 21        | 19        | 19        | 19       |
| NASS         | 27        | 26        | 26        | 26       |
| BMII         | 30        | 29        | 29        | 29       |
| CPARK        | 24        | 23        | 23        | 23       |

Note: Disclosure quantity (QUTD), disclosure coverage (COVD), disclosure concentration (COND), and disclosure quality (DQA). Total number of firms is 34 (17 bank and financial firms and 17 non-financial firms).
Table 5. Correlation matrix of the variables of the study

| Variables | SRV | QUTD | COVD | COND | DQA | LEV | FOWN | ROA | AGE | BoD | FSIZE |
|-----------|-----|------|------|------|-----|-----|------|-----|-----|-----|-------|
| SRV       | 1   | –    | –    | –    | –   | –   | –    | –   | –   | –   | –     |
| QUTD      | –0.17** | 1   | –    | –    | –   | –   | –    | –   | –   | –   | –     |
| COVD      | –0.11* | 0.28*** | 1   | –    | –   | –   | –    | –   | –   | –   | –     |
| COND      | –0.04 | 0.82*** | 0.36*** | 1   | –   | –   | –    | –   | –   | –   | –     |
| DQA       | –0.14** | 0.97*** | 0.33*** | 0.86*** | 1   | –   | –    | –   | –   | –   | –     |
| LEV       | 0.17** | 0.03 | 0.35 | 0.05 | 0.02 | 1   | –    | –   | –   | –   | –     |
| FOWN      | 0.03 | 0.06 | 0.17** | 0.11* | 0.03 | 0.01 | 1    | –   | –   | –   | –     |
| ROA       | –0.15** | –0.02 | –0.26*** | 0.03 | 0.03 | –0.49*** | 0.21** | 0.19** | 1   | –     | –     |
| AGE       | –0.05 | –0.22** | –0.25*** | –0.23** | –0.27*** | –0.15* | 0.21** | 0.19** | 1   | –     | –     |
| BoD       | –0.02 | 0.07 | –0.03 | 0.07 | 0.08 | –0.21** | 0.20** | 0.09 | 0.28** | 1   | –     |
| FSIZE     | 0.18** | –0.05 | 0.62*** | 0.01 | –0.04 | –0.22** | –0.02 | –0.03 | 0.02 | 0.07 | 1     |
| TYPE      | 0.11* | –0.15** | 0.83*** | –0.05 | 0.16^ | 0.38*** | 0.17* | –0.30*** | –0.08 | –0.07 | 0.69*** |

Notes: 1. Stock return volatility (SRV), disclosure quantity (QUTD), disclosure quality (DQA), disclosure coverage (COVD) and disclosure concentration (COND), financial leverage (LEV), foreign ownership (FOWN), firm performance (ROA), the age of the firm (AGE), independence of the board (BoD), firm size (FSIZE), type of industry (TYPE). 2. Number of firms 34 covering the period from 2014 to 2017 (136 firm-year observations). 3. * Correlation is significant at the 0.10 level (two-tailed); ** at the 0.05 level (two-tailed); *** correlation is significant at the 0.01 level (two-tailed).

DQA. The lowest correlation is –0.04, which exists between SRV and COND. QUTD has significant positive correlations at the 1% level with the three attributes of FLD (COVD, COND and DQA). Table 5 reveals that SRV has significant negative correlations (at the 5% level) with QUTD and DQA (–0.17’ and –0.14’, respectively), while it has a significant correlation with COVD (at the 10% level). In contrast, SRV has no significant negative correlation with COND (at the 10% level). Concerning control variables, LEV, ROA and FSIZE have statistically significant associations with SRV at the 5% level, while TYPE has a significant association with SRV at the 10% level. This result is inconsistent with Bravo (2016) who found that LEV has a negative association with SRV (–0.088), but not significant. Other control variables, such as ROA and FSIZE, are statistically significant with SRV similar to the findings that were reported by Aljifri and Hussainey (2007) and Bravo (2016).

Regression analysis

To test the hypotheses developed earlier in this study, different statistical models were performed to examine problems, such as multicollinearity and heteroscedasticity. Results revealed that these problems do not exist for all the models. To study the effect of the variables of the study on SRV, Table 6 presents five models, including four attributes of FLD and seven control variables. The following models were proposed, in which SRV is a function in all of these variables:

\[
 SRV = \left\{ \begin{array}{c}
 QUTD, COVD, COND, DQA, \\
 LEV, FOWN, ROA, AGE, \\
 BoD, FSIZE, TYPE
\end{array} \right. 
\]

Model 1:

\[
 SRV = \alpha + \beta_1\text{LEV} + \beta_2\text{FOWN} + \beta_3\text{ROA} + \\
 \beta_4\text{AGE} + \beta_5\text{BoD} + \beta_6\text{FSIZE} + \beta_7\text{TYPE} + \epsilon. 
\]

Model 2:

\[
 SRV = \alpha + \beta_1\text{QUTD} + \beta_2\text{LEV} + \beta_3\text{FOWN} + \\
 \beta_4\text{ROA} + \beta_5\text{AGE} + \beta_6\text{BoD} + \beta_7\text{FSIZE} + \\
 \beta_8\text{TYPE} + \epsilon. 
\]

Model 3:

\[
 SRV = \alpha + \beta_1\text{COVD} + \beta_2\text{LEV} + \beta_3\text{FOWN} + \\
 \beta_4\text{ROA} + \beta_5\text{AGE} + \beta_6\text{BoD} + \beta_7\text{FSIZE} + \\
 \beta_8\text{TYPE} + \epsilon. 
\]

Model 4:

\[
 SRV = \alpha + \beta_1\text{COND} + \beta_2\text{LEV} + \beta_3\text{FOWN} + \\
 \beta_4\text{ROA} + \beta_5\text{AGE} + \beta_6\text{BoD} + \beta_7\text{FSIZE} + \\
 \beta_8\text{TYPE} + \epsilon. 
\]

Model 5:

\[
 SRV = \alpha + \beta_1\text{DQA} + \beta_2\text{LEV} + \beta_3\text{FOWN} + \\
 \beta_4\text{ROA} + \beta_5\text{AGE} + \beta_6\text{BoD} + \beta_7\text{FSIZE} + \\
 \beta_8\text{TYPE} + \epsilon. 
\]
Model 1 presents seven control variables for SRV based on previous literature, which have been considered. Model 1 is not statistically significant and it has $R^2$ (18%). Model 2 considers QUTD as an independent variable, and control variables. This model explains the effect of QUTD individually on SRV beyond the control variables. The $R^2$ in model 2 is 27%. There is an increase about 9% compared with model 1. QUTD variable has a negative association with SRV (significant at 5% level). Findings of model 2 reveal that the increase of QUTD results in an incremental reduction in SRV. These findings confirm theoretical perspective of agency theory, which expected that the more the increase of QUTD, the more the decrease in SRV, which reflects the impact of FLD on financial markets. Hence, hypothesis H1 is accepted. This finding agrees with the results reported by Mousa and Elamir (2018).

Concerning model 4, COND variable plus the control variables are considered. The model is significant at the 10% level. The regression analysis shows how the changes in SRV beyond that of the control variables. The explanatory power for this model is 26% with an increase 8% than model 1. In addition, the new independent variable, COVD, has a significant negative effect on SRV. This finding supports the hypothesis H2, consequently, it is accepted.

Model 5 includes DQA variable plus the control variables. Model 5 is statistically significant at the 5% level with the $F$ value 2.25**. DQA is statistically significant at the 5% level. The $R^2$ for model 5 is 24%. In general, we can conclude that the

| Table 6. Regression analysis of the study |
|------------------------------------------|
| Variables                  | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|----------------------------|---------|---------|---------|---------|---------|
| Coefficients (Beta)        |         |         |         |         |         |
| Intercept                  | -4.89   | -4.583  | -4.365  | -1.075  | 3.912   |
| STRQT                     |         |         |         |         |         |
| -0.879**                   |         |         |         |         |         |
| COVD                      |         |         |         |         |         |
| -0.893*                   |         |         |         |         |         |
| COND                      |         |         |         |         |         |
| -2.465                    |         |         |         |         |         |
| DQA                       |         |         |         |         |         |
|                         |         |         |         |         |         |
| LEV                       | 0.9923  | 1.078   | 1.013   | 1.090   | 1.062   |
| ROA                       | -0.0418 | -0.0401 | -0.042* | -0.0389 | -0.040  |
| AGE                       | -0.0055 | -0.0101 | -0.008  | -0.038  | -0.100  |
| BoD                       | 0.0747  | 0.2891* | 0.154   | -0.010  | 0.283*  |
| FSIZE                     | 0.7276  | 0.7551**| 0.743** | 0.316** | 0.757** |
| TYPE                      | -0.8519 | -0.983  | -0.645  | 0.748   | -0.977  |
| $R^2$                     | 18%     | 27%     | 26%     | 23%     | 24%     |
| $R^2_{adj}$               | 9%      | 13%     | 14%     | 11%     | 12%     |
| F value                   | 1.29    | 2.88**  | 2.47**  | 1.97*   | 2.25**  |

Notes: 1. Stock return volatility (SRV), disclosure quantity (QUTD), disclosure quality (DQA), disclosure coverage (COVD) and disclosure concentration (COND), financial leverage (LEV), foreign ownership (FOWN), firm performance (ROA), age of the firm (AGE), independence of the board (BoD), firm size (FSIZE), type of industry (TYPE). 2. Number of firms 34 covering the period from 2014 to 2017 (136 firm-year observations). 3. * Significant at the 0.10 level (two-tailed); ** at the 0.05 level (two-tailed); *** correlation is significant at the 0.01 level (two-tailed).
increase in DQA will decrease the SRV. A significant negative relationship (at 5% level) was reported between DQA and SRV. This finding supports the hypothesis $H_4$ that was developed earlier in the study. Our results are consistent with Espinosa and Trombetta (2007), Hussainey and Mouselli (2010), Bravo (2016) and Mohamed and Schwienbacher (2016) who found that the quality of FLD can reduce SRV.

Regardless control variables, results of all models (2, 3, 4 and 5) indicate that the four attributes of FLD, namely OUTD, COND and DQA have significant negative associations with SRV. Prior literature argues that investors gain a number of benefits from FLD, such that it can mitigate instability in share price (Bravo, 2016). In line with agency theory, FLD can be a useful tool to reduce information asymmetry or agency costs, which can play a unique role in having an impact on stakeholders’ perception from the stakeholders’ perspective. The overall results of the current study support that FLD has significant effects on capital markets and helps to reduce SRV. Our results are consistent with prior studies such as Sahore and Verma (2017) and Jayshree (2012) who argue that more disclosure of information helps investors to take reliable decisions and avoids confusion. Unclear information or no information often leads to wrong decisions.

CONCLUSION

The current study has measured FLD by considering four attributes (OUTD, COVD, COND and DQA) in annual reports for a sample of listed firms in BHB from 2014 to 2017. The study’s results revealed that firms have different score in each index. Consequently, their rankings differ in the four indices related to FLD attributes, which supports the argument on using different disclosure indices impacts on the results of disclosure studies. Banks and financial firms obtained the first 17 positions in the four FLD indices in most cases. This is due to the vital role played by banks and financial firms in the economies of countries and the importance they represent to a large number of investors. Therefore, especially banks are subjected to strict control by governments and international legislation. Moreover, the current study investigated the relationship between the four attributes of FLD and SRV. The main findings of the regression analyses showed significant negative relationships between SRV and three attributes of FLD (namely OUTD, COVD and DQA), which supported the hypotheses $H_1$, $H_2$ and $H_4$, in contrast, $H_3$ was rejected, because, in model 4, the coefficient of the variable COND (−4.265) is not statistically significant with SRV.

This study contributes to the current literature on FLD by assessing FLD in Bahraini capital market. It implies practical implications for a number of interested parties, such as managers, investors and regulators. Since several studies have documented the importance of future information for different stakeholder groups, this study meets the unique demand for FLD and its impact on critical matters, such as SRV for these groups.

The study is not free of limitations. Firstly, the sample size is small, which can be increased in future research by including other countries. The results of the study cannot be generalized to other countries. Since each country has different economic status and regulations. Finally, the study has used content analysis, which is inevitably subjective. The current study suggests several trends for future studies. For example, studying the effect of other factors, such as economic and corporate governance factors, on FLD can be a promising avenue. Other directions are exploring the effect of legal environments and stockholders’ rights on FLD.

ACKNOWLEDGMENT

The authors appreciate the financial support provided by Scientific Research Deanship, University of Bahrain (Research #3/2014).
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## APPENDIX A

### Table A1. Forward-looking disclosure index

Source: Mousa and Elamir (2018).

| Opportunities and risks                                                                 |  |
|----------------------------------------------------------------------------------------|---|
| 1. Brief discussion and analysis of a company's financial position                      |  |
| 2. Discussion of the company's liquidity position and about additional financing        |  |
| 3. Qualitative forecast of earnings                                                     |  |
| 4. Discussion of overall risk management philosophy and policy                         |  |
| 5. Discussion on risks and how risks are managed                                        |  |
| 6. Discussion on how hedges and derivate are used to manage risks                       |  |
| 7. Information on risk management committee/information on risk management structure    |  |
| 8. Contingent gains and losses related to a company's rights and obligations, including legal proceedings |  |
| 9. Nature and cause of risks                                                           |  |
| 10. Nature and cause of opportunities                                                  |  |
| 11. Effects of opportunities and risks on future core earnings and cash flows           |  |
| 12. Risks related to deal with data and information                                      |  |
| 13. Opportunities and risks resulting from participation in additional industries      |  |
| 14. Opportunities and risks resulting from changes in a segment's industry structure   |  |
| 15. Change in the intensity of competition and the bargaining power of customers or suppliers |  |
| 16. Opportunities and risks that result from concentrations (for example, concentrations in assets, customers, or suppliers) |  |
| 17. Contingent gains and losses related to a company's rights and obligations, including legal proceedings |  |
| 18. Risk of illiquidity                                                                  |  |
| 19. Control risk                                                                         |  |
| 20. Business risk                                                                        |  |
| 21. Currency risk                                                                        |  |
| 22. Market risk                                                                          |  |
| 23. Financial analysis such as return on assets; return on equity; net interest margin; cost-to-income ratio; earning per share; risk-weighted assets; debt-to-equity ratio; total liquid assets to assets ratio and dividend per share |  |

| Strategic information                                                                 |
|----------------------------------------------------------------------------------------|
| 1. Customer satisfaction                                                               |  |
| 2. Product development                                                                 |  |
| 3. Efficiency and performance                                                           |  |
| 4. Environmental factors/Environmental issues                                          |  |
| 5. Regulatory environment                                                               |  |
| 6. Political environment                                                                |  |
| 7. Economic environment                                                                 |  |
| 8. Social environment                                                                   |  |
| 9. Type of industry or activities/Industry environment                                  |  |
| 10. Business portfolio                                                                  |  |
| 11. Competitors                                                                        |  |
| 12. Customers                                                                          |  |
| 13. Suppliers                                                                          |  |
| 14. Identity past and future effect of key demographic trends                          |  |
| 15. Planning on long term basis?                                                        |  |
| 16. Life cycle                                                                         |  |
| 17. Performance measurement                                                             |  |
| 18. Health and safety                                                                   |  |

| Management analysis                                                                   |
|----------------------------------------------------------------------------------------|
| 1. Discussion on accounting policy and impact                                         |  |
| 2. Discussion on accounting standards and impact                                       |  |
| 3. Comparison of actual business performance over two years                           |  |
| 4. Reasons for change in profitability                                                |  |
| 5. Identity the effect of unusual or nonrecurring transactions and events              |  |
| 6. Reasons for change in ratios                                                       |  |
| 7. Reasons for change in liquidity and financial flexibility                           |  |
| 8. Reasons for change in financial position                                            |  |
| 9. Reasons for change in innovation                                                   |  |
| 10. Identity past and future effect of key economic trends                             |  |
| 11. Identity past and future effect of key regulatory trends                           |  |
| 12. Identity past and future effect of key social trends                               |  |
| 13. Identity past and future effect of key technological trends                        |  |
| 14. Identity past and future effect of key demographic trends                          |  |
| 15. Graphical presentation of performance indicators                                   |  |

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## APPENDIX B

### Table B1. Company ranking in year 2016

| Type of company | Company code | QUTD | Rank | COVD | Rank | COND | Rank | DQA | Rank |
|-----------------|--------------|------|------|------|------|------|------|------|------|
| **Banks and financial firms** | | | | | | | | | |
| AUB | 0.79210 | 1 | 0.77453 | 4 | 0.99847 | 1 | 0.91120 | 2 |
| SALAM | 0.78818 | 3 | 0.75455 | 8 | 0.98946 | 8 | 0.90307 | 4 |
| BISB | 0.78251 | 5 | 0.78453 | 2 | 0.99071 | 4 | 0.90673 | 3 |
| BBK | 0.78521 | 4 | 0.76995 | 5 | 0.99648 | 2 | 0.90288 | 5 |
| KHCB | 0.77141 | 7 | 0.76208 | 7 | 0.98971 | 7 | 0.88791 | 7 |
| NBB | 0.79133 | 2 | 0.78709 | 1 | 0.99046 | 5 | 0.91614 | 1 |
| ITHMR | 0.77945 | 6 | 0.77702 | 3 | 0.99625 | 3 | 0.88619 | 8 |
| BARKA | 0.76946 | 8 | 0.76370 | 6 | 0.98995 | 6 | 0.89100 | 6 |
| ABC | 0.76697 | 9 | 0.74451 | 9 | 0.98846 | 9 | 0.88245 | 9 |
| BCFC | 0.74254 | 12 | 0.72954 | 10 | 0.98793 | 10 | 0.86543 | 10 |
| BMB | 0.72698 | 16 | 0.72820 | 11 | 0.98652 | 15 | 0.86135 | 11 |
| ESTERAD | 0.73601 | 14 | 0.63705 | 17 | 0.98654 | 13 | 0.84782 | 14 |
| GFH | 0.72829 | 15 | 0.63704 | 17 | 0.98674 | 11 | 0.78402 | 16 |
| INOVEST | 0.76678 | 10 | 0.72453 | 12 | 0.98651 | 17 | 0.82594 | 10 |
| INVCORP | 0.76146 | 11 | 0.64953 | 15 | 0.98655 | 13 | 0.79918 | 14 |
| UGB | 0.73718 | 13 | 0.67453 | 13 | 0.98653 | 14 | 0.79941 | 13 |
| UGIC | 0.69905 | 17 | 0.65053 | 14 | 0.98653 | 16 | 0.77870 | 17 |
| **Non-financial firms (such as industrial, tourism and services firms)** | | | | | | | | | |
| BFM | 0.30038 | 30 | 0.57500 | 24 | 0.89504 | 28 | 0.59014 | 30 |
| POLTRY | 0.31290 | 28 | 0.57500 | 24 | 0.89504 | 28 | 0.59431 | 29 |
| ALBH | 0.46124 | 23 | 0.57500 | 24 | 0.89504 | 28 | 0.64376 | 23 |
| FAMILY | 0.34337 | 27 | 0.55000 | 29 | 0.96379 | 20 | 0.61905 | 27 |
| BANDER | 0.19113 | 31 | 0.61250 | 22 | 0.87303 | 31 | 0.55889 | 31 |
| NHOTEL | 0.54289 | 21 | 0.53750 | 31 | 0.91557 | 24 | 0.66532 | 22 |
| BHOTEL | 0.53753 | 22 | 0.53750 | 31 | 0.98647 | 18 | 0.68717 | 21 |
| BASREC | 0.17548 | 33 | 0.63750 | 16 | 0.83936 | 34 | 0.55078 | 32 |
| CINAMA | 0.13690 | 34 | 0.62500 | 19 | 0.85848 | 33 | 0.54012 | 34 |
| DUTY | 0.17830 | 32 | 0.60000 | 23 | 0.86592 | 32 | 0.54807 | 33 |
| SEEF | 0.35918 | 25 | 0.56250 | 28 | 0.95923 | 21 | 0.62697 | 24 |
| TRAFCO | 0.35596 | 26 | 0.53750 | 31 | 0.98647 | 18 | 0.62664 | 25 |
| Zain.BH | 0.68513 | 18 | 0.62255 | 21 | 0.91559 | 24 | 0.74108 | 19 |
| BATELCO | 0.68172 | 19 | 0.62500 | 19 | 0.93992 | 22 | 0.74888 | 18 |
| NASS | 0.40903 | 24 | 0.55000 | 29 | 0.90133 | 26 | 0.62012 | 26 |
| BMIMI | 0.30095 | 29 | 0.57500 | 24 | 0.93919 | 23 | 0.60504 | 28 |
| CPARK | 0.67634 | 20 | 0.50100 | 34 | 0.90100 | 27 | 0.69278 | 20 |

Note: Disclosure quantity (QUTD), disclosure coverage (COVD), disclosure concentration (COND), and disclosure quality (DQA). Total number of firms is 34 (17 banks and financial firms and 17 non-financial firms).
### Table B2. Company ranking in year 2015

| Type of company                      | Company code | QUTD   | Rank | COVD   | Rank | COND   | Rank | DQA   | Rank |
|--------------------------------------|--------------|--------|------|--------|------|--------|------|-------|------|
| **Banks and financial firms**        | AUB          | 0.76432| 3    | 0.69487| 2    | 0.96604| 2    | 0.85503| 2    |
|                                      | SALAM        | 0.75429| 6    | 0.67984| 5    | 0.97524| 7    | 0.84406| 6    |
|                                      | BISB         | 0.76620| 2    | 0.69484| 2    | 0.97504| 8    | 0.85258| 3    |
|                                      | BBK          | 0.75432| 5    | 0.68484| 4    | 0.97404| 9    | 0.85054| 5    |
|                                      | KHCB         | 0.73752| 7    | 0.67484| 8    | 0.97626| 5    | 0.84105| 7    |
|                                      | NBB          | 0.77440| 1    | 0.69734| 1    | 0.98959| 1    | 0.85627| 1    |
|                                      | ITHMR        | 0.75560| 4    | 0.67734| 6    | 0.97724| 3    | 0.85091| 4    |
|                                      | BARKA        | 0.73557| 8    | 0.67484| 8    | 0.97705| 4    | 0.84104| 8    |
|                                      | ABC          | 0.73308| 9    | 0.67734| 6    | 0.97573| 6    | 0.83332| 9    |
|                                      | BCFC         | 0.68865| 16   | 0.66634| 10   | 0.97190| 10   | 0.82000| 11   |
|                                      | BMB          | 0.69309| 15   | 0.65984| 11   | 0.96735| 13   | 0.81390| 12   |
|                                      | ESTERAD      | 0.70212| 14   | 0.64734| 14   | 0.96660| 16   | 0.78652| 15   |
|                                      | GFH          | 0.70440| 12   | 0.65484| 12   | 0.96735| 14   | 0.78402| 16   |
|                                      | INOVEST      | 0.73289| 10   | 0.65484| 12   | 0.96649| 17   | 0.82594| 10   |
|                                      | INVCORP      | 0.72757| 11   | 0.62984| 20   | 0.96822| 11   | 0.79918| 14   |
|                                      | UGB          | 0.70329| 13   | 0.62984| 20   | 0.96735| 12   | 0.79941| 13   |
|                                      | UGIC         | 0.66516| 18   | 0.63784| 16   | 0.96710| 15   | 0.76203| 17   |
| **Non-financial firms (such as industrial, tourism and services firms)** | BFM          | 0.10853| 32   | 0.62500| 23   | 0.84720| 29   | 0.52691| 32   |
|                                      | POLTRY       | 0.38641| 21   | 0.55000| 33   | 0.90133| 22   | 0.61250| 24   |
|                                      | ALBH         | 0.20276| 28   | 0.62500| 23   | 0.84720| 29   | 0.55832| 29   |
|                                      | FAMILY       | 0.33840| 23   | 0.57500| 31   | 0.89504| 26   | 0.60281| 26   |
|                                      | BANDER       | 0.15689| 31   | 0.62500| 23   | 0.84720| 29   | 0.54286| 31   |
|                                      | N'HOTEL      | 0.34107| 22   | 0.58750| 30   | 0.91346| 20   | 0.61401| 23   |
|                                      | B'HOTEL      | 0.16497| 30   | 0.63750| 17   | 0.83937| 32   | 0.54728| 30   |
|                                      | BASREC       | 0.43650| 20   | 0.57500| 31   | 0.93919| 19   | 0.65023| 20   |
|                                      | CINAMA       | 0.66766| 17   | 0.53750| 34   | 0.96647| 18   | 0.72388| 18   |
|                                      | DUTY         | 0.02492| 33   | 0.63750| 17   | 0.83937| 32   | 0.50059| 33   |
|                                      | SEEF         | 0.23496| 27   | 0.60000| 27   | 0.90563| 21   | 0.58020| 27   |
|                                      | TRAFCO       | 3.3E-09| 34   | 0.63750| 17   | 0.83937| 32   | 0.49229| 34   |
|                                      | ZAIN.BH      | 0.33772| 24   | 0.62510| 22   | 0.89848| 23   | 0.62043| 21   |
|                                      | BATELCO      | 0.33995| 25   | 0.62500| 23   | 0.89848| 23   | 0.61914| 22   |
|                                      | NASS         | 0.32598| 26   | 0.64560| 15   | 0.86592| 28   | 0.61250| 25   |
|                                      | BMNI         | 0.19267| 29   | 0.60000| 27   | 0.89811| 25   | 0.56359| 28   |
|                                      | CPARK        | 0.60000| 19   | 0.58800| 29   | 0.87500| 27   | 0.68766| 19   |

Note: Disclosure quantity (QUTD), disclosure coverage (COVD), disclosure concentration (COND), and disclosure quality (DQA). Total number of firms is 34 (17 banks and financial firms and 17 non-financial firms).
| Type of company                          | Company code | QUTD  | Rank | COVD  | Rank | COND  | Rank | DQA  | Rank |
|-----------------------------------------|--------------|-------|------|-------|------|-------|------|------|------|
| Banks and financial firms               |              |       |      |       |      |       |      |      |      |
| AUB                                     | 0.69819      | 1     | 0.73115 | 1 | 0.99522 | 2 | 0.80819 | 1 |
| SALAM                                   | 0.69101      | 4     | 0.72976 | 3 | 0.99194 | 5 | 0.80424 | 3 |
| BISB                                    | 0.69449      | 2     | 0.72815 | 4 | 0.99015 | 7 | 0.80426 | 2 |
| BBK                                     | 0.69119      | 3     | 0.72765 | 5 | 0.99100 | 6 | 0.80328 | 5 |
| KHCB                                    | 0.68339      | 5     | 0.72615 | 6 | 0.98773 | 9 | 0.79909 | 7 |
| NBB                                     | 0.68331      | 6     | 0.73015 | 2 | 0.99715 | 1 | 0.80354 | 4 |
| ITHMR                                   | 0.68143      | 8     | 0.72265 | 7 | 0.99194 | 4 | 0.79867 | 8 |
| BARKA                                   | 0.68144      | 7     | 0.72265 | 7 | 0.99473 | 3 | 0.79961 | 6 |
| ABC                                     | 0.67896      | 9     | 0.72265 | 7 | 0.98804 | 8 | 0.79655 | 9 |
| BCFC                                    | 0.67452      | 10    | 0.72265 | 7 | 0.98202 | 12 | 0.79306 | 10 |
| BMB                                     | 0.66896      | 11    | 0.67269 | 11 | 0.98054 | 13 | 0.77405 | 11 |
| ESTERAD                                 | 0.64799      | 17    | 0.62277 | 21 | 0.98657 | 10 | 0.75239 | 15 |
| GFH                                     | 0.66025      | 15    | 0.63516 | 14 | 0.99074 | 17 | 0.75530 | 14 |
| INOVEST                                 | 0.66876      | 12    | 0.63513 | 14 | 0.97133 | 15 | 0.75841 | 13 |
| INVCORP                                 | 0.66344      | 14    | 0.59762 | 29 | 0.96711 | 18 | 0.74273 | 16 |
| UGB                                     | 0.64916      | 16    | 0.66010 | 12 | 0.97048 | 16 | 0.75993 | 12 |
| UGIC                                    | 0.61103      | 18    | 0.63865 | 13 | 0.97346 | 14 | 0.74105 | 17 |
| Non-financial firms (such as industrial, tourism and services firms) |              |       |      |       |      |       |      |      |      |
| BFM                                     | 0.14630      | 31    | 0.61250 | 23 | 0.87303 | 26 | 0.54394 | 31 |
| POLTRY                                  | 0.17961      | 30    | 0.60000 | 28 | 0.86592 | 29 | 0.54851 | 30 |
| ALBH                                    | 0.27432      | 26    | 0.61250 | 23 | 0.87303 | 26 | 0.58661 | 26 |
| FAMILY                                  | 0.66634      | 13    | 0.50000 | 34 | 0.91251 | 23 | 0.69295 | 20 |
| BANDER                                  | 0.19396      | 29    | 0.61250 | 23 | 0.87302 | 26 | 0.55983 | 28 |
| NHOTEL                                  | 0.44050      | 22    | 0.56250 | 31 | 0.94702 | 21 | 0.65000 | 23 |
| BHOSTEL                                 | 0.19854      | 27    | 0.62500 | 16 | 0.86520 | 30 | 0.56291 | 27 |
| BASREC                                  | 0.19500      | 28    | 0.62500 | 16 | 0.85848 | 34 | 0.55979 | 29 |
| CINAMA                                   | 0.12628      | 32    | 0.62500 | 16 | 0.86520 | 30 | 0.53883 | 32 |
| DUTY                                    | 0.11882      | 33    | 0.62500 | 16 | 0.86520 | 30 | 0.53634 | 33 |
| SEEF                                    | 0.32382      | 25    | 0.57500 | 30 | 0.93919 | 22 | 0.61267 | 25 |
| TRAFCO                                  | 0.09816      | 34    | 0.62500 | 16 | 0.86520 | 30 | 0.52945 | 34 |
| ZAIN.BH                                 | 0.43309      | 23    | 0.61198 | 27 | 0.95647 | 20 | 0.66718 | 22 |
| BATELCO                                 | 0.49159      | 21    | 0.61199 | 26 | 0.98647 | 11 | 0.69668 | 19 |
| NASS                                    | 0.58400      | 20    | 0.61640 | 22 | 0.91251 | 23 | 0.70430 | 18 |
| BMMA                                    | 0.38620      | 24    | 0.56250 | 31 | 0.95923 | 19 | 0.63597 | 24 |
| CPARK                                   | 0.58998      | 19    | 0.54100 | 33 | 0.89200 | 25 | 0.67432 | 21 |

Note: Disclosure quantity (QUTD), disclosure coverage (COVD), disclosure concentration (COND), and disclosure quality (DQA). Total number of firms is 34 (17 banks and financial firms and 17 non-financial firms).
## APPENDIX C

### Table C1. List of firms included in the sample of the study

| Type of firms                                      | Firm name                                      | Firm code |
|---------------------------------------------------|------------------------------------------------|-----------|
| **Banks and financial firms**                     | Ahli United Bank B.S.C.                        | AUB       |
|                                                   | Al Salam Bank B.S.C.                           | SALAM     |
|                                                   | Bahrain Islamic Bank B.S.C.                    | BISB      |
|                                                   | BBK B.S.C.                                     | BBK       |
|                                                   | Khaleeji Commercial Bank B.S.C.                | KHCB      |
|                                                   | National Bank of Bahrain B.S.C.                | NBB       |
|                                                   | Ithmaar Bank B.S.C.                            | ITHMR     |
|                                                   | Albaraka Banking Group B.S.C.                  | BARKA     |
|                                                   | Arab Banking Corporation B.S.C.                | ABC       |
|                                                   | Bahrain Commercial Facilities Company B.S.C.   | BCFC      |
|                                                   | Bahrain Middle East Bank B.S.C.                | BMB       |
|                                                   | Esterad Investment Company B.S.C.              | ESTERAD   |
|                                                   | GFH Financial Group B.S.C.                     | GFH       |
|                                                   | Inovest B.S.C.                                 | INOVEST   |
|                                                   | Investcorp B.S.C.                              | INVCORP   |
|                                                   | United Gulf Bank B.S.C.                        | UGB       |
|                                                   | United Gulf Investment Corporation B.S.C.      | UGIC      |
| **Non-financial firms (such as industrial, tourism and services firms)** | Bahrain Flour Mills                            | BFM       |
|                                                   | Delmon Poultry                                 | POLTRY    |
|                                                   | Aluminum Bahrain                               | ALBH      |
|                                                   | Bahrain Family Leisure                         | FAMILY    |
|                                                   | Banader Hotels Company BSC                     | BANADER   |
|                                                   | National Hotels Company                        | NHOTEL    |
|                                                   | Gulf Hotel Group B.S.C.                        | BHOTEL    |
|                                                   | Bahrain Ship Repairing & Engineering Company B.S.C.| BASREC    |
|                                                   | The Bahrain Cinema Company B.S.C.              | CINAMA    |
|                                                   | Bahrain Duty Free Shop Complex B.S.C.          | DUTY      |
|                                                   | Seef Properties B.S.C.                         | SEEF      |
|                                                   | TRAFCO Group B.S.C.                            | TRAFCO    |
|                                                   | Zain Bahrain B.S.C.                            | Zain.BH   |
|                                                   | Bahrain Telecommunications Company B.S.C.      | BATELCO   |
|                                                   | Nass Corporation B.S.C.                        | NASS      |
|                                                   | BMMI B.S.C.                                    | BMMI      |
|                                                   | Bahrain Car Park Company B.S.C.                | CPARK     |

*Note: Total number of firms is 34 (17 banks and financial firms and 17 non-financial services).*