


# “Determining factors that affect risk disclosure level in Egyptian banks”

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# DETERMINING FACTORS THAT AFFECT RISK DISCLOSURE LEVEL IN EGYPTIAN BANKS

## Abstract

This study aims to measure the risk disclosure level in Egyptian banks and to investigate its determinants. The sample consisted of 28 banks during the period from 2010 to 2017. An unweighted risk disclosure index including six categories was used: credit risk, market risk, liquidity risk, capital structure and adequacy risk, operational risk, and other non-financial risks. Also, a content analysis approach was used to measure the actual level of risk disclosure. The findings demonstrated that there was an average level of total risk disclosure of all sample banks. The results showed that banks with a higher percentage of independent board membership, large board size, large audit committee size, duality, higher institutional ownership, and banks audited by one of big four audit firms were more motivated to increase risk disclosure. Also, the results showed that leverage, bad news, and bank social responsibility have a negative relationship with the level of risk disclosure. Overall, the results indicated that leverage, board size, audit committee size, auditor types, independence, duality, institutional ownership, bank social responsibility, and bad news are the main factors affecting the level of risk disclosure in Egyptian banks. The findings of this paper have a number of important implications. The risk disclosure in the banking sector is important for stakeholders such as investors and depositors. Also, risk disclosure index helps the regulatory bodies to evaluate the risk disclosure practice in Egyptian banks. This paper contributes to analyzing factors affecting banks managers' decision to disclose risk information in emerging countries such as Egypt.

**Keywords** risk disclosure determinants, risk disclosure index, content analysis, Egyptian banks

**JEL Classification** M40, G21, G34

## INTRODUCTION

Recently, many professional organizations, regulatory bodies, international organizations, and standard setters such as the Basel Committee on Banking Supervision (BCBS), the Financial Stability Board (FSB), the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) have required the banking sector to improve the level of risk disclosure as a result of a number of factors. Among these factors are: the banks exposed to increasing risk, the weakness and inadequacy of the current disclosure model to meet the needs of financial reporting users, technological progress, the dealing with financial instruments and their associated risks, the recent global financial crisis, and the benefits of risk disclosure for both the bank's management and various stakeholders such as investors, depositors, customers and employees.

Bank risk disclosure has many advantages such as reducing information asymmetry between management and shareholders, predicting qualitative and quantitative risks and future returns, rationalizing investment decisions, improving transparency, and supporting market discipline (Hatay, 2011; Alhadi et al., 2016; Lisnely et al., 2006; Oliveira,

2013). Risk disclosure is an important tool for improving the efficiency of capital markets, as it provides for monitoring the behavior of managers and reducing uncertainty among investors regarding future cash flows (Barakat & Hussainy, 2013). The voluntary risk disclosure promotes stability of the banking system, market discipline effectiveness, sustains the social support of stakeholders and enhances the legitimacy and reputation of the bank (Oliveira et al., 2011c). Bank risk disclosure improves the operational performance (Elbannan & Elbannan, 2015). In addition, risk disclosure is one of the most effective tools to reduce the crises facing the banking sector (Financial Stability Board, 2012). Moreover, risk disclosure reduces the cost of capital, improves risk management practices and strategy, and improves managers' effectiveness in risk handling (Solomon et al., 2000; Linsely & Shrives, 2005).

In recent years, many professional organizations, regulatory bodies, international organizations, and standard setters such as BCBS, FSB, FASB and IASB have undertaken several initiatives to improve risk disclosure in banks due to its benefits for both the management of the bank and stakeholders. The BCBS issued Basel II in 2004, which included an amendment requiring that the capital adequacy ratio covers credit risk, market risk, and operational risk. The pillars of Basel II are as follows: Pillar 1 is the minimum requirements for capital; Pillar 2 is the regulatory review of capital requirements; Pillar 3 is market discipline. Market discipline is supported by risk disclosure. The Committee recommended that the disclosure should include the risk management, methods used by banks to measure risks and minimum requirements for capital (Wong, 2012; Al-Tamimi, 2008).

In 2010, the Committee issued Basel III to enhance capital requirements in commercial banks and introduced new requirements related to liquidity risk as well as other risks addressed in previous issues. This agreement aimed to improve the banking sector's ability to absorb difficulties arising from economic financial crises and pressures (BCBS, 2010).

The FASB and the IASB have undertaken several initiatives in recent years to enhance risk disclosure. These initiatives included IASB improvement of standards for disclosure about financial instrument risks and valuation and about off-balance sheet exposure, and FASB adjustments standards for disclosure about credit risk, valuations, and off-balance sheet risks. The two Boards have issued some standards on disclosure of derivatives and other financial instruments. The FSB also has been keen to improve qualitative and quantitative disclosure in certain aspects such as information about governance, risk management strategies, credit risk information, market risk information, the disclosure of capital adequacy and risk-weighted assets, and liquidity risk disclosures (FSB, 2012).

IASB issued IFRS 7 Financial Instruments: Disclosure. This standard aimed to provide disclosures that allow users to assess the risks arising from the financial instruments of the entity and how they are managed such as credit risk, market risk, and liquidity risk (IASB, 2005; Oliveira et al., 2011b). Although the standard addressed in detail the types of disclosures about credit, market and liquidity risks in business enterprises, it did not address in particular the disclosure of risks in banks and financial institutions.

Despite the importance of improving risk disclosure in banks at the international level, the risk disclosure requirements in Egyptian banking environment are limited in line with the Egyptian accounting standards. Particularly, the Egyptian Standard No. 19: Disclosure in financial statements of banks and similar financial institutions and the rules. There is a shortage of comprehensiveness by focusing more on the disclosure of financial risks greater than non-financial risks, as well as the absence of a specific location and form of the risk disclosure in addition, the absence of a separate risk disclosure report, which leads to the inadequacy of the current disclosure risk model to meet the needs of financial reports users. Accordingly, there is a great need to improve the risk disclosure in the Egyptian banking environment.

The majority of studies focused on some of the factors that affect the risk disclosure in banks, such as the bank characteristics (Linsely et al., 2006; Oliveira et al., 2011c; Anagnostopoulos & Skordoulis, 2011;

Aryani & Hussainey, 2017; Oliveira et al., 2013; Rahman et al., 2013) and bank governance (Barakat & Hussainey, 2013; AlHadi et al., 2016). However, these studies did not focus on the other factors affecting the level of risk disclosure, such as competition, bank social responsibility and bad news.

This paper aims to measure the level of risk disclosure in Egyptian banks. It also intends to examine determinants of the risk disclosure level in Egyptian banks such as bank characteristics, bank governance, bank social responsibility, competition, and bad news.

The structure of the paper is as follows. Section 1 discusses the literature review and hypotheses development. Section 2 discusses research methodology, while Section 3 presents empirical analysis. Section 4 discusses results, and the last section represents conclusion.

## 1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Most previous studies have focused on measuring the level of risk disclosure in banks in developed countries such as Canada, the United Kingdom, the United States, Britain, Germany, Japan, Italy, France, the Netherlands, Greece, Cyprus (Linsley et al., 2006; Perignon & Smith, 2010; Maffei et al., 2011; Savvides & Savvidou, 2012; Pucci & Tutino, 2013). There is a scarcity of studies that focused on measuring risk disclosure level in banks in developing countries such as Egypt.

Linsley and Shrivs (2006, p. 388) defined risk disclosure “as any information disclosed with relation to any opportunity, prospect, hazard, harm, threat, danger or exposure, which has an effect on the company or may affect the company in the future or of the management of any such opportunity prospect, hazard, harm, threat or exposure”. Risk disclosures include “any information published within the annual report that provides qualitative or quantitative information about uncertainties facing an economic entity” (Elbannan & Elbannan, 2015, p. 184).

Several foreign studies in developed countries have focused on the factors affecting the level of risk disclosure, most notably the banking governance mechanisms such as Board of Directors, Audit Committee, Internal Audit, External Audit, Ownership Structure and Risk Management (Barakat & Hussainey, 2013; Alhadi et al., 2016; Ashfaq et al., 2016; Rao & Jirra, 2017; Neifar & Jarboui, 2018; Elgammal et al., 2018). Some studies

in accounting literature have focused on the characteristics of banks as one of the factors influencing the level of risk disclosure in banks’ annual reports, including bank size, liquidity, profitability, leverage, cross-listing in stock exchange, management efficiency (Linsley et al., 2006; Oliveira et al., 2011c; Anagnostopoulos & Skordoulis, 2011; Aryani & Hussainey, 2017; Oliveira et al., 2013; Rahman et al., 2013). In the following section, the factors affecting risk disclosure level will be explored.

### 1.1. Bank size

Most studies indicated that the bank size is one of the most important factors affecting the risk disclosure level in banks. The large bank tends to provide risk information rather than the small bank (Linsley et al., 2006). Some studies found that there was a positive association between the bank size and the level of risk disclosure (Linsley et al., 2006b; Savvides & Savvidou, 2012; Nahar et al., 2016b). While other studies have concluded that there was no association between the bank size and the level of risk disclosure (Anagnostopoulos & Skordoulis, 2011; Aryani & Hussainey, 2017). Also, Rao and Jirra (2017) found a negative association between these two. Therefore, the following hypothesis will be tested:

*H1: There is a significant association between the bank size and the level of risk disclosure in Egyptian banks.*

### 1.2. Profitability

According to the signaling theory, the banks with higher profitability disclose more risk information to inform their stakeholders about their good per-

formance (Khlif & Hussainey, 2016; Elshandidy et al., 2013). Some studies revealed that bank profitability has a negative effect on the risk disclosure level (Helbok & Wagner, 2006; Aryani & Hussainey, 2017). And another type of studies concluded that there was no association between the two variables (Lipunga, 2014; Oliveira et al., 2011c; Linsley et al., 2006; Anagnostopoulos & Skordoulis, 2011). The hypothesis that will be tested is the following:

*H2: There is a significant association between the profitability and the level of risk disclosure in Egyptian banks.*

### 1.3. Leverage

The leverage is one of the main incentives for managers to disclose risk information since banks with high leverage ratios have a greater incentive to increase risk disclosure to reduce agency problems (Linsley et al., 2006). Nahar et al. (2016b) found a positive association between the leverage and disclosure of operational risk in listed banks in Bangladesh, as well as a negative association between the leverage and market risk disclosure. Aryani and Hussainey (2017) found a negative association between the leverage and the risk disclosure degree in unlisted banks in Indonesia. The following hypothesis is tested:

*H3: There is a significant association between the leverage and the level of risk disclosure in Egyptian banks.*

### 1.4. Liquidity

Prior research highlighted the impact of liquidity on the level of risk disclosure in banks. According to the signaling theory, firms with high liquidity are more motivated to disclose more information than those with low liquidity to send signal about good risk management and the strength of their financial position (Elshandidy et al., 2013). One of the studies has found the association between liquidity and risk disclosure was insignificant (Aryani & Hussainey, 2017). Therefore, the following hypothesis is presented:

*H4: There is a significant association between the liquidity and the level of risk disclosure in Egyptian banks.*

### 1.5. Board size

A number of studies have investigated the association between board size and bank risk disclosure. Elzahar and Hussainey (2012) found non-significant relationship between board size and risk disclosure. Mokhtar and Mellett (2013) concluded that Egyptian firms with a large board are more likely to provide mandatory and voluntary risk reporting. Rao and Jirra (2017) found that the board size has a negative effect on the risk disclosure level. The following hypothesis is tested:

*H5: There is a significant association between the board size and the level of risk disclosure in Egyptian banks.*

### 1.6. Role duality

Some prior studies investigated the impact of role duality on risk disclosure. Elzahar and Hussainey (2012) found non-significant association between role duality and risk disclosure. Mokhtar and Mellett (2013) found a significant negative association between these two variables. They concluded that Egyptian companies with role duality presented low compliance with mandatory risk reporting. Elamer et al. (2015) found a significant positive association between duality and risk disclosure. Elgammal et al. (2018) found that the duality has a negative effect on risk disclosure. The following hypothesis is tested:

*H6: There is a significant association between the role duality and the level of risk disclosure in Egyptian banks.*

### 1.7. Board of directors independence

According to the agency theory, the independence of the board helps to reduce the agency problems and associated costs. Some studies focused on testing the association between the board's independence and the level of risk disclosure in banks. Some studies found a positive association between the board of directors independence and the quality of operational risk disclosure (Barakat & Hussainey, 2013; Ashfaq et al., 2016). Neifar and Jarboui (2018) concluded that there was a positive effect of the board's independence on the level of operational risks



disclosure in Islamic banks. Maffei et al. (2011) concluded that the percentage of independent board members is one of the most important factors affecting the level of risk disclosure in Italian banks. Elgammal et al. (2018) found a significant negative association between the variables. The following hypothesis is to be tested:

*H7: There is a significant association between the independence of the board of directors and the level of risk disclosure in Egyptian banks.*

### 1.8. Audit Committee

The Audit Committee is one of the internal mechanisms of bank governance, and one of the factors affecting the level of risk disclosure. Previous studies highlighted the impact of characteristics of the Audit Committee on the level of risk disclosure in banks. However, Neifar and Jarboui (2018) found no association between the meeting of the Audit Committee and the level of disclosure of risk in Islamic banks. Barakat and Hussainey (2013) found that the more effective the Audit Committee activities, the better the quality of the operational risks disclosure. On this basis, the following hypothesis is to be tested:

*H8: There is a significant association between the Audit Committee size and the level of risk disclosure in Egyptian banks.*

### 1.9. Ownership structure

Some studies investigated the association between the ownership structure and the risk disclosure level in banks. These studies were based on the variables of the ownership structure, including internal ownership, external ownership, governmental ownership and ownership concentration. Neifar and Jarboui (2018) found that the ownership concentration was negatively associated with the risk disclosure level in Islamic banks. It also was positively associated with the quality of risk disclosure. Barakat and Hussainey (2013) reported that the quality of operational risk disclosure was negatively affected by ownership concentration. Htay and Rashed (2011) found that managerial ownership has a

negative effect on the risk disclosure level. They also revealed that the association between institutional ownership and the risk disclosure level in banks was insignificant.

*H9: There is a significant association between institutional ownership and the level of risk disclosure in Egyptian banks.*

### 1.10. Auditor type

Some studies focused on examining the effect of the auditor type on the risk disclosure level. Mokhtar and Mellet (2013) revealed that the audit firm size was one of the most important factors affecting the level of risk disclosure in non-financial firms. Some studies concluded that there was a positive association between auditor type and risk disclosure (Lopes & Rodrigues, 2007; Oliveira et al., 2011a). Therefore, the following hypothesis will be tested:

*H10: There is a significant association between the auditor type and the level of risk disclosure in Egyptian banks.*

### 1.11. Bank social responsibility

According to the legitimacy theory, the bank complies with the mandatory risk disclosure to meet its obligations to the society and uses voluntary risk disclosure as a tool to maintain its reputation and legitimacy (Barakat & Hussainey, 2013; Chen & Robert, 2010). The bank social responsibility is one of the most important explanatory factors for risk disclosure in banks, where the social pressure is one of the main motivations for the banks to disclose social and environmental risks. There is a scarcity of studies examining the association between the bank social responsibility and the risk disclosure level. Therefore, the following hypothesis will be tested:

*H11: There is a significant association between the bank social responsibility and the level of risk disclosure in Egyptian banks.*

### 1.12. Competition

Competition is one of the most important factors explaining the risk disclosure level in banks.

There is a paucity of studies that test the impact of competition on the risk disclosure level in banks. Mokhtar and Millet (2013) found that competition is one of the most important factors affecting the level of risk disclosure. Oliveira et al. (2013) reported that competition is one of the most important explanatory factors for the risk disclosure in credit institutions in Portugal. Therefore, the following hypothesis will be tested:

*H12: There is a significant association between competition and the level of risk disclosure in Egyptian banks.*

### 1.13. Bad news

Bad news disclosure may affect the level of risk disclosure in banks. According to the signaling theory, managers want to provide a specific signal to the market to achieve a certain objective. This signal may be a bad signal, namely increased interest rates on loans, a decrease in profits and increase in the number of lawsuits filed against the bank. Thus, banks with bad news may decrease the level of disclosure. Previous research has not interested in investigating the association between bad news and the risk disclosure level in banks. Therefore, the following hypothesis will be tested:

*H13: There is a significant association between bad news disclosure and the level of risk disclosure in Egyptian banks.*

## 2. RESEARCH METHODOLOGY

### 2.1. Sample research and data collection method

The research sample consists of 28 banks registered in the Central Bank of Egypt during the period from 2010 to 2017. The year 2010 was selected as a starting point because in this year Basel Committee issued Basel III and the Egyptian Financial Supervisory Authority issued the Egyptian Governance Guide. Data were collected from annual reports of banks and the final sample was 224 observations.

### 2.2. Risk disclosure index

Disclosure Index method was used to determine risk disclosure requirements in Egyptian banks based on the Basel Committee requirements and previous studies.

**Table 1.** Risk disclosure index

Unweighted risk disclosure index	Number of items
<b>Financial risk disclosure</b>	
Credit risk disclosure	17
Market risk disclosure	18
Liquidity risk disclosure	14
Capital structure and adequacy risk	8
<b>Non-financial risk disclosure</b>	
Operational risk disclosure	15
Other non-financial risk disclosure	10
Total	82

*Note:* Other non-financial risk disclosure: legal risk, social risk, reputation risk, environmental risk, technological risk.

$$RD = \frac{\sum Actual\ Score}{\sum Maximum\ Score}, \quad (1)$$

where  $RD$  – level of risk disclosure;  $\sum Actual\ Score$  – total points of actual risk disclosure items;  $\sum Maximum\ Score$  – total points of maximum risk disclosure/expected items (Risk Disclosure Index).

### 2.3. Content analysis method

The content analysis method was used to collect, identify and categorize sentences and paragraphs or items related to the disclosure of risk information, including financial statements, notes in the financial statements, management reports and analyses, websites, as well as any other tables/forms or organizational formats (Elshandidy et al., 2015).

Risk disclosure characteristics in the banking sector:

- Evidence nature (qualitative, quantitative).
- Risks type (financial, non-financial).

### 2.4. Regression model

Pearson correlation coefficient and the multiple linear regression were used to test the association between independent variables (bank characteristics, bank governance, bank social responsibility,

competition, bad news) and the dependent variable (risk disclosure level). Multiple regression is in the following model:

$$RD = \beta_0 + \beta_1 \cdot SIZE + \beta_2 \cdot PROF + \beta_3 \cdot LIQ + \beta_4 \cdot LEV + \beta_5 \cdot BRDSIZE + \beta_6 \cdot INDEP + \beta_7 \cdot DUL + \beta_8 \cdot ACSIZE + \beta_9 \cdot INSTIOWNER + \beta_{10} \cdot ATYPE + \beta_{11} \cdot BSR + \beta_{12} \cdot COMP + \beta_{13} \cdot BNEWS + \beta_{14} \cdot LIST + e, \quad (2)$$

where  $RD$  – level of risk disclosure;  $\beta_0$  – constant;  $\beta_1$  to  $\beta_{14}$  – regression coefficients (see Table 2 for explanation);  $e$  represents the error.

**Table 2.** Measurement of variables

Abbreviated name	Full name	Measurement
<b>Dependent variable</b>		
<i>RD</i>	Level of risk disclosure	Disclosure index and content analysis
<b>Independent variable</b>		
<b>Bank characteristics</b>		
<i>SIZE</i>	Bank size	Natural logarithm of Total assets
<i>PROF</i>	Profitability	Net income after tax/Total assets
<i>LEV</i>	Leverage	Total liabilities/total assets
<i>LIQ</i>	Liquidity	Cash and due to banks/total deposit
<b>Bank governance</b>		
<i>BRDSIZE</i>	Board size	The number of board members
<i>INDEP</i>	Board of directors independence	Number of independent directors on the board of directors
<i>CEO</i>	Duality role	Dummy variable, number 1 = CEO is the chairman, number 0 = otherwise
<i>ACSIZE</i>	Audit Committee size	Number of Audit Committee members
<i>INSTOWNER</i>	Institution ownership	Percentage of shares held by the institution
<i>ATYPE</i>	Auditor type	Dummy variable = 1 if the bank is audited by one of the big four audit offices or 0 otherwise
<b>Other independent variables</b>		
<i>BSR</i>	Bank social responsibility	Dummy variable, number 1 = a bank has social responsibility, number 0 = otherwise
<i>COMP</i>	Competition	Market share of the deposit = a bank deposit/total deposits of the banking sector
<i>BAD NEWS</i>	Bad news	Dummy variable, number 1 = a bank has bad news, number 0 = otherwise
<b>Control variables</b>		
<i>LIST</i>	Listing	Dummy variable, number 1 = bank is listed, number 0 = otherwise

### 3. EMPIRICAL ANALYSIS

#### 3.1. Descriptive analysis

Table 3 provides the overall minimum, maximum, statistical mean and standard deviation. Firstly, it shows that the average risk disclosure level in Egyptian banks is about 57%, and the level of risk disclosure varies between 43% and 73%, which means that some Egyptian banks have a strong level of risk disclosure, while other banks have a low level of risk disclosure. Secondly, it shows the descriptive analysis for the bank characteristics. The mean of bank size is 7.53 and the mean of leverage is 90%, which means that total liabilities represent 90% of a bank's total assets. The mean of liquidity is 24.8% showing that cash and due to banks represent less than 25% of banks' total deposits, the mean of profitability is 1.46%.

Additionally, Table 3 shows a descriptive analysis of the bank governance variable, the board size has a maximum value of 15 and a minimum value of 5, with a mean value of 9 members, and the mean of duality is 40%. As well, the table shows that the percentage of independent directors is high with a mean value of about 75%, the institutional ownership mean is 89%. This means that Egyptians banks are characterized by higher institutional ownership. Also, the audit committee size is between 3 and 4 directors with a mean of 3. This result is consistent with the governance rules in banks which stated that the composition of the audit committee should be not less than 3 members. Also, the mean of an auditor type four is 74.5% of the sampled banks. This means that the majority of Egyptian banks are audited by one of big four audit firms. The mean of the bank social responsibility is 64.7%, the mean of Competition is 2.15%, and the bad news mean is 19%. This means lower bad news disclosure in Egyptian banks.

Table 4 shows the descriptive analysis of the characteristics of risk disclosure in Egyptian banks. The table shows that Egyptian banks disclosed more financial risk than non financial risk (means of 75.5% for Financial risk disclosure and 7.2% for Non-financial risk disclosure). They disclosed Quantitative risk information more than Qualitative risk information (means of 64% for Quantitative and 43% for Qualitative). The table



**Table 3.** Descriptive statistics

Variable	N	Mean	Median	Min	Max	Std. dev.
RD, %	207	0.565	0.57	0.43	0.73	0.0615
SIZE, log	219	7.538	7.504	6.525	8.715	0.4615
PROF, %	200	0.0146	0.0145	0	0.0341	0.0071
LIQ, %	210	0.2487	0.2228	0.0149	0.5916	0.1233
LEV, %	216	0.9022	0.9033	0.8122	0.9616	0.3382
BRD SIZE	223	9.4439	9	5	15	2.5049
INDEP, %	216	0.7498	0.80	0.50	0.9166	0.1026
DUL, %	224	0.4062	0	0	1	0.4922
INSTOWNER, %	224	0.8932	0.9793	0.57	1	0.1452
AC SIZE	221	3.171	3	3	4	0.3781
ATYPE	224	0.7455	1	0	1	0.4365
COMP, %	204	0.0216	0.0145	0.0012	0.0905	0.0192
BSR	224	0.6473	1	0	1	0.4788
BAD NEWS	214	0.1915	0	0	1	0.3944

**Table 4.** Descriptive analysis of the characteristics of risk disclosure in Egyptian banks

Variable	N	Mean	Median	Min	Max	Std. dev.
Financial risk disclosure	224	0.755	0.79	0.207	0.85	0.1607
Non-financial risk disclosure	224	0.072	0	0	0.52	0.1311
Qualitative disclosure	224	0.431	0.41	0.17	0.73	0.1073
Quantitative disclosure	224	0.641	0.68	0	0.73	0.1445

also shows that there is a strong level of financial risk disclosure and a low level of non-financial risk disclosure for all Egyptian banks.

Table 5 shows the types of risk disclosure in Egyptian banks. It shows that the credit risk disclosure, capital structure, and adequacy risk disclosure are the highest scores for all Egyptian banks. Also, operational risk disclosure and other non-financial risk disclosure are the lowest scores for all Egyptian banks.

**Table 5.** Types of the risk disclosure

Types of the risk disclosure	Proportion (%)	Rank
Credit risk	94	1
Capital structure and adequacy risk	87.5	2
Market risk	62	3
Liquidity risk	59	4
Operational and other non-financial risk	7.2	5

### 3.2. Correlation matrix

The results in Table 6 show that the level of risk disclosure is correlated positively with bank size,

board size at the 5% and 10% significance levels. Also, Table 6 shows the positive association between liquidity, profitability, independence, audit committee size, auditor type, completion, bank social responsibility and level of risk disclosure at the 1% significance level. The correlation matrix indicates that there is a negative significant association between bad news and level of risk disclosure at the 10% significance level.

### 3.3. Regression analysis

Research hypotheses were tested with the panel data methodology. Panel data technique has many advantages, namely a larger number of data points, more degrees of freedom, lower collinearity between explanatory variables and more control for individual heterogeneity (Baltagi, 2005). To test the determinants of risk disclosure level in Egyptian banks, General Least Squares (GLS) method was applied to counter issues of heteroskedasticity in data. Table 7 shows the association between the level of risk disclosure in banks as a dependent variable, and determinants of risk disclosure (bank characteristics, bank governance variable, competition, bad news, bank social responsibility) as independent variables. List is the control variable.

**Table 6.** Pearson correlation matrix

	RD	SIZE	PROF	LIQ	LEV	LIST	BRD SIZE	INDEP	DUL	INSTOWN	ACSIZE	ATYPE	COMP	BSR	BAD NEWS
<i>RD</i>	1														
<i>SIZE</i>	0.152**	1													
<i>PROF</i>	0.361***	0.2118***	1												
<i>LIQ</i>	0.204***	-0.0361	0.0500	1											
<i>LEV</i>	-0.083	0.3532***	-0.2388***	0.0230	1										
<i>LIST</i>	-0.018	-0.1621**	-0.0375	-0.1954***	0.0592	1									
<i>BRD SIZE</i>	0.132*	-0.0006	0.0490	-0.0711	-0.0339	0.4777***	1								
<i>INDEP</i>	0.206***	-0.1487**	0.0695	0.1385	-0.0636	0.2385***	0.384***	1							
<i>DUL</i>	0.102	0.0307	0.0590	-0.2549***	-0.0713	0.0683	0.106**	0.054	1						
<i>INSTOWN</i>	0.079	0.2208***	0.0459	0.04320	-0.0066	-0.7018***	-0.587***	-0.298***	0.047	1					
<i>AC SIZE</i>	0.405***	0.2873***	0.2009***	0.1115	0.1073	-0.1572	-0.123*	0.134**	0.192***	0.260***	1				
<i>ATYPE</i>	0.507***	-0.1559**	0.0901	0.3181***	-0.0050	0.2150***	0.153**	0.154**	-0.163**	-0.1986***	0.104	1			
<i>COMP</i>	0.374***	0.6680***	0.3501***	-0.0062	0.1546**	0.0913	0.017	-0.059	0.196***	0.1371**	0.572***	0.194***	1		
<i>BSR</i>	0.288***	0.2710***	0.0346	-0.0036	0.2730***	0.2937***	0.247***	0.126*	0.134**	-0.1717**	0.339***	0.1908***	0.414***	1	
<i>BAD NEWS</i>	-0.122*	-0.3067***	-0.3067***	-0.0298	0.1047	0.0538	-0.00008	0.065	0.090	-0.03999	-0.0265	-0.001	-0.150**	-0.155**	1

Note: \*\*\* significant at the 1% level, \*\* significant at the 5% level, \* significant at the 10 % level.

**Table 7.** Multiple regression

Variable	Coefficient	Std. error	T	Sig
<i>Constant</i>	0.5297	0.1110	4.7705	0.0000***
<i>SIZE</i>	0.0023	0.0128	0.1801	0.8574
<i>PROF</i>	0.37846	0.3793	0.9978	0.3202
<i>LIQ</i>	-0.0258	0.0158	-1.6339	0.1046
<i>LEV</i>	-0.3409	0.0939	-3.6305	0.0004***
<i>BRDSIZE</i>	0.0023	0.0128	0.1801	0.0055 ***
<i>INDEP</i>	0.1310	0.0271	4.8298	0.0000***
<i>DUL</i>	0.0143	0.0071	2.0178	0.0456**
<i>INSTOWNER</i>	0.0718	0.0400	1.7961	0.0748*
<i>ACSIZE</i>	0.0197	0.0089	2.2174	0.0283**
<i>ATYPE</i>	0.0807	0.0102	7.9376	0.0000***
<i>COMP</i>	0.7146	0.2924	2.4437	0.0158**
<i>BSR</i>	-0.0110	0.0058	-1.8782	0.0625*
<i>BAD NEWS</i>	-0.0064	0.0037	-1.7122	0.0892*
<i>LIST</i>	-0.0154	0.0114	-1.3474	0.1801
<i>R-squared</i>			0.53	
<i>Adjusted R-squared</i>			0.49	

Note: \* – regression is significant at the 10% level, \*\* – regression is significant at the 5% level; \*\*\* – regression is significant at the 1% level.

It can be seen from the regression result in Table 7 that there is a positive significant association between board size, duality, auditor type, institutional ownership, competition, audit committee size and the actual level of risk disclosure in all banks. Also, the table shows that leverage, bad news, bank social responsibility are negatively associated with the risk disclosure level in all banks. While the association between bank size, profitability, liquidity, list and risk disclosure level is insignificant.

As can be seen from Table 7, bank social responsibility, board size, board of directors independence, institutional ownership, auditor type, profitability, leverage, competition, duality, audit committee size are the main variables affecting the risk disclosure level in Egyptian banks. The summary of Table 7 provides that R-squared and Adjusted R-squared are 0.53 and 0.49, respectively. This means that the applied independent variables explain about 50% of the risk disclosure level in Egyptian banks.

#### 4. RESULTS AND DISCUSSION

The current study found a negative significant association between leverage and level of risk disclosure in Egyptian banks. This is in line with Aryani and Hussainey (2017), who showed that

banks with lower leverage have a greater incentive to increase risk disclosure, because higher leverage could send a negative image for stakeholders related to bankruptcy. Also, the coefficient of independence is 0.13 and is significant at the 0.01 significance level. These findings show that banks with a higher percentage of an independent board member are more motivated to disclose more risk information. This result agrees with the findings of other studies (Barak & Hussainey, 2013; Neifar & Jarbou, 2017). However, the result shows that there is a positive significant relationship between board size and risk disclosure level in banks. This confirms Mokhtar and Mellett (2013), who revealed a significant positive association between these variables. They concluded that Egyptian firms with a large board comply more with mandatory and voluntary risk disclosure.

Additionally, the findings indicate that duality is associated positively with bank risk disclosure at the 0.05 significance level. This is consistent with Elamer et al. (2015). They found a significant positive association between duality and risk disclosure. Also the result of the current research shows that there is a positive significant association between audit committee size and risk disclosure at the 0.05 significance level. The findings show that institutional ownership has a positive significant effect on the level of risk disclosure in banks. This

association confirms that banks with higher institutional ownership are more motivated to increase risk disclosure. The results show that there is a positive significant relationship between auditor type and risk disclosure at the 0.01 significance level. This finding seems to be consistent with another research which found banks audited by one of big four audit firms have greater risk information (Oliveira et al., 2011a).

Also, there is a significant positive association between computation measured by market share of deposit and the actual level of risk disclosure at the 0.05 significance level. This result means that banks with high competition attribute greater importance to risk disclosure to maintain mar-

ket share and enhance their reputation (Oliveira et al., 2013). Also, the coefficient of bad news is  $-0.006$  and is significant at the 0.10 significance level. These findings show that banks with more bad news are less likely to disclose risk information, fearing a negative effects on their financial position and reputation. Additionally, the findings indicate that bank social responsibility is associated negatively with risk disclosure at the 0.10 significance level. This means banks that don't have social responsibility are more motivated to provide risk disclosure in order to reduce social pressure and enhance their visibility. The association between liquidity, bank size, profitability, list and level of risk disclosure in Egyptian banks was not significant.

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## CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

The purpose of the current study was to measure the risk disclosure level in Egyptian banks and its determinants from 2010 to 2017. The result showed that the risk disclosure level in Egyptian banks was average. Also, the Egyptian banks have more tendency to disclose financial risk than non-financial risk, and the quantitative risk information was more than qualitative risk information in all sample banks. The highest disclosure scores were related to credit risk disclosure and capital structure and adequacy risk disclosure. While, the lowest disclosure scores were related to operational risk and other non-financial risk disclosure. The findings demonstrated that there was an average level of total risk disclosure, a strong level of financial risk disclosure and a low level of non-financial risk disclosure for all Egyptian banks.

Also, multiple regression analysis revealed that banks with a higher percentage of independent board members, large board size, large audit committee size, duality, higher institutional ownership, and banks audited by one of big four audit firms were more motivated to increase risk disclosure. Moreover, the result show that leverage, bad news and bank social responsibility have a negative relationship with the level of risk disclosure. Overall, the findings indicated that the total risk disclosure level, leverage, board size, audit committee size, auditor type, independence, duality, institutional ownership, bank social responsibility, and bad news were the main factors affecting the level of risk disclosure in Egyptian banks.

The findings of this paper have a number of important implications. The risk disclosure in the banking sector is important for stakeholders, such as investors and depositors. Risk disclosure is an important tool for improving the efficiency of capital markets, as it provides information for monitoring the behavior of managers, promotes stability of the banking system and supports market discipline. Also, risk disclosure helps the regulatory bodies to evaluate bank performance and is useful in determining the banking sector's ability to absorb difficulties arising from financial crises and pressures, and managers' ability to handle risk. In addition, this paper contributes to analyzing factors affecting the banks' manager decision to disclose risk information in emerging countries such as Egypt.

Finally, a number of important limitations need to be considered. First, the sample size is relatively small. Second, the study was limited to the statistical analysis of a time series, data covered the period from 2010 to 2017. Third, the sample was nationally representative of Egyptian banks but would tend to miss banks that were operating in the Middle East region. Future research may include the value

relevance of the bank risk disclosure in Egypt, and the effect of other factors on the bank risk disclosure practice such as risk committee, international financial reporting standards, risk management, managerial ownership. Also, it is recommended to execute a comparative study between risk disclosure practice in listed and non-listed Egyptian banks. Further research might explore the determinants of financial vs. non-financial risk disclosure level.

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