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Keywords: mutual fund governance, performance, fee structure, stock selection, market timing, endogeneity, structural equation model.

Author: Assistant Professor in Finance, School of Management and Technology, Arab Academy for Science, Technology & Maritime Transport, Egypt.

I. INTRODUCTION

This article investigates whether mutual fund governance has an effect on fund performance, fee structure, and stock selection and market timing of the Egyptian fund managers' pre-and-post 2007-2008 financial crises. It provides an overview of three separate but inter-connected

studies on the effect of the board structure and ownership in the mutual fund industry. The first two studies investigate the impact of board structure on mutual funds' performance and mutual fund fee structure in the Egyptian Stock Market, whereas the third one investigates the impact of board composition on the two skills of stock picking and market timing of the Egyptian fund managers' pre-and-post 2007-2008 financial crisis.

Using a final sample of 82 mutual funds between 2004 and 2013, this study first determines the fund performance and fund fees, and tests whether corporate governance characteristics such as board composition and ownership affect the fund performance and fund fees. The study further investigates the effect of mutual fund board composition and ownership on stock picking and market timing abilities of the Egyptian mutual fund managers' pre and post financial crisis.

This research applies a Structural Equation Modelling technique to solve the potential endogeneity problem between internal governance measures, fund performance, fee structure, and stock selection and market timing of the Egyptian fund managers. The results find no evidence on a significant relation neither between the corporate governance index of the Management Company and performance, nor between the governance index of the Management Company and fees. The study further finds no evidence on a significant relation neither between the corporate governance index of the fund Management Company and stock selection, nor between the corporate governance index of the fund management company and market timing of the Egyptian fund managers' pre and post the crisis.

To analyse corporate governance in the mutual fund industry, this research utilizes Ross' (1973) principal-agent paradigm. In the context, the principal is the investor in the fund and the agent is the fund's advisor. Agency cost in mutual funds occurs because investors' interest diverges from fund advisor's interest. A fund adviser's utility function increases with compensation received from the fund; however, an investor's utility function increases with returns adjusted for risk and net of fees.

Although it may not benefit the investor's long-term risk-return profile, the fund manager has an incentive to increase the level of assets in the fund because the total assets invested in the fund determine fund adviser's compensation. In addition, compared to investor's utility, which decreases as asset related fees increase, fund advisers increase their utility if they negotiate higher fees.

The objective of this study is to investigate the effect of board structure on mutual fund performance in the Egyptian Stock Market. Egypt is one of the emerging economies that reacted to the excess attention surrounding corporate governance by constructing the Egypt Code of Corporate Governance: Guidelines and Standards in October 2005, which include regulations and procedures that improve the quality of corporate governance index (Ebaid, 2011). In the ensuing section, this research gives a brief idea about the development of Egyptian mutual funds.

II. RESEARCH PROBLEM

The research problem is formulated in the following three main questions:

1. How does the structure of the fund board of directors' impact performance in the Egyptian Stock Market?
2. How does the structure of the fund board of directors' impact fee structure in the Egyptian Stock Market?
3. Does the mutual fund board of directors' impact the two skills of stock picking and market timing of the Egyptian fund managers' pre-and-post 2007-2008 financial crises?

III. RESEARCH AIM

This research views the mutual fund sector as a convenient industry to examine the ability of boards to affect performance. In contrast to the studies on corporate governance, this research contends that boards have a direct impact on:

1. Investor fee variables.
2. Abnormal return measures, such as Jensen alphas.

The main purpose of this study is to *improve a model to enhance the performance of mutual fund board of directors in the Egyptian Stock Market.*

IV. RESEARCH OBJECTIVES

In particular, the aim of the research is to fulfil the following three objectives:

1. To present a comprehensive literature review on the effect of mutual fund governance on performance, examine the ability of mutual funds managers to fulfil excess returns using system-based model (SEM), and provide a set of recommendations on how to improve the performance of mutual funds.
2. To present a comprehensive literature review on the effect of mutual fund governance on fees, examine the ability of mutual funds managers to decrease investors' fees using system-based model (SEM), and provide a set of recommendations on how to negotiate fair fees.
3. To present a comprehensive literature review on the effect of mutual fund governance on stock picking and market timing abilities, examine the ability of mutual funds managers to make security selection and market timing using system-based model (SEM), and provide a set of recommendations on how to ensure that fund managers are skilled in stock picking and market timing in the Egyptian Stock Market.

V. APPLICATIONS TO FIRM PERFORMANCE

The main objective of corporate governance is finding a solution to the principal-agent problem, and this is examined by Adam (1776), Berle and Means (1932), Jensen and Meckling (1976), Fama and Jensen (1983) and Shleifer and Vishny (1997). Cremers and Nair (2005) classify the corporate governance mechanisms in two categories, internal and external, which are classified into three broad groupings: market, internal monitoring and regulatory.

Market mechanisms include block shareholders, the capital market and the managerial labor market (Azim, 2012; Agrawal and Knoeber, 1996; Denis and McConnell, 2003). This study is a country-level study, and the capital market and managerial labor market are common to all companies. Also, there is a little difference between these market mechanisms; therefore, this research does not take into account the effect of these market mechanisms on performance (Agrawal and Knoeber, 1996; Denis and McConnell, 2003).

As an internal monitoring mechanism, this research focuses on boards of directors' structure and ownership structure (Jensen, 1993). Another important internal monitoring mechanism is managerial compensation. However, this study does not take into account the relation between director compensation and fund performance because there is no data available for complex-level director compensation in the Egyptian mutual funds. Thus, this research suggests that the Egyptian Stock Market should require funds to disclose the total compensation paid to directors by the complex rather than per fund. The availability of time series data on director compensation by the complex leads to higher quality compensation data for research on the determinants of director compensation and the relation between director compensation and performance.

Similar to Jensen (1993) argument that the legal system is 'too blunt an instrument' to solve the agency problems, and the legal system is common to all companies in a country-level study, this

research focuses on the audit committee to examine the procedures the fund has established for maintenance of regulatory policy, due diligence, and return maximization.

Therefore, this research focuses mainly on ownership structure board's structure, and audit committee as monitoring mechanisms and their effect on mutual fund performance.

VI. PRINCIPAL-AGENT FRAMEWORK IN MUTUAL FUNDS INDUSTRY

Starks (1987), Ippolito (1992) and Golec (1992) suggest that the agency problem within the mutual fund industry arises due to incentives to manipulate portfolios in view of higher compensation. Furthermore, they document a flow-performance relation that generates incentives for investment companies to manipulate portfolio riskiness (Bansal, 2013; Ross, 1973; Williamson, 1985; Hansmann, 1996; Buchanan, 2014; Stout, 2012; Jensen & Meckling, 1976; McNulty et al., 2013).

To reduce agency cost, two types of internal corporate governance mechanisms could be introduced:

- (i) Mechanisms that constrain monetary rewards for the agent with implied risk sharing rules.
- (ii) Mechanisms that increase monitoring of the underlying process adopted by management in generating risk and returning outcomes (Chevalier and Ellison, 1995).

Both of two categories of corporate governance mechanisms seek to realign managers' and investors' interests; the former is by creating incentive contracts and the latter is by constraining managers' actions. The model is based on Ross (1973) economic theory of agency; he assumes interest alignment between agent and principal which is achieved via a fee-structure tied to the agent's performance.

The fee structure is based on the payoff from the agent's action, and incentives contracts are derived assuming corporation between the agent and the principal who decide a fee schedule "that maximizes a weighted sum of utilities". This research uses this model as the theoretical

framework to illustrate agency problems within the investment company.

funds has been hypothesized in Figure 1, Figure 2, and Figure 3.

VII. CONCEPTUAL FRAMEWORK OF THE STUDY

A conceptual framework of linking board structure to performance and fees of the mutual

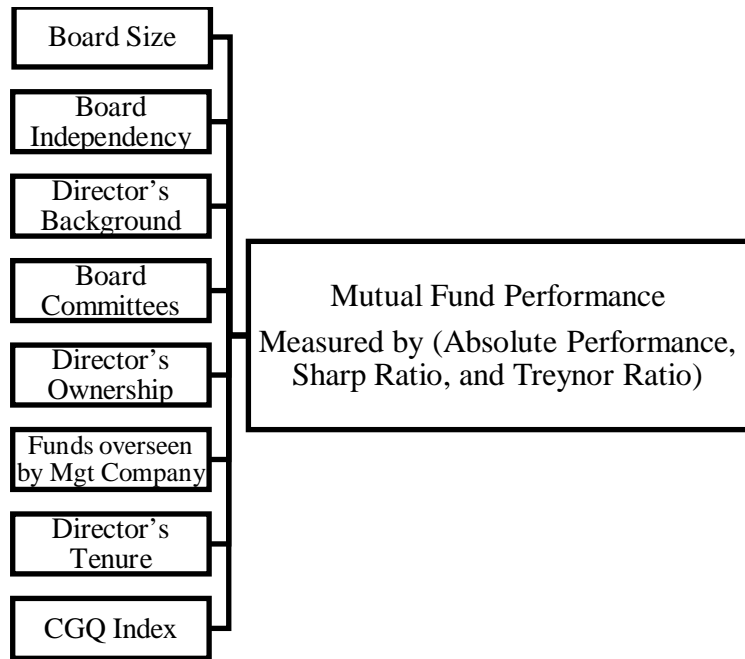


Figure 1: Conceptual Framework of Linking Board Structure to Performance

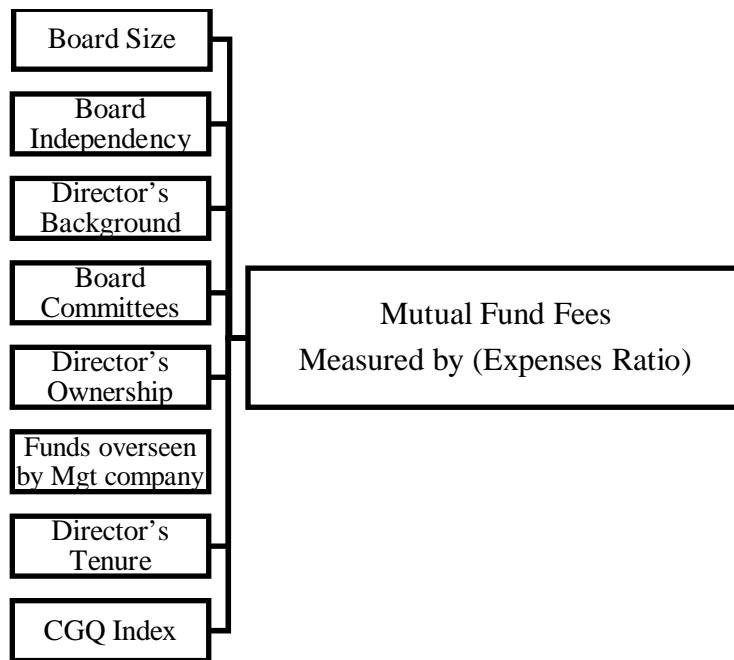


Figure 2: Conceptual Framework of Linking Board Structure to Fees

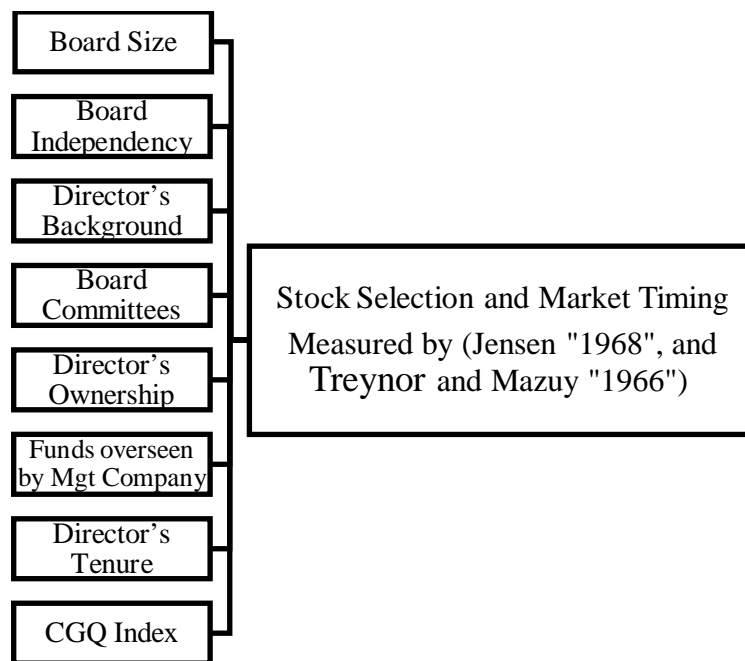


Figure 3: Conceptual Framework of Linking Board Structure to Stock Selection and Market Timing

VIII. MAIN FOCUS OF THE CHAPTER

As indicated before, this chapter provides an overview of three separate but interconnected studies. The first two studies investigate the role of board structure on mutual funds' performance and mutual fund fee structure, whereas the third investigates the impact of board composition on the two skills of stock picking and market timing of the Egyptian mutual fund managers' pre-and-post 2007-2008 financial crisis.

Article 1: The Effect of Board Structure on Egyptian Mutual Fund Performance: A Structural Equation Model Analysis

Literature Review

- *The Role of Board Structure in Mutual Funds Performance*

Baysinger and Butler (1985) suggest that there is a positive relationship between independent directors and performance. They further view that board composition as providing three components: the executive component, the monitoring component, and the instrumental component. The executive component provides information and expertise necessary for corporate strategy and business policy. The monitoring

component fulfils a policing function over management's performance and represents shareholders' interests. The instrumental component provides general knowledge, networking, and productive links between organizations. They conclude that inside directors provide the executive component; independent directors fulfil the monitoring component. Similarly, Khorana et al. (2007) illustrate that independent directors enhance performance.

The results of Cochran et al. (1985) raise doubts about the theory that insider-dominated boards allow managers to consume higher levels of perquisites than do boards having other compositions. Similarly, Rosenstein and Wyatt (1990) document positive abnormal returns when an outside director is appointed with more positive abnormal returns for impartial and financial outsiders compared to the appointment of corporate outsiders.

Brickley et al. (1994) also supports the independent director monitoring hypothesis and shows outside dominated boards accrue positive performance on the declaration of poison pill defences. On the contrary, Agrawal and Knoeber (1998) find that the proportion of outside directors have a negative impact on performance.

Furthermore, (e.g., Agrawal & Knoeber, 1996; Klein, 1998; Bhagat & Black, 2002) find a negative relationship between independent directors and firm performance. Additionally, (Hermalin & Weisbach, 1991; Mehran, 1995; and Ferris & Yan 2007) find no relationship at all. On contrary, Yermack (1996), and Ding and Wermers (2012) find a positive relationship. Due to the lack of experience of most of the independent directors, Adams et al. (2009) find that firms that suffer from essential financial problems during the 2008-2009 crisis, had more independent directors than others.

Additionally, (e.g., Agrawal & Knoeber 1998, Yermack, 1996; Eisenberg et al., 1998; Cheng, 2008; and Guest, 2009) find a negative relationship between firm performance and board size. On contrary, Belkhir (2009) and Ding and Wermers (2012) find a positive relationship between firm performance and board size (Wintoki et al., 2012).

- *The Role of Ownership Structure in Mutual Funds Performance*

Barnhart and Rosenstein (1998) find that the variables of board composition, managerial ownership, and performance are simultaneously determined. Recent empirical work supports the monitoring hypothesis for board of directors. Brickley and James (1987) find that there is a negative correlation between managerial consumption of perquisites and both proportion of independent directors and concentration of ownership. Similarly, Mak and Li (2001) find that there is a negative correlation between the proportion of independent directors and both board size and managerial ownership. Recent evidence of Kryzanowski and Mohebshahedin (2016) finds that there is a positive relationship between directors' ownership and CEF returns of U.S. closed-end funds (CEFs) during 1994–2013, using a dynamic panel two-step system generalized method of moment's estimator to solve the endogeneity problem.

A large body of empirical research on corporate finance suggests that governance structures improve performance, but this research has

serious issues with endogeneity (Wintoki et al., 2012). However, the implications for the empirical work will be usefulness if it does not deal with endogeneity problem, because the results will be biased and cannot be dependable (Roberts and Whited, 2012).

Consequently, when this research investigates the role of corporate governance mechanisms on performance, endogeneity come from the powerful association between past values of the regressand (performance), and current values of the regressors (corporate governance structure) (Wintoki et al., 2012; Agrawal & Knoeber, 1996; Rediker & Seth, 1995; Chandio, 2011; Klein & Zur, 2011). There are many methods of overcoming this; including Maximum likelihood (ML) and Ggeneralized Method of Moments (GMM).

Although, GMM and ML is a general framework for deriving estimators, there is a difference between the assumptions of the two methods. ML estimators use assumptions about the specific families of distributions for the random variables to derive an objective function. It selects the parameters that are probably have generated the observed data, which can be proceeded by maximizing an objective function. GMM estimators use assumptions about the moments of the random variables to derive an objective function. The assumed moments of the random variables present population moment conditions, which can be achieved by minimizing an objective function. Accordingly, ML can be more efficient than GMM, because ML uses the entire distribution instead of uses specified moments only.

Therefore, this paper utilizes SEM which is a multivariate technique that allows us to estimate a system of equations. Structural Equation Models are often drawn as Path Diagrams. SEM is a Full Information Maximum Likelihood (FIML), which estimates all the equations and all the unknown parameters jointly and obtains robust findings, compared with GMM.

- *The Structural Equation Modelling Analysis*

The empirical analysis is carried out at different levels: firstly, an absolute performance analysis is

presented before risk adjusted performance analysis ratios such as Treynor and Sharpe's are carried out. See, Key Terms and Definition providing a full set of variables of the study.

Structural equation modelling (SEM) enables researchers to examine interrelationships among multiple endogenous and exogenous variables simultaneously (Hair et al., 2006). To test the effect of board composition on mutual fund

performance, this paper utilizes SEM technique to deal with the endogeneity problem through the following three stages model specification, model estimation, and goodness of fit indices.

• *Structural Equation Modelling Specification*

In this paper, the central research question focuses on whether the composition of the board affects the mutual fund performance by using the following structural equation model (SEM):

$$Perf_{it} = \alpha_{it} + \alpha_1(B_{Size}) + \alpha_2(Ind_{Dir}) + \alpha_3(Fin_{Dir}) + \alpha_4(Prof_{Dir}) + \alpha_5(Dir_{Tn}) + \alpha_6(CGQ) + \alpha_7(Dir_{Own}) + \alpha_8(Inv_{Comm}) + \alpha_9(Aud_{Comm}) + \alpha_{10}(Dir_{Fn}) + \alpha_{11}(\sigma_i) + \alpha_{12}(Time) + \alpha_{13}(Dum_p) + \alpha_{14}(Fund_{Obj1}) + \alpha_{15}(Fund_{Obj2}) + \alpha_{16}(Fund_{Obj3}) + \alpha_{17}(Fund_{Obj4}) + \alpha_{18}(Fund_{Obj5}) + \epsilon_{it} \tag{1}$$

$$CGQ = \beta_{it} + \beta_1(B_{Size}) + \beta_2(Ind_{Dir}) + \beta_3(Fin_{Dir}) + \beta_4(Prof_{Dir}) + \beta_5(Dir_{Tn}) + \beta_6(Dir_{Own}) + \beta_7(Inv_{Comm}) + \beta_8(Aud_{Comm}) + \beta_9(Dir_{Fn}) + \beta_{10}(Fund_{Obj1}) + \beta_{11}(Fund_{Obj2}) + \beta_{12}(Fund_{Obj3}) + \beta_{13}(Fund_{Obj4}) + \beta_{14}(Fund_{Obj5}) + \epsilon_{it} \tag{2}$$

$$Dir_{Own} = \gamma_{it} + \gamma_1(B_{Size}) + \gamma_2(Ind_{Dir}) + \gamma_3(Fin_{Dir}) + \gamma_4(Prof_{Dir}) + \gamma_5(Dir_{Tn}) + \gamma_6(Dir_{Fn}) + \gamma_7(Inv_{Comm}) + \gamma_8(Aud_{Comm}) + \gamma_9(Fund_{Obj1}) + \gamma_{10}(Fund_{Obj2}) + \gamma_{11}(Fund_{Obj3}) + \gamma_{12}(Fund_{Obj4}) + \gamma_{13}(Fund_{Obj5}) + \epsilon_{it} \tag{3}$$

• *Structural Equation Modelling Specification*

The results about the estimation of the structural model (A), (B), and (C) are presented in Table 1. According to the previous, in testing the hypotheses, results reveal that there are eleven hypotheses in this study, and ten hypotheses i.e. H1, H2, H3, H4, H5, H6, H7, H8, H9, and H10 are statistically significant. Thus, these hypotheses are supported. While, one hypothesis i.e. H11 is found statistically not significant. Hence, this hypothesis is not supported.

Although the hypothesis is not supported, the result is consistent with Ebaid (2011) argument that the internal audit function in Egypt suffers from many weaknesses that affect negatively its effective role in corporate governance. Furthermore, the result is consistent with Fawzy (2003) argument that however corporate governance standards in Egypt have improved significantly, as reflected in the overall assessment of all five OECD principles, the degree of progress is still far from properly implementing corporate governance principles.

Table 1: Path Coefficients - Whole Sample (p value of the t tests in parentheses)

	Model A		Model B		Model C	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: The Effect of Board Structure on Mutual Fund Performance Perf</i>						
CGQ	0.0006	(0.790)	0.0145	(0.969)	0.6414	(0.730)

Dir Own	0.0020	(0.220)	-0.8908**	(0.002)	0.8654	(0.549)
Fund Obj5	-0.0023***	(0.000)	-1.4480***	(0.000)	-1.0128*	(0.046)
Fund Obj4	0.0021**	(0.002)	0.3722***	(0.001)	-0.1628	(0.771)
Fund Obj3	0.0012	(0.057)	0.3897***	(0.000)	-0.3382	(0.541)
Fund Obj2	0.0030***	(0.000)	0.3299***	(0.000)	-0.1568	(0.735)
Fund Obj1	-0.0014	(0.187)	-0.5204**	(0.003)	0.1519	(0.863)
Dump	0.0003	(0.240)	0.1009*	(0.048)	-0.2888	(0.256)
Time	-0.0005***	(0.000)	-0.0939***	(0.000)	-0.0245	(0.629)
Dir Tn	-0.0000	(0.244)	0.0066	(0.319)	0.0260	(0.429)
Prof Dir	0.0011	(0.692)	1.1817*	(0.017)	0.2290	(0.926)
Aud Comm	0.0020	(0.401)	-0.6722	(0.110)	0.1169	(0.955)
B Size	-0.0001	(0.612)	0.0591**	(0.001)	-0.0768	(0.395)
Inv Comm	-0.0000	(0.976)	0.1524	(0.598)	0.7073	(0.623)
Dir Fn	0.0001	(0.365)	-0.0202*	(0.045)	-0.0370	(0.460)
Fin Dir	-0.0028	(0.491)	-2.5017***	(0.000)	-0.4182	(0.906)
Ind Dir	-0.0018	(0.239)	0.5637*	(0.037)	0.1743	(0.897)
StdDev i	-0.2081***	(0.000)				
Constant	0.9205***	(0.000)	188.6593***	(0.000)	48.8607	(0.632)
<i>Panel B: The Effect of Board Structure on Corporate Governance Index CGQ</i>						
Dir Own	0.0998***	(0.000)	0.0998***	(0.000)	0.0998***	(0.000)
Fund Obj5	0.0443***	(0.000)	0.0443***	(0.000)	0.0443***	(0.000)
Fund Obj4	0.0465***	(0.000)	0.0465***	(0.000)	0.0465***	(0.000)
Fund Obj3	0.0307**	(0.002)	0.0307**	(0.002)	0.0307**	(0.002)
Fund Obj2	0.0216**	(0.008)	0.0216**	(0.008)	0.0216**	(0.008)
Fund Obj1	0.0521***	(0.001)	0.0521***	(0.001)	0.0521***	(0.001)
Dir Tn	-0.0095***	(0.000)	-0.0095***	(0.000)	-0.0095***	(0.000)
Prof Dir	0.4255***	(0.000)	0.4255***	(0.000)	0.4255***	(0.000)
Aud Comm	0.4015***	(0.000)	0.4015***	(0.000)	0.4015***	(0.000)
B Size	0.0124***	(0.000)	0.0124***	(0.000)	0.0124***	(0.000)
Inv Comm	-0.0333	(0.188)	-0.0333	(0.188)	-0.0333	(0.188)
Dir Fn	0.0146***	(0.000)	0.0146***	(0.000)	0.0146***	(0.000)
Fin Dir	-0.2357***	(0.000)	-0.2357***	(0.000)	-0.2357***	(0.000)

Ind Dir	-0.1463***	(0.000)	-0.1463***	(0.000)	-0.1463***	(0.000)
Constant	0.3177***	(0.000)	0.3177***	(0.000)	0.3177***	(0.000)
<i>Panel C: The Effect of Board Structure on Director Ownership Dir Own</i>						
Fund Obj5	0.0650***	(0.000)	0.0650***	(0.000)	0.0650***	(0.000)
Fund Obj4	0.0689***	(0.000)	0.0689***	(0.000)	0.0689***	(0.000)
Fund Obj3	0.1450***	(0.000)	0.1450***	(0.000)	0.1450***	(0.000)
Fund Obj2	0.0794***	(0.000)	0.0794***	(0.000)	0.0794***	(0.000)
Fund Obj1	0.0883***	(0.000)	0.0883***	(0.000)	0.0883***	(0.000)
Dir Tn	-0.0012	(0.057)	-0.0012	(0.057)	-0.0012	(0.057)
Prof Dir	-0.2624***	(0.000)	-0.2624***	(0.000)	-0.2624***	(0.000)
Aud Comm	0.0515	(0.249)	0.0515	(0.249)	0.0515	(0.249)
B Size	0.0440***	(0.000)	0.0440***	(0.000)	0.0440***	(0.000)
Inv Comm	0.0407	(0.215)	0.0407	(0.215)	0.0407	(0.215)
Dir Fn	-0.0095***	(0.000)	-0.0095***	(0.000)	-0.0095***	(0.000)
Fin Dir	0.2298**	(0.004)	0.2298**	(0.004)	0.2298**	(0.004)
Ind Dir	0.7272***	(0.000)	0.7272***	(0.000)	0.7272***	(0.000)
Constant	-0.0852**	(0.009)	-0.0852**	(0.009)	-0.0852**	(0.009)
var(e.Perf1)						
Constant	0.0000***	(0.000)				
var(e.CGQ)						
Constant	0.0047***	(0.000)	0.0047***	(0.000)	0.0047***	(0.000)
var(e.DirOwn)						
Constant	0.0079***	(0.000)	0.0079***	(0.000)	0.0079***	(0.000)
var(e.Perf2)						
Constant			0.6082***	(0.000)		
var(e.Perf3)						
Observations	932		932		932	

Note: This table provides results from SEM of The effect of board structure on mutual fund performance for the sample of 82 funds from (2004-2013). In Model (A), mutual fund performance is measured by the absolute return, in Model (B) mutual fund performance is measured by Sharp ratio, and in Model (C), mutual fund performance is measured by Treynor ratio. A robust t-statistics test is conducted, and p-values are in parentheses. Columns (2), (4), and (6) provide p-values. Columns (1), (3), and (5) present the path coefficients for the three models.

* Statistical significance at 10% level.

** Statistical significance at 5% level.

- *The Goodness of Fit*

The fit indices shown in Table 2 indicate that the hypothesized structural model provides a good fit to the data. The (R-squared) value of Perf3 (measured by Treynor ratio) is 0.01 and is

considered low. This might be due to the major limitation of the Treynor ratio that the results will mislead if applied to the schemes with negative betas, and in model (C), there are 173 observations with negative betas.

Table 2: Structural Equation Model Fit Measure Assessment

	Model A	Model B	Model C	
Fit Statistics	Value	Value	Value	Description
Likelihood ratio				
chi2_ms	6.555	5.683	5.683	model vs. saturated
p > chi2	0.364	0.224	0.224	
chi2_bs	3638.278	4150.755	3464.685	baseline vs. saturated
p > chi2	0.000	0.000	0.000	
Population error				
RMSEA	0.010	0.021	0.021	Root mean squared error of approximation
90% CI, lower bound	0.000	0.000	0.000	
upper bound	0.045	0.057	0.057	
Pclose	0.977	0.892	0.892	Probability RMSEA <= 0.05
Information criteria				
AIC	-1904.801	14049.384	17040.621	Akaike's information criterion
BIC-	-1658.097	14291.251	17282.488	Bayesian information criterion
Baseline comparison				
CFI	1.000	1.000	1.000	Comparative fit index
TLI	0.999	0.995	0.994	Tucker-Lewis index
Size of residuals				
SRMR	0.002	0.002	0.002	Standardized root mean squared residual
CD	0.979	0.988	0.975	Coefficient of determination

Note: This table provides summary of Goodness of fit index

Conclusion

This paper conclude that most of the hypothesized relationships are supported (e.g. BSize is positively associated with Perf2 and CGQ, IndDir

is positively associated with Perf2 and negatively associated with CGQ, ProfDir is positively associated with Perf2 and negatively associated with DirOwn, AudComm is positively associated with CGQ, DirOwn is negatively associated with

Perf2, DirFn is negatively associated with Perf2, and DirTn is negatively associated with CGQ). One is not supported (e.g., CGQ is not associated with Perf1, Perf2, and Perf3).

Additionally, this paper is consistent with (Kryzanowski and Mohebshahedin, 2016) argument that there is a positive relationship between ownership by directors and CEF returns (closed-end funds). This paper is consistent with Kirkpatrick (2009) argument that the contribution of effective board oversight is an important, but often neglected, governance issue in issue in many OECD countries.

Article 2: The Effect of Board Structure on Egyptian Mutual Fund Fees: A Structural Equation Model Analysis

Literature Review

- *Role of Board of Directors in Mutual Funds Fee Structure*

Johnson (2009) argues that allowing sponsors to effectively control the board appointment process makes directors less likely to negotiate fees rigorously with sponsors. Despite the close relationship between fund boards and sponsors, there is evidence that boards can be effective mentors. Tufano and Sevick (1997) find an inverse relationship between board independence and fund fees. Adams et al. (2010) further report that independent boards of index funds offered by publicly traded investment companies, where conflicts between sponsors and fund shareholders are particularly high, are associated with lower fees. In addition, two large providers of index funds have fund sponsor officers acting as mutual fund board chairs and charge especially competitive fees.

Similarly, Gil Bazo and Ruiz-Verdú (2009) find that higher quality boards, measured using Morningstar's stewardship scores that assumed that highly independent boards were superior monitors, are related to lower ownership costs. However, Adams et al. (2010) also find that board with independent chairs charge higher front end loads.

Overall, the literature is consistent with Hermalin (1994) argument that there is no single optimal board structure. In addition, just because a board is implicitly of high quality (i.e., more independent, smaller, unitary) does not mean it monitors each share class with the same intensity. Boards may pay little attention to some classes and more attention to others. For instance, they may focus on fees at the largest share class or they may consider overall average expenses and not individual share class expenses. As such, there is no expectation concerning how board structure is associated with the range of fees charged to mutual fund investors.

- *Role of Ownership Structure in Mutual Funds Fee Structure*

Jensen and Meckling (1976) argue that, inside equity, ownership provides a powerful incentive for managers to act in the interest of shareholders (Rowe and Davidson, 2005). If management has too large an equity position, it may control enough votes to consolidate itself. Morck et al. (1988) argue that there is a positive correlation between managerial ownership and firm value. Rowe and Davidson (2005) argue that outside directors' ownership helps to align management interests and reduces fees.

The ownership structure of publicly held sponsors suffers more from the effects of agency costs than does the ownership of privately held ones (McConnell and Servaes 1990; Barnhart et al., 1994). Alternatively, the operating strategies of private sponsor funds may be more complex than public ones and incorporate concerns about firm and founder reputation. Ferris and Yan (2009) find that private fund sponsors charge lower fees and are less likely to be involved in fund scandals that harm sponsors' reputations. Overall, the literature suggests that publicly held firms have different incentive structures than privately owned firms. Therefore, they differ in how they assess the costs across single and multiple share class funds.

This paper examines the role of the board of directors and ownership structure on fees using structural equation modelling. SEM is a statistical

technique prepared to deal with endogeneity problem, which come from the powerful relationship between past values of the regressand (fees), and current values of the regressors (corporate governance structure) (Agrawal & Knoeber, 1996). There are many methods of overcoming this; including Maximum likelihood (ML) and Generalized Method of Moments (GMM).

Although, GMM and ML is a general framework for deriving estimators, there is a difference between the assumptions of the two methods. ML estimators use assumptions about the specific families of distributions for the random variables to derive an objective function. It selects the parameters that are probably have generated the observed data, which can be proceeded by maximizing an objective function. GMM estimators use assumptions about the moments of the random variables to derive an objective function. The assumed moments of the random variables present population moment conditions, which can be achieved by minimizing an objective function. Accordingly, ML can be more efficient than GMM, because ML uses the entire

distribution instead of uses specified moments only.

- *Structural Equation Modelling Analysis*

SEM is adapted from (Erkens et al., 2012; Adams, 2012; Tufano and Sevick, 1997; Agrawal and Knoeber, 1996). To test the effect of board composition on mutual fund fees, this paper uses the SEM technique through the following three stages: model specification, model estimation, and goodness of fit indices. See, Key Terms and Definition providing a full set of variables of the study

- *Structural Equation Modelling Specification*

Considering the potential endogeneity problem between internal governance measures and fund fees and similar to (Erkens et al., 2012; Adams, 2012; Agrawal and Knoeber, 1996), the central research question focuses on whether the composition of the board affects the level of the mutual fund fees incurred by investors in mutual fund by using the following structural equation model:

$$Fees_{it} = \alpha_{it} + \alpha_1(B_{Size}) + \alpha_2(Ind_{Dir}) + \alpha_3(Fin_{Dir}) + \alpha_4(Prof_{Dir}) + \alpha_5(Dir_{Tn}) + \alpha_6(CG_Q) + \alpha_7(Dir_{Own}) + \alpha_8(Inv_{Comm}) + \alpha_9(Aud_{Comm}) + \alpha_{10}(Dir_{Fn}) + \alpha_{11}(Log_{Size}) + \alpha_{12}(Time) + \alpha_{13}(Dum_p) + \alpha_{14}(Fund_{Obj1}) + \alpha_{15}(Fund_{Obj2}) + \alpha_{16}(Fund_{Obj3}) + \alpha_{17}(Fund_{Obj4}) + \epsilon_{it} \quad (4)$$

$$CG_Q = \beta_{it} + \beta_1(B_{Size}) + \beta_2(Ind_{Dir}) + \beta_3(Fin_{Dir}) + \beta_4(Prof_{Dir}) + \beta_5(Dir_{Tn}) + \beta_6(Dir_{Own}) + \beta_7(Inv_{Comm}) + \beta_8(Aud_{Comm}) + \beta_9(Dir_{Fn}) + \beta_{10}(Time) + \beta_{11}(Dum_p) + \beta_{12}(Log_{Size}) + \beta_{13}(Fund_{Obj1}) + \beta_{14}(Fund_{Obj2}) + \beta_{15}(Fund_{Obj3}) + \beta_{16}(Fund_{Obj4}) + \epsilon_{it} \quad (5)$$

$$Dir_{Own} = \gamma_{it} + \gamma_1(B_{Size}) + \gamma_2(Ind_{Dir}) + \gamma_3(Fin_{Dir}) + \gamma_4(Prof_{Dir}) + \gamma_5(Dir_{Tn}) + \gamma_6(Dir_{Fn}) + \gamma_7(Aud_{Comm}) + \gamma_8(Inv_{Comm}) + \gamma_9(Fund_{Obj1}) + \gamma_{10}(Fund_{Obj2}) + \gamma_{11}(Fund_{Obj3}) + \gamma_{12}(Fund_{Obj4}) + \epsilon_{it} \quad (6)$$

- *Structural Equation Modelling Estimation*

The results about the estimation of the structural model (A) are presented in Table3 which includes three panels. Panel A: The Effect of Board Structure on Mutual Fund Fees, Panel B: The Effect of Board Structure on Corporate governance Index, and Panel C: The Effect of Board Structure on Director Ownership which will

be illustrated below. According to the previous, in testing the hypotheses, results reveal that there are eleven hypotheses in this study, and ten hypotheses i.e. H1, H2, H3, H4, H5, H6, H7, H8, H9, and H10 are statistically significant. Thus, these hypotheses are supported. While, one hypothesis i.e. H11 is found statistically not significant. Hence, this hypothesis is not supported.

Although the hypothesis is not supported, the result is consistent with Ebaid (2011) argument that the internal audit function in Egypt suffers from many weaknesses that affect negatively its effective role in corporate governance. Furthermore, the result is consistent with Fawzy (2003) argument that however corporate governance standards in Egypt have improved significantly, as reflected in the overall assessment

of all five OECD principles, the degree of progress is still far from properly implementing corporate governance principles. Additionally, the result is consistent with Tobe (2000) who argues that there is a growing lack of trust in the mutual fund industry. Unless something is done to protect shareholders from excessive expenses, the next market downturn will lead to stringent government regulation.

Figure 3: Path Coefficients - Whole Sample (p value of the t tests in parentheses)

Model A			
	(1)	(2)	
Panel A: The Effect of Board Structure on Mutual Fund Fees			
ExpRatio			
CGQ	0.0634	(0.103)	
DirOwn	0.0700	(0.055)	
BSize	-0.0112***	(0.000)	
IndDir	-0.0070	(0.833)	
AudComm	-0.1000*	(0.047)	
InvComm	0.0015	(0.964)	
DirFn	0.0013	(0.308)	
DirTn	0.0013	(0.117)	
FinDir	0.1842**	(0.004)	
ProfDir	-0.1467***	(0.001)	
Dump	0.0152**	(0.006)	
FundObj1	0.0421*	(0.042)	
FundObj2	0.0641**	(0.002)	
FundObj3	0.0526*	(0.012)	
FundObj4	0.0132	(0.570)	
LogSize	-0.0056	(0.075)	
Time	-0.0020	(0.213)	
Constant	4.1365	(0.204)	
Panel B: The Effect of Board Structure on Corporate Governance Index			
CGQ			
DirOwn	0.0031	(0.942)	
BSize	0.0188***	(0.000)	
IndDir	-0.1503***	(0.000)	
AudComm	0.6892***	(0.000)	
InvComm	0.0222	(0.573)	
DirFn	0.0125***	(0.000)	
DirTn	-0.0110***	(0.000)	
FinDir	-0.2456***	(0.001)	
ProfDir	0.4371***	(0.000)	
Dump	-0.0008	(0.895)	
FundObj1	-0.0935***	(0.000)	
FundObj2	-0.0812***	(0.000)	
FundObj3	-0.0717**	(0.003)	

FundObj4	-0.1474***	(0.000)	
LogSize	0.0300***	(0.000)	
Time	0.0041*	(0.027)	
Constant	-8.3399*	(0.025)	
Panel C: The Effect of Board Structure on Director Ownership			
DirOwn			
BSize	0.0315***	(0.000)	
IndDir	0.7487***	(0.000)	
AudComm	-0.1141*	(0.026)	
InvComm	-0.1837***	(0.000)	
DirFn	-0.0157***	(0.000)	
DirTn	0.0045***	(0.000)	
FinDir	0.1486	(0.052)	
ProfDir	-0.1144*	(0.020)	
FundObj1	0.0420	(0.092)	
FundObj2	0.0766**	(0.002)	
FundObj3	0.0385	(0.129)	
FundObj4	0.0245	(0.323)	
Constant	0.0534	(0.192)	
var(e.ExpRatio)			
Constant	0.0038***	(0.000)	
var(e.CGQ)			
Constant	0.0050***	(0.000)	
var(e.DirOwn)			
Constant	0.0057***	(0.000)	
Observations	501		

Note: This table provides results from SEM of the effect of board structure on mutual fund fees for the sample of 48 funds from (2007-2013). In Model (A), mutual fund fees measured by the expense ratio. A robust t-statistics test is conducted, and p-values are in parentheses. Column (2) provides p-values. Column (1) presents the path coefficients of the model (A).

* Statistical significance at 10% level.

** Statistical significance at 5% level.

*** Statistical significance at 1% level.

Probability of a t-value equals to or greater than actual t-value in a two-tailed test for significance of coefficient under the null hypothesis that the true value is zero. The symbol *** indicates that the null hypothesis is rejected at the 0.001 level of significance.

- *The Goodness of Fit*

The fit indices shown in Table 4 indicate that the hypothesized structural model provides a good fit to the data. In this paper, the (R-squared) values of the endogenous variables range from 0.23 and 0.89, and the overall (R-squared) value is 0.98 for

model (A), these values fall within the acceptable range compared with other studies in the area of financial management research.

Table 4: Structural Equation Model Fit Measure Assessment Note: This table provides summary of goodness of fit index. *Conclusion*

Model A			
	(1)	(2)	
Panel A: The Effect of Board Structure on Mutual Fund Fees			
ExpRatio			
CGQ	0.0634	(0.103)	
DirOwn	0.0700	(0.055)	
BSize	-0.0112***	(0.000)	
IndDir	-0.0070	(0.833)	
AudComm	-0.1000*	(0.047)	
InvComm	0.0015	(0.964)	
DirFn	0.0013	(0.308)	
DirTn	0.0013	(0.117)	
FinDir	0.1842**	(0.004)	
ProfDir	-0.1467***	(0.001)	
Dump	0.0152**	(0.006)	
FundObj1	0.0421*	(0.042)	
FundObj2	0.0641**	(0.002)	
FundObj3	0.0526*	(0.012)	
FundObj4	0.0132	(0.570)	
LogSize	-0.0056	(0.075)	
Time	-0.0020	(0.213)	
Constant	4.1365	(0.204)	
Panel B: The Effect of Board Structure on Corporate Governance Index			
CGQ			
DirOwn	0.0031	(0.942)	
BSize	0.0188***	(0.000)	
IndDir	-0.1503***	(0.000)	
AudComm	0.6892***	(0.000)	
InvComm	0.0222	(0.573)	
DirFn	0.0125***	(0.000)	
DirTn	-0.0110***	(0.000)	
FinDir	-0.2456***	(0.001)	
ProfDir	0.4371***	(0.000)	
Dump	-0.0008	(0.895)	
FundObj1	-0.0935***	(0.000)	
FundObj2	-0.0812***	(0.000)	
FundObj3	-0.0717**	(0.003)	
FundObj4	-0.1474***	(0.000)	
LogSize	0.0300***	(0.000)	
Time	0.0041*	(0.027)	
Constant	-8.3399*	(0.025)	
Panel C: The Effect of Board Structure on Director Ownership			
DirOwn			
BSize	0.0315***	(0.000)	
IndDir	0.7487***	(0.000)	
AudComm	-0.1141*	(0.026)	

InvComm	-0.1837***	(0.000)	
DirFn	-0.0157***	(0.000)	
DirTn	0.0045***	(0.000)	
FinDir	0.1486	(0.052)	
ProfDir	-0.1144*	(0.020)	
FundObj1	0.0420	(0.092)	
FundObj2	0.0766**	(0.002)	
FundObj3	0.0385	(0.129)	
FundObj4	0.0245	(0.323)	
Constant	0.0534	(0.192)	
var(e.ExpRatio)			
Constant	0.0038***	(0.000)	
var(e.CGQ)			
Constant	0.0050***	(0.000)	
var(e.DirOwn)			
Constant	0.0057***	(0.000)	
Observations	501		

Note: This table provides summary of goodness of fit index.

Conclusion

This paper concludes that most the hypothesised relationships are supported (e.g. BSize is positively associated with CGQ and DirOwn, and negatively associated with ExpRatio. IndDir is positively associated with DirOwn, and negatively associated with CGQ. AudComm is negatively associated with ExpRatio and DirOwn and positively associated with CGQ, and Prof Dir is negatively associated with ExpRatio and DirOwn and positively associated with CGQ and some others are not supported (e.g. CGQ is not associated with ExpRatio). Additionally, this paper is consistent with Kirkpatrick (2009) argument that the contribution of effective board oversight is an important, but often neglected, governance issue in issue in many OECD countries. This paper is consistent with (Kryzanowski and Mohebshahedin, 2016) argument that closed end funds board sizes are negatively related to fees.

Article 3: The Effect of Board Structure on Stock Picking and Market Timing Abilities of the Egyptian Mutual Fund Managers: Evidence from Financial Crisis

Literature Review

- *Role of Board of Directors on Stock Picking and Market Timing Abilities*

Poor corporate governance has been suggested by academics as a key contributing factor to the recent crisis. Theoretically, McNulty et al. (2013) argue for the significance of board processes and their impact on financial risk supported by quantitative evidence. Through attention to the deeper social-psychological dynamics of collective board behaviour, they are afforded greater understanding of board functions and how risk management operates through the mechanism of the board. The evidence on the value of corporate governance during the crisis is derived from data on US financial companies (Ahrens et al., 2011).

Furthermore, McNulty et al. (2013) extend earlier work by providing evidence for UK firms. Similar to US firms, firms in the UK are significantly affected by the crisis and experience a considerable weakening of their balance sheets (Financial Times, 2008). Practically, in the aftermath of the crisis, emphasis is given in the UK to the important role of boards in managing risk. Subsequently, the UK Corporate Governance Code has determined the responsibility of boards for effective risk management (Financial Reporting Council, 2010: Principle C.2).

- *Role of Ownership Structure on Stock Picking and Market Timing Abilities*

Desender et al. (2013) develop a contingency approach to explain how firm ownership influences the monitoring function of the board measured as the magnitude of external audit fees contracted by the board. Analyses of data on Continental European companies find that while board independence and audit services are complementary when ownership is dispersed, this is not the case when ownership is concentrated suggesting that ownership concentration and board composition become substitutes in terms of monitoring management.

Furthermore, Erkens et al. (2012) investigate the influence of corporate governance on financial firms' performance during the 2007–2008 financial crisis, they find that firms with more independent boards and higher institutional ownership experienced worse stock returns during the crisis period. They suggest that this is because (1) firms with higher institutional ownership took more risk prior to the crisis, which resulted in larger shareholder losses during the crisis period, and (2) firms with more independent boards raised more equity capital during the crisis which led to a wealth transfer from existing shareholders to debt holders.

This paper examines two models proposed and tested in the literature to measure stock picking and market timing abilities of Egyptian fund managers which are: (1) Jensen (1968) model, and (2) Treynor and Mazuy (1966) model respectively. The study of the impact of corporate governance on portfolio selection and market timing is particularly valuable for various reasons (Lassoued and Elmir, 2012). Firstly, a large body of theoretical and empirical literature has shown that corporate governance mechanisms affect risk and return. In fact, many arguments demonstrate that board characteristics (Agrawal and Knoeber, 1996) ownership structure, managerial compensation and external control help to explain risk and return. Secondly, governance quality seems to be a criterion used by sophisticated investors for their portfolio management.

Consequently, when this research investigates the role of corporate governance mechanisms on stock picking and market timing abilities, endogeneity come from the powerful association between past values of the regressand (stock picking and market timing), and current values of the regressors (corporate governance structure) (Wintoki et al., 2012). There are many methods of overcoming this; including Maximum likelihood (ML) and Generalized Method of Moments (GMM). Although, GMM and ML is a general framework for deriving estimators, there is a difference between the assumptions of the two methods. ML estimators use assumptions about the specific families of distributions for the random variables to derive an objective function. It selects the parameters that are probably have generated the observed data, which can be proceeded by maximizing an objective function. GMM estimators use assumptions about the moments of the random variables to derive an objective function. The assumed moments of the random variables present population moment conditions, which can be achieved by minimizing an objective function. Accordingly, ML can be more efficient than GMM, because ML uses the entire distribution instead of uses specified moments only.

Therefore, this paper utilizes SEM which is a multivariate technique that allows us to estimate a system of equations. Structural Equation Models are often drawn as Path Diagrams. SEM is a Full Information Maximum Likelihood (FIML), which estimates all the equations and all the unknown parameters jointly and obtains robust findings, compared with GMM.

- *Structural Equation Modelling Analysis*

The empirical analysis is carried out at different levels: (1) Jensen's Alpha model to measure to measure stock selection, and (2) Treynor and Mazuy (1966) to measure market timing. See, Key Terms and Definition providing a full set of variables of the study (Huber & Mellace, 2013). The results are based on a sample of 524 annual and semi-annual observations for 35 mutual funds from 2004 to 2013.

SEM is adapted from (Erkens et al., 2012), (Adams, 2012) and (Agrawal and Knoeber, 1996). To test the effect of board composition on mutual fund performance, this study uses the SEM technique through the following three stages: model specification, model estimation, and goodness of fit indices, which will be discussed respectively in the ensuing sections.

• *Structural Equation Modelling Specification*

For the analysis of the effect of board structure on mutual fund performance, this study evaluates the previous hypotheses. To test this assertion, a simultaneous equation system is utilized, where fund performance, corporate governance index, and director ownership are endogenous variables by using the following structural equation model:

$$\begin{aligned}
 Perf_{it} = & \alpha_{it} + \alpha_1(B_{Size}) + \alpha_2(Ind_{Dir}) + \alpha_3(Fin_{Dir}) + \alpha_4(Prof_{Dir}) + \alpha_5(Dir_{Tn}) \\
 & + \alpha_6(CG_Q) + \alpha_7(Dir_{Own}) + \alpha_8(Inv_{Comm}) + \alpha_9(Aud_{Comm}) + \alpha_{10}(Dir_{Fn}) + \alpha_{11}(\sigma_i) \\
 & + \alpha_{12}(Time) + \alpha_{13}(Dum_p) \\
 & + \alpha_{14}(Fund_{Obj_1}) \\
 & + \alpha_{15}(Fund_{Obj_2}) + \alpha_{16}(Fund_{Obj_3}) + \alpha_{17}(Fund_{Obj_4}) + \alpha_{18}(Dum_{fc}) + \varepsilon_{it} \quad (7)
 \end{aligned}$$

$$\begin{aligned}
 CG_Q = & \beta_{it} + \beta_1(B_{Size}) + \beta_2(Ind_{Dir}) + \beta_3(Fin_{Dir}) + \beta_4(Prof_{Dir}) + \beta_5(Dir_{Tn}) + \beta_6(Dir_{Own}) \\
 & + \beta_7(Inv_{Comm}) \\
 & + \beta_8(Aud_{Comm}) + \beta_9(Dir_{Fn}) + \beta_{10}(Fund_{Obj_1}) \\
 & + \beta_{11}(Fund_{Obj_2}) + \beta_{12}(Fund_{Obj_3}) + \beta_{13}(Fund_{Obj_4}) + \beta_{14}(Dum_{fc}) + \varepsilon_{it} \quad (8)
 \end{aligned}$$

$$\begin{aligned}
 Dir_{Own} = & \gamma_{it} + \gamma_1(B_{Size}) + \gamma_2(Ind_{Dir}) + \gamma_3(Fin_{Dir}) + \gamma_4(Prof_{Dir}) + \gamma_5(Dir_{Tn}) + \gamma_6(Dir_{Fn}) \quad (9) \\
 & + \gamma_7(Inv_{Comm}) + \gamma_8(Aud_{Comm}) + \gamma_9(Fund_{Obj_1}) \\
 & + \gamma_{10}(Fund_{Obj_2}) + \gamma_{11}(Fund_{Obj_3}) + \gamma_{12}(Fund_{Obj_4}) + \gamma_{13}(Dum_{fc}) + \varepsilon_{it}
 \end{aligned}$$

• *Structural Equation Modelling Estimation*

The results about the estimation of the structural model (A), (B) are presented in Table 5 which includes three panels for every model. According to the previous, in testing the hypotheses, results reveal that there are eleven hypotheses in this study, and ten hypotheses i.e. H1, H2, H3, H4, H5, H6, H7, H8, H9, and H10 are statistically significant. Thus, these hypotheses are supported. While, one hypothesis i.e. H11 is found statistically not significant. Hence, this hypothesis is not supported.

that the internal audit function in Egypt suffers from many weaknesses that affect negatively its effective role in corporate governance. Accordingly, corporate governance in Egypt, in its current status, has no significant effect on performance because corporate governance rules included in the Egypt Code of Corporate Governance: Guidelines and Standards are not mandatory and lack legislative force (Sharma et al., 2008). Additionally, the result is consistent with Erkens et al. (2012) argument that the coefficients of the country-level governance variables are insignificant.

Although the hypothesis is not supported, the result is consistent with Ebaid (2011) argument

Table 5: Path Coefficients - Whole Sample (p value of the t tests in parentheses)

	Model (A)		Model (B)		
	(1)	(2)	(3)	(4)	
Panel A: The Effect of Board Structure on Mutual Fund Performance					

Perf					
CGQ	-0.0020	(0.294)	-1.0160	(0.512)	
Dir Own	0.0059***	(0.001)	-0.3951	(0.782)	
Time	-0.0004***	(0.000)	-0.1542***	(0.001)	
Dump	-0.0001	(0.652)	0.5075***	(0.000)	
Dumfc	0.0001	(0.779)	2.1023***	(0.000)	
Fund Obj1	0.0008*	(0.019)	-1.1125***	(0.000)	
Fund Obj2	-0.0001	(0.899)	-0.4250	(0.224)	
Fund Obj3	0.0004	(0.339)	-1.0893**	(0.002)	
Aud Comm	0.0001	(0.980)	1.1127	(0.544)	
Inv Comm	-0.0002	(0.878)	-0.8483	(0.417)	
B Size	-0.0003***	(0.000)	0.0669	(0.341)	
Ind Dir	-0.0049**	(0.008)	0.6582	(0.663)	
Dir Tn	0.0000	(0.182)	-0.0058	(0.825)	
Dir Fn	0.0000	(0.975)	-0.0782	(0.073)	
Fin Dir	-0.0183*	(0.020)	-2.4791	(0.701)	
Prof Dir	0.0144**	(0.010)	1.9437	(0.671)	
Fund Obj4	-0.0014***	(0.001)	1.1185**	(0.002)	
StdDev i			52.5244***	(0.000)	
Constant	0.8764***	(0.000)	307.5198***	(0.001)	
Panel B: The Effect of Board Structure on Corporate Governance Index					
CGQ					
Dir Own	0.2890***	(0.000)	0.2890***	(0.000)	
Dumfc	0.0109**	(0.002)	0.0109**	(0.002)	
Fund Obj1	0.0633***	(0.000)	0.0633***	(0.000)	
Fund Obj2	0.0495***	(0.000)	0.0495***	(0.000)	
Fund Obj3	0.0819***	(0.000)	0.0819***	(0.000)	
Aud Comm	0.5766***	(0.000)	0.5766***	(0.000)	
Inv Comm	-0.1399***	(0.000)	-0.1399***	(0.000)	
B Size	0.0033	(0.099)	0.0033	(0.099)	
Ind Dir	-0.2194***	(0.000)	-0.2194***	(0.000)	
Dir Tn	-0.0114***	(0.000)	-0.0114***	(0.000)	
Dir Fn	0.0079***	(0.000)	0.0079***	(0.000)	
Fin Dir	-0.4345*	(0.016)	-0.4345*	(0.016)	
Prof Dir	0.6271***	(0.000)	0.6271***	(0.000)	
Fund Obj4	0.0825***	(0.000)	0.0825***	(0.000)	
Constant	0.3309***	(0.000)	0.3309***	(0.000)	
Panel C: The Effect of Board Structure on Director Ownership					
Dir Own					
Dumfc	0.0033	(0.421)	0.0033	(0.421)	
Fund Obj1	0.1110***	(0.000)	0.1110***	(0.000)	
Fund Obj2	0.1815***	(0.000)	0.1815***	(0.000)	
Fund Obj3	0.1062***	(0.000)	0.1062***	(0.000)	
Aud Comm	0.5234***	(0.000)	0.5234***	(0.000)	
Inv Comm	0.3174***	(0.000)	0.3174***	(0.000)	

B Size	0.0462***	(0.000)	0.0462***	(0.000)	
Ind Dir	0.9846***	(0.000)	0.9846***	(0.000)	
Dir Tn	-0.0087***	(0.000)	-0.0087***	(0.000)	
Dir Fn	0.0126***	(0.000)	0.0126***	(0.000)	
Fin Dir	3.7165***	(0.000)	3.7165***	(0.000)	
Prof Dir	-2.6595***	(0.000)	-2.6595***	(0.000)	
Fund Obj4	0.1192***	(0.000)	0.1192***	(0.000)	
Constant	-0.8138***	(0.000)	-0.8138***	(0.000)	
var(e.Perf1)					
Constant	0.0000***	(0.000)			
var(e.CGQ)					
Constant	0.0014***	(0.000)	0.0014***	(0.000)	
var(e.DirOwn)					
Constant	0.0019***	(0.000)	0.0019***	(0.000)	
var(e.Perf2)					
Constant			1.8104***	(0.000)	
Observations	524		524		

Note This table provides results from SEM of the effect of board structure on performance pre and post the financial crisis for the sample of 35 funds from (2004-2007) and (2009-2013). A robust t-statistics test is conducted, and p-values are in parentheses. Columns (2) and (4) provide p-values. Columns (1) and (3) present the path coefficients for the two models. * Statistical significance at 10% level. ** Statistical significance at 5% level. *** Statistical significance at 1% level.

- *The Goodness of Fit*

The fit indices shown in Table 6 indicate that the hypothesized structural model provides a good fit to the data. In this study, the (R-squared) values of the endogenous variables range from 0.46 and

0.96 and the overall (R-squared) value is 0.99 for model (A), the (R-squared) values range from 0.33 and 0.96 and the overall (R-squared) value is 0.99 for model (B), these values fall within the acceptable range compared with other studies in the area of financial management research.

Table 6: Structural Equation Model Fit Measure Assessment

	Model A	Model B	
Fit Statistics	Value	Value	Description
Likelihood Ratio			
chi2_ms	2.515	4.308	model vs. saturated
p > chi2	0.642	0.635	
chi2_bs	3661.556	3549.059	baseline vs. saturated
p > chi2	0.000	0.000	
Population Error			
RMSEA	0.000	0.000	Root mean squared error of approximation
90% CI, lower bound	0.000	0.000	
upper bound	0.053	0.047	
Pclose	0.936	0.963	Probability RMSEA <= 0.05
Information criteria			
AIC	-1622.152	1904.665	Akaike's information criterion
BIC	-1409.077	2122.001	Bayesian information criterion
Baseline comparison			

CFI	1.000	1.000	Comparative fit index
TLI	1.005	1.004	Tucker-Lewis index
Size of residuals			
SRMR	0.001	0.001	Standardized root mean squared residual
CD	0.999	0.999	Coefficient of determination

Note: This table provides summary of goodness of fit index.

IX. CONCLUSION

This paper concludes that most of the hypothesized relationships are supported (e.g. BSize is negatively associated with Perf1, IndDir is negatively associated with Perf1 and CGQ, ProfDir is positively associated with Perf1 and CGQ, InvComm is negatively associated with CGQ, DirOwn is positively associated with Perf1 and CGQ, DirFn is positively associated with CGQ, and DirTn is negatively associated with DirOwn) and one is not supported (e.g. CGQ is not associated with Perf1, and Perf2). Additionally, this paper is consistent with (Kryzanowski and Mohebshahedin, 2016) that closed end fund board size is negatively related to benchmark-adjusted returns, because larger boards are less effective in monitoring (Jensen, 1993; Lipton and Lorsch, 1992).

9.1 Research Conclusions

The main conclusion of this research is to provide evidence through robust statistical analysis around the usefulness of governance attributes Egyptian mutual funds' performance, fee structure, and stock selection and market timing. The research finds no evidence on a significant relation neither between the corporate governance index of the fund management company and fund performance – measured by Absolute performance, Sharpe ratio, and Treynor ratio – nor between the corporate governance index of the fund management company and fund fees measured by Expenses ratio. The research further finds no evidence on a significant relation neither between the corporate governance index of the fund Management Company and stock selection – measured by Jensen (1968) model – nor between the corporate governance index of the fund Management Company and market timing of the Egyptian fund managers measured

by Treynor and Mazuy (1966) model pre and post the crisis.

Therefore, this research is consistent with Kirkpatrick (2009) argument that the contribution of effective board oversight and robust risk management including reference to widely accepted standards is not limited to financial institutions. It is also an important, but often neglected, governance aspect in nonfinancial companies. Potential weaknesses in board composition have been obvious for some time and widely debated. The remuneration of boards and senior management also remains a highly controversial issue in many OECD countries.

Furthermore, the results are consistent with Fawzy (2003) who argues that corporate governance in Egypt has no significant effect on enhancing fund performance and decreasing fund fees because corporate governance rules are included in the Egypt Code of Corporate Governance: Guidelines and Standards - to promote responsible and transparent behaviour in managing corporations according to international best practices that strike equilibrium between various parties' interests - are not mandatory and lack legislative force, so it is not clear how auditors would react to client's voluntary adoption of corporate governance practices (Sharma et al., 2008).

Additionally, this research is consistent with (Kryzanowski and Mohebshahedin, 2016) argument that there is a negative relationship between board size and CEF (closed end funds) fees, and there is a positive relationship between ownership by directors and CEF returns.

Accordingly, the financial crisis demonstrates a need for the OECD through the guidance Group

on Corporate Governance to investigate the adequacy of its corporate governance principles in these key areas in order to determine whether additional guidance and clarification are needed. It is also necessary to modify some recommendations contained in the OECD methodology for evaluating the implementation of the OECD Principles of Corporate Governance (Kirkpatrick, 2009).

Finally, the global financial crisis demonstrates the need to integrate behavioural finance into our economic and financial theories. The crisis could have been prevented. There would have been no foreclosures of homes financed by subprime mortgages if no subprime mortgages were allowed, and no failures of banks holding them. Therefore, we should take into consideration aspirations for houses, trade-offs in crisis prevention (Shefrin and Statman, 2011).

9.2 Future Research Directions

For future research, the model in this study could be expanded to include more factors such as director compensation, because there is no data available for complex-level director compensation in the Egyptian mutual funds. Thus, this paper suggests that the Egyptian Stock Market should require funds to disclose the total director compensation by the complex rather than per fund. The availability of time series data on director compensation by the complex leads to higher quality compensation data for research on the relationship between compensation and performance..

Furthermore, there is no data available for corporate governance index of the mutual funds management companies in Egypt. Therefore, a governance index is constructed calculated as an average of six governance indicators based on the OECD Corporate Governance Principles April 2004 (EFSA), using the annual reports of the companies and the companies' websites. The data has been obtained from web based sources, and there might be inaccuracies in this method of data collection. Although the results of the three studies are consistent with the Worldwide Governance Indicators (WGI), the country-level

index for corporate governance indicates a weak governance performance in Egypt.

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Key Terms and Definition

Panel A Endogenous Variables

Variables	Measures	Source
Corporate Governance Index (CGQ)	A constructed governance index calculated as an average of six governance indicators.	Calculated from the annual reports of the fund management companies and the companies' websites.
Equity Ownership by Directors (Dir_{own})	The number of directors holding zero shares divided by board size.	Board of director's annual reports of Egyptian funds.

Panel (B) Exogenous Variables

Variables	Measures	Source
Board Committee Structure (Inv_{Comm}) (Aud_{Comm})	The number of directors on the investment committee divided by board size. The number of directors on the audit committee divided by board size.	Board of director's annual reports of Egyptian mutual funds.
Board Size (B_{Size})	The size of the board .	Board of director's annual reports of Egyptian mutual.
Director's Background (Fin_{Dir}) ($Prof_{Dir}$)	The directors' background. The number of directors with a background in finance or investment divided by board size. The number of directors who are retired or serve on several different boards as professional directors divided by board size.	Board of director's annual reports of Egyptian funds.
Director's Tenure (Dir_{Tn})	The average number of years the firm's directors have served on the board either the fund management company board or any other boards.	Board of director's annual reports of Egyptian mutual funds.
Number of Funds overseen by the Fund Management Company (Dir_{Fn})	The number of funds overseen by the fund management company.	Board of director's annual reports of Egyptian mutual funds.
Proportion of Independent Directors (Ind_{Dir})	The number of independent directors on the board divided by board size.	Board of director's annual reports of Egyptian funds.

Panel (C) Control Variables

Variables	Measures	Source
Fund Size (Log_{size})	The logarithm of total net assets of the fund.	Calculated from the mutual fund's financial statements.
Standard Deviation of the Stock Return (σ_i)	The standard deviation of mutual fund returns.	Calculated with help of Microsoft Excel.

Source: Developed by the Researcher