# THE ASSOCIATION BETWEEN ENVIRONMENTAL PERFORMANCE AND FINANCIAL PERFORMANCE: THE CASE OF EGYPT

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## ABSTRACT

*The terms "corporate social performance" or, alternatively, "corporate social responsibility" (CSR) are often used synonymously and comprise both social as well as environmental measures. The efficient markets hypothesis suggests that capital markets respond to information and, accordingly, adjust the stock prices either positively or negatively. The research literature is rich with articles addressing the empirical association between environmental and financial performance, yet the results are inconclusive. The aim of this research is to provide evidence on the nature of the association between environmental performance and firms' market value and profitability in the developing countries, particularly Egypt. The environmental performance is assessed on a dichotomous basis of whether firms earned their ISO 14001 (listed) or not (not listed). The financial performance is measured using capital market return which is measured using the cumulative stock returns. The results indicate an insignificant relationship between environment performance and cumulative stock returns. The results indicate that companies in Egypt do not care much about other dimensions of corporate social responsibility including environment which might be due to the weak CSR education of the Egyptian stakeholders.*

**Keywords:** Corporate Social Responsibility, Environmental Performance, Developing Countries, Financial Performance.

## INTRODUCTION

One of the arguable areas is whether the Corporate Social Responsibility (CSR) can affect the organization financially or economically. There are several inconclusive questions about this area, one of particular interest is "*Social performance may be good for society, but does it pay?*" (Brown, 1998).

The terms "*corporate social performance*" or, alternatively, "*corporate social responsibility*" (CSR) are often used synonymously and comprise both social as well as environmental measures (e.g., Waddock & Graves, 1997; Orlitzky et al., 2001; Orlitzk, Schmidt & Rynes, 2003). According to the popular definition of McWilliams & Siegel, 2001, CSR is "*actions that appear to further some social good, beyond the interest of the firm and what is required by law*". Another definition of CSR emphasizes - besides the avoidance of distributional conflicts – "*actions which reduce the extent of externalized costs*" (Heal, 2005; Arx & Ziegler, 2008).

One essential components of corporate social responsibility is environmental performance. Stanwick & Stanwick, (1998) argue that the environmental performance of an organization is one of the critical components in the measurement of corporate social

performance (CSP). Environmental performance is defined as the firms' responsibility and attempts towards preserving the environment from the polluting impact that may result from firms' operations.

Environmental performance is a controversial topic in the business and the research world. Firms, as profit maximizing entities, strive for better environmental performance which improves the firms' social image. However, improving the firm's environmental performance may affect the firm's financial performance negatively. The research literature is rich with articles addressing the empirical association between environmental and financial performance, yet the results are inconclusive.

The efficient markets hypothesis suggests that capital markets respond to information and, accordingly, adjust the stock prices either positively (higher stock prices) or negatively (lower stock prices). Given the general environmental awareness, firms may have to face consequences, not just from investors in the capital market but also from regulatory agencies if they misbehaved environmentally.

Some research studies find that firms with better environmental performance tend to report high profitability which indicates a positive relationship between environmental and financial performance. Such association would indicate that firms' investment in environmental protection activities, or at least damage control activities, would create returns that outweigh costs (Wu, 2006; Mishra & Suar, 2010; Ruf et al., 2001; Chen & Wang, 2011; Youssef et al., 2012. Freeman R. E. 1984; Donaldson & Preston, 1995; Freeman & Evan, 1990; McGuire et al., 1988).

Other research studies find negative association between the variables of interest, which could be viewed as if conducting environmental protection, more precisely pollution prevention activities, and abiding to environmental rules and regulations are considered as additional cost with no future benefits thus reduces the firm's profitability (Friedman, 1970; Preston & O' Bannon, 1997; Moore, 2001).

A third group of research studies report an insignificant relation between environmental and financial performance (Fauzi et al., 2007; Crisóstomo et al., 2011; Fauzi et al., 2007; Crisóstomo et al., 2011).

On a more in depth front Preston & O' Bannon, (1997) distinguish between the direction of the relationship, positive; negative; or neutral, and the causal sequence - whether one type of performance follows another or whether they are synergistic.

The nature of the association between financial and environmental performance could be logically connected to the development stage of the country in which the firm operates. It would be expected to find the developed countries keen to protect the environment whilst developing countries would be less concerned about the environmental issues, despite their importance, it would be viewed as a luxurious goal compared to basic needs goals. Most research papers are conducted on developed countries which makes generalization not so accurate when it comes to developing countries.

The main focus of this research is to assess the relation between environmental performance and financial performance in Egypt as an example of a developing country. From the academic perspective, this paper aims at filling the gap on the academic studies by focusing on Egyptian companies, as the studies concerning this field in the developing countries especially Egypt is not sufficient, while several studies were conducted in developed countries. Therefore, this research aims to add to the academic research by presenting evidence on the nature of the general association between environmental performance and firms' stock returns (not by focusing on the immediate effect of a particular environmental event) in emerging market context by using a sample of companies listed in the Egyptian stock Market and the Egyptian Corporate Responsibility Index.

The nature and significance of the association between corporate environmental

performance CEP and corporate financial performance (CFP) are investigated in the light of the Good Management Theory. The research methodology offers an empirical analysis which depicts the association and significance between CEP and CFP and if there is a group difference in financial performance between listed companies with ISO 14001 and companies with no ISO.

The financial performance is measured using capital market return which is measured using the cumulative stock returns. The capital market-based measures assess the financial performance considering the stock price changes based on stockholders' responses to firms' related information.

The rest of this paper is organized as follows: first, the literature review illustrates how this research adds to the overall body of literature, followed by the research methodology where the data collection process and statistical methods are described in details, then in the findings and analysis, the results are discussed and analyzed. At the end, in light of the results and analysis, conclusions and recommendations are provided and the limitations of this research are highlighted.

## LITERATURE REVIEW

Klassen & McLaughlin, (1996) examine the association between the environmental management and firms' financial performance. The environmental performance is measured by firms' winning an environmental award announced by third parties. The financial performance is measured using the stock prices as reflected in the equity value of the firm, based on which the authors sought the firms' abnormal returns. The results show significant positive abnormal stock returns following positive environmental events. The marketplace rewards firms investing in areas like new or redesigned products and processes that minimize their adverse environmental impact, improve their environmental safety systems, and develop strong management programs. Following the award announcement, the market valuation of firms rises by $80.5 million which shows the market's perception of the net present value of future profits and cash flows related to strong environmental performance.

Cohen, (1997) explores the relationship between environmental performance and financial performance. They divide companies into two portfolios, low polluter and high polluter portfolios to compare their accounting and market returns. The main hypothesis is whether or not firms that perform well in the environmental arena also perform well financially. Environmental performance is measured using nine measures for each firm in the sample. Eight of them are taken from government data and they are number of environmental litigation proceedings, superfund sites, number of noncompliance penalties, dollar value of noncompliance penalties, volume of toxic chemical releases (TRI), number of oil spills, volume of oil spills, and number of chemical spills and one from corporate 10-K filings. Cohen employs two different measures of financial performance which are accounting returns measured using return on assets (ROA) and return on equity (ROE), and market returns measured using the total return to a common shareholder. The results show that green investors don't need to pay a premium for their convictions. Cohen finds that investors who choose the environmental leaders in an industry-balanced portfolio do better than choosing the environmental laggards in each industry. Thus, a well balanced portfolio can be constructed by tracking the S&P 500 index including the environmental leaders in each industry category only. This portfolio is expected to perform as good as or even better than the S&P 500.

Konar & Mark, (2001) explore the extent to which firm's environmental reputation is valued in the marketplace. They explore the relationship between firm level environmental performance and intangible assets. The market valuation is disaggregated into tangible and

intangible assets and the financial performance is measured using Tobin's q and market valuation. Environmental performance is measured by TRI88, the aggregate pounds of toxic chemicals emitted per dollar revenue of the firm and LAW89, the number of environmental lawsuits pending against the firm in 1989. The study indicates that the environmental variables have a significant negative impact on Tobin's q. So, poor environmental performance has a statistically and economically significant negative effect on the intangible-assets value of publicly traded firms that belong to the S&P 500.

Lorraine et al., (2004) examine the relationship between the environmental performance information and stock prices. The study investigates the impact resulting from pollution activities as well as commendations on the share prices in the UK stock market. The results show that 13 out of 32 companies are negatively affected by the environmental news. They divide the sample into the good news group and bad news group to measure the individual effect of good and bad events where t-test is carried out. They analyze the good-news events and find little evidence that the stock market utilizes this information as none of the mean abnormal returns were significant at the 5% level. The bad-news event analysis is more consistent with the overall findings from the 32 events with a significant negative return on day t + 7.

Ziegler et al., (2007) explores the effect of the sustainability performance of European firms on their stock performance. Stock performance is measured by the average monthly stock return from 1996 to 2001. The sustainability performance is measured in 2 ways: the average sustainability performance of the industry in which the corporation operates and the relative sustainability performance of a corporation in a certain industry. The study indicates that the average environmental performance of the industry in which a corporation operates has a significant positive impact on the average monthly stock return from 1996 to 2001. On the contrary the average social performance of the industry has a significantly negative influence on the stock performance.

Yamaguchi, (2008) assesses the effect of the environmental performance on the ranked firms' stock prices using the event study methodology. He uses the Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) and compared the results to those of OLS (Ordinary Least Squares) for a period of eight years and for each year. The stock prices data is collected from stock price listed in the first and second sections of the Tokyo Stock Exchange and Tokyo Stock Price Index (TOPIX).The environmental performance data is collected from the Nikkei Environmental Management Ranking survey which includes seven items; environmental management system, long-term objective, pollution prevention, resource circulation, product measure, carbon reduction and office. The results indicate that the corporate environmental performance of a firm affects its stock price in a positive way as its frequency of the ranking increases. Also, firms with low frequency of ranking are affected considerably by noise. Thus, the researcher compares financial impact of the lower frequency of ranking with the higher frequency of ranking, finding that the negative effect increases in the low frequency of ranking and the positive effect increases in the higher frequency of ranking. The market may take these firms with the lower frequency of ranking as being unfriendly towards the environment and their environmental performance is not linked to their financial performance in the short term. On the other hand, firms with the higher frequency of ranking may be regarded as being friendly towards the environment and their environmental performance is linked to their profits in the long term.

Anderson-Weir, (2010) investigate the relationship between environmental decisions and the stock market reaction. He assesses the 2009 NewsWeek Green Rankings effect on the firm's financial performance using stock market returns. The research uses the environmental news (independent variable) which is measured by green score, environmental score, and green policies score and reputation score. The market reaction to an event is measured using

abnormal stock returns of the largest 500 public US companies ranked based on revenue, market capitalization, and employees. These ranked companies are categorized by industry using the Dow Jones benchmark. The results indicate that investors place a negative value for firms who are environmentally friendly.

Cortez, (2011) explores the relationship between social and environmental performance and financial performance in the Japanese top listed companies. The research tests two main hypotheses to analyze the relation between these variables. Specifically, the first hypothesis is whether there is a two-way relationship between environmental innovation costs and market performance. The second hypothesis is whether there is a two-way relationship between environmental innovations costs and financial performance measured in firm size, revenues, profit, liquidity, accounting risk, and intangible asset value. The researcher shows that there is a significant positive relation between environmental innovations costs and market performance. This result is consistent with the first hypothesis that states that the market appreciates the environmental innovative practices of companies that is evident from the increase in the stock prices of the firms that incur environmental innovation costs which results in an increase in the book value of common stocks of these firms that lead to an increase in the stockholders' equity. The other direction of the relation is not rejected where market performance affects investments in environmental innovations costs of the TSE manufacturing companies. The researcher suggests that although environmental innovation is positively related to firm size, revenues (sales), and liquidity, short term and long term liabilities, it is not significantly related to intangible assets and profitability.

McPeak & Demi Dai, (2011) examine environmental issues as a part of corporate social responsibility and how these environmental issues are related to stock market performance. The study uses the KLD data and investigates each company's positive and negative issues. The authors assess the relationship between the environmental ratings and financial performance by using beta to evaluate the risk return relationship. Beta is defined as, the relationship of a stock's return with financial market return as a whole and a parameter of the CAPM. So in terms of return, higher beta implies a higher return compared to the market and in terms of risk, higher beta implies higher unsystematic risk. The results indicate that companies with high beta have a higher growth rate compared to the S&P 500. So beta greater than 1 called growth beta which means that when the stock market is getting higher, these companies grow more but when the market goes down, these companies go down even more. On the other hand, lower beta companies are called defensive companies which mean that when the stock market is falling, these companies fall less than the market. Also environmental friendly companies should be considered by investors in a bull market and negative ratings companies may be considered in a bear market.

Flammer, (2012) examined the relationship between Environmental CSR (corporate social responsibility) and stock prices. Also, the researcher investigated whether shareholders reward or penalize corporations for their behavior towards the environment and how such rewards and punishments have changed over the past decades. The result indicates that the stock market reacts positively to the announcement of eco-friendly initiatives, and negatively to the announcement of eco-harmful behavior. This result is consistent with the argument that environmental CSR generates new and competitive resources for firms as mentioned in instrumental stakeholder theory (Jones, 1995) and natural resource- based view of the firm (Hart, 1995). The stock price reaction was measured by the average cumulative abnormal return (CAR). The results indicate that the mean CAR is positive (negative) for the announcement of eco-friendly (harmful) events, consistent with the view that shareholders reward companies for eco-friendly initiatives and punish them for eco-harmful behavior. Further, the correlation between CAR and the time trend is negative for both eco-friendly and

harmful events, suggesting that the reward for eco-friendly initiatives has decreased over time while the punishment for eco-harmful behavior has increased. Finally, the correlations between the CAR and the KLD indices of environmental strengths and concerns are consistent with the decreasing marginal return argument.

## Methodology and Hypothesis Development

According to the efficient market hypothesis, it is assumed that news such as environmental performance could create an impact and be impounded in the firms' stock prices, if, and only if, market participants perceive such information as affecting future cash flows.

The literature is rich with research articles illustrating the relationship between the environmental and financial performance. However, the results are inconclusive. Also, most research articles are based on data from developed countries which can't be accurately generalized on developing countries. Assessing the financial impact is performed in two common ways either stock market returns or accounting returns. In this article we are going to assess the financial impact via stock market prices.

Thus the hypothesis is:

*H1: Firms' environment performance has a significant influence on firms' capital market returns.*

*H2: Firms' environment performance has a significant influence on firms' cumulative stock returns*

## VARIABLES

### Environmental Performance Variables

Due to the absence of clear environmental measures in the EGX, the ISO 14001can be used as a proxy for environment performance. ISO 14000 is a series of international standards on environmental management that help integrate the environmental management systems of companies that trade with each other. ISO 14001 is the standard to which an organization will register its environmental management systems (EMS) using an independent third-party to evaluate the system and to confirm that the organization's EMS conforms with the ISO 14001 specifications and it is the only standard in the full series to which an organization can be registered.

The ISO 14001 is used as a dichotomous variable; companies that earned the ISO 14001 certificate are coded "*1*" while others that didn't earned the ISO 14001 are coded "*0*". Thus, the companies which are coded "*1*" are considered environmental friendly because the firms are abiding to the environmental specifications and standards set by the ISO 14001.Companies coded "*0*" are considered unfriendly to the environmental given the absence of activities that are either directed towards protecting the environment such as recycling wastes or minimizing damage such as proper waste disposal.

The other metric used to assess the environmental performance is a questionnaire survey method which is used to measure the environmental performance in the listed and ranked Egyptian companies in the S&P EGX ESG index to evaluate the companies' actions and perspective towards the environment. The questionnaire is based on the methodology introduced by Mishra & Suar, 2010 which provides a complete measurement of CSP towards each primary stakeholder group including corresponding social, ethical, legal and economic issues derived from global standards. However, only the part related to the environmental performance is employed in this research due to the focus of this research on the relationship

between environmental performance and financial performance.

In this questionnaire, the environmental performance is measured by seventeen measures. Responses are set on a five-point scale, (1) it is not in the company policy, (2) it is in the company policy but not applied, (3) it is in the company policy but partially applied, (4) it is in the company policy but substantially applied and (5) it is in the company policy and fully applied. The summative score of the environment actions towards the environment is divided by the number of the items to maintain the value within the range of the scale Mishra & Suar, (2010).

According to the previous literature, environmental performance is measured by several ways, we chose the KLD database as one of the used measurement for environmental performance, such as Graves & Waddock, (1994); Waddock & Graves, (1997); Harrison & Freeman, (1999); Deckop et al., (2006); Fauzi et al., (2007); McPeak & Demi Dai, (2011); Barnett & Salomon, (2012); Flammer, (2012). It assesses environmental performance based on 6 environmental strength variables and 7 environmental concern variables. Prior literature also documents another measure of environmental performance, Michael Jantzi Research Associate (MJRA) utilized by Fauzi et al., 2007 and Fauzi, 2009. Also, OECD survey is another way to assess the environmental performance utilized by Darnall & Ytterhus, (2005); Darnall, (2009).

Other methods used for measuring environmental performance include, but not exclusive to, Toxic Release Inventory (TRI) used by Hart & Ahuja, (1996); Cohen et al., (1995); Gottsman & Kessler, (1998); TRI emissions data used by Feldman, (1997); Stanwick, (1998); Konar & Mark, (2001); Media reports on the environment used by Hamilton, (1995); Klassen & McLaughlin, (1996); Oil spills and chemical leaks like (White II, 1996; Blacconiere & Patten, 1994; Cohen, 1997).

## Financial Performance Variables

The literature shows various methods to evaluate the financial performance. Some measures are accounting-based measures while others are capital market-based. Accounting based measures shows how the firms' earnings respond to different managerial strategies and policies, as accounting returns are subject to managers' discretionary distribution of funds towards different projects and policy choices, and thus it can reflect the internal decision-making competencies and managerial performance Ahmed & Uchida, (2009); Orlitzky et al., (2003).

The capital market-based measures assess the financial performance through investigating how the stock price as a result of the reaction of stockholders' to firms' related information. A number of studies uses market-based measures of financial performance, which includes stock prices and abnormal returns, market-to-book ratio, price/earnings (P/E), market return and other market-based measures Anderson-Weir & H., (2010); Cohen, (1997); Calderón et al., (2012); Flammer, (2012).

## Annual Stock Returns

Annual stock return is used to measure the financial performance of 69 listed companies in the Egyptian stock market. Only 32 firms have the ISO 14001. Monthly stock returns for the sample companies were obtained from the Egypt for Information Dissemination Company, afterward it is annualized [Cum_Ret] as illustrated below.

$$Cum\_Ret = \{1* (1+ Ret1) * (1+ Ret2)* (1+ Ret3)* (1+ Ret4)* (1+ Ret5)* (1+ Ret6)* (1+ Ret7)* (1+Ret8)* (1+ Ret9)* (1+ Ret10)* (1+ Ret11)* (1+ Ret12)\} - 1$$

The cumulative annual returns are thus calculated by compounding the monthly returns where the initial base is 1 (or 100% of the firm's beginning stock price), which corresponds to Cum_Ret at T=0. After one month, Cum_Ret will get the value 1*(1+Ret1), which is the accumulation of the initial base 100% and Ret1. After the second month, Cum_Ret will get the value 1*(1+Ret1)*(1+Ret2). This process is repeated until the twelve months are compounded.

## Control Variables

Prior literature shows that other factors relate to environmental performance and need to be controlled to neatly investigate the relationship between the variables of interest. Thus, in order to provide more accurate investigation of the relationship between environmental performance and stock returns, control variables are considered such as: firm size, environmentally sensitive industry membership, financial leverage and capital intensity.

## Firm Size (LnAs)

Prior studies such as Walker & Wan, (2011); Fauzi et al., (2007); Barnett & Salomon, (2012); Flammer, (2012) find an association between a firm size and environmental performance, where larger companies perform environmentally different than smaller companies; therefore firm size is measured using the natural log of total assets.

## Environmentally Sensitive Industry Membership (SIC)

Similarly, prior studies such as Calderón et al., (2012) find that companies in industries whose activities have a significant impact on the surrounding environment perform differently, with respect to the environment, than firms in other industries. Therefore, to control for industry membership Dummy variable coded "*1*" for firms that belong to environmentally sensitive industries and otherwise coded "*0*" is used.

## Capital Intensity (Cap_Int)

Although capital intensity is not used a lot in the literature as firm size and industry, Iwata & Okada, (2011); Russo & Fouts, (1997) find that it is significantly related to environmental performance. Capital Intensity is measured by dividing total assets by total revenues.

## Financial Leverage (Fin_Lev)

Many studies have also used financial leverage as one of the financial control variables (Walker & Wan, 2011; Fauzi, 2009; Iwata & Okada, 2011). Financial leverage shows the extent to which the business relies on debt financing and it is measured by dividing long-term debt by stockholders equity in Table 1.

| Table 1 CONTROL VARIABLES | |
|---|---|
| LnAs | Natural logarithm of Total Assets; |
| SIC | 1 In case the firm operates in industries classified as environmentally unsafe, 0 otherwise; |
| Fin_Lev | (Debt in current liabilities + Debt in long term Liabilities) / Total Shareholder's Equity; |
| Cap_Int | Total Assets / Total Revenues. |

## Sample Selection

The population data for this research is comprised of 69 companies out of 155 firms listed in the Egyptian Stock Exchange, 32 of them received the ISO 14001 certificate, including 14 companies ranked in the Egyptian Corporate Responsibility Index and the other 37 companies are neither the ISO 14001 neither certificated nor ranked.

However, using a convenience sampling technique, any listed company that is ISO 14001certified and is ranked in the Corporate Responsibility Index ''*S&P/ EGX ESG Index*'' from 2007 to 2013 is included.

## Environmental performance data collection

The environmental performance data is collected from the 32 listed companies in the Egyptian stock market in different sectors by two ways, first, websites search for the ISO 14001 certificate and second, questionnaire.

In regards to the questionnaire, pilot study is performed to check the questionnaire validity to test research variables and the appropriateness of the items to evaluate environmental performance of Egyptian companies. The questionnaire is distributed to professors in the Egyptian universities, managers of some companies and experts in this field working in the Egyptian Corporate Responsibility Center (ECRC). Afterwards, the environmental performance questionnaire Survey is distributed to the senior- level Egyptian managers of the 32 chosen companies. Responses from 26 firms were received. The loss of respondents to questionnaire is an inherent defect with such instrument.

The final sample set is comprised of 69 companies classified into 11 sectors. The 32 companies that are the ISO 14001 certified are from basic resources, chemicals, construction and materials, food and beverage, industrial goods and services and automobiles, oil and gas, healthcare and pharmaceuticals and utilities sectors. The companies that don't have the ISO 14001 certificate are from basic resources, chemicals, construction and materials, food and beverage, industrial goods and services and automobiles, oil and gas, healthcare and pharmaceuticals, utilities, personal and household products, real estate and retail sectors. The major sectors in the sample of the companies have ISO 14001 are from construction and materials, industrial goods and services and chemicals as shown in Table 2 while the major sectors in the sample of the companies that don't have ISO14001 are food and beverage, construction and materials and personal and household products as shown in Table 3.

| # | Table 2 SAMPLE SECTOR CLASSIFICATION | | |
|---|---|---|---|
| # | Sector | # of companies in the Sector | % |
| 1 | Basic Resources | 3 | 9.375% |
| 2 | Chemicals | 5 | 15.625% |
| 3 | Constructions and Materials | 11 | 34.375% |
| 4 | Food and Beverage | 3 | 9.375% |
| 5 | Industrial goods, services and automobiles | 5 | 15.625% |
| 6 | Oil and Gas | 2 | 6.25% |
| 7 | Healthcare and Pharmaceuticals | 2 | 6.25% |
| 8 | Utilities | 1 | 3.125% |
| | **Total** | **32** | **100%** |

| # | Sector | # of companies in the Sector | % |
|---|---|---|---|
| | **Table 3** **SAMPLE SECTOR CLASSIFICATION** | | |
| 1 | Basic Resources | 4 | 10.81% |
| 2 | Chemicals | 2 | 5.41% |
| 3 | Constructions and Materials | 7 | 18.92% |
| 4 | Food and Beverage | 11 | 29.73% |
| 5 | Industrial goods, services and automobiles | 4 | 10.81% |
| 6 | Healthcare and Pharmaceuticals | 2 | 5.41% |
| 7 | Personal and household products | 5 | 13.51% |
| 8 | Real estate | 1 | 2.70% |
| 9 | Retail | 1 | 2.70% |
| | Total | 37 | 100% |

## Financial performance data

Annual stock return is used to measure the financial performance of 69 listed companies in the Egyptian stock market. Only 32 firms have the ISO 14001. Monthly stock returns for the sample companies were obtained from the Egypt for Information Dissemination data base, afterward it is annualized [Cum_Ret] as illustrated below:

Cum_Ret = {1* (1+ Ret1) * (1+ Ret2)* (1+ Ret3)* (1+ Ret4)* (1+ Ret5)* (1+ Ret6)* (1+ Ret7)* (1+Ret8)* (1+ Ret9)* (1+ Ret10)* (1+ Ret11)* (1+ Ret12)} – 1

The cumulative annual returns are thus calculated by compounding the monthly returns where the initial base is 1 (or 100% of the firm's beginning stock price), which corresponds to Cum_Ret at T=0. After one month, Cum_Ret will get the value 1*(1+Ret1), which is the accumulation of the initial base 100% and Ret1. After the second month, Cum_Ret will get the value 1*(1+Ret1)*(1+Ret2). This process is repeated until the twelve months are compounded (Elshahat, 2010).

## RESEARCH METHODS

Different statistical tools and techniques are used to test the hypothesis of this research which is whether there is significant relation between firms' environment performance and firms' capital market returns using 69 companies listed on the Egyptian Stock Exchange from 2007 to 2013.

### Descriptive statistics and correlation analysis

First, descriptive statistics are used to describe all the variables in the research which is used to demonstrate the Mean (measuring the average), Standard Deviation, Minimum and Maximum values for each variable. Next, Spearman correlation analysis is applied to examine the correlation between the variables of interest to show the direction and strength of the correlation between variables. Correlation measures the degree of linear association between two variables, but it doesn't imply causality between variables. Therefore regression analysis is used as it is more powerful and flexible compared to correlation since it doesn't only show the direction and strength of a relationship, but also determines the causal effect of this relationship in Table 4.

## Regression analysis

The regression models used for cross-sectional data to test hypothesis 1 are as follows:

$$Cum\_Ret_i = \beta_0 i + \beta_1 \text{ ISO dummy } i + \beta_2 \text{ LnAs} + \beta_3 \text{ SIC } i + \beta_4 Fin\_Lev_i + \beta_5 Cap\_Int_i + \varepsilon_i$$

$$Cum\_Ret_i = \beta_0 i + \beta_1 CEPq_i + \beta_2 \text{ LnAs} + \beta_3 \text{ SIC } i + \beta_4 Fin\_Lev_i + \beta_5 Cap\_Int_i + \varepsilon_i$$

Where:
$Cum\_Ret_i$ is the dependent variable of firm i
$\beta_0$ is the constant
$\beta$ is the coefficient of the independent variables
ISO dummy i, and $CEPq_i$ are the independent variables of firm i
$LnAs_i$ , $SIC_i$ , $Fin\_Lev_i$ and $Cap\_Int_i$ are the control variables of firm i $\mu_i$ are the error terms.

| Variable | Definition |
|---|---|
| **Table 4** **VARIABLES DEFINITION** | |
| Variable | Definition |
| **Dependent Variables** | |
| $Cum\_Ret_i$ | Cumulative annual stock market returns, which represents the accumulation of monthly returns for each firm year. |
| **Independent Variables** | |
| ISO dummy | Dummy variable used to measure the environmental performance coded 1 or 0 |
| $CEPq$ | Environmental performance measured by questionnaire |
| **Control Variables** | |
| LnAs | Natural logarithm of Total Assets; |
| SIC | 1 for environmentally unsafe industries, 0 otherwise; |
| Fin_Lev | Financial Leverage |
| Cap_Int | Capital Intensity |

## RESULTS

## Regression analysis

A multiple linear regression models are used to fit the linear relationship between the financial performance (cumulative stock returns) and each environmental performance measures (ISO 14001 dichotomous and questionnaire).

**Cumulative stock returns as dependent variable with ISO 14001 as an independent variable**

The results indicate that the R-squared value is 0.004 which means that only 0.4% of the variance in cumulative stock returns is explained by the first model. The adjusted R-squared value is - 0.007. The ANOVA test indicates that the overall regression model is statistically insignificant with a significance level of 0.876 and F value 0.360. This indicates that the independent variables (environmental performance measured by ISO) can't explain the variation in the dependent variable (annual stock returns). The Durbin Watson statistics is 2.253 which is near to 2. This means that error terms are uncorrelated, and thus there is no autocorrelation problem as shown in Table 5.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Table 5** **MODEL (1) SUMMARY** | | | | | | | |
| **R** | **R Square** | **Adjusted R Square** | **Std. Error of the Estimate** | **Durbin-Watson** | **ANOVA** | | |
| | | | | | | **F** | **Sig** |
| 0.061 | 0.004 | -0.007 | 0.589 | 2.253 | | 0.360 | 0.876 |

Table 6 shows that there is no multicollineartiy problem since the VIF is less than 10 for all variables. The results of this model indicate that there is an insignificant relationship between cumulative stock returns and all the variables. Thus, the stock returns of the Egyptian stock market don't reflect the environmental performance which could be due to the fact that Egypt is a developing country. The results are consistent with the results of Mahapatra, (1984); Aupperle, et al., (1985); Jaggi & Freedman, (1992); Kreander et al., (2005). Also, it appears that the environment performance, as a factor of the overall CSR, is not priority for Egyptian stakeholders, consistent with (El Moslemany, 2014).

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Table 6** **COEFFICIENTS** | | | | | | | |
| **Model** | **Unstandardized Coefficients** | | **Standardized Coefficients** | **t** | **Sig.** | **Collinearity Statistics** | |
| | **B** | **Std. Error** | **Beta** | | | **Tolerance** | **VIF** |
| (Constant) | .224 | .290 | | .772 | .440 | | |
| ISO | .029 | .056 | .025 | .519 | .604 | .914 | 1.095 |
| Firm Size | -.027 | .032 | -.042 | -.847 | .397 | .862 | 1.161 |
| Environmentally Sensitive Industry | .030 | .058 | .025 | .523 | .601 | .880 | 1.136 |
| Capital Intensity | .000 | .000 | .041 | .836 | .404 | .873 | 1.145 |
| Financial Leverage | .003 | .011 | .012 | .250 | .803 | .962 | 1.040 |

## Cumulative stock returns as dependent variable with questionnaire as an independent variable

The results indicate that R-squared value is 0.016 which means that only 1.6% of the variance in cumulative stock returns is explained by the second model. The adjusted R-squared value is - 0.011. The ANOVA test indicates that the overall regression model is statistically insignificant with an insignificant level of 0.708 and F value 0.589. Therefore, this indicates that the independent variables are insignificant and can't explain the variation in the dependent variable. The Durbin Watson statistics is 2.143 which are near to 2. This means that error terms are uncorrelated, and thus there is no autocorrelation problem as shown in Table 7.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Table 7** **MODEL (2) SUMMARY** | | | | | | | |
| **R** | **R Square** | **Adjusted R Square** | **Std. Error of the Estimate** | **Durbin-Watson** | **ANOVA** | | |
| | | | | | | **F** | **Sig** |
| 0.128 | 0.016 | -0.011 | 0.665 | 2.143 | | 0.589 | 0.708 |

Table 8 shows that there is no multicollineartiy problem since VIF is less than 10 for all variables. The results of this model indicate that there is an insignificant relationship between cumulative stock returns and all the variables. So the results of this model is

consistent with the previous model confirming that cumulative stock return is not related or affected with environmental performance in Egypt and consistent with the reasons mentioned before.

| Model | Unstandardized Coefficients | | Standardized Coefficients | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | | Std. Error | Beta | t | Sig. | Tolerance | VIF |
| (Constant) | 650 | 799 | | 813 | 417 | | |
| Questionnaire | .002 | 085 | -.002 | .023 | 982 | .866 | 1.155 |
| Financial Leverage | 007 | 021 | .028 | 355 | 723 | .908 | 1.101 |
| Capital Intensity | 000 | 000 | .108 | .199 | 232 | .690 | 1.448 |
| Environmentally Sensitive Industry | 115 | 119 | .080 | 967 | 335 | .808 | 1.238 |
| Firm Size | .074 | 070 | -.096 | 1.062 | 290 | .685 | 1.460 |

**TABLE 8**
**COEFFICIENTS**

The results indicate that H1.1, which states that firms' environmental performance has a significant influence on firms' cumulative stock returns, is not supported. Therefore, the results indicate that there is an insignificant relationship between cumulative stock returns and environmental performance measured by either the ISO 14001 or the questionnaire.

## CONCLUSION

The Interest in CSR is growing over time as more and more researchers are trying to investigate the link between CSP and CFP. However, it is hard to believe that the importance and value of certain matters would be the same over different countries. The nature of the relationship between CSR and CFP is not expected to be universal and ultimate which explains the inconclusive nature of the relationship and it can be described as case sensitive. In this research, such a relationship is investigated in a developing country such as Egypt. This research aims at contributing to the literature illustrating the nature of the relationship in a developing economy. The relationship is examined based on the Good Management theory.

We analyzed the relationship between CEP-CFP in listed companies in the Egyptian Stock Market and Egyptian companies listed in the Egyptian Corporate Responsibility Index 'S&P/ EGX ESG Index' from 2007 to 2013. First; data collection process was conducted through distributing Mishra & Suar, (2010)'s questionnaire to companies in the research sample that have the ISO 14001 to measure their environment performance level. In addition of having the financial statements and stock prices of these companies mainly from 'Egypt for Information Dissemination Company' to measure their financial performance through Cumulative stock returns.

The results of the first model indicate an insignificant relationship between environmental performance and cumulative stock returns. Therefore, H1.1 is rejected. It appears to be that in Egypt, as a developing country with an emerging capital market, investors don't perceive environmental activities of firms as a vital element that affects the firms' financial position, which translate in the changes in the stock price that comprised the firms' returns. Also, it is found that CFP is only related with CSR activities towards customers, while companies in Egypt do not care much about other dimensions of CSR including environment and also due to the weak CSR education of the Egyptian stakeholders.

There are a number of differences between the findings of this research and the majority of the previous studies in the developed countries, this may be due to the difference in behavior towards the environment between developed countries and developing countries.

# LIMITATIONS

A major inherent limitation is the data volume and quality. There is no formal and /or systematic database available similar to those in the United States. However, there have been attempts to rate CSP activities for Egyptian Companies, like S&P/EGX ESG Index, Such index, discloses the ranking of the companies listed on annual basis only without considering any other information and this is not sufficient for measuring CSP. Also, in order to evaluate the firm's environmental performance there is only the certificate ISO 14001 to perceive if the company has well behaved to the environment or not and this is also not as comprehensive measure.

The questionnaire used to assess CEP for Egyptian Companies itself represents a limitation. The shortcoming of this method is that the responses might be subjective and reflect the managers' own opinion concerning the environmental performance. The questionnaire response rate also is not sufficient enough to generalize the results over the Egyptian companies as the research sample is composed of only 32 companies and the responses were only received from 26 companies, and this is due the difficulty of obtaining responses from companies. Also the unstructured Financial Statements might lead to inaccuracies in the data.

One of the limitations in this research was the distorted data in the research period (2007-2013) which includes the global financial crisis of 2007 and 2008 and the Egyptian 2011 revolution which may have a negative effect on FP.

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