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# The Moderating Role of Long-term Institutional Investors on Environmentally Friendly Management

## ABSTRACT

This paper explores the behavior of organizations in adopting environmentally friendly management. Institutional theory tried to explain the isomorphic behavior of firms operating in various organizational fields by examining the institutional pressures imposed upon them. While their findings are consistent in that firms operating in different institutional context show differing behavior due to dissimilar levels of institutional pressures, they fail to explain the heterogeneous firm behavior within the same institutional context. In order to bridge this gap, a few studies have considered the moderating role of organizational characteristics in firm's norm-conforming behavior. I empirically test the effects of both institutional pressures and organizational characteristics of 139 firms by observing industry's institutional pressures and firm's ownership structure to see their influence on firm's adoption of environmentally friendly management. The findings suggest that the impact of institutional pressures on firm's behavior of adopting environmentally friendly management is negatively moderated by greater long-term institutional investor holdings of a firm.

*Keywords: institutional theory, environmental management, institutional investment horizon, risk management, insurance*

# INTRODUCTION

Why do some firms conduct more environmentally friendly management than others? To answer this question, institutional theorists extensively studied the isomorphic behavior of firms in search for legitimacy as it increases their chances of survival (DiMaggio and Powell, 1983; Meyer and Rowan, 1977). Several scholars found that differing institutional pressures among organizational fields influence firms' adoption of environmental strategies. For example, firms voluntarily complying to set norms such as ISO 14001 Environmental Management Systems (EMS) standards were different in Europe and the United States due to different institutional environment (Delmas, 2002). Also, those operating in organizational fields with high coercive forces adopt similar environmental practices (Jennings and Zandbergen, 1995). While this stream of research can explain the isomorphic behavior of firms within similar institutional context, it does not sufficiently explain why firms subject to the same level of institutional pressures pursue different level of strategies.

To answer this question, Oliver (1991, 1997) asserted that there might be variance in firm's responses to similar institutional stimuli and that institutional and organizational dynamics are tightly linked to influence firms' behavior (Hoffman, 2001). Recent studies revealed that organizational characteristics including organizational context and design, leadership values and managerial attitudes are the causes of firms' different attitude regarding environmental management (Delmas and Toffel, 2004; Ramus and Steger, 2000; Egri and Herman, 2000; Cordano and Frieze, 2000; Sharma,

2000; Levy and Rothenberg, 2002). However, less attention has been paid to the ownership structure of a firm and their effect on causing firms to adopt more or less environmentally friendly management strategies than their competitors. The impact of institutional ownership and their investment horizon have been studied to be significantly related with firms' various strategic decisions (Neubaum and Zahra, 2006; Johnson and Greening, 1999; Hoskisson, Hitt, Johnson and Grossman, 2002). Moreover, their impact on environmental performance has been studied and proved to be significant (Walls, Berrone and Phan, 2012).

Although each study contributes to our understanding of firm's heterogeneous behavior, there is still a lack of understanding on the conditions under which institutional pressures and organizational characteristics explain the adoption of firms' different environmental management. Focusing on this key question, I propose that 1) high institutional pressures and 2) long-term institutional investors are positively associated with firms adopting more environmentally friendly management and 3) long-term institutional investors will negatively moderate the relationship between institutional pressures and firm's tendency to adopt environmentally friendly management practices.

I test my hypotheses by using 3-year averaged data on the type of institutional ownership, environmentally friendly management strengths and institutional pressures of firms operating in the 'dirty' industry (Hart and Ahuja, 1996) as they are most affected by environmental issues.

In examining this phenomenon, this paper makes several contributions to the

current literature. First, it extends the previous notion that institutional pressures engender heterogeneous rather than isomorphic organizational response. Theoretically suggested by Oliver (1991), this paper empirically proves that different institutional pressures the 'dirty' industry and the type of institutional ownership instills different degree of norm conformity. Second, it extends the risk management literature by proving that long-term owners tend to view proactive environmental management as insurance for the future. By preparing more buffer through more environmentally friendly management, firms can achieve moral capital or protection that can preserve their firm value in times of crisis. Third, by recognizing the role of institutional ownership and contextual influences in the interpretation of institutional pressures, this paper tried to provide guidance to the underlying mechanisms of institutional change, which have not been studied extensively.

## **THEORY AND HYPOTHESIS DEVELOPMENT**

### **Institutional Theory and Environmental Strategies**

The institutional literature explains how social and cultural pressures can influence organizational actions to become isomorphic in common organizational fields (DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Scott, 1995). Being an approval seeking entity, organizations pay attention to social influence of their respective field. Accordingly, they are induced to adopt socially deemed practices as it will enhance or protect their legitimacy (Deephouse, 1999; Scott, 1995).

Therefore, the practices adopted by firms as an action to gain legitimacy by complying to institutional norms do not consider efficiency issues or strategic choices on firm performance. Due to this unique feature, institutional theory examined many of the social concerns surrounding organizations that are not necessarily linked to financial benefits (Hoffman, 1999; Campbell, 2007; Bansal and Clelland, 2004). Firms' environmental management is especially germane as increasing environmental responsibility is expected to organizations as their operations, products, services and activities are tightly linked to the environment that the whole society shares. For example, as a result of increasing institutional pressures, chemistry and petroleum industry changed to perform environmentally better despite facing a financial loss (Hoffman, 1999).

In order to accommodate institutional pressures, firms formulate many environmental strategies. Firms' environmental strategies range from operating internally developed environmental programs to participating in external programs sponsored by government or industry (Delmas, 2002; Delmas and Montes-Sancho, 2011; Short and Toffel, 2010). Previous studies found that these environmental strategies were the results of institutional pressures. For example, Delmas (2002) looked at firms' showing a 'copycat' behavior by adopting ISO 14001 EMS standards to meet the regulative, normative, and cognitive institutional pressures. By examining the different institutional environment of Europe and the United States, Delmas explained that the degree of isomorphism may differ to the relative pressure felt by organizations in different organizational field. Milstein and colleagues (2002) also showed that differences among

industries breed different institutional pressures and thus, distinct environmental strategies.

Although early institutional theory can explain differing actions of firms in other organizational fields, it does not address why firms experiencing similar institutional pressures in the same organizational field behave differently. Recently, several institution constituents created voluntary standards that provide incentives for firms to go beyond minimal regulatory requirements. For example, the U.S. Environmental Protection Agency (EPA) has developed several voluntary agreements between governmental agencies and firms to encourage technological innovation or reduce pollution while providing relief from particular procedural requirements (Delmas and Terlaak, 2001: 44). Industry programs include Responsible Care and Sustainable Slopes (King and Lenox, 2000; Rivera and de Leon, 2003), and NGO programs include The Natural Step, Global Reporting Initiative Guidelines, and UN Global Compact (Bradbury and Clair, 1999; Hedberg and von Malmberg, 2003; Tonello, 2010). In order to answer who adopts more of these standards in the same organizational field, Oliver (1991) and Hoffman (2001) give an insight. They argue that organizations do not simply react to the pressure dictated by the organizational field and also do not act completely ignoring the external influences. Rather, the relationship between institutional and organizational dynamics is tightly and closely related.

To answer the heterogeneous behavior of firms, other research investigated the effect of organizations' characteristics. Organizational characteristics include firm-level traits like organizational context and design (Ramus and Steger, 2000; Sharma, 2000),

board characteristics (Kassinis and Vafeas, 2002; Walls and Hoffman, 2013), ownership structure (Darnall and Edwards, 2006) and resource specificity (Berrone, Fosfuri, Gelabert, and Gomez-Mejia, 2013) to more micro-level traits like leadership of individuals and managers (Egri and Herman, 2000) and managerial attitudes (Sharma, 2000). For example, Chatterji and Toffel (2010) explained that firms that performed environmentally poorly than others are more likely to react to third-party ratings by adopting more environmental practices. Also, Levy and Rothenberg (2002) suggested several mechanisms that can encourage heterogeneity: transformed institutional forces through managerial interpretation, and prioritization of conflicting institutional pressures by managers, multinational and diversified organizations operating in several institutional fields.

Although each research contributes to our understanding of differing behavior of firms in similar institutional context, we need more detailed observation to specifically identify which institutional pressures and organizational traits explain the behavior of firms adopting strategies that are different to each other. In this paper, I argue that strong institutional pressures and long-term institutional investors make firms to adopt more environmentally friendly management. However, when both are simultaneously considered, investment horizon of firm's institutional investor will negatively moderate this behavior.

## **Institutional Pressures and Environmental Strategies**

Three basic 'pillars' identified by Scott (1995)—regulative, normative, and

cognitive—provides a useful starting point for previous studies to investigate the causes for conforming to institutional norms. Regulation provides explicit guidance to organizations through rules, controls, rewards, and sanctions (Scott, 1995). Having the power to decide organization's existence under jurisdiction, government enforced regulations are the strongest pressure to firms. For example, Jennings and Zandbergen (1995) found that coercive forces caused firms to adopt similar environmental practices. Enforcement of enhanced regulation after an environmental crisis, firms in the U.S. nuclear power industry and chlorofluorocarbon manufacturing industry adopted similar environmental strategies. Henriques and Sadosky (1996) also found that government regulations to be the most frequently cited source of pressure in adopting environmental strategy. The threat of legal liabilities or receiving government inspections also influence firms to adopt voluntary environmental practices and disclose of their environmental strategies (Khanna and Anton, 2002; Reid and Toffel; 2009). Also, Berrone and colleagues (2013) found that high regulatory pressure instills high normative pressure.

Not conforming to these institutional forces can be costly for firms in many ways. Since it is enforced under legislative power, the firm will face large amount of fines for non-compliance. Also, compliance will secure them from political risk of being monitored closely or given more stringent regulation (Berrone et al., 2013). Social cost will also be high as their offensive behavior will damage their reputation and become a popular target for scrutiny of other stakeholders. Acquiescence is critical for firms participating in an organizational field that has strong institutional pressures. Thus, in order to gain legitimacy, firms will conform to norm. However, being in a highly

regulated domain, firms will expect constant regulatory challenges. For example, regulations and social pressure can evolve more stringent on firms who emit toxic pollutant. For them, doing more than it is required in the field with stringent regulations will grant firms with benefits as they may achieve competitive advantage through environmental innovation (Porter and van der Linde, 1995) or increased reputation from positive media coverage or government recognition. Therefore, I hypothesize:

*Hypothesis 1. Firms facing high institutional pressures are more likely to adopt environmentally friendly management than those facing low institutional pressures.*

## **Organizational Characteristics and Environmental Strategies**

Institutional theory traditionally describes how institutional pressures lead to common organizational practices. In this vein, heterogeneity among various firms might be attributed to differences in organizational field (Delmas, 2002; Milstein et al., 2002). However, this is insufficient to explain the differing behaviors of firms who share common organizational fields. Thus, more informed theory is needed to explain firms' differing decisions within organizational fields facing similar institutional pressures. Limited research explores this through the moderating role of organizational characteristics (Chatterji and Toffel, 2010, Levy and Rothenberg, 2002; Hoffman, 2001; Delmas and Toffel, 2008; Delmas and Montiel, 2009; Sharma, 2000; Darnall and Edwards, 2006). However, no research examined the impact of institutional ownership and their investment horizon to explain the differing behaviors of firms in adopting environmental strategies.

Institutional investors are a potent force in the United States as they control more than 60% of outstanding common shares of stock (MIT Sloan Management Review, 2003). They emerged as major equity owners and became key players in corporate governance (Hansen and Hill, 1991). These major shareholders can greatly influence a company's corporate strategy by exerting pressures on executives and reduce possible agency problems (Useem, 1993, 1996). Generally, owners serve two main roles: the allocation of scarce resources among competing investments and the efficient management of them by pressuring managers (Hoskisson et al., 2002). To ensure efficient management of their investment, owners often sell their shares or voice out their needs (Hirschman, 1970). Thus, although ownership is separated from control—giving executives more control in deciding corporate strategy—managers are still pressured to attend the demands of more influential stakeholders like institutional owners (Fiske and Taylor, 1984). Among different owners, institutional investors perform the vigilance role more significantly than others as they are under pressure from their own stakeholders (Neubaum and Zahra, 2006). Also, as they invest large sums of money, their funds are less mobile than individual shareholders as it may affect the share price of their investment (Pound, 1992). Hence, institutional investors are not only interested in the financial performance of their invested firms but also in the strategies, activities and other stakeholders of those firms (Holderness and Sheehan, 1988; Gilson and Kraakman, 1991; Johnson and Greening, 1999). Proving this behavior, many previous studies observed the influence of institutional ownership on various firms' strategic decisions (Graves and Waddock, 1990; Hill, Hitt, and Hoskisson, 1988; Baysinger, Kosnik, and Turk, 1991; Kochar and David, 1996). However, results have been inconclusive as

heterogeneity among institutional owners was not taken into account.

Institutional investors are not homogeneous as their investment horizons are different. Neubaum and Zahara (2006) asserted that failure to distinguish between potential and exercised power of institutional investors impedes better understanding of the influence of institutional owners. Research on investment horizon has differentiated public pension funds to have long-term investment perspective and mutual funds and investment company funds to have short-term perspectives (Gilson and Kraakman, 1991; David, Hitt and Gimeno, 2001; David and Kochar, 1996). Different investment horizon stems from different incentives of the institutional investors. For example, Khorana (1996) found that professional investment fund managers face replacement if their performance is not adequate in the short term. Being evaluated quarterly with the size or net asset value of their investment and their income being results driven, they are fonder of short-term results. On the other hand, Scharfstein and Stein (1990) found that pension fund managers' compensation is not market-based as they receive salaries and regular funds from the pensioners with a longer time horizon. Moreover, pension funds prefer indexing which involves the purchase of balanced weightings of shares in specific class of firms due to their broader investment portfolio (Gilson and Kraakman, 1991). Due to indexing investment strategy implemented by public pension funds, they often hold stocks up to a decade. This led them to show more active monitoring and targeting of poorly performing firms (Pound, 1992). Many recent literatures observed this activism through the form of proxy statements, proposals, or coordinated actions (Smith, 1996; Gillan and Starks, 2000; Neubaum and Zahra, 2006). Thus, more recent literature tried to

disentangle the influence of different type of institutional investors on firm's strategy. Empirical evidence support that various strategic decisions like research and development, corporate social performance or diversification, that are generally long-term, risk involved, but considered to enhance sustainability and competitiveness of the focal firm, were preferred by long-term institutional investors (Hoskisson et al., 2002; Johnson and Greening, 1999; Tihanyi, Johnson, Hoskisson and Hitt, 2003; David et al, 2001).

## **Environmental Strategies as a Moral Capital to Manage Risk**

Studying the impact of different institutional owners on long-term firm strategy with less financial benefits like corporate social responsibility (CSR) has attracted many scholars. Although firms' social issues were studied for many decades (Berle, 1931; Dodd, 1931; Davis, 1960), recent corporate scandals involving Enron and WorldCom as well as many environmental accidents caused by corporations brought stakeholders' interest to pay attention to CSR. CSR is defined as the voluntary corporate actions designed to improve social conditions (Mackey, Mackey, and Barney, 2007). Being a voluntary act which disperses corporate resources, the effectiveness of CSR on firm value has been widely debated among scholars to be positive or normative (Berle, 1931; Dodd, 1931). To solve this endless question, recent literature tried to investigate CSR as a risk management effort through its 'insurance-like' protection in times of negative events (Godfrey, 2005).

In order to bridge the gap between CSR and corporate financial performance by

proving the insurance effect of CSR, Godfrey (2005) theorized ‘moral capital’ as a risk management strategy protecting firm’s financial performance in times of crisis. He suggests that stakeholder sanction to organizational mishaps will be more severe when bad acts are committed by bad actors. And mitigating this perception is the moral capital or goodwill generated through CSR activities. Godfrey and colleagues (2009) found that certain types of CSR activities generate this moral capital or goodwill that may placate the punitive sanctions by stakeholders during a negative event. Here, types of CSR activities refer to institutional and technical CSR activities that are directed to different stakeholders: primary stakeholders—those who are essential to the operation of the business—and secondary stakeholders—those who can influence the firm’s primary stakeholders (Mitchell, Agle, and Wood, 1997). They found that since institutional CSR activities directed to secondary stakeholders that lack both urgency and power (e.g. NGOs, community), firms can display non-self-interested actions and create effective moral capital that can act as insurance in times of crisis. Therefore, decisions on institutional CSR activities may attract long-term investors who would hold firm’s share for a long time.

## **Institutional Investment Horizon and Environmental Strategies**

Institutional investors are facing more pressure to be vigilant in monitoring the actions of companies that they invest in due to increased fiduciary responsibilities by the U.S. securities law (Monks and Minow, 1991) and their own stakeholders. Thus, their involvement is not just limited to securing firm’s financial performance but to broader issues like stakeholder management. Especially, institutional investors who are

concerned about firm's sustainability due to their longer involvement in the invested firm will be particularly interested in wider issues of the focal firm. For instance, previous research found links between long-term institutional ownership and CSR (Neubaum and Zahra, 2006; Johnson and Greening, 1999). However, there are two shortcomings. First, except Godfrey's work (2005, 2009), no research has approached to investigate shareholder's relation with CSR from the risk management perspective. Second, despite the multidimensional trait of CSR activities, not much research interprets CSR in finer-grained activities (e.g. environmental performance, diversity).

Based on the preceding logic, it is reasonable to investigate the relationship of long-term institutional investors and specific CSR activity from a risk management perspective. In other words, since there are certain CSR activities that are deemed to provide shareholders with 'insurance-like' protection (Godfrey et al., 2009), institutional investors with more concern over protecting the firm from any risk is likely to engage in more of these CSR activities. Long-term institutional investors will be more interested in managing risk of their invested firm as their investment horizon lasts longer than short-term institutional investors. Thus, they will want to prepare a shield that can provide a buffering effect for the firm in times of crisis. Following the differentiation used by Godfrey and colleagues, environmental management can be thought of as institutional CSR activities that create moral capital by affecting secondary stakeholders. Thus, based on this logic, I propose:

*Hypothesis 2. Firms with more long-term institutional investors are more likely to adopt environmentally friendly management than those with less long-term institutional*

*investors*

As there are more long-term institutional investors, managers will face more vigilance from them. Since they are more actively involved in firm's various decision making process, long-term institutional investors become stringent forces that managers should overcome. In this vein, previous research studied much about the kinds of strategic decision making that long-term institutional investors are involved with (e.g. R&D, diversification, CSR). They are more concerned with firm's sustainable performance so will constantly pressurize the managers to attain to stringent standards. In highly polluted industry for example, long-term institutional investors will want to prepare their firm from any potential risk that may damage their business operation and so may demand harsher internal environmental control. Thus, firms with more long-term institutional investors will be better equipped with environmentally friendly management than those with less long-term investors. So, even though the same institutional pressures is applied to firms, the impact or influence interpreted by each firm will be different. In other words, those already doing more environmentally friendly management due to their vigilant long-term institutional investors will sense the institutional pressures less seriously than those firms who are doing badly and change less. Thus, I propose:

*Hypothesis 3. Greater long-term institutional investor holdings weakens the relationship between institutional pressures and firm's environmentally friendly management practices.*

# **METHOD**

## **Sample**

The sample in this study includes firms from Standard and Poor's 500 (S&P 500) lists of corporations in the primary and manufacturing industries (2-digit Standard Industrial Classification code below 50), which are most likely to be affected by the environment (Hart and Ahuja, 1996) in 2008. Year 2008 was chosen as the point of analysis because in 2007, British Petroleum paid the largest criminal fine ever for violating the Clean Air Act in the U.S., making other firms to be more aware of their environmental management practices. After compiling all the necessary information from four different databases, COMPUSTAT, Thompson Reuters, Kinder, Lyndeborg, and Domini (KLD), and U.S. Environmental Protection Agency's (EPA) TRI (Toxic Release Inventory), I ended up with 139 U.S. publicly traded companies. The final sample of firms was obtained as follows. First, I screened out firms that were inactive at any point after 2008 as this may affect their environmental management strategies. Also, firms that were effective from 2005 were exempt from the sample as its explanatory variables were irretrievable. After matching firms that have the same fiscal reporting date, are listed in KLD database, and have data on institutional investors, 139 firms from 39 industries were included as the final data set.

I collected data on the independent, moderating, and control variables for the three years preceding a company's appearance on the S&P 500 list (i.e., 2005-2007) and averaged its value following previous research (Neubaum and Zahra, 2006). For the

dependent variable, measuring firm's environmentally friendly management practices, 3-year period was assessed and averaged which includes the year that the firm was listed on the S&P 500 and covering two additional years (i.e., 2008-2010). Although firms in the S&P 500 list are biased as large firms, this was not problematic in this study as the environmentally friendly management levels varied considerably among the big firms (e.g. Hart and Ahuja, 1996).

## **Measures**

### *Environmentally Friendly Management Practices*

Firms' environmentally friendly management practices were measured by using the KLD ratings. KLD ratings are developed through a comprehensive process by qualified experts who monitor companies' multidimensional CSP activities (Waddock & Graves, 1997). Since it is not solely based on firm's self-reported measures, it is relatively objective. While KLD has some limitations, its appropriateness has been proved by many studies as investors actually refer and gather this data when making investment decisions (e.g. Walls et al., 2013). Among the eight dimensions, environmental performance is often measured by looking at the environmental strengths and concerns ratings (Chatterji et al., 2009; Walls et al., 2013). In order to examine the degree of firm's commitment towards beneficial environmental management practices, I focused on the environmental strengths. The KLD 'environmental strengths' data evaluates firms on six categories which include products and services that promote efficient use of energy or innovative products that gives environmental benefits; program that prevent pollutants; manufacturing processes that uses recycled materials; use of

alternative fuels; engaging in active communication on environmental reporting; and other superior commitment to management systems or voluntary programs that are not captured previously. Score one is given if the company satisfies a category and thus, the total environmental strength is calculated by summing the six categories. Environmental strengths data was gathered for year 2008 to 2010 and then averaged. The highest environmental practice score was 4.3 by a firm in oil and gas extraction industry and the lowest score 0 was by firms in chemicals, utilities, and industrial machinery industries.

### *Institutional Pressures*

In previous studies, institutional pressures were identified by separating firms that operate primarily in environmentally sensitive industries<sup>1</sup> (Cho and Patten, 2007; Chatterji and Toffel, 2010) or by identifying the amount of toxic pollutants emitted by industry players (Berrone et al., 2013). Most of these studies show that those industries emitting more pollutants are subject to various forms of institutional pressures. In line with previous studies, I have identified industries that emit the most pollutants in the U.S. territory to measure the regulatory pressure by using EPA's TRI database. Under the EPA's Emergency-Right-to-Know Provision, industrial facilities with more than 10 employees are required to report the type and amount of emission (US EPA 2002). Thus, using the TRI data is well established in management research on the environmental impact of corporations (Russo and Harrison, 2005). Also, its positive relation to

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<sup>1</sup> Environmentally sensitive industries include firms operating in industries starting with 2-digit SIC code of 10 (mining), 13 (oil exploration), 26 (paper), 28 (chemical and allied products), 29 (petroleum refining), 33 (metals), and 49 (utilities).

institutional pressures and consequently, on firms' environmental practices has been identified in several studies (Cho and Patten, 2007; Berrone et al., 2013). From EPA's TRI database, toxic pollutant amount emitted by firms in 2005 to 2007 was identified and averaged to give ranks to industries according to their pollutant amount. This identified 25 top polluting industries (i.e. 2-digit SIC code 10, 49, 33, 28, 42, 26, 20, 29, 37, 30, 34, 32, 24, 12, 27, 32, 25, 36, 35, 38, 39, 22, 31, 23, 51). Since my sample consisted of companies below SIC 50, industry 51 was excluded from the rank when it was assigned to firms. Firms belonging to the above industries were ranked from 2 to 25 according to their pollutant level and the mean score was 15.91.

#### *Long-term Institutional Investor Holdings*

Under Securities Exchange Act, institutional investment managers with over \$100 million investment are required to file their holdings with SEC every quarter. Previous literature defines that long-term institutional investors include public pension funds (Johnson and Greening, 1999; Hoskisson et al., 2002). Long-term institutional investors' holdings were measured by the percentage of shares held by long-term institutional owners, using data from Thompson Reuters Institutional (13f) Holdings. Thompson Reuters database originally sort institutional investors by type (i.e. bank, insurance company, investment companies, investment advisors, others including pension funds). However, as the database faced serious classification errors since 1998, correction was needed to accurately identify the type of institutional investment of a firm. Thus, by merging the correction file developed by Brian Bushee<sup>2</sup>, I was able to classify

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<sup>2</sup> Institutional Investor Classification Data (1981-2010)

long-term institutional investor holdings. Consistent with previous studies, public pension fund holdings were measured from year 2005 to 2007 and then averaged. Since institutional investors are required to file their holdings quarterly, the database reports four times a year. Following Bushee (1998), institutional investor variables are measured at the end of the firms' third fiscal quarter as at this date the management can see a clearer picture on their yearly position and decide on various strategies that institutional investors give an impact upon. The percentage of long-term institutional investor holdings out of company's total equity was measured and this ranged from 0.8% to 4.6%.

#### *Control Variables*

I included several control variables based on prior research conducted on environmental management. The control variables were retrieved from COMPUSTAT database, measured and averaged over the year 2005 and 2007. Company size is expected to have a positive relationship with institutional ownership and have more slack resources that can be dedicated for more use in environmental management (Hoffman, 1996; Neubaum and Zahra, 2006). To control for company size, I have gathered data on sales, total assets and employees. Since the employees had correlation of 0.54 ( $p < 0.05$ ), the natural log of employee was used. Sales growth, as the change in sales over the previous year was measured as positive growth, may lead firms' resources to be spent on investments that can directly affect their sales. Also, as abundant slack resources can positively affect firms' environmentally friendly management practices. liquidity was controlled. Lastly, following Neubaum and Zahra (2006), I have controlled debt-to-equity ratio as institutional investors can influence the company to allocate more of their

resources to debt payment when their debt level is high, consequently reducing the amount of resources that can be given to environmental management.

## **Estimation Techniques**

Since my dependent variable was a continuous and normally distributed measure, I used multiple regression analysis to test the hypotheses. Previous studies that examined environmental practices or corporate social practices have used one or two year lagged measure (Neubaum & Zahra 2006). Literature studying the effect of long-term institutional investors has used one year to examine its influence on firm's various strategic decisions (Hoskisson et al., 2002). Following the previous literature, I have lagged firm's environmental friendly management practices one year to the explanatory variables. Four separate models were run to examine the effect of control, main, and interaction variables. I have conducted several robustness tests to account for the possibility of heteroskedasticity by using robust and hc3 standard errors (Long and Ervin, 1998). Also, the variance inflation factor (VIF) for each explanatory variable and mean VIF (1.21) was less than 10, the accepted cutoff value (Neter, Wasserman, and Kunter, 1990). This result indicated that multicollinearity problem is not serious in the estimation. To interpret the interaction effects, I centered relevant variables (institutional pressures, long-term institutional investor holdings) before including them in the regression analysis (Aiken and West, 1991).

## RESULTS

Tables 1 and 2 provide an overview of my descriptive statistics and correlations among variables. Correlation results were moderate in the direction I have predicted. Firm size and regulatory pressure positively associate with firm's environmentally friendly management practices ( $p < 0.05$ ). Sales growth has a negative association with firm's environmental practices ( $p < 0.05$ ). Although insignificant, long-term institutional investor holdings positively associates with firm size and environmentally friendly management practices of a firm. Environmentally friendly management practices of firm ranged from 0 to 4.3, with the mean score of 1.55.

Table 3 provides regressions conducted in stages. Model 1 represents the base model with only the control variables and shows that firm size is significantly positively associated with firm's environmentally friendly management. Also, it shows that sales growth has a negative significant relationship with the dependent variable. The subsequent model includes the control variables, predictors and suspected moderator to explain firm's environmentally friendly management practices. Model 2 shows that institutional pressures are positively associated with firm's environmentally friendly management practices. This indicates support for Hypothesis 1 that more institutional pressures would lead firms to adopt more environmentally friendly management.

Model 3 explains the main effect of long-term institutional holdings on the dependent variable. Although the effect was insignificant at a very marginal level, rejecting hypothesis 2, the coefficient shows that long-term institutional investors are

positively related to firm's environmentally friendly management. Model 4 includes the interaction terms of institutional pressures and long-term institutional investor holdings. At a significance level, I found that long-term institutional investor holdings negatively moderate the relationship between institutional pressures and firm's environmental management, supporting hypothesis 3. Overall, the results for model 1 were significant ( $R^2=0.316$ ,  $p<0.001$ ), as were the results for model 2 ( $R^2=0.357$ ,  $p<0.001$ ), model 3 ( $R^2=0.319$ ,  $p<0.001$ ) and model 4 ( $R^2=0.377$ ,  $p<0.001$ ). The explanatory power of the main effects model tested in model 2 and 3 were higher than the control model ( $\Delta R^2=0.41$  and  $\Delta R^2=0.44$ ) and the full model including the interaction effect also had a higher explanatory power than model 2 and 3 ( $\Delta R^2=0.02$  and  $\Delta R^2=0.58$ ).

## **DISCUSSION**

In response to recent calls for more integration between institutional pressures and organizational characteristics to explain the heterogeneous behavior of firms facing similar institutional pressures, this study makes several contributions.

I argue that different level of institutional pressures directly influence firm's environmentally friendly management decisions, and that the effect of these pressures on firms are weakened by the amount of shareholdings held by firms' long-term institutional investors when crafting environmental management decisions. Therefore, I enrich

**Table 1. Descriptive statistics**

Variables	Obs	Mean	Std. Dev.	Min	Max
Environmentally Friendly Management	139	1.55	1.02	0	4.3
Firm Size (log employees)	138	9.90	1.18	7.09	12.95
Sales Growth	139	10.83	14.58	-17.05	102.43
Liquidity	135	1.60	0.89	0.42	7.88
Leverage	139	33.41	28.86	0.08	143.74
Institutional Pressures	139	15.91	7.49	2	25
Long-term Institutional Investors	139	2.94	0.51	0.80	4.55

**Table 2. Correlations**

	Mean	SD	1	2	3	4	5	6	7
1 Environmentally Friendly Management	1.55	1.02	1.00						
2 Firm Size (log employees)	9.90	1.18	0.54*	1.00					
3 Sales Growth	10.83	14.58	-0.29*	-0.20*	1.00				
4 Liquidity	1.60	0.89	-0.18*	-0.26*	0.25*	1.00			
5 Leverage	33.41	28.86	0.03	0.10	-0.08	-0.45*	1.00		
6 Institutional Pressures	6.36	3.00	0.04	-0.26*	0.00	-0.29*	0.27*	1.00	
7 Long-term Institutional Investors	2.94	0.51	0.13	0.19*	-0.02	-0.05	0.04	-0.11	1.00

Note: n=139. Correlations are significant at  $p < 0.05$

**Table 3. Moderating effect of long-term institutional investors on the relationship between institutional pressures and firm's environmentally friendly management**

	Model 1	Model 2	Model 3	Model 4
Firm Size (log employees)	0.4269*** (0.0658)	0.4904*** (0.0735)	0.4172*** (0.0674)	0.4816*** (0.0728)
Sales Growth	-0.0123** (0.0045)	-0.0124*** (0.0036)	-0.0123** (0.0044)	-0.0126*** (0.0036)
Liquidity	-0.0195 (0.0708)	0.0481 (0.0713)	-0.0207 (0.0712)	0.0468 (0.0686)
Leverage	-0.0022 (0.0025)	-0.0040 (0.0027)	-0.0023 (0.0025)	-0.0050 (0.0028)
Institutional Pressures		0.0306** (0.0115)		0.0340** (0.0111)
Long-term Institutional Investor Holdings			0.1068 (0.1114)	0.2183† (0.1279)
Institutional x Long-term				-0.0394* (0.0203)
Constant	-2.4395***	-3.1182***	-2.3368**	-3.0143***

	(0.6778)	(0.7669)	(0.6956)	(0.7534)
$R^2$	31.6%	35.7%	31.9%	37.7%
$F$ -value	16.80***	16.3***	13.65***	12.10***
$\Delta R^2$		4.1%	-3.8%	5.8%
Number of Observations	139	139	139	139

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Standard errors in parentheses

† $p < 0.1$ , \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*

$p < 0.001$

previous institutional theory (DiMaggio and Powell, 1983; Meyer and Rowan, 1977) that explains institutional pressures engender heterogeneous rather than isomorphic organizational response due to different organizational characteristics. While previous theory could not efficiently explain the heterogeneous behavior of firms facing similar institutional pressures, by providing a fine-grained analysis of the relationship between institutional pressures and environmental management by considering firm's ownership structure, I explain that firms conduct different strategies. Also, I extend the risk management view of CSR activities (Godfrey, 2005) by providing empirical evidence that firms with more long-term institutional investors pressurize their managers to prepare for some shield by adopting more environmentally friendly management which consequently makes institutional pressures less effective to influence the behavior of these firms.

The findings were consistent with my prediction. First, high institutional pressures motivate firms to adopt more environmental practices. As firms face high regulative, normative and cognitive pressure, it is better to conform well to the set norm if they want to attain legitimacy. Although the results for exploring a direct relationship of long-term institutional investors and firm's environmental management was insignificant, it still provides insight that long-term institutional investors are fond of long-term strategies to protect their investment from risk. The last model provided evidence that each institutional pressure and long-term institutional investors affect firms to adopt more environmentally friendly management, but firms who have more long-term institutional investors make institutional pressures less effective in influencing firms.

This is an interesting finding that can be used to devise further policies regarding environmental management. The fact that there is greater number of long-term institutional investors' shareholdings means that the focal firm may face stronger internal pressure from their shareholders than those with less long-term institutional investors, making their managers adopt more environment related strategies. This means that the firm itself is made environmentally competent in order to meet their own shareholders' demand who seek for ways to minimize potential risk through CSR activities. Actually, many firms in my sample that have greater long-term institutional investors (e.g. Dupont) had appointed environmental committee of board members that oversees firm's environmental management. Also, more of them were members of the UN Global Compact. This implies that firms with more long-term institutional investors are initially more competent environmentally compared to those with less long-term investors and even though they experience the same institutional pressures, the impact is interpreted differently. In other words, those who were doing well feel less need to adopt more environmentally friendly management than those who were doing bad. This may give useful managerial and policy implications. In order to influence firms that have greater number of long-term institutional owners and are appropriately adopting environmentally friendly management for a change, policies that can affect inside investors are more effective than applying stringent institutional pressures, as it will be interpreted only mildly.

Nevertheless, this study has several limitations. Since institutional investor holdings and environmental strengths measures are much found in large firms, my

findings only apply to large firms in the polluting industry. However, future research could explore more detailed mechanism to find the relationship of institutional pressures and long-term institutional investors by looking at small and medium sized firms. Also, institutional pressures can be looked at in more detail by observing each regulative, normative and cognitive pressure of an industry. Berrone and colleagues (2013) have discovered that the level of regulative and normative pressure differs even in the same industry, so a fine-grained approach that can examine each pressure may be beneficial. Moreover, further research can look at the timing of the effectiveness of long-term institutional investors. For example, there may be a threshold level of long-term institutional holdings that become effective and ineffective. In order to provide an answer to when long-term institutional investors are useful, future study can look at the time at which institutional investors assert most power in moderating institutional pressures.

## **CONCLUSION**

This study shed some light on the institutional theory and risk management theory. Institutional theory explains that institutional pressures instill isomorphic behavior of firms as they try to gain legitimacy for survival. However, it does not provide a sufficient answer in explaining firms that adopt differently to institutional norm despite facing similar institutional pressures. By neglecting the role of organizational decision makers or those that influence those decision-makers, prior literature could not explain

the heterogeneity among firms in the same organizational field. This study attempted to explore this phenomenon by examining the effect of long-term institutional investors of firms on the relationship between institutional pressures and firm's environmentally friendly management. By taking into account how firms with more long-term institutional investors attend, interpret and act upon the institutional pressures imposed to them, this study proves that organizational characteristics should be considered together in order to explain the different behavior of firms in similar institutional pressures. Moreover, by looking at environmentally friendly management as shareholders' demand to manage risk, this study offers insight that greater long-term institutional investors will pressurize their managers to attain to stricter environmental standards to avoid potential risk. As a result, firms with more long-term institutional investors become less influenced by institutional pressures that urge them to adopt more environmentally friendly management. By recognizing the role of institutional ownership and contextual influences in the interpretation of institutional pressures, this paper tried to provide guidance to the underlying mechanisms of institutional change, which have not been studied extensively.

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## 국 문 초 록

제도적 압력과 소유구조가 기업의 친환경 경영에 미치는 영향: 장기 기관투자자의 조절효과를 중심으로

서울대학교 대학원

경영학과 국제경영 전공

서 연 지

기업이 정당성을 얻기 위해 제도적 압력에 순응하며 동질화 된다는 연구는 같은 제도적 압력을 받는 산업의 기업들이 다른 전략을 펼치며 이질화 되는 현상을 설명하지 못하고 있다. 본 연구는 같은 제도적 압력을 받지만 이질성을 보이는 기업들을 설명하기 위해 제도적 압력과 기업의 특성 중 장기 기관투자자가 기업의 친환경 경영에 미치는 조절효과를 연구하였다. 총 139개의 미국 내 기업들이 속한 산업의 제도적 압력, 각 기업의 장기 기관투자자 주식보유율의 3년 평균치 자료를 다중회귀분석으로 분석하였다. 그 결과 제도적 압력이 센 곳에 있는 기업일수록 친환경 경영을 하고, 장기 기관투자자가 투자비율이 높은 기업일수록 제도적 압력이 친환경 경영에 미치는 영향을 부정적으로 조절하는 것으로 드러났다

주요어: 제도론, 환경 경영, 장기 기관투자자, 위험 관리, 보험

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