REPORT

Understanding the External Pressure and Behavior of Commercial Banks' Environmental Risk Management: An Empirical Study Undertaken in the Yangtze River Delta of China

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Abstract The present study employed a quantitative survey to ascertain whether the external pressure of environmental risk management (ERM) on commercial banks was a contributing factor to their ERM behavior. Data was obtained using questionnaires from 204 branches of commercial banks located in the Yangtze River Delta of China. The relationship between external pressure and behavior was tested using a linear structural relations model through path analysis. The results revealed that external pressure of ERM was significantly and positively related to the behavior and that pressure from governmental regulations was the most important contributing factor in the passive feedback behavior and preventive behavior of commercial banks. The pressure from markets was the most important contributing factor in banks' active participation behavior; the pressure from community and NGOs was the most important contributing factor in their enthusiastic behavior.

Keywords Environmental risk management · External pressure and behavior · Questionnaire survey · Yangtze River Delta

INTRODUCTION

Environmental risk can be defined as the likelihood of any adverse impact arising from financial, legal, or reputational risks—and even loss to the industrial business and its lending banks—as a result of any issues related to the environment. In relation to other type of risks such as credit and market risk, the environmental risk plays a significant role in sustainable development and banks' profits. According to the research of Sarokin and Schulkin (1991), the decisions made by financial institutions are crucial in determining whether an economy will succeed in following

a sustainable path. Moreover, their management decisions and specific requirements have an enormous effect on entrepreneurs' attitudes toward the idea of sustainable development. From the perspective of commercial banks, the impact becomes clearer. If commercial banks provide loans for a polluting firm, the banks may suffer environmental risk and lose money through increasingly stringent environmental regulations (Coulson and Monks 1999; Liu 2008a). Conversely, if commercial banks strengthen their environmental risk management (ERM), which will produce incentives on firms to improve their environmental behavior because firms need to obtain loans from banks (Lu et al. 2009). Some famous commercial banks, such as Barclays, have integrated ERM into their day-to-day businesses, but Chinese commercial banks have lagged behind in this global trend (Guo 2009). Moreover, their environmental criteria for loans are very limited (Guo 2005), and sometimes they have provided money for polluting projects.¹

Therefore, in order to achieve better environmental objectives, it is necessary to manage the behavior of China's commercial banks. Many approaches can be taken, but the difficulty lies in knowing whether the approaches will be effective or not. So it is important to identify the motivating factors and principal pressures that shape the banks' decision to promote ERM in their operations and support environmentally sound industries.

¹ In the early 1990s, the Agricultural Bank of China lent a considerable amount of money to small and medium-sized enterprises (SMEs). However, pollution caused by SMEs became a very serious problem and led to critical degradation of the environment. Consequently the government forced closure on many SMEs. The Agricultural Bank of China suffered considerable losses as a result.

LITERATURE REVIEW

Commercial banks' ERM is the process by which commercial banks can identify, appraise, and control—as well as transfer and monitor—environmental risks (Guo 2005). In practice, ERM procedures can be separated into major blocks, including identifying environmental risks with some tools (such as environmental screening); appraising environmental risks (for example, environmental investigation or environmental impact assessment in case of project financing); controlling environmental risks with ERM strategies; and monitoring environmental risks with early warning strategy during the term of the loan. The process is influenced by a number of external pressures.

First, governmental regulation is an important factor affecting the ERM behavior of commercial banks (Jeucken and Bouma 1999; Weber et al. 2006). In America, since 1980, under the federal law of the Comprehensive Environmental Response, Compensation and Liability Act in the United States, commercial banks can be held directly responsible for environmental pollution caused by their clients and are obliged to pay remediation costs. This has promoted commercial banks to consider their ERM (Jeucken 2001). In Europe, during the mid-1990s, commercial banks began to develop policies toward environmental issues. In the United Kingdom, a bank incurred direct legal liability for cleaning up contamination that had been caused by an insolvent borrower (Thompson 1998). In the Netherlands, the role of the government is to stimulate, facilitate, monitor, and actively coordinate the Green Funds System (Jeucken and Bouma 1999; Bouma et al. 2001). Meanwhile, in China, the central bank and Ministry of Environmental Protection have established special regulations on commercial banks' ERM (Liu 2008a). Besides commercial banks, according to the findings of Henriques and Sadorsky (1996), Reijnders (2003), etc., firms' environmental behavior has also been affected by governmental inspections and enforcement.

Second, market pressure also plays a remarkable role in commercial banks' ERM. When corporations engage in activities that damage the environment, they suffer escalating costs or reduced revenues, such as costs for cleaning up a polluted site and lost revenues owing to their damaged reputation. These factors will impair corporate profitability and cash flows, thereby reducing the corporations' abilities to repay loans and, in turn, increasing the risk to the lenders (Coulson and Dixon 1995). Commercial banks may therefore suffer credit or loan risks as a result of that corporate risk, and this justifies ERM measures being implemented in the credit business (Coulson and Monks 1999; Scholz et al. 1995). Conversely, some commercial banks have regarded the increase in environmental awareness in society as an opportunity and created specialized credit

products (Schaltegger and Figge 2001), which has engendered competitive pressure among those commercial banks without an ERM system (Liu 2008b). In fact, the growing number of environmental funds² illustrates that competitive pressures have been driving more banks to diversify their product range in response to market demand (Bouma et al. 2001). In addition, many other studies have shown that the pressure from markets also affects the environmental behavior of firms (Chase 1991; Wen and Chang 1998).

Third, commercial banks are facing increasing scrutiny over lending policies from NGOs and the media (Guo 2005). In 1992, the United Nations Environment Programme introduced the Statement by Banks on the Environment and Sustainable Development, which encourages the financial sector to develop products and services that promote environmental protection (UNEP 1992). According to Thompson's research, customer boycotts and media exposure have made banks aware of the importance of ERM (Thompson 1998). For example, the reputation of commercial banks has suffered through high-profile campaigns by various NGOs, which name and shame banks for financing polluting companies and contributing to environmental harm (Coulson 2007). Thus, it is important for commercial banks to demonstrate that they act responsibly at all times, and this is particularly important when financing major projects. Meanwhile, communities are playing a more active role in environmental protection in developed countries and have become a key factor in determining environmental behavior of firms (Chen and Soye 2003). However, they are not found to be the key factor determining environmental behavior of firms in China (Wang et al. 2007).

Another set of considerations relates to the methods employed in previous studies. The majorities of studies are conceptual (Jeucken 2001) and tend to be based on case studies (Thompson 1998; Coulson and Monks 1999; Goldstein 2001; Guo 2005). Other methods, for example, questionnaire surveys (Weber 2005; Weber et al. 2006), web-based data collection, and econometric models (Aerts et al. 2008), have also been adopted. Despite these methods' popularity, the lack of quantitative reliability and validity calculation has limited their usefulness. Moreover, little scholarly research and writing have been done to measure the multidimensional constructs of such terms as ERM and ERM behavior.

An assessment of the existing literature indicates that external pressures of ERM on commercial banks mainly

² For example, in German-speaking markets from 1994 to 1999, funds invested according to environmental criteria grew by 25 %; in China from 2004 to 2008, environmental funds grew by 135 % (China Invest, 2010-1-14 10:46:10. http://www.epi88.com/master/News_View.asp?NewsID=11400).

Fig. 1 The theoretical framework of external pressure and commercial banks' environmental risk management (ERM)

include government rules, market competition, communities and NGOs. The pressures have affected banks' ERM behavior. But the mechanism between external pressure and behavior has been studied only to a limited extent. Furthermore, until recently, there has been a lack of empirical research examining commercial banks located in developing country. Consequently, an integrated and more objective approach with most factors taken into account was adopted in the present study.

THEORETICAL FRAMEWORK

Since the 1990s, financial institutions, such as commercial banks, have been moved up on the agenda of sustainable development. We expect them to integrate environmental considerations into all aspects of their operation and services. For example, in order to raise the environmental awareness of financial institutions, the United Nations Environment Program Financial Initiative on the Environmental and Sustainable Development was established.

Although the business extension of commercial banks has already gone beyond activities of savings and loans, it is generally believed that commercial banks can be defined as institutions that are using the funds entrusted to them by their customers to extend loans to consumers, and distribute profits to the bank's shareholders. Particularly in China, the traditional intermediary function with savings and loans is still the fundamental pillar supporting commercial banks' business operation. Therefore, whatever form economic development takes, commercial banks play an important role in the economy as a whole and for individual firms. Active forces, including governmental regulations, market competition, community and NGOs have considerable influence on the behavior of commercial

banks (Scholz et al. 1995; Jeucken and Bouma 1999; Coulson and Monks 1999). As can be seen from Fig. 1, in the economic and social system, commercial banks invest capital to other sectors, such as industrial firms, which will produce the indirect impacts on environment. Meanwhile, resources consumption by commercial banks will lead to direct environmental impacts that generally are much less significant than indirect ones. Once commercial banks provide a loan for a polluting project or industrial firm with bad environmental behavior, this will result in environment pollution. Thus, governments, communities and NGOs will exert pressures on commercial banks to implement green finance and ERM, and meanwhile, exert pressures on industrial firms to implement cleaner production. Furthermore, the market opportunities and competitive advantages from cleaner production and green finance will urge banks to carry out the strategy of ERM.

This theoretical framework indicated some interaction agents, including commercial banks, industrial firms, governments and consumers, as well as communities and NGOs, which provide predictions of the relationship between external pressure and commercial banks' behavior. For example, the stringent governmental regulation will affect commercial banks' ERM behavior, and the pressure from market, communities and NGOs will play an important role in commercial banks' ERM behavior. Therefore, the theory yields these relationships between different agents. The empirical research which was followed could be viewed as an estimation of these hypotheses.

EMPIRICAL DESIGN AND RESULTS

Considering the multidimensional characteristic of external pressure and commercial banks' behavior, Churchill's

Fig. 2 The characteristics of respondents (experts)

(1979) research paradigm on developing multidimensional constructs was adopted in the present study. The paradigm mainly included three steps. First, specifying domain of construct based on literature review and generating samples of items, and then collecting data and purifying measures with factor analysis or coefficient alpha,³ finally, assessing reliability and validity. The paradigm has worked well in many multidimensional studies (Churchill et al. 1974; Parasuraman et al. 1991; Devellis 1991; Streiner and Norman 1995; Subhabrata 2002; Liu 2009). It can reduce the tendency to apply extremely sophisticated analysis to faulty data and thereby execute a GIGO (garbage in, garbage out) routine (Churchill 1979).

Questionnaire Design

The first step in the procedure for developing better measures involves specifying the domain of the construct. We have to be exacting in delineating what is included in the definition and what is excluded. It is imperative that researchers consult the literature when conceptualizing constructs and specifying domains (Churchill 1979). Thus, an initial list of 61 facets of external ERM pressure on commercial banks and their behavior was developed based mainly on the literature mentioned above (Mertins et al. 1995; Coulson and Monks 1999; Jeucken 2001; Bellegem 2001; Edwards et al. 2002; Springett 2003; Fenchel 2003; Peeters 2004; Liu 2008a, b) and the practices of financial institutions.⁴ These facets were then reviewed by experts from universities and banks. The ability of these experts to comment on the facets was established according to their

educational level and specialties. Contact was made with assistance of email, phone call and personal interview. A five-point Likert scale (one = least important; five = most important) was used as the measurement.⁵ Of the 200 delivered surveys, we received 102 responses (see Fig. 2). According to the marks given by the experts and the frequency in the literature or the practice of banking, 17 facets of ERM pressure and 18 facets of ERM behavior were deleted due to low marks and frequency. The next step in the procedure for developing better measures is to generate items which capture the domain as specified, i.e. those techniques that are typically productive in exploratory research, such as literature review, etc.

The emphasis at the early stages of item generation would be to develop a set of items which tap each of the domains of the construct at issue. Therefore, according to the literature mentioned in section two, 47 items were designed for the remaining 26 facets, and a five-point Likert scale was used to measure them. Consequently, a prototype questionnaire with 26 facets and 47 items was developed.

Questionnaire Pretest

The prototype questionnaire was pretested in Jiangsu,⁶ which aimed to uncover problems within the prototype questionnaire and the necessary revisions were made. The distribution of the commercial banks was as follows: China Industrial and Commercial Bank (25 %), Agricultural Bank of China (25 %), China Construction Bank (25 %), Bank of China (25 %). The response rate of the pretest was 42.80 %

³ Coefficient alpha (or alpha coefficient) is one of the important statistics in research involving test construction and use. Interested readers can refer to Cronbach (1951) for a detailed analysis on it.

⁴ The World Bank; International Finance Corporation; European Bank for Reconstruction and Development; Asian Development Bank; HSBC; Barclays; Lloyds TSB; National Westminster Bank; Citibank.

⁵ Do you think the optional facet is important? (a five-point Likert scale: one = least important; five = most important).

⁶ Jiangsu is a Chinese province located along the east coast. Jiangsu has a coastline of over 1000 km along the Yellow Sea, and the Yangtze River passes through its southern parts. Jiangsu has been a hot spot for economic development and is now one of China's most prosperous provinces.

(214 in 500 branches). By analyzing the data of the pretest questionnaires with an exploratory factor-analysis model, three factors of external ERM pressure on commercial banks with eigenvalues greater than 1.00 (explaining 80.81 % of the variance) and four factors of their environmental behavior with eigenvalues greater than 1.00 (explaining 87.67 % of the variance) were identified. Examination of the facets revealed that some of them had low factor loadings (not greater than 0.50) and square multiple correlations, were highly correlated and Ross-loaded, and presented elevated modification indices. Thus, the most problematic two facets were removed.

According to the literature review in section two, a closer look at the remaining facets that loaded on the first factor indicated that they appeared to address pressure from governmental regulation. For example, legal risks, routine inspection, and penalties applied by regulators were some areas related to governmental rule. Consequently, this factor was named governmental regulation because it dealt with issues that were linked to pressure from governmental rules. Factor loadings of the three facets were greater than 0.50. The remaining factors were assessed using the same method. So the three factors (Governmental regulation, Market, Community and NGOs) and 12 facets were adopted to ascertain the dimensions of ERM pressure. The facets that were captured by the first factor of ERM behavior included resistance to environmental regulation, etc. According to the literature review in section two, it dealt with issues that were linked to the passive feedback behavior of commercial banks, thus this factor was termed passive feedback behavior. Factor loadings of the three facets were greater than 0.50. The remaining factors were assessed by the same method. So four factors (Passive feedback behavior, Preventive behavior, Active participation behavior, and Enthusiastic behavior) and 12 facets were adopted to ascertain the dimensions of ERM behavior. Finally, a questionnaire of seven factors and 24 facets was developed (see Table 1).

Actual Investigation

Directories of bank branches in the Yangtze River Delta⁷ found on web sites were used as the sampling pool. Because of cost considerations and practicality, as well as the homogeneity of commercial banks, 400 sample branches were randomly picked from the directories. Contact

⁷ China's Yangtze River Delta comprises the triangular territory of Shanghai, southern Jiangsu Province, and northern Zhejiang Province. The area lies at the heart of the region traditionally called Jiangnan. The region has become an important driving force in China's economic growth. Meanwhile, the large population, factories, pollution, and heavy traffic have caused many rare species to be on the verge of extinction (Sun 2007).

was made with assistance of email, phone call and personal interview. The interviewees were told the full nature of the questionnaire and why they were selected for participation. The questions asked focused on the links between the facets of external pressure and those of banks' behavior. Of the 400 delivered surveys, 204 useable questionnaires were returned, representing a response rate of 51 %. The distribution of the commercial banks was as follows: China Industrial and Commercial Bank (16 %), Agricultural Bank of China (15 %), China Construction Bank (13 %), Bank of Communications (13 %), Bank of China (12 %), China Everbright Bank (11 %), China Minsheng Bank (10 %) and China Merchants Bank (10 %). The characteristics of respondents: 173 managers and 31 employees answered the questionnaire.

The robustness test included the reliability and validity of the questionnaire. The internal reliability of the questionnaire was good: all 24 facets had good internal reliabilities. The coefficient alpha was between 0.79 and 0.92 (Table 1). The theoretical factor structure of the questionnaire was verified by the confirmatory factorial analysis model, which allowed for correlated errors. The model fit indices were all satisfactory. The model fit indices of ERM pressure were as follows: χ^2 to degree of freedom (normed χ^2) = 1.76; root mean square error of approximation (RMSEA) = 0.05; root mean square residual (RMR) = 0.04; goodness-of-fit index (GFI) = 0.86; comparative fit index (CFI) = 0.98; normalized fit index (NFI) = 0.91. The model fit indices of ERM behavior were as follows: normed χ^2 = 1.66; RMSEA = 0.04; RMR = 0.04; GFI = 0.85; CFI = 0.98; NFI = 0.95. Furthermore, the factor loadings were high in all facets, ranging between 0.58 and 0.91 (Table 2). The entire model fit indices and the factor loadings were acceptable (Geffen et al. 2000). The above results indicated that the reliability and validity of the questionnaire were good (Fig. 3).

Measurement Model and Results

A linear structural relations (LISREL) model was employed for data analysis. According to the research of Anderson and Garbing (1998), LISREL is considered the most general method for analyzing a causal hypothesis. Although the sample size of the model is open to widely differing interpretations (Boomsma 1985; Velicer and Fava 1987; Nunnally 1997; Marsh et al. 1998; Li 2004), it is generally believed that the sample size should be more than 100 (Hou 2004) (the sample size in the present study was 204). According to the LISREL procedure, after the model has been modified to create the best measurement model, the structural equation model can be analyzed. By the application of LISREL 10.0, the overall effectiveness of the measurement model was examined using some common model fit measures (Hair et al. 1998): normed χ^2 = 1.90;

Table 1 Questionnaire factors and facets

Facets	High scores indicate that commercial banks...
Community and NGOs	
International reputation risks	Felt a lot of pressure as a result of losing international reputation
International routine	Felt a lot of pressure as a result of binding international routine
Public voice	Felt a lot of pressure as a result of public voice
Public image	Felt a lot of pressure as a result of losing public reputation
Governmental regulation	
Legal risks	Felt a lot of pressure as a result of forceful legal clause
Routine inspection	Felt a lot of pressure as a result of routine inspection
Penalties applied by regulators	Felt a lot of pressure as a result of penalties applied by regulators
Market	
Market share	Felt a lot of pressure as a result of losing market share
New product exploitation	Felt a lot of pressure as a result of new product exploitation
Credit risks	Felt a lot of pressure as a result of credit risks
Strong competition	Felt a lot of pressure as a result of strong competition
Consumer demand	Felt a lot of pressure as a result of consumer demand
Facets	High scores indicate that commercial banks demonstrate...
Passive feedback behavior	
Resistance to environmental regulation	Passive feedback behavior by fulfilling ERM
No plans to build an ERM system	Passive feedback behavior by fulfilling ERM
Perfunctory environmental assessment regarding clients	Passive feedback behavior by fulfilling ERM
Preventive behavior	
Considering environmental regulation as additional cost	Preventive behavior by fulfilling ERM
Building preliminary ERM system	Preventive behavior by fulfilling ERM
Effective environmental assessment on clients	Preventive behavior by fulfilling ERM
Active participation behavior	
Investing environment-friendly industries	Active participation behavior by fulfilling ERM
Exploring opportunities of environment-friendly industries	Active participation behavior by fulfilling ERM
Bettering ERM system	Active participation behavior by fulfilling ERM
Enthusiastic behavior	
Systematically and effectively ERM	Enthusiastic behavior by fulfilling ERM
Enthusiastically exploring environment-friendly financial products	Enthusiastic behavior by fulfilling ERM
Pursuing sustainable development returns	Enthusiastic behavior by fulfilling ERM

ERM environmental risk management

RMSEA = 0.05; RMR = 0.04; GFI = 0.87; CFI = 0.96; and NFI = 0.95. Thus, the measurement model exhibited a good overall fit. There was no need to respecify or refine the model.

The structural model was examined based on the measurement model. The overall fit of the data was evaluated by the same set of fit indices used in the measurement model. The normed χ^2 was 1.86, which was within the recommended threshold of 3.0; the structural model exhibited a fit value that satisfied the commonly recommended threshold for the respective indices, thus providing evidence of a good model: GFI = 0.84; NFI = 0.95; CFI = 0.97; RMR = 0.05; and RMSEA = 0.04. The results suggest that the structural model fit the data adequately.

The standardized LISREL path coefficients are shown in Fig. 4.

As can be seen from Fig. 4, pressures from governmental regulation, market, community and NGOs were significantly and positively related to the ERM behavior. Based on the *R*-squared and estimated path coefficients for the structural equation, three variables (Community and NGOs, Governmental regulation, and Market) were significantly related to passive feedback behavior (explained 70 % of the variance), preventive behavior (explained 75 % of the variance), and active participation behavior (explained 74 % of its variance), as well as enthusiastic behavior (explained 71 % of its variance). Furthermore, a comparison of these path coefficients indicated that the

Table 2 Coefficient alpha and factor loading of facets

Facets	Alpha	Factor loading
International reputation risks	0.81	0.62
International routine	0.80	0.78
Public voice	0.79	0.80
Public image	0.82	0.60
Legal risks	0.80	0.79
Routine inspection	0.89	0.90
Penalties applied by regulators	0.92	0.82
Market share	0.87	0.60
New product exploitation	0.79	0.64
Credit risks	0.91	0.86
Strong competition	0.81	0.83
Consumer demand	0.79	0.90
Resistance to environmental regulation	0.82	0.58
No plans to build an ERM system	0.80	0.75
Perfunctory environmental assessment regarding clients	0.87	0.63
Considering environmental regulation as additional cost	0.81	0.72
Building preliminary ERM system	0.85	0.68
Effective environmental assessment on clients	0.83	0.69
Investing environment-friendly industries	0.84	0.58
Exploring opportunities of environment-friendly industries	0.88	0.78
Bettering ERM system	0.79	0.78
Systematically and effectively ER management	0.80	0.91
Actively exploring environment-friendly financial products	0.83	0.85
Pursuing sustainable development returns	0.79	0.78

ERM environmental risk management

governmental regulation pressure was the most important factor in passive feedback behavior (path coefficient was 0.67) and preventive behavior (path coefficient was 0.62). Active participation behavior was more likely to be driven by market pressure (path coefficient was 0.65). Communities and NGOs played a key role in the enthusiastic behavior (path coefficient was 0.59).

DISCUSSION

According to the results as mentioned above, in general, social pressures, such as governmental regulation, market, community and NGOs, were significantly and positively related to commercial bank's behavior. This was partly similar to the findings of Baron et al. (2009) that corporate social performance was increasing in social pressure. Recently, in Sweden, Belu and Manescu (2013) echoed this conclusion that firms in the basic resources sector were

faced with high environmental pressures and therefore had to deliver more in engagement in corporate social responsibility. There were some channels through which external pressure might impact the commercial banks' ERM behavior.

First, passive feedback behavior and preventive behavior of commercial banks were more likely to be driven by pressure from governmental regulation. Commercial banks showing passive feedback and preventive behavior may try to delay or oppose new environmental rules, especially the environmental rules for financial institutes, because they feel such rules will increase their cost (Jeucken and Bouma 1999), such as the cost of integrating these rules into their business, etc. This conclusion partly supported the viewpoint of Belu (2009) that in the short run, for most firms, increasing efforts towards social and environmental practices would increase their costs. Meanwhile, these banks prefer that their corporate customers make immediate profits, but with stringent environmental regulation, corporate customers have the potential for future sustainable profits, which has a negative effect on banks' profit. Furthermore, when corporations engage in activities that damage the environment, they suffer reduced revenues, such as costs for cleaning up a polluted site, etc. This factor will impair corporate profitability and cash flows, thereby reducing the corporations' abilities to repay loans and, in turn, decreasing the profit of the lenders. This again makes some shortsighted banks less inclined to take ERM into account: establishing an ERM system is perceived as an avoidable cost. Because of more and more constraints from the government, such banks have to take some preliminary measures to improve their ERM, but merely adopt passive feedback or penalty prevention. In addition, a more sophisticated policy approach can make behavioral change easy (Jackson 2005). But in China, there is no detailed and executable green finance standard apart from some general and obscure guidelines. Some of the regulations were out of date, with little concrete reference to green finance guidelines (Wang 2012). All of these were translated into a positive relationship between governmental regulation pressure and passive feedback (or preventive) behavior.

On the other hand, active participation behavior of commercial banks was more likely to be driven by market pressure. Commercial banks showing active participation behavior have integrated environmental issues into their internal business and developed environment-friendly products, for example, Green Car Loan and Ecological Saving. This is driven by market competition within the financial sector. With the intense competition in the financial product market, some banks have explored environmentally sound financial products, such as financing cleaner production investment and financing renewable energy resources. These banks have actively started to use

Fig. 3 Flow chart of the research method

Fig. 4 The linear structural relations (LISREL) path coefficients and fit indices

normed $\chi^2 = 1.86$, GFI = 0.84, NFI = 0.95, CFI = 0.97, RMR = 0.05, and RMSEA = 0.04. *: $p < 0.05$

this kind of strategy to create a competitive advantage and differentiate themselves from competitors by being seen as proactive, creative, and innovative. Thus they will gain more market shares, and their behavior will become active

because their profit will be decreased if they shirk this market trend. In addition, according to the Agency Theory, competition reduces uncertainty associated with the managers' performance because competitive markets provide

more information about their efforts (Holmstrom and Tirole 1989). As a result, passive feedback behavior is easier to be detected and the manager's performance can be measured with higher precision in a more competitive market. Therefore, the behavior of banks is more responsive to ERM. In fact, competitive pressures have been driving more banks to actively diversify their product range in response to market demand (Bouma et al. 2001), and in turn, encouraging the bank's active participation behavior of ERM.

Finally, pressure from communities and NGOs was the most important factor that affected the enthusiastic behavior of commercial banks' ERM. Communities and NGOs can often use other channels to force pollution abatement in a process of "informal regulation" (Pargal and Wheeler 1996). According to the research of Liu (2008a) and Coulson (2007), a growing number of NGOs have promoted a green consumption effect by shifting trends of demand and consumption; at the same time, an increasing environmental awareness by communities has greatly promoted the establishment of a market for green products. The environmental image of commercial banks has become an important criterion for some consumers' preferences, which is partly supported by the research of Heyes and Kapur. A bank that is known to damage the local environment may face a hostile community and thus find it harder or more expensive to attract and motivate workers, or harder to sell its service, generating informal 'penalties' for poor environmental performance (Heyes and Kapur 2012). Thus, the environmental and public images should be incorporated into the banks' ethic. They enthusiastically promote this image to establish their reputation, differentiate themselves from competitors, and gain a more sustainable competitive advantage. Basic compliance with governmental regulations is not an issue for these pace-setting commercial banks. Therefore, we can deduce that banks with strongly competitive abilities will be more profitable in the long run, and they will look for both the financial rate of return and highest sustainable rate of return.

CONCLUSION

The present research has sought to explore the relationship between external pressure of ERM on commercial banks and their behavior in the Yangtze River Delta of China. Based on the questionnaire and measurement model, the author identified three factors associated with external pressure of ERM on commercial banks: Governmental regulation, Market, Community and NGOs. Meanwhile, four factors related to ERM behavior: Passive feedback behavior, Preventive behavior, Active participation behavior, and Enthusiastic

behavior. The four identified behavior factors can be interpreted as cumulative stages, which implies an evolutionary progression from passive feedback to enthusiastic behavior. The results indicate that pressure from governmental regulations, the market, the community, and NGOs were significantly and positively related to the ERM behavior of commercial banks. Further, the pressure from governmental regulations was the most important factor in passive feedback behavior and preventive behavior; the pressure from the market was the most important factor in active participation behavior. Finally, the pressure from the community and NGOs was the most important factor in enthusiastic behavior.

Thus, policy makers should pay more attention to the use of market mechanisms and information disclosure to engage commercial banks in active participation behavior and enthusiastic behavior. The mechanisms of a competition-oriented market should be developed, cultivating commercial banks' competitive abilities and specific in-house skills and processes, such as examining a bank's value chain (Furrer et al. 2009). On the other hand, creating measures that facilitate the community and NGOs to access more information about a bank's ERM, for example, legislating a bank's environmental information-disclosure profile and creating a list of best or worst banks according to their behavior, will improve the behavior of banks.

Finally, some limitations are worth mentioning. This research did not include internal cost-related motivations when analyzing the relationship between ERM pressure on commercial banks and their behavior. Moreover, although commercial banks are homogeneous, the useable questionnaires collected from the Yangtze River Delta do not represent all Chinese commercial banks. Nevertheless, the explorative research provides a context and starting point for further investigations with an expanded sample size. We believe this research will help further studies into ERM pressure on commercial banks and their behavior in China.

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