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ABSTRACTING AND INDEXING

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CONTENT

FARMERS' WILLINGNESS TO PAY FOR CROP INSURANCE IN PAKISTAN

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Keywords:

Willingness to Pay,
Crop Insurance,
Risk Management,
Contingent Valuation Method,
Heckman selection model

ABSTRACT

This study was conducted to analyze the farmer's willingness to pay for crop insurance and to investigate the factors that influence willingness to participate and pay for crop insurance. Contingent Valuation Method (CVM) and Heckman selection models were applied to analyze the primary data. Findings show that farmers were interested to pay minimum amount of premium, landholdings and farm income were found to be significant factors that influence farmer's willingness to pay for crop insurance. While landholding, farm income, credit, loss experience, land tenure and expected yield were found to be significant influencing factors towards willingness to participate in crop insurance

1. INTRODUCTION

Agriculture in Pakistan continues to suffer from production yield risks. Climate change is one of the major factors that effects agriculture production. It has also created an alarming situation of the food security in the world, as it is considered a crucial factor for decline of crop productivity (Cline, 2007) which further influences the income of not only poor farmers but also of those people who even are not involved in agriculture production but their livelihood is indirectly associated to agriculture production (Barnett and Mahul, 2007). Farmers from all over the world are facing the same situation of climate and income instability, different coping techniques are being practiced by the farmers from all over the world including consumption smoothing formats in the form of savings, grain banks ,income support through credit loan (Siegel *et al*. 2001) and use of less risky technologies that result in lower but guaranteed yield(i.e. drought resistant crops), diversification in field of production and income sources(off-farm income) and by deploying formal and informal risk sharing strategies (Friedberg, 2003), but these less risky activities limit the future investment opportunities and growth potential (Elbers *et al*. 2007) and provide limited security and low returns to farmers and are inclined to breakdown in case of disaster or emergency (Maleika and Kuriakose 2008). Therefore

there should be a market based risk coping mechanism to protect farmers from both systemic and idiosyncratic shocks.

Especially in developing countries, there is a need to develop a well functioned insurance tool that may facilitates farmers to deal with weather related shocks .Development of well-functioned insurance tool to protect the poor farmers from agriculture and income risks has become an important issue in developing counties (Clarke, Das, Nicola, & Hill, 2012). Although the weather based market instruments are not in the control of farmers but exert a direct impact on the returns from farming (Baquet *et al..* 1997). However the success of the crop insurance program depends upon certain conditions which include acceptable level of demand among farmers for crop insurance, farmers' capability to meet insurance policies and insurer's capability and willingness to pay the farmers' claims (Shaik, Barnett, Coble, Miller, and Hanson, 2006). So the Government and insurance companies must understand the needs of farmers that effect their willingness to participate and willingness to pay for crop insurance. Because this awareness of demand would facilitate the policy makers to the structure the insurance policies according to the needs of people (Barnett, B.J. &Mahul, O, 2007). In Pakistan, agriculture sector contributes a lot in the growth of economy and GDP of Pakistan. In 2012-2013, it contributed about 21.4% to GDP and engaged about 45% of the workforce in agriculture sector (Government of Pakistan, 2013). But unfortunately climate change, price volatility and crop failures are great threat to the growth of agriculture sector. Agriculture sector is extremely vulnerable to climate instability and climate change is the key factor that influences agricultural production and farm income of Pakistani farmers.

Agriculture system in Pakistan has mostly irrigated land along with sizeable rained area. Irrigated land is particularly vulnerable to irrigation water shortage resulting because of climate change while Semi-arid and arid areas are exposed to change in intensity, quantity, and frequency of monsoon rainfall (TASK FORCE, 2010). In Pakistan, the situation of climate change has arisen many threats to agriculture system including loss to crop yields, shortening of the length of crop growing season, increase in evaporation, heat wave sensitivity of reproductive growth stages, shortage of water due to change in river flows and increase in land degradation due to increase of soil salinization, water logging and wind and water erosion (Iqbal, M.M. & Khan, A.M, 2008). Hence all these factors lead towards decline in agriculture production and farm income which is crucial to the livelihood of poor farmers in Pakistan as agriculture sector is dominated by small farmers who constitute about 90% of the total farmers (Government of Pakistan, 2010). So in this situation, crop insurance could be best for poor farmers to deal with the climate and production volatility as it is economically viable, cost reducing and risk sharing institutional mechanism which helps the risk averse farmers to go towards high risk and high profit activities and facilitate them with post-disaster liquidity which secures their livelihood and speed up the recovery process. The purpose of this study is to investigate the factors that influence the decision of farmers to participate in crop insurance and to find out the amount that they are willing to pay for crop insurance program and the factors that influence the amount of premium, which Pakistani farmers are willing to pay.

2. LITERATURE REVIEW

Several studies have been conducted to find out the factors which influence the farmers' crop insurance purchase decisions. A review of some of the studies has been presented in this section.

Sherrick *et al,* (2004) conducted a study in which they evaluated the factors that influence the purchasing decision of farmers of crop insurance. They applied "expected utility theory" to evaluate these factors. The results of the study revealed that likelihood for purchasing crop insurance as a risk management tool is more for less tenured, highly leveraged and large lands and for the farmers with high perceived yields. The choice to purchase crop insurance depends on the premium level, expected indemnity, risk level and availability of alternative risk management tools (Makki & Somwaru, 2001). A study made by Ginder & Spaulding (2006) shows that the price (premium) of the crop insurance is the most influential factor that determines the farmers' decision to avail insurance or not. Torkamani (2002) conducted a study in Fars Province of Iran to find out the factors that affect the demand of crop insurance in Iran. The results of the research identified age, land ownership, wheat production during the previous years, education level, capital, risk taking behaviour and any previous exposure with risk as the factors which had positive correlation with the purchase/adoption of wheat insurance. The study also revealed that value of land; land diversity and crop rotation were the factors which were negatively correlated with the adoption of wheat insurance. McCarthy (2003) found the willingness to pay for crop insurance for the farmers of Morocco. The findings showed that farmers with less farm income were less willing to pay as compare to the farmers who had higher farm income. Akhter Ali (2013) identified the factors which affect the willingness to pay for crop insurance in the rain-fed areas, Soon Valley and Talagang situated in Pakistan and found out that the willingness to pay is mainly affected by household assets, economic status and membership of community organization. Bouquet and Smith (1996) conducted a study to find out the factors which affect the adoption of crop insurance among the growers of wheat crop. They found out that debt taken by farmers from banks and other financial institutes, previous experience of dealing with risk, literacy rate among the farmers and cost of insurance (premium) were the factors which effect the decision of farmers regarding acceptance or rejection of crop insurance. Aidoo *et al*. (2014) analyzed the willingness of farmers to participate in crop insurance program and the factors which influence the decision to pay the amount of premium for crop insurance program. The findings revealed that age of the farmers, land tenure system under practice and the educational level of the farmers were the major factors which influence the willingness to participate, Moreover education, amount of savings, on-farm income, land tenure and the farm size were the factors that determine the amount of premium which farmers were willing to pay for crop insurance program. The literature mentioned above provided us several important factors which influence the willingness of farmers to participate and willingness to pay for crop insurance regarding the farmers of different countries.

3. MATERIALS AND METHODOLOGY

This study was conducted in Punjab province of Pakistan. Three districts of this province namely Bahawalpur, RajanPur and Dera Ghazi Khan were purposely selected as these districts are vulnerable to disasters like floods and droughts. From each selected district, two tehsils[1] were randomly selected for the collection of primary data from the farmers. Out of six randomly selected tehsils, a total of 300 respondents were randomly selected by selecting 50 respondents from each selected tehsil. Before the collection of information from farmers, they were individually given short briefing about the insurance in order to make them familiar with the concept and mechanism of crop insurance as well as with the expected benefits (compensation) which they can get in case of occurrence of loss. This briefing was very useful for those farmers who had never availed credit from the formal sources (private and government financial institutes) as already there exists a crop loan insurance scheme in Pakistan through which all those farmers are assured who avail agricultural credit from formal sources. Using a questionnaire, the data were collected. The questionnaire consisted two parts. One part recorded the responses regarding the demographics of the respondents and the other one consisted on valuation which was based on bidding process in which farmers were asked to reply in "YES" or "No" for their willingness to participate and pay for the crop insurance. Those who were willingness to participate, they were further engaged into a bidding game where a fix hypothetical expected return amount was offered along with hypothetical premium rates.

3.1. Contingent Valuation Method (CVM)

CVM is a non-market valuation method which is used in a survey based economic research to measure the willingness to pay of selected farmers (Mitchell *et al*., 1989). It is also used to gauge the contagion effect and environmental protection. In agriculture economics, CVM is used to assess the Willingness to Pay (WTP) of a farmer against certain insurance by extracting information through a questionnaire based survey. As it is very difficult to estimate maximum WTP of a farmer directly (Dawei, 2003), therefore there are two types of methods to measure the WTP of a consumer (Xiu *et al*., 2012). To measure the maximum WTP of a farmer through open-ended questions is called direct method of estimation. On the other hand, extracting information through closed-ended questions is called indirect method of measuring WTP. Each method embraces certain advantages and consequences. It is easy to collect data from direct method but on the other hand it turns out into a large number of non-responses (Thomas, 1999). It is also very difficult to estimate exact amount of maximum WTP through indirect method as it uses dichotomous choices to collect information. In this study we used direct method of estimation as it considered as the most suitable to gather information regarding maximum WTP of farmers (Xiu *et al*., 2012). In the direct method, we have collected the information on maximum WTP by using bidding game. The last step of contingent valuation method is applying an appropriate econometric technique. In this analysis we check the relationship

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[1] In Pakistan, tehsil is a second level administrative unit after district and it serves as an administrative centre for a number of villages. A district usually has few tehsils and each tehsil has a number of villages under its administration. The function of tehsil is similar to a county.

between independent variables and WTP. We have used Heckman selection model as our dependent variable is conditionally dependent on participation in crop insurance.

3.2. Heckman Selection Model

After collecting data on WTP, we have observed that two types of groups exist in our sample. First group consist of those people who are not willing to get involved in insurance system. Second group consists of those who agree to participate in crop insurance. We have used two different models for these two groups. Probit model is used to estimate that whether farmers are willing to participate in crop insurance or not. Secondly, if they are willing than the maximum amount they are willing to pay in the form of premium and this has been incorporated by using an Ordinary Least Square (OLS) method. In such type of analysis it is probable that we can face the problem of selectivity bias. As we have selected those farmers to ask about WTP who have shown their willingness to participate as we cannot ask this question from those farmers who are not willing to participate. Inverse Mills Ratio (IMR) has been used to solve the problem of such biasness.

Now, the Probit model has been presented as

$$P_i = Z_i\gamma + \mu_i \quad P_i = \begin{cases} 1 & if P_i > 0; \\ 0 & Otherwise \end{cases}$$
(1)

Where, P_i is a dummy variable which is used to measure whether ith farmer is participating in crop insurance or not. γ is a vector of coefficients for independent variable. Z_i is a vector of independent variables which are used to measure that what are the factors which determine the decision of ith farmer to get involved in crop Insurance.

μ_i is normally distributed error term.

$$\Pr(D > 0 \,|\, Z) = \Pr(D = 1 \,|\, Z) = \Phi(Z\gamma)$$
(2)

Φ (.) is standard normal continuous random variable. Our outcome equation of WTP can be written as

$$WTP_i = \beta X_i + \varepsilon_i \text{ if } P_i>0$$
(3)

Where, WTP_i measures the maximum amount of WTP of ith farmer. β is a vector of coefficients of independent variables. It measures the change in WTP of a farmer by one unit change in independent variables. Xi is a vector of independent variables which are used to determine the maximum level of WTP of ith farmer.

By applying expectations on equation 3

$$E(WTP_i \,|\, P_i = 1, X_i) = E(WTP_i \,|\, X_i, Z_i, \mu_i) = E(\varepsilon_i \,|\, X_i, Z_i, \mu_i)$$
(4)

Final term can be simplified with selection equation as

$$E(WTP_i \mid P_i = 1, X_i) = \beta X_i + E(\varepsilon_i \mid P_i = 1) = \beta X_i + E(\varepsilon_i \mid \mu_i > -Z_i \gamma)$$

(5)

Inverse Mills Ratio (IMR) has been used to correct the selection bias. As one of the estimate that follows bivariate normal distribution can be explained as

$$E(\varepsilon_i \mid \mu_i > -Z_i \gamma) = \rho_{\varepsilon\mu} \delta_\varepsilon \lambda_i (-Z\gamma) = \theta \lambda_i (-Z\gamma)$$

(6)

By estimating γ of Probit model IMR can be obtained as

$$\hat{\lambda}_i \left(-Z \hat{\gamma}_i \right) = \frac{\phi\left(Z_i \hat{\gamma} \right)}{\Phi\left(Z_i \hat{\gamma} \right)}$$

(7)

Our final outcome equation 8 contained unique set of independent variables and IMR as

$$WTP_i = \beta X_i + \theta \hat{\lambda}_i \left(-Z_i \hat{\lambda} \right) + e_i$$

(8)

Where, $\hat{\lambda}_i$ is Inverse Mills Ratio, θ is the coefficient of IMR, X_i is a vector of independent variables and β represents their coefficient.

4. RESULTS

4.1. Descriptive Statistics

The data were collected from 300 farmers out of which 184 farmers were willing to participate in crop insurance and the remaining 116 were not interested for the crop insurance. In our analysis, the age distribution of our sample ranges from 22 to 70 years with average age of 43 years. Education level varied among farmers and average number of education years was 8 years hence majority of farmers of the respondents were less educated. Farm income is a variable which was measured in Pakistani Rupees and shows that average farm income for Pakistani farmers was Rs. 193,793. Household size always has a massive substance in agricultural research. On average, it was found that farmers in Pakistan have 5 members in a house. This variable has the range of 9 to 2 family members and a variation of 1.6 in our sample. The details are given in table 1.

Table 1: Descriptive Statistics

	Mean	Median	Maximum	Minimum	Standard Deviation
Age	43.0980	42.0000	70.0000	23.0000	11.7676
Crop diversity	0.2417	0.0000	1.0000	0.0000	0.4293
Credit	0.1043	0.0000	1.0000	0.0000	0.3066
Education	7.7307	8.0000	14.0000	0.0000	2.7389
Expected yield	0.1208	0.0000	1.0000	0.0000	0.3268
Farm income	193793.9	178192.0	690000.0	47301.00	95570.30
Future risk exposure	1.2582	1.0000	2.0000	0.0000	0.4633
Household size	5.4670	5.0000	9.0000	2.0000	1.6204
Land holdings	7.8571	7.0000	20.0000	3.0000	3.1114
Loss	3.1373	3.0000	6.0000	0.0000	1.1504
Live stock	5.6153	5.0000	17.0000	0.0000	2.6016
Land tenure system	1.1978	1.0000	3.0000	1.0000	0.4130
Non-farm income	0.1648	0.0000	1.0000	0.0000	0.3720

In our sample, land holdings distribution ranges between 2 acres to 20 acres with an average of 7.8 acres of land. 40% of farmers have land between 1-5 acres of land, 47.6% of farmers have 6-10 acres of land, 6.8% of famers hold 11-15 acres of land and 5.6% of farmers hold more than 15 acres of land. The majority of farmers are small farmers in our sample because 90% of farmers are small farmers in Pakistan (Government of Pakistan, 2010). Loss is a variable which is used to measure the number of times a farmer faces a loss. The analysis of the demographics shows the average loss experienced by farmers was three times within the period of last 10 years. Maximum number of loss a farmer faced was 6 times. The variable of loss contains variation of 1.1504 (standard deviation). Livestock distribution ranges from 2 to 17 heads with an average of 6 numbers of livestock and 23.6% of farmers were found to have non-farm income while the remaining did not have any source of non-farm income. The estimates of Heckman two steps selection model are shown in table (2) .Where, Panel A contains the information about willingness to participate in crop insurance and Panel B is about willingness to pay for crop insurance. We have used EViews 8 to estimate equation 8. As we look at different estimates of independent variables, we can observe that explanatory variables explain most of the part of dependent variable. In Panel A the coefficient of credit variable is negative and significant at 5 percent level of significance. Negative value of coefficient explains that a one unit increase in credit would lead to 113.24 percent decline in Probit index. Moreover, negative and significant value of credit shows that availability of credit negates the participation in crop insurance. Coefficient of expected yield is also negative and significant at 1 percent level of significance. Which means that one unit increase in

expected yield would lead to 139.9 percent decrease in Probit index. Results of expected yield are clearly negating the purchase of crop insurance in the presence of enough expected yield. Landholding has a positive impact on participation in crop insurance as the positive and significant value of coefficient is indicating that those farmers are more interested in crop insurance that have more landholdings. As the coefficient of land holdings is 0.4735 which means that one unit increase in landholdings would increase 47.3 percent interest in crop insurance. Farm income has also a positive impact on participation in crop insurance, its positive and significant value shows that farmers with maximum farm income are more willing to participate as the coefficient of farm income is 0.0322 which means that one unit increase in farm income would increase 3.2 percent increase in participant to pay for crop insurance. Loss is a variable which is used to measure the number of times of loss incurred for last 10 years. Estimates of loss are indicating that farmers are more sensitive about loss. Positive and significant value of loss coefficient indicates that as the more number of times the loss is experienced, the more are the farmers interested to get involved in crop insurance. According to the coefficient of loss, a one unit increase in number of experience of loss would cause 57.4 percent increase in willingness to participate. Land tenure system also has a negative and significant impact on participation in crop insurance. In Panel A, we have found age, crop diversity, education, future risk exposure, household size, livestock and non-farm income as statistically insignificant variables. Table (3) shows the estimates of willingness to pay of those farmers who are willing to participate in crop insurance. In the second step of Heckman selection model, we found that landholdings and farm income have a positive significant impact on farmer's willingness to pay. Coefficient of landholdings is significant at 1 percent level of significance. Positive and significant values of landholdings and farm income indicate that those farmers who have larger number of landholdings and more farm income are more willing to pay for crop insurance. According to the coefficient of landholding, one unit increase in landholding would lead to 43.8 percent increase in willingness to pay and one unit increase in farm income would increase 3.84 percent increase in willingness to pay. We found other independent variables as statistically insignificant.

Table 2: Results of Heckman selection model

	Participation in crop insurance		Willingness to pay	
	Coefficient	Probability	Coefficient	Probability
Constant	-0.0428 (1.9186)	0.9822	0.1018 (1.1974)	0.9323
Age	0.0246 (0.0249)	0.3253	0.0031 (0.0151)	0.8373
Crop diversity	-0.2277 (0.4003)	0.5700	0.0202 (0.2533)	0.9363
Credit	-1.1324** (0.5733)	0.0493	-0.0929 (0.3591)	0.7959
Education	0.0217 (0.0935)	0.8168	0.0164 (0.0578)	0.7759
Expected yield	-1.3998*** (0.4733)	0.0034	-0.0999 (0.3103)	0.7478
Farm income	0.0322* (0.0171)	0.0594	0.0384** (0.0151)	0.0113
Future risk exposure	0.3466 (0.2217)	0.1192	0.2157 (0.1680)	0.2005
Household size	0.0870 (0.1159)	0.4533	-0.0274 (0.0715)	0.7016
Land holdings	0.4735* (0.2542)	0.0636	0.4376*** (0.1527)	0.0045
Loss	0.5738*** (0.2128)	0.0075	0.0622 (0.1310)	0.6349
Live stock	-0.0746 (0.0741)	0.3152	0.0092 (0.0458)	0.8396
Land tenure system	-1.1541*** (0.3037)	0.0002	-0.0480 (0.2104)	0.8196
Non-farm income	-0.4755 (0.4186)	0.2570	-0.1375 (0.2697)	0.6107

***, **, * are presenting significance at 1%, 5% and 10% respectively.

4.2. Willingness to pay for crop insurance

Following frequency distribution table clearly states that 61.3 percent of farmers are willing to participate in crop insurance and 38.7 percent farmers are not willing to participate in crop insurance. The findings clearly reveal that majority of farmers of our sample show their willingness to participate for crop insurance but still there are large enough farmers who did not show their interest to participate. Low literacy rate and low awareness regarding the mechanism and expected benefits of crop insurance might be the reasons behind the refusal of crop insurance. Here we have calculated the mean willingness to pay for crop insurance by using the formula mentioned by Xiu *et al.*, (2012).

$$WTP = \sum_{i=1}^{k} AWP_i \frac{n_i}{N}$$

(9)

Where, *WTP* is the willingness to pay of farmers for crop insurance. AWP_i is willingness to pay in ith payment level. n_i represents the group of those people who are interested to buy crop insurance. N is the total number of farmers. A bidding game was designed to find out the amount of premium which the farmers (Those who are willing to participate) are willing to pay for crop insurance. The farmers who were willing to participate were asked to respond in "Yes" or "No" to find out whether they are willing or not to pay a certain amount of premium as a price of crop insurance which would give a maximum payout of Rs.10,000 (almost $98.76) in case of loss.

The game was started by offering a maximum price (premium) of 8% of the expected payout to know their willingness, if the respondent agreed over it by saying "yes", the bid came to end. But if the respondent refused to accept this amount, he was offered with a next lower bid of 7% , the bid continued to be offered in the same manner and was subsequently lowered to 6,5 4,3 and 2 percent.

We found 2.3818 percent of the expected payout amount as an average willingness to pay for crop insurance in the study area. The result shows that majority of farmers preferred the minimum amount of premium price because majority of farmers of our sample are small farmers who cannot afford to pay higher price (premium) for crop insurance.

Table 3: statistics for WTP and frequency distribution

	Mean	Median	Standard Deviation	Sample	Valid Percentage
WTP>0	3.8833	4.0000	1.4034	184.0000	61.3333
WTP=0	-	-	-	116.0000	38.6666
WTP≥0	3.8407	4.0000	1.4535	300.0000	100.0000

"-" means not participated

5. DISCUSSION

The results of the study show that credit, expected yield, farm income, land holdings, credit or loan, loss experience and land tenure system are found to have a significant impact on willingness to participate for crop insurance. landholding and farm income were found to have a positive significant impact on farmer' willingness to pay because farmers with more farm income and land holding can easily afford the premium price while most of the small famers with small landholdings and low income refused to participate because they could not afford the price of insurance policy (premium). Loss experience was also found to have a positive significant effect on farmer's participation in crop insurance because farmers with maximum loss experience feel insecure about their future yield production so they feel it better to avail crop insurance to avoid the losses from future climatic hazards.

Expected yield and land tenure system were found to have a significant negative impact on crop of farmers which mean that the farmers with least expected yield tend to have more interest in crop insurance than the farmers with more expected yield. The risk of low yield psychologically pushes the farmers to go for possible solution, that's why farmers with low expected yield are more willing to participate. Land tenure system was found to have a negative impact on willingness to participate in crop insurance. According to our findings, the farmers with their own land are more willing to participate in crop insurance although they have more wealth and stability and are less likely to face financial risk, therefore have less incentive to go for crop insurance as compare to farmers who are sharing or lending a piece of land and facing more financial risk seem to have less interest in crop insurance although there would be more incentives for them if they go for crop insurance. Tenants farmers in Pakistan are mostly poor farmers usually with facing financial issues like shortage of capital to meet the cost of inputs and burden of rent money to be paid for the rented land therefore they hesitated to participate for crop insurance because they believe that price of premium would be an additional financial burden for them. Just because of this they refused to participate although there are many incentives for them if they move to crop insurance decision. Credit loan was found to have a significant negative impact on willingness to participate of the farmers. In Pakistan, all the farmers who get agricultural credit/loan from banks get insured under a crop loan insurance scheme. This scheme is mandatory for all those farmers who avail agriculture credit/loan from banks. According to our results, farmers who avail credit seem to be less willing to participate in crop insurance scheme as compared to those farmers who do not take loan from banks. The farmers, who had availed agriculture credit, were found not to be interested in crop insurance because they were already insured under crop loan insurance program and were already paying premium to financial institutes so they were not willing to pay additional premium for an additional crop insurance program. The results of the study further show the trend of farmers towards minimum premium price. Majority of farmers responded positively towards willingness to participate but at a minimum price (premium). Cost of the premium is the biggest challenge for insurance agencies and government. The results also reveal that landholding is the only factor that influences farmer's willingness to pay for crop insurance. Farmers with maximum landholdings can afford premium charges while poor with small landholding farmers cannot afford premium charges because of their weak financial position. So in order to provide relief to small land holding farmers, the Government of Pakistan should provide maximum subsidy. The government can facilitate the companies by providing them rebate on tax for a specific time period so that companies may become willing to operate in rural areas to provide crop insurance facilities to farmers. Through crop insurance Pakistan can overcome the food security issues which are rising due to growing population in the country as well as due to the climate changes.

6. CONCLUSION

Crop insurance is kind of a new concept for Pakistani poor farmers; crop insurance is an emerging market with very less acceptance ratio. This study analyses the factors that influence the willingness of farmers to participate and to pay for crop insurance.

The results of the study provide an insight for the future considerations of government and insurance companies. The results of the study clearly show that the majority of farmers are willing to participate for crop insurance but the amount of the premium is the biggest concern of them. Low premium with government subsidy can make the crop insurance feasible for both the farmers and the insurer. And other than crop loan insurance government of Pakistan should also introduced new types of insurance programs including weather indexed base insurance, yield base index insurance and flood insurance because these insurance programs are running successfully in the world and there is a need of such crop insurance programs in Pakistan because without considering the needs of poor famers, crop insurance programs cannot be successfully launched.

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HOW EXTERNAL CORPORATE GOVERNANCE AFFECTS SEOS PERFORMANCE: MEDIATING EFFECT OF AGENCY COSTS

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Keywords:	ABSTRACT
Corporate governance, Agency costs, Post-SEO performance, Mediating effect	In an analysis of moment structure (AMOS) setting, this study investigates the effectiveness of external corporate governance in mitigating agency costs and enhancing long-term operating performance for seasoned equity offerings (SEOs). Additionally, this study hypothesizes the crucial and mediating role of agency costs in the relationship between governance structure and post-SEO operating performance. The results reveal that the mediating role of reducing agency costs is crucial to the causal relationship between external corporate governance and post-SEO performance, indicating external corporate governance can enhance performance through direct positive influence on firm performance and, more importantly, through indirect negative influence to decrease agency costs.
Jel Classification: C1;G3;M1	

1. INTRODUCTION

All activities after the listing of the company still need financial support. It is possible to raise funds through the issuance of equity securities; that is, seasoned equity offerings (SEOs). According to the pecking order model or the discussion of Ross (1977) and Scholes (1972), the issuance of equity securities can be regarded as a signal of subsequent underperformance. Previous studies have indicated that investors who invest in SEOs often exhibit excessive and irrational optimism. This optimism increases investor willingness to purchase stocks at higher prices causing temporary overvaluations. Moreover, managers who are able to determine when the market is willing to pay more for their stocks will use this opportunity for stock issuance. In either case, after clarifying the actual conditions of the issuing companies, investors eventually realize the overvalued price and will engage in corrective action resulting in poor long-term stock performance thereafter.

As pointed out by Jensen and Meckling (1976), the dilution of insider control after issuance is associated with increasing agency costs. Agency costs increase as the separation of ownership and control after issuance leads to greater conflict between managers and shareholders.

In addition, the inability of companies to utilize accumulated capital properly can produce agency problems. This tunneling and mismanagement damages firm value, as well as the wealth of stockholders.

Governance mechanisms, by design, can eliminate the agency problem between the agent and the principal and reduce inefficiencies (Cadbury, 1992; Shleifer and Vishny, 1997; Huang and Tompkins, 2010). If corporate governance is responsible for safeguarding functions, it must be effective in controlling agency problems to improve firm performance after issuance. As demonstrated in previous studies, although corporate governance can increase profits and benefits and reduce inefficiencies, companies that employ a third party to monitor activities (external governance) can better resolve agency problems and improve long-term operating performance. Jensen (1993) suggests that the primary governance mechanism should be external companies because of internal governance mechanisms failed in the 1970s and 1980s. Through external governance monitoring mechanisms, corporations can mitigate agency problems and reduce the information asymmetry between the corporation and investors. Effective corporate governance practices may also increase the value of issuing firms. However, evidence surrounding the impact of governance on issuing firms' performance is mixed and inconclusive. Extensive literature has documented the beneficial role of effective governance in improving performance of SEOs (Becker-Blease and Irani, 2008; Kim and Purnanandam, 2009; Dbouk and Ismail, 2010).

Yet, contrary results also appear in the literature. Craswell, Taylor, and Saywell (1997) could not find any relationship between firm performance and either insider or institutional ownership for SEOs. Linden and Matolcsy (2004) concluded that there is no reliable evidence that corporate governance is related to operating or financial performance. Moreover, other studies support the view that a firm's governance structure is endogenously determined. Factors such as managerial ownership (Himmelberg, Hubbard, and Palia, 1999), board characteristics (Hermalin and Weisbach, 2003), and ownership concentration (Bushman, Piotroski, and Smith, 2004) are products of the firm's organizational and economic environments. In addition to examining the "direct" effects of governance structure on firm performance, we establish an analysis of moment structure (AMOS) setting by including the mediating variable of agency costs into the association between corporate governance and post-SEO performance. Much has been written concerning the benefit of corporate governance on firm performance through the reduction of agency costs. Meltem (2009, 60) states that, "*After the IPO, the evolution of internal corporate governance mechanisms are expected to reduce agency costs by aligning the interests and help to mitigate the negative effects of increasing agency costs on the long-term firm performance.*" Lippert and Rahman (1999), Ang, Cole, and Lin (2000), Klapper and Love (2004), and Chi and Lee (2010) also make similar statements.

Accordingly, one may intuit that the reduction of agency costs is the most critical gateway for better corporate governance to enhance post-SEO performance. However, the literature does not appear to address this issue with its empirical research.

The objective of this study is to adopt AMOS when analyzing the influence of external corporate governance on post-SEO performance and in determining whether agency costs exist as a mediating variable between them. We hypothesize that the mediating role of decreasing agency costs is crucial to the causal relationship between external corporate governance and post-SEO underperformance. The failure to address agency costs as a mediating variable could be one reason for the inconclusive findings in the related literature.

The mediating effect refers to the mediating mechanism between the independent and dependent variables. Baron and Kenny (1986) contend that three conditions must be satisfied for a mediating variable in a regression: 1) there is a significant correlation between the independent and mediating variables, 2) there is a significant correlation between the mediating variables and the dependent variable, and 3) the inclusion of the mediating variable decreases the strength of the direct relationship between the independent and dependent variables. If, after the inclusion of a mediating variable, the direct effect between the independent and dependent variables remains statistically significant, it results in a partial mediating effect. However, if the direct effect becomes insignificant, the result is a full mediation effect.

As a Structural Equation Model (SEM), AMOS can express the relationship between independent and dependent variables, but differs from multivariate analysis of variance and the standard correlation analysis in that it only allows for single relationship dependent and independent variables. In other words, while a variable may be a dependent variable (agency costs) of another variable (corporate governance), is also the independent variable for another variable (performance after issuance). A series of structural equation models can be used to analyze the complex causal relationships (Hair, Anderson, Tatham, and Black, 1998).

This study focuses on a SEO sample because it is important to assess how better external governance mechanisms enhance SEO performance. To estimate the relationship between different variables, the study applies the AMOS approach to analyze U.S. SEOs from 2000-2009. The empirical results indicate that those SEO companies who employ external corporate governance for monitoring achieve optimal or superior long-term operating performance. Controlling for agency costs is a significant aspect or factor in employing external corporate governance to improve the long-term operating performance of SEO companies.

In sum, this research contributes to the literature in the following ways: 1) it strives to provide in-depth evidence that agency problems account for the underperformance SEOs; 2) it provides a comprehensive analysis of the relationship between external corporate governance and firm performance after SEOs. By taking into account the possible endogeneity among variables, relationship tests in an AMOS setting provide more reliable results than ordinary causality models.

Therefore, it expands the research perspectives for external corporate governance, SEOs underperformance, and agency theory; and 3) by demonstrating that better external corporate governance adds value to shareholder wealth in the issuing context, we contribute to the line of research that examines the desirability of external corporate governance rules on offering firms.

The next section provides brief literature review, research framework in a figure and the hypotheses designed to test them. Section III describes the research method, variables definitions, and the sample, while Section IV provides our conclusions.

2. LITERATURE REVIEW AND RESEARCH HYPOTHESES

Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) are among the first to demonstrate that returns to U.S. firms following SEOs are significantly lower than their non-issuing counterparts for up to five years. A great deal of the empirical research indicates that equity returns may exhibit negative effects after SEOs (Dann and Mikkelson, 1984; Asquith and Mullins, 1986; Eckbo, 1986; Kalay and Shimrat, 1987; Barclay and Litzenberger, 1988; Patel, Emery, and Lee, 1993; Loughran and Ritter, 1997).

Jain and Kini (1994) demonstrate that declines in financial performance after listing were correlated with agency problems. Bessler and Stefan (2006) describe that raising new equity, in either the primary or secondary market, typically leads to long run underperformance suggesting information asymmetry or agency problems. Jo and Kim (2008) review the financial performance of firms in the SEO market and find the theory of agency to be one of the most important areas in the study of corporate finance. Wang, Chen, and Huang (2008) examine the impact of the price performance of SEOs. They support the agency theory in the sense that bookbuilding offers a mechanism to strengthen the external monitoring provided by blockholders, which can subsequently reduce agency costs and increase the share price. Therefore, some monitoring costs are incurred by the principals to ensure that the agent acts in their best interests, while bonding costs are incurred by the agent.

Singh and Davidson III (2003) determine that management ownership can significantly decrease agency conflict by increasing their asset utilization rate and reducing discretionary costs. Lins (2003) confirmed that agency costs can be effectively reduced through external shareholder protection mechanisms. Davidson, Bouresli, and Singh (2006) find that companies with strict market supervision and complete accounting transparency can reduce the occurrence of agency problems. Wang et al. (2006) support the agency theory in the sense that bookbuilding offers a mechanism to strengthen external monitoring provided by blockholders, thereby reducing agency costs. The research structure, as well as the three study objectives, is presented in Figure 1. As illustrated, external corporate governance is the exogenous variable (independent variable) in the model and agency costs and long-term corporate operating performance after SEOs are the endogenous variables that are divided into a mediating variable (agency costs) and a dependent variable (operating performance).

Figure 1: Research Framework
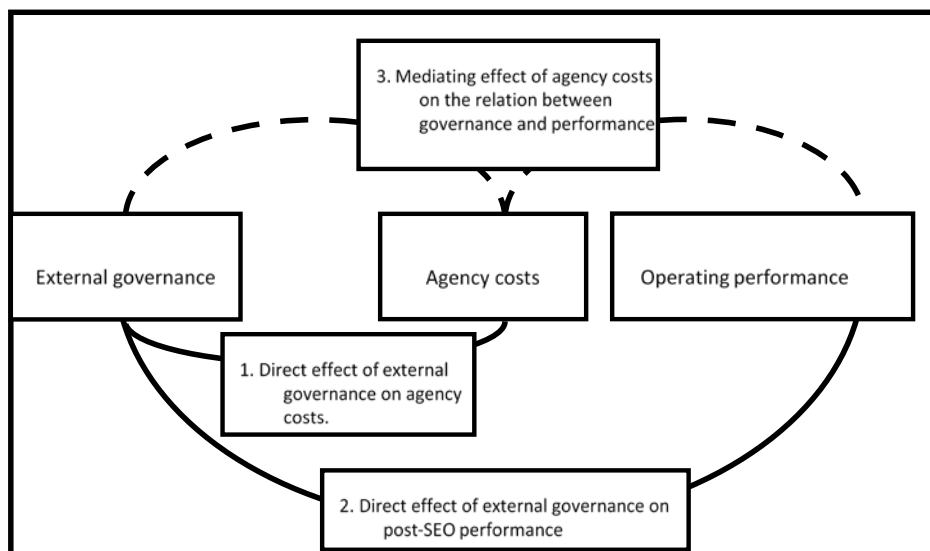
Based on the reasoning presented in the Introduction section, the following hypotheses are proposed, while test methods are discussed in the following section:

H1: External governance is effective in decreasing the agency costs of issuing firms.

H2: External governance is effective in enhancing long-term operating performance after SEOs.

H3: Reducing agency costs has a mediating effect on the correlation between external corporate governance and SEOs' operating performance.

3. RESEARCH METHOD

In an AMOS setting, this study first employs confirmatory factor analysis (CFA) to obtain the representative observable variables for each latent variable and to establish a completely fit model. Then, we proceed with the analyses of direct and mediating effects among latent variables.

3.1. The AMOS (SEM) Setting

Joreskog and Sorbom (1993) point out that with multicollinearity among independent variables, SEM analysis is a more valid method for estimating a model than a simple regression method. It simultaneously solves correlations between a series of multiple independent and dependent variables and considers increasing vital causal paths through the appropriate measurement model or the level of fitness of the measurement model. When compared to general regression models, SEM structure (as does AMOS) can use measurement variables to assess latent variables that are difficult to observe directly, while identifying the relationship between each latent and measurement variable.

The total effect of an independent variable on the dependent variable can be divided into two parts: 2) the indirect effect that refers to the independent variable's effect on the dependent variable through a mediating variable, and 2) the direct effect that refers to the independent variable's effect on the dependent variable after controlling for the indirect effect (Baron and Kenny, 1986; Stone and Sobel, 1990; MacKinnon et al., 2002). According to MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) and Preacher and Hayes (2004), the mathematically formulated Sobel test should first be used to determine whether the indirect effect is significant to adhere more closely to the meaning of mediating effect. In the Sobel test, a mediating effect exists when the *Z* value in Equation (1) is greater than 1.96:

$$Z = a * b / SE_{ab}$$

where *a* and *b* are non-standardization values, and $SE^2_{\hat{a}^2}$ and $SE^2_{\hat{b}^2}$ are standard errors of *a* and *b* .

3.1.1. Confirmatory Factor Analysis (CFA) and Measurement Reliability

This study performs a CFA on the relevant variables to test the representativeness of the latent variables and to establish the complete fit for the research model. The CFA was conducted on external governance, agency costs, and operating performance to eliminate inefficient observation variables and to ensure that each factor complied with the optimum fit indicators.

Micceri (1989) indicated that when the SEM method is used to analyze data, data must be corrected and transferred in violation of the normality assumption to ensure reliability. To avoid the trouble of negative definition in the SEM model, we refer to the practice of Abarbanell and Bushee (1998). This study adjusted the scales and units of different observed variables, sorted the raw data into deciles, and the converted data is ranged from 1-10. Chou, Bentler, and Satorra (1991) and Hu and Bentler (1995) point out that when the multivariate normal assumption does not hold, the standard errors and *t* values of the parameters estimated in a SEM model will be biased leading to estimated results with significant distortions. According to Gilford (1954), Cronbach's α is used to indicate the measurement reliability. Reliability is high when the indicator is greater than or equal to 0.70, acceptable when the indicator is from 0.35-0.70, and low when the indicator is less than 0.35.

3.1.2. Goodness-of-Fit Measurement

An overall goodness-of-fit test is conducted to evaluate the suitability of the model. Goodness-of-fit is a model quality test that is used to examine whether the empirical results are consistent with the theoretical model. Thirteen model fitness tests, as well as their descriptions and test statistics, are summarized in Appendix 1. The evaluation criteria are broadly divided into absolute fit indices, comparative fit indices, and parsimonious fit indices and are detailed below. The absolute fit measures include the chi-square test (x^2), the standardized root mean square residual (*SRMR*), the root mean square error of approximation (*RMSEA*), the goodness-of-fit index (*GFI*), and the adjusted goodness-of-fit index (*AGFI*).

The comparative fit measures include the normed fit index (*NFI*), the non-normed fit index (*NNFI*), the incremental fit index (*IFI*), the comparative fit index (*CFI*), the and relative fit index (*RFI*). The parsimonious fit measures include the parsimonious normed fit index (*PNFI*), the parsimonious goodness-of-fit index (*PGFI*), and Hoelter's critical N (*CN*).

3.2. External Governance (E*CG*): Independent Variable

This study includes three variables to measure external corporate governance: 1) analyst coverage, 2) institutional shareholding, and 3) auditor reputation.

3.2.1. Analyst Coverage (*ACOV*)

Chung and Jo (1996) find that securities analysts can monitor corporate management by revealing business information to the market, thereby reducing agency costs. Das, Guo, and Zhang (2006) suggest that analyst coverage significantly predicts the cross-sectional variation in stock returns. For the SEO sample, *ACOV* is the natural logarithm of the number of analysts that provide one-year-ahead earnings forecasts during the six-month period leading up to the SEO announcement.

3.2.2. Auditor Reputation (*AR*)

Titman and Trueman (1986) confirm that superior or higher quality accounting firms provide more accurate information to the users of financial statements. Palmrose (1984) found that companies can reduce the influence of agency costs by employing high quality accounting firms to run audits. Following prior research, *AR* is a dummy variable equal to one if the auditor of the sample firms is a member of the Big-Four (e.g., Ernst and Young, Deloitte and Touche, KPMG, and PWC) and zero otherwise.

3.3.3. Institutional Shareholding (*INS*)

Pound (1988) finds that institutional investors are well suited to provide the professional expertise, technology, and costs required for monitoring management. Economies of scale allow them to spend fewer resources on monitoring as compared to minority shareholders. Therefore, increasing institutional shareholdings can effectively decrease the agency problem and improve corporate operating performance. O'Brien and Bhushan (1990) suggest that a greater number of shareholdings owned by institutional investors enhances performance. *INS* is measured as the percentage of shares held by institutional investors (year-end).

3.3. Agency Costs (*AC*): Mediating Variable

Agency costs resulting from bonding activities are contractual limitations on the manager's decision-making power. Agency costs resulting from monitoring involve auditing, formal control systems, budget restrictions, and incentive compensation systems. In addition, some residual loss, which is the effective loss related to the state-contingent future of the firm, results despite the bonding and monitoring costs incurred. The sum of the monitoring, bonding and residual costs is the agency cost. We include four variables to proxy for agency costs: 1) asset turnover ratio, 2) sales and management expenditures, 3) leverage, and 4) operating expenses.

3.3.1. Asset Turnover Ratio (*ATR*)

This ratio can be interpreted as an asset utilization ratio that indicates how effectively management deploys the firm's assets. For example, a low asset turnover ratio may indicate poor investment decisions, insufficient effort, the consumption of perquisites, and the purchase of unproductive products. Firms with low asset turnover ratios are expected to experience high agency costs between managers and shareholders. A similar proxy for agency costs is also used in the studies of Ang et al. (2000), Singh and Davidson III (2003), and Fleming, Heaney, and McCosker (2005).

3.3.2. Sales and Management Expenditures (*SME*)

To understand management's discretionary spending, Singh and Davidson III (2003) continue the research of Ang et al. (2000) by measuring agency costs with sales and management expenditures rather than operating expenses. Their results indicated that management ownership decreases the conflict between owners and agents by enhancing asset usage and reducing discretionary spending. *SME* is the ratio of selling, general, and administrative expenses to sales (year-end).

3.3.3. Leverage Ratio (*LEV*)

Jensen (1986) finds that an increased debt ratio can decrease the conflict of interest between managers and shareholders. However, it also increases interest costs and the risk of bankruptcy, most likely deepening the debt agency problem between shareholders and creditors. Brander and Spencer (1989) determine that the increased risk of bankruptcy created by a rising level of debt negatively affects corporate operating performance. Furthermore, where no mechanism exists to resolve the debt agency problem, the greater the debt ratio, the higher the debt agency costs if an agency problem develops. This will completely offset the tax savings benefits of debt and reduce corporate operating performance. Agrawal and Knoeber (1996) suggest that in addition to the proportion of outside directors and external market pressure, debt ratio is negatively correlated with firm performance. Kim and Maksimovic (1990) also support the leverage as a measure of agency costs. *LEV* is measured as total interest bearing debt to total assets (year-end).

3.3.4. Operating Expense (*OE*)

Ang et al. (2000) measured agency costs by demonstrating that the higher the operating expense ratio, the more likely a manager is to use special privileges or information advantages to incur expenses and increase spending without adding value. *OE* is the ratio of a property's operating expense to gross operating income (year-end).

3.4. Operating Performance (*LOP*): Dependent Variable

Four variables are employed to proxy for operating performance of issuing firms: 1) operating cash flows (*OCF*) (Jain and Kini, 1994,1995; Mikkelson, Partch, and Shah, 1997), 2) operating return on assets (*OPROA*) (Jain and Kini, 1994; Barber and Lyon, 1997; Loughran and Ritter, 1997; Teoh , Welch, and Wong, 1998), 3) net profit margin (*NPM*), and 4) ratio of earnings before interest and taxes to net sales (*REBITNS*) (Loughran and Ritter, 1997).

When compared with other profitability measures, *OPROA* and *OCF* are more powerful measures of operating performance as they are less likely to be affected by leverage, extraordinary items, and other discretionary items (Barber and Lyon, 1996). The *OPROA* provides a measure of the efficiency of asset utilization. Therefore, following Jain and Kini (1994), Barber and Lyon (1996), Loughran and Ritter (1997), Teoh et al. (1998), this study also employs *OPROA* and *OCF* as measures to proxy for the operating performance of issuing firms. *OPROA* is the operating income (before depreciation and taxes) divided by total quarterly assets (year-end), where operating income equals net sales less the cost of goods sold and selling, general, and administrative expenses before depreciation, depletion, and amortization. *OCF* is the ratio of operating cash flow to current liabilities (year-end).

Loughran and Ritter (1997) found that corporate operating performance almost peaked during periods of seasoned equity, but then gradually decreased after offerings. Of the six operational indicators used in the study, four indicated improved operating performance before the offering implying that the stock market is overly optimistic regarding the prospect of SEO corporations. The six indicators used in Loughran and Ritter (1997) were net profit margin (*NPM*), ratio of earnings before interest and taxes to net sales (*REBITNS*), the return rate on assets, the market-to-book ratio, capital expenditures and the R&D expense ratio of total assets, and the pre-tax, depreciated, pre-amortized net operating profit (including interest income) to total asset ratio.

NPM is the after-tax, net profit divided by net sales (year-end). *REBITNS* is the pre-tax, depreciated, pre-amortized net operating profit plus interest income divided by net sales (year-end).

3.5. Sample and Data

The sample is comprised of U.S. SEOs from 2000-2009 from the *Security Data Company's* (*SDC*) new issues database. The sample period ends in 2007 to allow for the availability of operating and stock data for the post-SEO period. As in previous research, the following observations are excluded from the final sample: 1) issuing firms from the financial insurance industry (SIC Codes 6000-6999), 2) best efforts offers, closed-end funds, ADRs, REITs, and offerings with offer prices below $5.00 per share, 3) SEOs within a three-year period after listings, and 4) issuing firms with insufficient data.

Governance-related data are obtained from the *Investor Responsibility Research Center* (*IRRC*) and the *Institutional Brokers' Estimate System* (*I/B/E/S*) databases. Both agency costs and operating performance data are obtained from the Compustat database.

4. EMPIRICAL RESULTS

4.1. Descriptive Statistics and Factor Loadings of SEO Samples

CFA was conducted on the external corporate governance, agency costs, and long-term operating performance of SEO companies to eliminate inefficient observation variables and to ensure that each factor complied with the optimum fit indicators. The 14 observation variables of the SEO companies were then incorporated into the model. The variables of external governance are *ACOV, AR,* and *INS*.

The dimensions of agency cost include *ATR, SME, LEV* and *OE*. The dimensions of long-term operating performance are comprised of *OCF, OPROA, NPM* and *PEBITNS.*

Table 1 presents the fully standardized factor loadings and descriptive statistics of the SEO companies in three dimensions. After eliminating inefficient observation variables, the results for SEO companies indicate that: 1) factor loading of each variable reached significance at the 5% level; 2) Cronbach's α of each dimension reached a minimum reliability of 0.35, increasing the consistency of the model estimation; and 3) for normality assumptions, skews for the variables indicate that the absolute value is less than three, and the kurtosis demonstrates that the absolute value is less than eight. Together, these indicators suggest that the variables comply with normality assumptions.

Table 1: Descriptive Statistics of SEO Sample

	Variable	Factor Loading	Cronbach's α	Mean	*SD*	*Sk*	*Kur*
ECG	*ACOV*	0.158**	0.411	0.283	0.327	0.920	0.189
	AR	0.226**		0.951	0.216	-2.189	5.551
	INS	0.752***		11.890	11.480	0.860	-0.869
AC	*ATR*	0.205***	0.718	-0.041	0.232	-1.257	0.946
	SME	0.405***		0.280	0.274	1.556	2.623
	LEV	0.095***		1.536	2.175	0.898	0.446
	OE	0.550***		0.432	0.293	2.226	6.642
LOP	*OCF*	0.446***	0.865	-0.520	1.414	1.158	1.162
	OPROA	0.644***		-0.663	1.364	-1.602	2.568
	NPM	0.024***		-0.098	0.292	-1.671	1.264
	REBITNS	0.958***		0.736	0.7361	-1.790	1.811

The sample employed in this study is comprised of 246 annual observation values of SEOs in the U.S. (excluding the finance and insurance industries). External governance data were obtained from *IRRC* and *I/B/E/S*, and information regarding agency costs and long-term operating performance were retrieved from Compustat. For these variables, the factor loadings are coefficients under full standardization. *** indicates that α reached a level of significance at 1%, while ** indicates that α reached a level of significance at 5%. Cronbach's α is the reliability indicator, and a Cronbach's α > 0.35 indicates that the reliability test was satisfied. Additional variables include External Corporate Governance (*ECG*), Agency Costs (*AC*), Long-Term Operating Performance (*LOP*), Stand Deviation (*SD*), Skewness (*Sk*), and Kurtosis (*Kur*).

4.2. Goodness-of-Fit Measurement in the SEM Model

Table 2 reports the model's goodness-of-fit test conducted concerning the direct effect that external corporate governance has on agency costs and long-term operating performance after SEOs. Excluding Cronbach's α values, which are significant due to the influence of the sample size, the calculation results indicate that the remaining indicators reached the standard value. This suggests that the overall model had a good fit.

The study also measured the goodness-of-fit of the model for the mediating effect that agency costs had on "the influence of external corporate governance on long-term operating performance" after issuance. The results indicate that, excluding the Cronbach's α values, that are significant due to the influence of the sample size, and the *CN* that cannot adequately reflect the sample data due to the influence of the sample scale, the remaining indicators reached the standard value. This outcome implies that the overall model has a good fit.

Table 2: Goodness-of-Fit Test for SEOs

Indicator	Acceptable Thresh old Levels	Direct Effect of Governance on Agency Costs	Direct Effect of Governance on Post-SEO Performance	Mediating Effect of Agency Costs on the Relation Between Governance
Absolute fit indices				
χ^2	P<0.01	55.145 (P=.002)	55.844 (P=.003)	185.971 (P=.000)
SRMR	≤0.08	0.059	0.053	0.077
RMSEA	≤0.08	0.061	0.059	0.083
GFI	≧0.9	0.96	0.958	0.916
AGFI	≧0.9	0.923	0.923	0.852
Comparative fit indices				
NFI	≧0.9	0.893	0.94	0.892
NNFI	≧0.9	0.914	0.956	0.882
IFI	≧0.9	0.946	0.971	0.924
CFI	≧0.9	0.944	0.971	0.922
RFI	≧0.9	0.854	0.91	0.846
Parsimonious fit indices				
PNFI	≧0.5	0.575	0.627	0.588
PGFI	≧0.5	0.506	0.523	0.523
CN	>200	221	224	117

If the measurement standard is greater or less than the acceptable threshold levels in the table, we conclude that the model's fit is good or acceptable.

4.3. Direct Effect

After the CFA verification enabled the variables of the SEO companies to sufficiently explain the various dimensions and become appropriately reflected in the model, direct effect analysis was performed. Table 3 demonstrates the direct and mediating effects of SEO companies. The first two verification conditions of testing mediating effect are the direct effect of external corporate governance on agency costs and long-term operating performance.

Table 3: Direct Effect and Mediating Effect of SEO Companies

	NSV	T Statistics	*SE*	
ECG to *AC*	-0.204	-0.020	0.009	
ECG to *LOP*	0.393***	2.851	0.127	
	NSV	T Statistics	*SE*	Sobel Test
ECG to *AC*	-0.163	-1.445	0.113	-
ECG to *LOP*	0.299***	2.709	0.122	2.000**
AC to *LOP*	-0.397***	-5.922	0.067	-

Variable include Non-Standardization Value (*NSV*), Standard Error (*SE*), External Corporate Governance (*ECG*), Agency Cost (*AC*), and Long-Term Operating Performance (*LOP*). ** indicates significance at the 5% level. *** indicates significance at the 1% level. The Sobel test equation is defined as Z = a*b/SE_{ab} where *a* and *b* are non-standardizing values. SE_{ab} is standard errors.

According to the direct effect results in Table 3, the direct effect confirms similar results for SEO companies. That is, external corporate governance also has a negative correlation (with a coefficient of -0.204 and a *t*-value of -0.020). We also compare the non-standardized coefficients (NSC) of SEOs for external corporate governance and agency costs. Moreover, the direct effect of external corporate governance on long-term operating performance in SEO companies indicates a significant and positive correlation (with a coefficient of 0.393 and a *t*-value of 2.851). Therefore, SEO companies should employ external corporate governance to enhance monitoring and achieve superior long-term operating performance. Our findings confirm the results of Cremers and Nair (2005) that external factors link corporate governance to firm value.

4.4. Mediating Effect of Agency Costs

The data regarding the mediating effects presented in Table 3 were used for testing the third condition. With the addition of the mediating variable, the strength of the direct correlation between the independent and the dependent variables declines as proposed by Baron and Kenny (1986). Furthermore, to increase the accuracy and rigorousness of the mediating effect test, the study employed the Z-value of the Sobel test, as suggested by MacKinnon et al. (2002) and Preacher and Hayes (2004), to examine the mediating effect.

The results in Table 3 show that the coefficient strength of external governance subsequently exhibited a significant decrease from 0.393 to 0.299 and complied with our third condition. The Z-value of the Sobel test for external governance was 2.000, which is in line with Jensen's (1986) suggestion that the main cause of poor long-term operating performance for SEO companies is agency problems. This proposes that firms should devise strategies to reduce costs over the long run. (Himmelberg et al, 1999). After we incorporate agency costs as a mediating variable, we find that agency costs are included in the effect of external corporate governance on long-term operating performance. The results are similar to that of Klapper and Love (2004) and Chi and Lee (2010). They conclude that better corporate governance is highly correlated with improved operating performance and those firms that have greater agency problems need to compensate with stricter governance mechanisms.

In other words, the use of external corporate governance to reduce agency costs is a crucial method for improving the long-term operating performance of SEO companies. As previously mentioned, good corporate governance can lead to a higher value of issuing firms for SEOs. Our empirical results support this contention. Mitigating agency costs play an important mediating role in external corporate governance and SEOs performance. It can aid in the understanding of the mixed or inconclusive results of previous studies that omit agency costs a mediating variable. It provides greater evidence that agency problems account for post-SEO underperformance as Jain and Kini (1994) and Ritter and Welch (2002) have suggested. By demonstrating that good governance adds value to shareholder wealth by reducing agency costs in the issuing context, this study contributes to the line of research that examines the desirability of governance rules on offering firms.

5. CONCLUSIONS

The poor performance of post-SEO firms has attracted considerable research interest. The purpose of this study is, taking into account a range of external governance factors, to adopt AMOS when analyzing the influence of corporate governance on the underperformance of SEO firms and in determining whether agency costs exist as a mediating variable between them. After issuance, the evolution of governance mechanisms are expected to reduce agency costs by aligning interests and to help mitigate the negative effects of increasing agency costs on long-term firm performance. This research examines the direct effect of external corporate governance on agency costs, followed by the influence of corporate governance on firm performance. To test the existence of poor administrative mitigating functions of external corporate governance in reducing agency costs, we then examine the mediating effect of reducing agency costs on the influence of external corporate governance on performance. This is the first study concerning the mediating effect of agency costs on the association between external corporate governance and SEO performance. A mediating effect can easily lead to an inability to determine whether the independent variable (external corporate governance in this study) is functioning effectively. The relationship between variables can only be clarified when tests and assessments of the mediating effect are incorporated. While this study adds another set of findings to the literature on post-SEO deterioration in operating and stock performance, it also examines whether good external governance mechanisms enhance SEO's performance. This study builds on the existing research concerning the influence of external corporate governance on SEO's performance to provide a clear understanding of the relationship between the two. Specifically, the study findings determine that the agency problem is crucial when explaining the decline in SEO's operating performance. This discovery provides support for the view that post-SEO deterioration in performance is, at least, in part, attributable to an attempt at entrenchment. Additionally, the poor administrative mitigating functions of external corporate governance can decrease agency costs, thereby improving SEO's performance. Our empirical results generate straight forward evidence that good external governance structures can mitigate the agency problem and increase the value of SEO firms. Moreover, the reduction of agency cost play role only in SEO firms with poor post-issue performance. This finding provides indirect, but strong evidence that post-SEO underperformance is largely a result of the agency problem.

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Appendix 1: Goodness-of-Fit Indicators

Indicator	Test Statistics	Descriptions
Absolute Fit Indices		
x^2	$F_{ML} * (N-1)$	Assesses the magnitude of discrepancy between the sample and fitted covariance matrices.
SRMR	$\sqrt{\sum (S_{jn} - I_{ij})^2 / q}$	Standardized version of the *RMR*. Easier to interpret due to its standardized nature.
RMSEA	$\sqrt{\hat{\delta}_M / df_M (N-1)}$	Has a known distribution. Favors parsimony. Values less than 0.03 represent excellent fit.
GFI	$1 - V_{res} / V_{total}$	Scaled between zero and one with higher values indicating better model fit. This statistic should be used with caution.
AGFI	$1 - (1 - GFI)[v(v+1)/2df_M]$	Adjusts the *GFI* based on the number of parameters in the model. Values can fall outside the 0-1.0 range.
Comparative Fit Indices		
NFI	$1 - \chi^2{}_M / \chi^2{}_B$	Assesses fit relative to a baseline model that assumes no covariances between the observed variables. Has a tendency to overestimate fit in small samples.
NNFI	$[\chi^2{}_B - (df_b / df_M)\chi^2{}_M]/(\chi^2{}_B - df_B)$	Non-normed values can fall outside the 0-1 range. Favors parsimony. Performs well in simulation studies.
IFI	$(\chi^2{}_B - \chi^2{}_M)/(\chi^2{}_B - df_M)$	Should be equal to or greater than .90 to accept the model. IFI can be greater than 1.0 under certain circumstances.
CFI	$1 - \hat{\delta}_M / \hat{\delta}_B$	Normed, 0-1 range.
RFI	$1 - (\chi^2{}_M / df_M)/(\chi^2{}_B / df_B)$	The relative fit index, the mean square metric pioneered by the *TLI*, is retained in the *RFI*. It is not guaranteed to vary from zero to one.
Parsimonious Fit Indices		
PNFI	$(df_M / df_B)NFI$	This index also adjusts for degrees of freedom; however, it is based on the NFI.
PGFI	$[df_M /((v(v+1)/2)]GFI$	The *PGFI* is based on the *GFI* by adjusting for loss of degrees of freedom.
CN	$(((2.58+(2\,df \\ 1)**2)**.5)/((2chisq)/(n-1)))+1$	Hoelter's N should be greater than 200. AMOS computes Hoelter's N for the .05 level. **N** is the sample size.

Where *FML* is the value of the statistical criterion minimized in the ML estimation; (N - 1) is the overall degrees of the freedom in the sample; $S_{jn} - I_{ij}$ is the residual correlation matrix (including the variances); *q* is the number of residuals; *q* = p(p+1)/2; *p* is the number of variables; $\hat{\delta}_M = \max(\chi^2{}_M - df_M, 0)$; $\hat{\delta}_M$ and $\hat{\delta}_B$ estimate the non-centrality parameter of a non-centrality chi-square distribution for the researcher's model and the baseline model, respectively; *v* is the number of observed variables; v_{res} is the unexplained variability in the sample covariance matrix; v_{tot} is the total variability in the sample covariance matrix; . $\chi^2{}_M$ and df_M are the chi-square and the degrees of freedom for the null model, respectively, and $\chi^2{}_B$ is a substantive model of interest.

COMMITTEES OF BOARDS: AN EVENT STUDY ON AN EMERGING MARKET

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ABSTRACT

This study investigates the market reaction surrounding the establishments of committees of boards, and director appointments to these committees based on the underlying reason for the appointments in public firms quoted at the Borsa Istanbul. In addition, it investigates how the market reaction changes based on the professional expertise of these directors. The findings suggest that investors in Turkish capital markets do not value the existence of various committees of boards highly. In addition, they do not appear to react differently to director appointments to these committees based on the underlying reasons for the appointments. Lastly, they do not seem to value the professional expertise of directors serving on these committees, except in the case of audit committees. Investor reaction surrounding the appointments of expert directors to audit committees is significantly higher compared to the appointments of non-expert directors to audit committees.

1. INTRODUCTION

A potential way of improving the effectiveness of monitoring provided by members of boards of directors is establishing committees. These committees could be useful corporate governance mechanisms in the protection of minority shareholders' benefits, as well as in the early determination of potential risks that companies might be subject to in future periods. Therefore, the establishment of these committees could lead to improved corporate governance quality and consequently increased firm value. However, effective functioning of these committees is as important as establishing them, in order to ensure that firms do not only "appear" to have improved corporate governance but actually carry out improved corporate governance practices. A factor that could be an important determinant of committee functioning effectiveness is the characteristics of members of these committees such as their professional expertise. The regulations in some developed countries that require companies to appoint at least one director with financial/accounting expertise to audit committees support this argument.

Studies such as Sevim and Eliuz (2007), Nuhoglu and Armagan (2013), Kandemir and Akbulut (2013) investigate board committees in Turkish public firms with a special focus on audit committees. However, in this study we investigate various committees of boards from a different perspective: from the point of view of investors. We investigate how markets react to the establishments of committees of boards and director appointments to these committees in public firms quoted at the Borsa Istanbul (BIST). In addition, we investigate how the market reaction to committee member appointments and departures changes based on the underlying reasons for director appointments to these committees and the professional expertise of these directors. To ensure that our findings are econometrically robust, we employ various market models, event windows and statistical significance tests in the event study.

Corporate governance research on committees of boards of public firms in developed countries generally focuses on corporate governance and nominating committees, compensation committees and audit committees, probably as a result of the fact that these are the most common committees established by companies. However, the most common committees of boards in public firms quoted at the BIST are audit committees, corporate governance committees and early determination of risk committees (Arioglu and Tuan, 2014). The main responsibilities of members of audit committees are related to independent auditing of companies, preparation of financial statements, coordination of external auditors and internal control mechanisms, and prevention of fraud. On the other hand, corporate governance committee members' main responsibilities could be stated as ensuring the compliance of companies with the Principles of Corporate Governance (PCG) of Turkey and advising boards of directors to promote the improvement of corporate governance practices of their companies. Lastly, the main responsibilities of (early determination of) risk committee members could be stated as the identification of potential risks that companies might be subject to in the future and the potential ways to cope with these risks. It is difficult and unnecessary to argue which one of these committees' responsibilities is most vital for companies. What is important is that these committees function effectively, which depends on the members of these committees performing their monitoring duties effectively (Klein, 1998, Deli and Gillan; 2000). For example, effectively functioning audit committees could be vital in the prevention of fraudulent actions that would affect firm value negatively (Klein, 2002; Uzun et al., 2004). In the case of governance committees, effective functioning of these committees could be beneficial for companies especially in the process of nominating board members that could improve the quality of decisions regarding various corporate issues and not be influenced by chairmen or CEOs, who would be willing to work with directors that would not challenge their decisions (Borokhovich et al., 1996; Shivdasani and Yermack, 1999). Also, the members of risk committees bear important responsibilities in the detection of any potential risks that could arise as a result of the decisions made in boardrooms.

As mentioned earlier, one of the important characteristics of committee members that would affect their effectiveness in performing their duties in the committees is their professional expertise (Xie et al., 2003; Tao and Hutchinson, 2013). Directors such as financial and accounting experts could be very beneficial resources not only in audit committees as a result of their specific skills and experience, but they could also be beneficial in the assessment of potential risks that companies might be subject to.

On the other hand, academicians could be very helpful in these committees especially if their field of research is relevant. For example a business professor would be expected to have scientific information related to finance, accounting, management or risk assessment topics among others. Therefore, these skills could be valuable for the improvement of corporate governance practices of companies, as well as for the functioning of audit and risk committees. In addition, lawyers in these committees could be especially beneficial especially in the compliance of companies with corporate governance regulations, as well as identifying potential risks of any future lawsuits. All these examples point out to the importance of technical skills and professional expertise of directors in board committees. Yet, it should be kept in mind that these experts, who are not executives of companies, might lack valuable firm-specific information (Litov et al., 2014). In empirical studies, Choi et al. (2014) provide evidence suggesting that the characteristics of the members of audit committees could alter the soundness of corporate governance structure of firms. Studies such as Agrawal and Chadha (2005) and Albring et al. (2014) provide supportive evidence of the importance of committee member expertise arguments. On the other hand, Defond et al. (2005) show that markets react positively to the existence of accounting financial experts on audit committees, whereas Chakrabati and Sarkar (2010) show that Indian markets do not value the financial expertise of directors in audit committees.

2. DATA AND METHODOLOGY

The committee establishments sample covers the establishments of 111 risk committees, 43 governance committees and 16 audit committees by public companies quoted at the Borsa Istanbul (BIST) during the January 1, 2012 to June 30, 2014 period. On the other hand, committee member appointments sample includes the appointments of 300 risk committee, 164 governance committee and 112 audit committee members. Lastly, committee member departures sample covers the departures of 36 risk committee, 52 governance committee and 42 audit committee members. The reason that the number of committee member appointments is substantially higher than the number of committee member departures is the sample period chosen. Before the sample period, the Principles of Corporate Governance (PCG) in Turkey was not effective. The PCG, which could be considered the corporate governance reform of Turkey, imposed various requirements such as the establishment of board committees and the ratio of independent directors that must serve on these committees. Consequently, the majority of public firms either established new committees or restructured the existing ones. The directors included in the samples are committee members that are also members of boards of directors. For example, an individual, who is the manager of investor relations department, serving on the governance committee is not included in the sample. This is because our focus and arguments are on the effectiveness of board members serving on committee of boards. In addition, board members are relatively more public figures compared to non-board member executives of companies and many companies do not provide background information for lower level executives, whereas the majority of them provide detailed information about board members.

Since investors would be expected to react to new information and price it when it becomes available, if not earlier as a result of leakages, we investigate the market reaction surrounding the announcements of committee establishments and member appointments and departures. The announcements are identified via reading all the news submitted to the Public Disclosure Platform (PDP) by firms during the sample period. Any committee establishment or member appointment/departure that is not announced by public firms to the PDP is not included in the samples. In addition, only isolated announcements are included in the samples in order to separately measure the effect of each announcement on stock prices. On the other hand, announcements by financial firms are not included in the samples because we employ the 4 Factor Model (4FM) and the 3 Factor Model (3FM) in expected return estimations.

Data required to estimate expected returns and to calculate abnormal returns are gathered from official data providers such as Finnet, Is Yatirim and Borsa Istanbul's official webpage. Data regarding director expertise are hand-collected via annual reports and official webpages of companies. For daily and monthly stock returns calculations, adjusted price series were utilized as opposed to raw price series Basdas and Oran (2014).

To investigate the market reaction to various announcements abnormal returns (ARs), average abnormal returns (AARs), and cumulative average abnormal returns (CAARs) are required. CAAR can be denoted as:

$$CAAR_T = \sum_{t=1}^{T} AAR_t$$

(1)

where,

$$AAR_t = \frac{1}{N} \sum_{i=1}^{N} AR_{i,t}$$

(2)

and,

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

(3)

As can be observed in equation (1), expected returns *E(R)s* are also required. Expected returns can be estimated by utilizing various models. Majority of the studies that conduct event studies for Turkish capital markets employ models such as the capital asset pricing model or the simple market model, as well as market adjusted returns. On the other hand, Tahaoglu and Guner (2011) employ the 3FM. In this study we employ the 4FM in order to estimate expected returns. 4FM developed in Carhart (1997) incorporates the momentum factor into the 3FM developed in Fama and French (1993). In addition to size and book-to-market anomalies, the 4FM captures the momentum anomaly in Jegadeesh and Titman (1993). Ahern (2009) argues that this model outperforms models such as the capital asset pricing models and generates returns that are less skewed.

Unlu (2012) shows that the 4FM captures variations in stock returns of Borsa Istanbul firms as well. The model can be stated as (Kosowski et al., 2006; Fama and French, 2012):

$$R_{i\,(m)} - Rf_{(m)} = a_i + b_i\,(RM_{(m)} - Rf_{(m)}) + s_i\,SMB_{(m)} + h_i\,HML_{(m)} + m_i\,MOM_{(m)} + e_{i\,(m)}$$
(4)

where, the RM above denotes the daily returns for the market return; average daily return for the BIST index that includes all the firms quoted at BIST. RF denotes the daily risk-free rate of returns. SMB, HML and MOM denote the returns for the size, book-to-market, and momentum factors. Since the focus of this study is not these models, readers interested in the details of this model can consult Carhart (1997), Fama and French (2012).

Based on this model, coefficients for each firm's stock are estimated in the 240 previous days estimation window following previous studies (Giroud and Mueller, 2010; Falato et al., 2014) and then utilized to estimate expected returns. The estimation window does not include the days immediately prior to the event and does not intersect with the event windows (Ahern, 2009), which are set as (-10,+10), (-5,+5), (-1,+1) and (0) for robustness purposes. After calculating CAARs in various event windows, we investigate whether these CAARs are statistically significantly different from zero by employing various significance tests. For robustness purposes, we test the significance of CAARs via the parametric cross sectional t-test and Boehmer, Musumeci and Poulsen (BMP) tests and the non-parametric sign test. In the standard cross-sectional t-test, the test statistic below is utilized:

$$t_{CAAR} = \sqrt{N}\;\frac{CAAR}{S_{CAAR}}$$
(5)

where S_{CAAR} :

$$S_{CAAR}^2 = \frac{1}{N-1}\sum_{i=1}^{N}(CAR_i - CAAR)^2$$
(6)

In addition, the test statistic for the BMP test is:

$$z_{BMP} = \sqrt{N}\;\frac{\overline{SCAR}}{S_{\overline{SCAR}}}$$
(7)

where:

$$S_{\overline{SCAR}}^2 = \frac{1}{N-1}\sum_{i=1}^{N}(SCAR_i - \overline{SCAR})^2$$
(8)

and:

$$\overline{SCAR} = \frac{1}{N} \sum_{i=1}^{N} SCAR_i$$
(9)

Lastly, the test statistic for the sign test is (Cowan, 1992):

$$t_{sign} = \sqrt{N} \; \frac{\hat{p} - 0.5}{\sqrt{0.5 \, (1 - 0.5)}}$$
(10)

For robustness check, we also provide findings based on returns estimated via the 3FM, as well as returns estimated via the 4FM where the return of the BIST 100 index is used as the market return.

3. RESULTS

3.1. Committee Establishments

The findings regarding the market reaction surrounding the establishment of committees of boards are presented in Table 1. The Table shows that the CAARs on the day of the announcements of audit committee, risk committee, and governance committee establishments are 0.42%, 0.11%, and 0.46%, respectively. Even though the market reaction to the establishments of these committees on the announcement days is positive, they are not statistically significant. Parallel findings are observed for the CAARs in the three days surrounding these announcements. The CAARs(-1,+1) for the audit, risk, and governance committee establishment announcements are 0.97%, 0.11%, and 0.73%, respectively. Once again, none of these CAARs are statistically significant. As the event window extends to ten and twenty days surrounding these announcements, the direction of the market reaction becomes negative for some of the committees. However, none of the CAARs are statistically significant.

Based on the findings presented in Table 1, one cannot argue that markets value the existence of various committees of boards, even though some positive market reaction in the most immediate days surrounding the establishment of these committees for the first time is observed.

Our findings are robust to different expected return generating model specifications as can be observed in Appendix 1.

Table 1: Board Committee Establishments

	CAAR (0)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Audit Committee	0.421%	16	0.66	0.89	0.00
Risk Committee	0.113%	111	0.38	1.16	-0.28
Governance Committee	0.464%	43	1.13	1.25	-0.45
	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Audit Committee	0.976%	16	1.61	0.89	1.00
Risk Committee	0.112%	111	0.26	0.96	-0.66
Governance Committee	0.734%	43	1.30	1.03	0.45
	CAAR (-5,+5)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Audit Committee	0.618%	16	0.57	0.12	0.50
Risk Committee	-0.063%	111	-0.06	0.32	-0.66
Governance Committee	-0.279%	43	-0.34	-0.41	-1.06
	CAAR (-10,+10)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Audit Committee	0.682%	16	0.50	0.35	0.50
Risk Committee	-1.337%	111	-1.05	-0.74	-1.80
Governance Committee	0.777%	43	0.60	0.66	0.15

4 Factor Model is employed to estimate expected returns for stocks. The return for the XTUM (the index that includes all the stocks traded at the BIST) is employed as the market return. The sample includes all the firms traded at the BIST.

3.2. Committee Appointments

Next, we investigate the market reaction surrounding the appointments of directors to various board committees based on the underlying reason for the appointments. The findings are presented in Table 2, Table 3 and Table 4. Table 2 shows that markets react negatively to director appointments to audit committees, if the appointments take place as a result of the PCG regulations. These are the regulations imposing that all members of audit committees are independent directors and therefore firms had to replace executive directors serving on audit committees with independent directors. Even though the CAARs in all the event windows are negative, they are statistically insignificant, except for the case of CAAR(-5,+5).

On the other hand, the results in Table 2 also suggest that markets appear to react positively to the appointments of directors to audit committees, when directors are appointed to these committees as a result of the voluntary establishment of the committee for the first time by companies.

Yet, the CAARs do not appear to be statistically significant, except in the case of CAAR(-1,+1) for which different significance tests provide contradicting significance levels. These findings should not be surprising based on the results presented in Table 1 that investors in Turkish capital markets do not value the establishment of committees in boards.

Lastly, the findings in Table 2 suggest that markets react positively to audit committee director appointments in the most immediate announcement days in the case that the director is appointed to replace a member that has left the committee. In the longer event windows, the CAARs become negative. However, none of the CAARs are statistically significant.

Next we present our findings regarding the market reaction to the announcements of member appointments to risk committees based on the underlying reasons in Table 3. What is observed in the Table is that the CAARs for these announcements based on various underlying reasons are mixed in terms of the direction of the reaction, for various event windows. However, none of the CAARs are statistically significant at 95% level. These figures suggest that markets do not value the appointments of directors to risk committees irrelevant of the underlying reason for the appointments, whether they are results of the PCG regulations, first time committee establishments or replacements of previous directors.

Table 2: Audit Committee Appointments and Causes

	CAAR (0)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation	-0.092%	40	-0.57	-0.97	-0.31
First Time Committee Establishment	0.498%	30	1.07	1.38	0.36
Previous One Left	0.418%	42	0.88	0.47	0.92
	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation	-0.444%	40	-1.42	-1.58	-1.89
First Time Committee Establishment	1.089%	30	2.46	1.39	1.82
Previous One Left	0.063%	42	0.12	-0.53	-0.30
	CAAR (-5,+5)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation	-2.506%	40	-3.13	-3.34	-3.16
First Time Committee Establishment	0.983%	30	1.31	0.55	1.09
Previous One Left	-2.030%	42	-0.93	-1.05	-0.30
	CAAR (-10,+10)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation	-0.691%	40	-0.68	-1.12	0.00
First Time Committee Establishment	0.706%	30	0.70	0.48	0.36
Previous One Left	-3.255%	42	-1.26	-1.34	-1.23

4 Factor Model is employed to estimate expected returns for stocks. The return for the XTUM (the index that includes all the stocks traded at the BIST) is employed as the market return. The sample includes all the firms traded at the BIST.

Table 3: Risk Committee Appointments and Causes

		CAAR (0)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation		-2.095%	8	-1.07	-0.44	-0.70
First Time Committee Establishment		0.078%	265	0.41	1.61	-0.55
Previous One Left		-0.062%	27	-0.13	-0.19	0.96

		CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation		-0.848%	8	-0.80	0.14	0.00
First Time Committee Establishment		0.131%	265	0.44	1.65	-0.67
Previous One Left		0.269%	27	0.49	0.29	0.96

		CAAR (-5,+5)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation		-0.074%	8	-0.05	0.39	-1.41
First Time Committee Establishment		-0.112%	265	-0.19	0.49	-0.30
Previous One Left		2.124%	27	1.65	2.29	1.73

		CAAR (-10,+10)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation		1.401%	8	1.84	1.73	2.12
First Time Committee Establishment		-1.543%	265	-1.90	-1.21	-3.25
Previous One Left		2.353%	27	1.26	1.88	0.96

4 Factor Model is employed to estimate expected returns for stocks. The return for the XTUM (the index that includes all the stocks traded at the BIST) is employed as the market return. The sample includes all the firms traded at the BIST.

Lastly, we present our findings regarding the market reaction to the announcements of director appointments to governance committees. The results are presented in Table 4. We observe parallel findings to those in Table 2 and Table 3.

Once again, the CAARs for various underlying appointment reasons are mixed in terms of the direction of the reaction for various event windows, and they are statistically insignificant except for CAAR(-5,+5) for director appointments as a result of the PCG regulations.

Table 4: Governance Committee Appointments and Causes

	CAAR (0)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation	0.297%	22	1.04	0.95	0.00
First Time Committee Establishment	0.456%	98	1.74	1.80	-1.01
Previous One Left	-0.255%	44	-0.68	-0.75	-0.60
	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation	-0.316%	22	-0.87	-0.46	-0.42
First Time Committee Establishment	0.578%	98	1.60	0.98	0.40
Previous One Left	-0.724%	44	-1.84	-1.72	-1.20
	CAAR (-5,+5)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation	-3.128%	22	-3.12	-2.77	-3.41
First Time Committee Establishment	0.221%	98	0.40	0.24	-0.80
Previous One Left	-0.477%	44	-0.27	-0.21	0.30
	CAAR (-10,+10)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
PCG Regulation	0.069%	22	0.06	0.31	0.42
First Time Committee Establishment	1.049%	98	1.20	1.18	-0.20
Previous One Left	-1.252%	44	-0.61	-0.48	-0.30

4 Factor Model is employed to estimate expected returns for stocks. The return for the XTUM (the index that includes all the stocks traded at the BIST) is employed as the market return. The sample includes all the firms traded at the BIST.

Based on the overall evidence presented in Table 2, Table 3 and Table 4, one cannot suggest that investors in Turkish capital markets value the appointments of directors to various committees of boards. Our findings are robust to different expected return generating model specifications as can be observed in Appendix 1.

3.3. Committee Member Expertise

Another issues we investigate is the market reaction to director appointments to (departures from) various committees of boards based on the professional expertise of directors. As discussed earlier, the professional expertise of committee members would be an important determinant of the effectiveness of committee functioning.

In this section, we define a director as an expert if she is either a financial expert, an accounting expert, a lawyer or an academician. A director with none of these professional backgrounds is defined as a non-expert director. A detailed discussion of benefits and costs associated with the existence of these professional on corporate boards can be found in Arioglu (2014).

Our findings are presented in Table 5, Table 6 and Table 7. Table 5 shows that the market reaction to the announcements of appointments of expert directors to audit committee is positive. On the other hand, market reaction to the departures of these expert directors is negative in all the event windows, except in the three days surrounding the departures. Yet, none of these CAARs are statistically significant. However, when we compare the CAARs surrounding expert director appointments to CAARs surrounding non-expert director appointments, we observe that in the three, ten and twenty days surrounding the announcements of appointments, the CAARs are statistically significantly higher for expert director appointment announcements. Yet, we do not observe a similar pattern for expert director departures and non-expert director departures.

Table 5: Audit Committee Member Changes: Expertise

	CAAR (0)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	0.120%	62	0.41	0.46	1.27
Expert Departure	-0.225%	28	-0.32	-0.79	0.37
Non-Expert Appointment	0.362%	44	0.89	0.79	-0.30
Non-Expert Departure	-0.496%	14	-0.53	-0.22	0.53
	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	***0.562%	62	1.48	1.04	2.03
Expert Departure	0.363%	28	0.52	0.20	1.13
Non-Expert Appointment	-0.656%	44	-1.48	-2.35	-2.71
Non-Expert Departure	-1.511%	14	-1.19	-1.21	-0.53
	CAAR (-5,+5)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	***0.818%	62	0.83	0.53	0.50
Expert Departure	-3.041%	28	-1.43	-1.27	-1.51
Non-Expert Appointment	-4.139%	44	-2.28	-2.59	-2.11
Non-Expert Departure	-5.061%	14	-1.17	-1.29	0.00
	CAAR (-10,+10)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	**0.714%	62	0.63	0.33	-0.25
Expert Departure	-5.570%	28	-1.73	-1.64	-2.26
Non-Expert Appointment	-3.555%	44	-1.54	-1.67	-0.60
Non-Expert Departure	-4.872%	14	-0.93	-0.91	-0.53

4 Factor Model is employed to estimate expected returns for stocks. The return for the XTUM (the index that includes all the stocks traded at the BIST) is employed as the market return. The sample includes all the firms traded at the BIST. The CAARs are compared for directors that are considered experts and that are not. The significance levels based on Wilcoxon signed-rank tests are reported. *, **, and *** present significance at 10%, 5%, and 1% levels.

Next, in Table 6, we present the findings regarding the market reaction to the appointments and departures of expert and non-expert directors for risk committees. The Table presents mixed results in terms of the signs of the market reactions. The investors in Turkish capital markets do not appear to react to the appointments or departures of expert or non-expert directors for risk committees. None of the CAARs surrounding the announcements of these events are statistically significant. In addition, the comparison of CAARs between expert and non-expert director appointments and departures do not yield any significant difference for these groups at 95% level. Based on these findings, one can argue that investors in Turkish capital markets value the professional expertise of directors in risk committees of public companies.

Lastly, we present market reaction surrounding the appointments and departures of expert end non-expert directors for governance committees in Table 7. The signs of the CAARs for expert director appointments to governance committees are mixed for different event windows, whereas it is negative for expert director departures from these committees. However, the CAARs for neither expert appointments nor expert departures are statistically significant. When we compare the CAARs for expert director appointments and departures, with the appointments and departures of non-expert directors, we do not observe statistically different significances at 95% levels.

Table 6: Risk Committee Member Changes: Expertise

	CAAR (0)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	-0.048%	166	-0.21	0.49	-0.93
Expert Departure	-0.406%	27	-0.93	-0.48	0.57
Non-Expert Appointment	0.122%	108	0.34	1.63	0.96
Non-Expert Departure	0.555%	9	1.10	1.38	1.00
	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	0.123%	166	0.40	1.37	0.15
Expert Departure	0.251%	27	0.54	0.25	0.96
Non-Expert Appointment	0.246%	108	0.42	1.27	0.00
Non-Expert Departure	-0.136%	9	-0.22	0.31	-0.33
	CAAR (-5,+5)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	0.100%	166	0.16	0.68	0.46
Expert Departure	0.196%	27	0.15	0.36	-0.96
Non-Expert Appointment	-0.146%	108	-0.13	0.58	-0.19
Non-Expert Departure	-2.687%	9	-1.42	-1.07	-0.33
	CAAR (-10,+10)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	-0.472%	166	-0.54	-0.60	-2.17
Expert Departure	*2.152%	27	0.76	0.82	0.57
Non-Expert Appointment	-1.698%	108	-1.10	-0.35	-0.96
Non-Expert Departure	-3.775%	9	-1.18	-0.79	-1.00

4 Factor Model is employed to estimate expected returns for stocks. The return for the XTUM (the index that includes all the stocks traded at the BIST) is employed as the market return. The sample includes all the firms traded at the BIST. The CAARs are compared for directors that are considered experts and that are not. The significance levels based on Wilcoxon signed-rank tests are reported. *, **, and *** present significance at 10%, 5%, and 1% levels.

Table 7: Governance Committee Member Changes: Expertise

	CAAR (0)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	0.102%	76	0.37	0.77	-1.14
Expert Departure	*-0.234%	30	-0.52	-0.01	1.09
Non-Expert Appointment	0.288%	86	1.02	1.00	-0.64
Non-Expert Departure	-0.995%	22	-1.92	-1.73	-1.70
	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	-0.087%	76	-0.22	-0.10	0.00
Expert Departure	-0.185%	30	-0.41	-0.31	-0.36
Non-Expert Appointment	0.195%	86	0.55	-0.11	-0.64
Non-Expert Departure	-1.476%	22	-1.67	-1.19	-0.85
	CAAR (-5,+5)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	-0.188%	76	-0.02	0.16	-0.91
Expert Departure	-0.531%	30	-0.52	-0.75	-1.46
Non-Expert Appointment	-0.644%	86	-0.71	-0.76	-1.07
Non-Expert Departure	-0.389%	22	-1.43	-1.28	-1.27
	CAAR (-10,+10)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment	0.427%	76	0.42	0.83	0.00
Expert Departure	*-0.646%	30	-0.37	-0.10	0.00
Non-Expert Appointment	0.793%	86	0.64	0.73	0.64
Non-Expert Departure	-4.859%	22	-1.51	-1.31	-1.70

4 Factor Model is employed to estimate expected returns for stocks. The return for the XTUM (the index that includes all the stocks traded at the BIST) is employed as the market return. The sample includes all the firms traded at the BIST. The CAARs are compared for directors that are considered experts and that are not. The significance levels based on Wilcoxon signed-rank tests are reported. *, **, and *** present significance at 10%, 5%, and 1% levels.

Based on the overall evidence presented in the three Tables in this section, we cannot argue that investors in Turkish capital markets value the existence of expert director on various committees of boards. However, as the findings in Table 5 suggest, the markets react significantly higher to the announcements of appointments of directors with professional expertise to audit committees of boards, compared to the appointments or directors with no professional expertise. Our findings are robust to different expected return generating model specifications as can be observed in Appendix 2.

4. CONCLUSIONS

As it is the case with other corporate governance mechanisms, committees of boards of directors have received attention in Turkish capital markets and finance literature investigating Turkish capital markets in the recent years (ownership structure is an exception). These committees are very important corporate governance mechanisms that could help firms improve the effectiveness of monitoring provided by boards of directors. Yet, research on these committees is very limited -mostly with a focus on audit committees- and does not consider whether investors in capital markets value the existence of these committees and the characteristics of members of these committees. In this study, we investigate the market reaction surrounding the establishments of committees of boards and director appointments to these committees based on the underlying reasons for the appointments in public firms quoted at the Borsa Istanbul. In addition, we investigate whether the market reaction varies based on the professional expertise of committee members.

Our findings suggest that markets do not appear to value the existence of various committees of boards, even though some positive market reaction in the most immediate days surrounding the establishment of these committees is observed. These results are surprising since they indicate that investors in Turkish capital markets do not value the existence of board committees, which could be expected to improve the effectiveness of monitoring provided by members of boards of directors, leading to increased firm value.

In addition, our findings suggest that investors in Turkish capital markets do not value the appointments of new directors to various committees of boards, no matter what the underlying reason is. It is hard to argue that one could expect to observe positive or negative market reaction surrounding the appointments of directors to board committees when the appointment takes place as a replacement of a previous committee member. Yet, if the PCG regulations are aimed at improving the level of corporate governance applications and we could expect the voluntary efforts of firms to improve the quality of their corporate governance applications to signal to markets that the rights of minority shareholders would be protected better, we could expect to observe positive market reaction surrounding the announcements of director appointments to board committees as a result of the PCG regulations and voluntary first time committee establishments. However, we do not observe such market reaction.

Lastly, our findings suggest that investors in Turkish capital markets do not value the existence of expert directors on various committees of boards. However, markets react significantly higher to the appointments of directors with professional expertise to audit committees of boards, compared to the appointments or directors with no professional expertise. This observation is in accordance with the fact that the majority of research on various committees of boards of public firms in Turkey focuses on audit committees, rather than risk or governance committees. After all, public companies have had internal audit mechanisms such as internal controllers and internal auditors that have been replaced with audit committees. However, they did not use to have specific mechanisms to control the riskiness of various aspects of companies' operations or any mechanisms to improve the corporate governance applications until recently.

Overall, the evidence we provide in this study suggests that investors in Turkish capital markets do not value committees of boards highly, as opposed to the investors in more developed markets. This could potentially be explained by the fact that corporate governance is a relatively new concept in Turkish capital markets. Authorities in more developed countries have imposed various requirements on public firms to improve the quality of corporate governance practices in order to protect the rights of minority shareholders over a decade ago. However, such requirements are being imposed on Turkish public companies only in the most recent year following the effectiveness of the Principles of Corporate Governance.

In addition, these findings could be an outcome of the possibility that investors do not believe that corporate governance does actually matter in Turkish capital markets and legal requirements are met by companies on paper even though large controlling groups and families do not act in the best interest of small investors. No matter what the underlying reason is, more research should be conducted on corporate governance, which could help policymakers set legal requirements that would work effectively and help protect the benefits of small investors, if Turkey wants to provide such an investment environment that funds can be attracted to Turkish capital markets so that the country's economy can develop in a sound and healthy manner.

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Appendix 1: Robustness Tests I – Committee Establishment and Member Appointment

PANEL A: 3 Factor Model with XTUM as Market Return					
	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Audit Committee Establishment	0.893%	16	1.24	0.83	0.50
Risk Committee Establishment	0.047%	111	0.11	0.78	-1.04
Governance Committee Establishment	0.618%	43	1.06	0.89	0.15
PCG Regulation – (Audit C.)	-0.401%	40	-1.29	-1.40	-1.89
First Time Comm. Establish. – (Audit C.)	0.998%	30	1.89	1.30	1.09
Previous One Left – (Audit C.)	0.061%	42	0.11	-0.56	-0.61
PCG Regulation – (Risk C.)	-1.083%	8	-0.94	0.01	0.00
First Time Comm. Establish. – (Risk C.)	0.079%	265	0.26	1.43	-1.16
Previous One Left – (Risk C.)	0.097%	27	0.18	0.09	0.96
PCG Regulation – (Govern C.)	-0.270%	22	-0.76	-0.35	-0.42
First Time Comm. Establish. – (Govern C.)	0.444%	98	1.18	0.74	-0.40
Previous One Left – (Govern C.)	-0.753%	44	-1.89	-1.81	-0.90

PANEL B: 4 Factor Model with X100 as Market Return					
	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Audit Committee Establishment	1.007%	16	1.64	0.95	1.00
Risk Committee Establishment	0.123%	111	0.28	0.99	-0.66
Governance Committee Establishment	0.761%	43	1.34	1.08	0.45
PCG Regulation – (Audit C.)	-0.446%	40	-1.40	-1.60	-1.89
First Time Comm. Establish. – (Audit C.)	1.121%	30	2.52	1.48	1.82
Previous One Left – (Audit C.)	0.039%	42	0.07	-0.58	-0.30
PCG Regulation – (Risk C.)	-0.847%	8	-0.83	0.10	0.00
First Time Comm. Establish. – (Risk C.)	0.142%	265	0.47	1.70	-0.67
Previous One Left – (Risk C.)	0.272%	27	0.50	0.31	1.34
PCG Regulation – (Govern C.)	-0.350%	22	-0.98	-0.58	-0.42
First Time Comm. Establish. – (Govern C.)	0.602%	98	1.65	1.04	0.40
Previous One Left – (Govern C.)	-0.734%	44	-1.85	-1.73	-0.90

Panel A presents findings based on the 3 Factor Model as the market return and the return of the XTUM index as the market return. Panel B presents findings based on the 4 Factor Model as the market model and the return of the X100 index as the market return. The sample includes all the firms traded at the BIST.

Appendix 2: Robustness Tests II: Committee Member Expertise

PANEL A: 3 Factor Model with XTUM as Market Return

	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment – (Audit C.)	**0.550%**	62	1.38	1.00	1.52
Expert Departure – (Audit C.)	0.428%	28	0.59	0.22	1.13
Non-Expert Appointment – (Audit C.)	-0.622%	44	-1.33	-2.19	-2.71
Non-Expert Departure – (Audit C.)	-1.789%	14	-1.37	-1.41	-0.53
Expert Appointment – (Risk C.)	0.010%	166	0.03	1.00	-0.31
Expert Departure – (Risk C.)	0.178%	27	0.40	0.12	1.34
Non-Expert Appointment – (Risk C.)	0.219%	108	0.37	1.2	-0.19
Non-Expert Departure – (Risk C.)	-0.387%	9	-0.62	0.13	-0.33
Expert Appointment – (Govern. C.)	-0.151%	76	-0.38	-0.21	-0.22
Expert Departure – (Govern. C.)	-0.290%	30	-0.63	-0.48	0.73
Non-Expert Appointment – (Govern. C.)	0.129%	86	0.35	-0.26	-0.86
Non-Expert Departure – (Govern. C.)	-1.639%	22	-1.80	-1.32	-0.85

PANEL B: 4 Factor Model with X100 as Market Return

	CAAR (-1,+1)	Number of Events	Cross-Sect. t-test	BMP t-test	Sign Test
Expert Appointment – (Audit C.)	**0.568%**	62	1.49	1.04	2.03
Expert Departure – (Audit C.)	0.324%	28	0.47	0.15	1.13
Non-Expert Appointment – (Audit C.)	-0.659%	44	-1.49	-2.35	-2.71
Non-Expert Departure – (Audit C.)	-1.530%	14	-1.21	-1.24	-0.53
Expert Appointment – (Risk C.)	0.135%	166	0.45	1.43	0.31
Expert Departure – (Risk C.)	0.238%	27	0.51	0.23	0.96
Non-Expert Appointment – (Risk C.)	0.256%	108	0.44	1.30	0.00
Non-Expert Departure – (Risk C.)	-0.149%	9	-0.23	0.29	-0.33
Expert Appointment – (Govern. C.)	-0.081%	76	-0.21	-0.09	0.00
Expert Departure – (Govern. C.)	-0.199%	30	-0.44	-0.33	-0.36
Non-Expert Appointment – (Govern. C.)	0.202%	86	0.56	-0.09	-0.43
Non-Expert Departure – (Govern. C.)	-1.493%	22	-1.68	-1.21	-0.85

Panel A presents findings based on the 3 Factor Model as the market return and the return of the XTUM index as the market return. Panel B presents findings based on the 4 Factor Model as the market model and the return of the X100 index as the market return. The sample includes all the firms traded at the BIST. The CAARs are compared for director subgroups. The significance levels based on Wilcoxon signed-rank tests are reported. *, **, and *** present significance at 10%, 5%, and 1% levels.

MARKET DISCIPLINE IN BANKING: THE JORDANIAN EXPERIENCE

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Keywords:

Jordan,
Bank Discipline,
Risk,
Deposits Growth,
Interest Expense,
Seemingly-Unrelated Regression.

Jel Classification:

G20, G21, N25

ABSTRACT

This paper applies the issue of bank discipline to the Jordanian banking sector. Based on a total of 13 banks, the time period 2001-2012, and the Seemingly-Unrelated Regression (SUR), the results, on average, show that Jordanian depositors demand higher interest rate from banks with higher levels of risk. In addition, depositors seem to withdraw their depositors from banks with increasing levels of risk. These results are encouraging. Indeed, they indicate that depositors' disciplining behavior complements the efforts of the Central Bank of Jordan (CBJ).

1. INTRODUCTION

Efficient financial intermediaries (banks) can play a positive role in the economic development of nations. Indeed, banks promote a more efficient mobilization of savings, spread risk, and provide liquidity. In addition, banks intermediate between suppliers of funds and those that demand them. In other words, by providing these, and other, financial services, banks can contribute to a more efficient allocation of scarce economic resources (Levine, 2004). Relative to the services provided by banks, it is known that the cost of bank failures can be high. For example, this cost varies between 3 percent to more than 55 percent of Gross Domestic Product (Caprio and Klingebiel, 2003). In a more recent paper (Laeven and Valencia, 2013), the costs of major banking crises in advanced economies are estimated at 4.2 percent of GDP (bail-out cost), 23.6 percent of GDP (public debt increase), and 32.4 percent of GDP (cumulative loss in output). Relative to any standard, these costs are extremely high.

To avoid banking crises, or to reduce the risk of bank bankruptcy cases, bank regulators always look for better and more efficient means to regulate the risk-taking behavior of banks. Indeed, this is why, for example, Basel I which came into effect in 1992, was replaced by Basel II (2004). Notwithstanding the fact that there are differences in these two accords, Basel II added a new dimension (Pillar 3). This pillar relies on the disclosure of information and market discipline.

In other words, it encourages private participants (i.e. shareholders, and depositors) to discipline banks by, for example, demanding higher interest rates on their deposits from riskier banks, or withdrawing their deposits from such banks altogether. The issue of market discipline is also important for other reasons. For example, it may improve the efficiency of banks by forcing less efficient banks to become either more efficient, or exit the industry altogether (Berger, 1991). Finally, it goes without saying that the 2008 global financial crisis, and its implications, makes the issues of bank regulation and market discipline all the more compelling.

Relative to the above, it would be interesting to examine the Jordanian banking sector in terms of bank discipline. This paper seeks to answer two questions. First, do depositors require higher (lower) interest rates on their deposits from riskier (less risky) Jordanian banks? Second, do depositors withdraw their funds from riskier Jordanian banks and deposit them in less risky banks?

The paper is thought to be interesting and important for a variety of reasons. First, the Jordanian banking sector has witnessed a bank bankruptcy case. Back in 1989, the third largest bank in the country (Petra Bank) went bankrupt. Then, the government had no choice but to pay about $200 million to the bank's depositors. Second, the size of the banking system in Jordan is large. For example, during the last four years (2011-2014), the mean annual bank assets to GDP ratio was equal to 180 percent. In addition, the mean annual bank credit to the private sector to GDP ratio was equal to 70 percent. This proportion (70 percent) is higher than in, for example, Egypt (30 percent), Qatar (40 percent), and Saudi Arabia (37 percent). It is even higher than that which exists in Turkey (57 percent) and Indonesia (33 percent). The rest of the paper is organized as follows. The following section reviews the literature that examines bank discipline. In section 3, we present and discuss the data, methodology, and empirical results. The final section summarizes and concludes the paper.

2. MARKET DISCIPLINE: LITERATURE REVIEW

In all developed and developing economies banks are supervised and regulated by their respective central banks. As one might expect, the objective of this control or supervision is to oversee banks' liquidity and bankruptcy risk. To maintain and promote the existence of safe, sound and efficient banking systems, it makes sense to have regulatory bodies around (Hall and Miles, 1991). In addition, the fact that in the first place banks are supposed to resolve the asymmetry of information problem between borrowers and lenders, and hence promote more efficient allocation of resources, the case for their regulation is simply a valid one (Fama, 1980). Market discipline, as a complementary tool to the regulatory efforts of central banks, relies on, for example, the behavior of depositors (market participants), and if they require higher interest rates form riskier banks, one can deduce that private sector agents do regulate the risk-taking behavior of banks. Indeed, in such cases, their behavior complements the efforts of central bankers.

Similarly, if depositors take into account the risk-taking behavior of banks before they decide where to deposit their funds, one can also deduce that the market does discipline banks.

Market discipline has generated numerous empirical papers. For example, some researchers choose to examine the relationship between subordinated debt yields and bank risk levels. The assumption behind this effort is that if secondary-market risk premiums on subordinated notes are correlated with bank risk levels, then a case can be made for the existence of market discipline. This method has been used by several researchers including Morgan and Stiroh (2011), Sironi (2012), Krishnan et al. (2013), Hwang (2013), Shin (2014), and Zhang et al. (2014).

In addition, some researchers examine the impact of bank risk measures on the growth rate in deposits or on banks' interest expense. Imai (2008), Ioannidou and de Dreu (2010), Barajas and Catalan (2011), Murata and Hori (2011), Cubillas et al. (2012), Karas et al. (2012), Thiratanapong (2012), Arnold et al. (2015), and Berger and Turk-Ariss (2015) are some of those researchers that used this methodology. For example, based on a total of 2038 banks that operate in the USA, 21 European countries, and in Switzerland, the sub-periods 1997-2007 and 2008-2009, and using deposit growth as the dependent variable, it is stated that "we find significant depositor discipline prior to the crisis in both the US and EU… We also find that depositor discipline mostly decreased during the crisis, except for the case of small US banks" (Berger and Turk-Ariss, 2015).

Relative to the above-mentioned papers which involve the issue of bank discipline, there have been a limited number of papers that examine bank discipline of Islamic banks. For example, based on a total of four Islamic banks in Turkey, and the time period January 2001 to January 2013, it is stated that "depositors adjust the level of their funds in Islamic banks based on the banks' capital adequacy; i.e., better-capitalized banks experienced higher deposit growth rates. Risk factors are, however, not significant in demanding higher returns on deposits" (Aysan et al., 2013).

On average, and based on country-level or cross-country banking data, the above-mentioned, and other researchers, estimate a version of both or one of the following models:

$$Deposit_{i,t} = \alpha_1 + \beta_1 \, BankRisk_{i,t} + \beta_2 \, Control_{i,t} + \beta_3 Macro_t + \varepsilon_{i,t} \qquad (1)$$

$$IntRate_{i,t} = \alpha_2 + \beta_1 \, BankRisk_{i,t} + \beta_2 \, Control_{i,t} + \beta_3 \, Macro_t + \eta_{i,t} \qquad (2)$$

where $i = 1, …, N$ and $t = 1, …., T$, and N is the number of banks and T is the number of observations per bank.

The dependent variables is either $Deposit_{i,t}$ or $IntRate_{i,t}$. Deposit is the growth rate of deposits. IntRate is total paid interest on deposits to total deposits.

The explanatory variables include BankRisk, Control, and Macro. Bank risk measures are the ratio of shareholders equity to total assets (capital adequacy), total loans to total assets (asset quality), non-interest expenses to total assets (management quality), return on assets (earnings capability), and cash to total assets (bank liquidity).

Control is a vector of control variables including bank size and this is usually measured by the natural logarithm of total assets). Finally, Macro refers to the macroeconomic environment like the real GDP growth rate and inflation rate.

Based on the estimated results, researchers make a judgment about whether or not bank discipline exists. When deposits growth (interest on deposits to total deposits) is used as the dependent variable, if the signs of the coefficients of capital adequacy, asset quality, management quality, earnings capability, bank liquidity are, on average, negative (positive) and statistically significant, this implies that market discipline does exist.

3. THE DATA, METHODOLOGY AND RESULTS

The total number of Jordanian banks is equal to 15. Two of these banks operate under the Islamic Sharia Law. The fact that the lending principles of the Islamic banks are different, we rely on the remaining 13 banks and the time period 2001-2012 to examine the issue of banking discipline in the Jordanian banking sector. In other words, the statistical analysis is based on a balanced panel with a total of 156 observations.

To examine whether or not depositors exercise disciplining behaviour on banks, we regress the change in deposits (quantity variable) on a vector of risk measures. In addition, we regress interest expense (price variable) on the same set of bank risk measures. In other words, we estimate the two models outlined below:

$$\Delta Deposits_{i,t} = \alpha_1 + \beta_1 BankRisk_{i,t} + \sigma_1 Control_{i,t} + + \sigma_2 Macro_t + \varepsilon_{i,t} \qquad (3)$$

$$DepositRate_{i,t} = \alpha_2 + \beta_2 BankRisk_{i,t} + \sigma_2 Control_{i,t} + \sigma_2 Macro_t + \eta_{i,t} \qquad (4)$$

where $i = 1, …, N$ and $t = 1, …., T$, and N is the number of banks and T is the number of observations per bank.

The dependent variables $\Delta Deposits_{i,t}$ and $DepositRate_{i,t}$ are the growth rate of deposits in bank i (the first difference of the log of bank deposits) at time t and total interest expenses paid on deposits to total deposits respectively.

The independent variables include bank-level risk measures, control variable, and macroeconomic measures.

The bank-level risk measures include the ratio of shareholders equity to total assets (capital adequacy), total loans to total assets (asset quality), ratio of non-interest expenses to total assets (management quality), ratio of return on assets (earnings capability), and the ratio of cash to total assets (bank liquidity).

The control variable is bank size (natural logarithm of total assets). Finally, the macro variables include the inflation rate and real GDP growth rate.

As mentioned above, a negative estimate for β_1 and a positive estimate for β_2 indicate the existence of market discipline.

The independent variables enter the models in their lagged values to account for the fact that the financial statements of all banks become available to the public with a certain time delay, and to reduce any potential endogeneity problems. Finally, the estimation method that we use is the Period Seemingly Unrelated Regression (SUR) – Pooled Estimated Generalized Least Squares (EGLS). This method corrects for period serial correlation and period heteroskedasticity between the residuals for a given cross-section.

In Tables 1 and 2, we report some descriptive statistics about all the dependent and independent variables. A look at Table 1 reveals the following comments.

First, the mean of total interest expenses to deposits is equal to 3.4 percent. In addition, this variable had a maximum value of 7.8 percent and a minimum value of 1.1 percent. The mean annual change in deposits, on the other hand, reflects a much larger variation. The maximum and minimum values of this measure are equal to 84 percent and -54 percent respectively. Indeed, the difference between these two variables in terms of respective standard deviations reveals this. Second, asset quality (total loans to total assets) reflects some difference between the 13 banks. Again, the maximum and minimum values of this variable are equal to 68 percent and 19 percent respectively. Naturally, this reflects the conservative nature of some banks in their lending policy. Finally, and as expected, the size of banks reflects the largest variation. As one might expect, the presence of banks like the Arab Bank and the Housing Bank are the reason behind this large variation.

Table 1: **Overall Descriptive Statistics**

Variable	Mean	Median	Maximum	Minimum	Std.Dev.
Deposit rate	0.034	0.031	0.078	0.011	0.014
ΔDeposits	0.109	0.092	0.840	-0.544	0.183
Capital Adequacy	0.079	0.062	0.342	0.006	0.054
Asset Quality	0.437	0.435	0.685	0.192	0.091
Management Quality	0.023	0.024	0.028	0.016	0.004
Earnings Capability	0.018	0.019	0.061	-0.041	0.012
Bank Liquidity	0.329	0.325	0.591	0.138	0.097
Bank Size	20.789	20.616	23.898	17.793	1.214
Growth	0.057	0.056	0.086	0.023	0.023
Inflation	0.042	0.040	0.139	-0.007	0.035

The reported figures in Table 2 reveal that the growth rate in deposits was relatively high in 2004 and 2005. More likely than not, the reason for these figures is the increase in the remittances of Jordanians working in the Gulf countries during this period. Similarly, the annual mean of total interest expenses to deposits has come down from 5.2 percent in 2001 to 2.9 percent by the 2012. Again, the reason for this decrease is the decrease in the interest rate on the US dollar. In other words, the fact that the Jordanian currency is pegged to the dollar, the interest rate on the Dinar reflects the interest rate on the dollar.

Table 2: **The Dependent Variables: Annual Means**

Year	Δ Deposits	Deposit Rate
2001	0.063	0.052
2002	0.025	0.036
2003	-0.033	0.027
2004	0.236	0.019
2005	0.308	0.024
2006	0.158	0.038
2007	0.157	0.047
2008	0.085	0.043
2009	0.099	0.036
2010	0.118	0.026
2011	0.057	0.025
2012	0.040	0.029

We report in Tables 3 and 4 the estimation results of the main models. Again, based on the reported results, a number of observations can be made. First, the coefficient of capital adequacy is positive and significant in both the interest expense model and deposit growth models. This implies that depositors demand higher interest from better capitalized banks and clearly this contradicts market discipline. On the other hand, the fact that better capitalized banks experience higher deposits growth, this implies bank discipline. On average, these observations imply the existence of market discipline. The reason for is peculiar. Whilst nobody really knows how many depositors and the size of their deposits, many bank customers refuse to receive interest on their deposits. This probably explains why the impact of capital adequacy on interest expense is positive. In other words, it might be that less capitalized banks' customers are those who do not accept interest on their accounts.

Table 3: Interest Expense

Variable	Coefficient	Coefficient
Capital Adequacy	0.087 (14.510*)	0.080 (12.274*)
Asset Quality	0.073 (34.848*)	0.066 (26.429*)
Management Quality	-0.634 (-20.360*)	-0.566 (-16.446*)
Earnings Capability	-0.240 (-10.995*)	-0.286 (-11.647*)
Bank Liquidity	0.046 (20.221*)	0.035 (14.531*)
Bank Size	-0.003 (-1.941)	-0.005 (-3.103)
Growth	-----	0.097 (5.630*)
Inflation	-----	0.005 (1.126)
Adjusted R^2	0.812	0.869
F-statistic	256.544*	783.787
D-W Statistic	1.921	1.904

Table 4: Deposit Growth

Variable	Coefficient	Coefficient
Capital Adequacy	0.127 (14.021*)	0.085 (8.710*)
Asset Quality	-0.100 (-15.340*)	-0.077 (-4.587*)
Management Quality	-0.655 (-5.073*)	-0.443 (-2.065*)
Earnings Capability	0.660 (14.275*)	0.228 (13.369*)
Bank Liquidity	0.014 (1.908**)	0.098 (4.711*)
Bank Size	-0.001 (-1.941)	-0.003 (-2.113)
Growth	-----	0.098 (6.253*)
Inflation	-----	-0.655 (-6.325)
Adjusted R^2	0.845	0.789
F-statistic	536.544*	992.952
D-W Statistic	2.022	1.967

Second, the coefficient of asset quality is positive and significant in the interest expense model, and negative and significant in the deposit growth model. Clearly, this is a sign of market discipline. Indeed, this implies that depositors are not prepared to supply more funds to banks that lend more. However, those banks that lend more, must incur greater interest expenses. Third, the coefficient of management quality is negative and significant in the deposit growth model. This implies that less efficient management face lower growth in their bank deposits. This observation support bank discipline. However, when we look at the impact of management on the interest expense variable, we see that its' sign is negative. In other words, it seems that less efficient banks pass on this extra expense on to their customers in the form of lower interest payments. Fourth, the impact of earnings capability on deposit growth is positive and significant. In other words, banks that achieve higher levels of accounting returns experience higher deposit growth. Again, this is a sign of bank discipline. On the other hand, the sign of this coefficient is negative in the interest expense model. Again, this is a sign of bank discipline because one must expect, if discipline is in force, the impact of superior accounting returns to be negative on interest expense. Finally, the coefficient of bank liquidity is positive and significant in the deposit growth model. This is also a sign of bank discipline because more liquid banks' risk is by definition lower, and this encourages depositors to keep their accounts. However, the positive impact of this risk measure on the interest expense model contradicts market discipline.

On average, the above-mentioned observations support the main objective of this paper. On average, there is some strong evidence that market discipline does exist in the Jordanian banking sector. Indeed, this is encouraging. Based on the same number of banks (13) and the time period 1982-2003, Omet and Fayyoumi (2004) report that market discipline is "largely non-existent in Jordan". In other words, Jordanian depositors seem to have become more sophisticated. Relative to this conclusion, it is useful to note that introducing the macroeconomic measures (inflation and real GDP growth rate) did not result in any significant change in the results.

4. CONCLUSION

It is probably accurate to state that banks play a positive role in economic growth and development. Indeed, banks promote a more efficient mobilization of savings, spread risk, and provide liquidity. Relative to these, and other, services, it is also known that the cost of bank failures is relatively high. This is why numerous empirical papers e examine various bank performance issues including market discipline. Based on the time period 2001-2012, and the seemingly-unrelated regression, we conclude, on average, that Jordanian depositors discipline Jordanian banks. This conclusion is encouraging because it indicates that Jordanian depositors complement the efforts of the central Bank of Jordan in regulating the risk-taking behaviour of Jordanian banks. Based on the results of this paper, a number of recommendations can be suggested. For example, one can include further examine the issue of market discipline in terms of the impact of the various risk measures on the banks' stock returns. Similarly, one can look at various governance measures and examine their impact of the risk-taking behaviour of Jordanian banks.

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FINANCIAL DIFFERENCES AND SIMILARITIES OF ISLAMIC BANKS: A STUDY ON QISMUT COUNTRIES

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Keywords:	ABSTRACT
	Six countries, namely Qatar, Indonesia, Saudi Arabia, Malaysia, UAE and Turkey (abbreviated as QISMUT) are considered to play an important role in the future international development of the Islamic finance. QISMUT countries have a majority Muslim population who prefers Islamic finance for their banking needs. QISMUT countries account for 38 million customers which is 67% of the global Islamic bank customer base.
	The focus of this study is to define similar (or different) international banks using the financial data collected from Islamic banks operating in QISMUT countries between 2012 and 2014. In this context, 56 Islamic banks were categorized in the light of their financial ratios for the period between 2012 and 2014 using cluster analysis. There was also an attempt to identify these clusters using multidimensional scaling analysis. Positions of QISMUT Islamic banks in the multidimensional space were defined using multidimensional scaling analysis. Results showed that Islamic banks operating in QISMUT countries are similar in terms of their financial structure.

1. INTRODUCTION

Islamic banks have been making efforts to increase their productivity and to improve their performance in order to gain sustainability as a result of the recent globalization movement (Mghaieth and Mehdi, 2014). Recent global mortgage crisis brought Islamic finance forward as an alternative in terms of investment and banking (Smola and Mirakhor, 2010). Islamic banking has become an integral part of the global finance structure particularly with its immunity to the recent banking and financial crises (Aldohni, 2015).

Islamic banking has gained momentum and acknowledgement especially in the Middle-East and Southern Asia when compared to the rest of the world (Ariff, 2014). Islamic banking is widely preferred in these regions as the Muslim population is in the majority and the Islamic rules are internalized. These regions with their concentrated Muslim population are leading the Islamic finance. QISMUT is a composition of countries which will make its mark in the future of Islamic finance and banking in both regional and global terms.

Six rapid growth markets (QISMUT countries: Qatar, Indonesia, Saudi Arabia, Malaysia, UAE and Turkey) will play an important role in the globalization of Islamic banking industry. Having a wide pool of intellectual capital and funds, these countries may well be the drivers of a growth wave in current and new markets. Two third of the 38 million Islamic bank customers in the world reside in QISMUT countries. A Compound Annual Growth Rate (CAGR) of 19.7% is expected for the total assets of Islamic banks operating in QISMUT countries between 2013 and 2018 adding up to USD $1.6 trillion (2012: USD $567 billion) (Nazim, Bellens, 2014). It is estimated that total assets of the Islamic banks in QISMUT countries reached $662 billion by 2013. Global Islamic banking assets, on the other hand, are anticipated to reach $3.4 trillion by 2018 (Lackmann, 2014).

This study aims to investigate if the QISMUT Islamic banks which are anticipated to improve their profits in a global scale in the years to come have similarities in terms of their financials. QISMUT country classification is a rather new one. Previous research involves studies performed in order to include countries in this group such as research on the Middle-Eastern (including Gulf Cooperation Council countries) countries, North African (MEAN) countries, Gulf Cooperation Council (GCC) countries, and Organization of the Islamic Conference (OIC) countries. These classifications were made mainly through taking geographic, economic, and political aspects into consideration. As a new classification and expected to become the leader of Islamic banking in the close future, do QISMUT Islamic banks show similarities with respect to their lucrativeness, growth, risks, and DuPont ratios? Establishing these similarities will have notable implications for QISMUT classification in the future. This study is significant in this context.

This study uses 15 financial variables obtained from annual financial statements and statements of receipts published by Islamic banks operating in the QISMUT countries. It was attempted to identify the similarities and discrepancies between Islamic banks using variables such as Lucrativeness, Growth, Risks, and DuPont Ratios with Cluster Analysis and Multidimensional Scaling Analysis.

2. LITERATURE REVIEW

Literature includes Cluster Analysis and Multidimensional Scaling Analysis in the identification of similarities and discrepancies between various objects. Lucotte (2015), Knotek (2014), Sorensen and Gutierrez (2006) classified the banks operating in Eurozone using a Cluster Analysis. Lucotte (2015) also used Cluster Analysis in order to be able to classify banks operating in Eurozone in the aftermath of the recent global financial crisis. Knotek (2014) tested the similarities and discrepancies between banks operating in Eurozone using a Cluster Analysis. Sorensen and Gutierrez (2006) made use of Cluster Analysis techniques in order to identify the uniformity of the banks operating in Eurozone between 1998 and 2004. In their study, Western (Germany, France, Belgium and to some extent the Netherlands, Austria and Italy) and Central European countries were clustered with Spain, Portugal, and Greece. Irish and Finnish banks were clustered in a separate group however. The study concluded that there is a convergence between them and the banks operating in Western and Central Europe. Kowal, Yeleyko, and Kharkhalis (2014) analyzed the credit operations of foreign-invested banks operating in Ukraine using a hierarchic cluster analysis. Vagizova, Lurie, and Ivasiv (2014) grouped Russian banks using Cluster Analysis.

Dardac and Boitan (2009) made use of Cluster Analysis in order to examine the profitability and risk ratio of Romanian banks between 2004 and 2006. They have found similarities between banks in terms of risk and profitability. Grzegorz and Dawid (2009) investigated 48 Polish banks classifying them into several groups using Cluster Analysis for a period between 1999 and 2005. Molinero and Cinca (2001) used Multidimensional Scaling Analysis in order to measure the financial failure of banks. Their study investigated 66 Spanish banks for financial stability using Multidimensional Scaling Analysis.

This study has differences from the previous studies on Islamic banks in terms of its scope. Literature consists of studies based on a single country and multiple countries. Most commonly, among these countries are Middle-Eastern (including Gulf Cooperation Council countries) countries, North African (MEAN) countries, Gulf Cooperation Council (GCC) countries, and Organization of the Islamic Conference (OIC) countries. The literature still lacks studies based on QISMUT countries. The reason behind this is that the QISMUT country classification is a rather new one in terms of Islamic banking. This study contributes significantly to the literature.

3. METHODOLOGY AND DATA

This study attempts to identify the financial similarities and discrepancies between Islamic banks using Cluster Analysis and Multidimensional Scaling Analysis.

Cluster analysis is a multivariate statistics method which aims to sort observations set into a limited number of groups or clusters. This kind of a sorting takes place when the observations obtained from the same group are similar while they are different from the observations obtained from other groups (Neil, 2002). Cluster Analysis is a commonly used method among non-structural multivariate analysis methods. Methodology of cluster analysis consists of algorithms which arrange a given dataset into subsets (Izenman, 2008).

Cluster analysis makes use of hierarchical and non-hierarchical clustering method in order to sort units into appropriate groups (Hand et al., 2001). Hierarchical cluster analysis is a significant statistical method used in order to identify uniform clusters. This method makes use of differences of distances between objects during the formation of clusters. Results are then shown in a hierarchical tree diagram.

However, clustering method offers fast measurements, hierarchical methods are not convenient for the analyses of larger samples (Hair, 1998). K-Means technique will be explained as it is the technique used in this study.

3.1. Non-Hierarchical Clustering (K-Means) Method

Non-hierarchical clustering analysis is a method designed to cluster units when the number of clusters is fixed to K. This method includes two widely preferred techniques. One being the K-Means technique and the other is the probability technique. K-Means is one of the most commonly used non-hierarchical clustering techniques (Lin and Chen 2006). K-Means technique involves "d" number of variables of the dataset, "x", and N number of feature vectors which are able to cluster and classify into K number of clusters (Burn and Goel, 2000). This method starts with the identification of K number of clusters. Each object in the dataset is allocated in a cluster (Rao and Srivinas, 2006).

A possible change in the results must be considered as they will depend on the K-means centers defined in the beginning. Algorithm selects a number of k-means centers in order to reach a better solution every time it runs. It attempts to find the smallest value of the objective function while running these selections (Liu and Yu, 2009).

When each $x_1, x_2, \ldots, x_n$ value is taken as observation vectors with a number of "d" variables and a point in the multidimensional N space and $a_{1n}, \ldots, a_{kn}$ value was selected as the cluster center for each group observation;

$$W_n = \frac{1}{n} \sum_{i=1}^{n} min \, |x_i - a_{jh}|^2$$

Using this formula, observations are allocated to the closest cluster. When n is the number of data and p is the quality factor in the data matrix;

$$\begin{bmatrix} x_{11} & \cdots & x_{1f} & \cdots & x_{1p} \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ x_{i1} & \cdots & x_{if} & \cdots & x_{ip} \\ \cdots & \cdots & \cdots & \cdots & \cdots \\ x_{n1} & \cdots & x_{nf} & \cdots & x_{np} \end{bmatrix}$$

Disparity Matrix

$$\begin{bmatrix} 0 & & & & \\ d(2,1) & 0 & & & \\ d(3,1) & (3,2) & 0 & & \\ \vdots & \vdots & \vdots & & \\ d(n,1) & d(n,2) & \cdots & \cdots & 0 \end{bmatrix}$$

the distance between two data is d(i,j). When q=2 and d is Euclidean Distance, the similarity and disparity between data is then measured with;

$$d(i,j) = \sqrt{(x_{i1}-x_{j1})^2 + (x_{i2}-x_{j2})^2 + \ldots + (x_{ip}-x_{jp})^2},$$

Features:

d(i,j) ≥ 0

d(i,j) = 0

d(i,j) = d(j,i)

d(i,j) ≤ d(i,h)+d(h,j)

Cluster pattern recognition and image processing is widely used in many fields such as economics (particularly in market research), document classification on worldwide web, discovering similar peer groups, data mining, statistics, biology and machine learning (Han and Kamber, 2006).

3.2. Multidimensional Scaling Analysis

Multidimensional Scaling Analysis is a technique which visualizes the "similarity" features between objects with statistical calculations (Machado and Mata, 2013). Distances between objects are shown on a map-like structure (Machado and Mata, 2015). Multidimensional Scaling Analysis aims to graphically display the dataset combined of "n" units on "a" Euclidean space.

Multidimensional Scaling Analysis makes use of stress values in order to determine if the number of dimensions used in the graphical setup is acceptable. Table 1 shows the stress values and quality of compliance obtained from the Multidimensional Scaling Analysis.

Table 1: Stress Values and Quality of Compliance

Stress Values (Compliance)	Quality of Compliance
≥ 0,20	Poor Compliance
0,10 < 0,20	Medium Compliance
0,05 < 0,10	Good Compliance
0,025 < 0,05	Very Good Compliance
0,000 < 0,025	Perfect Compliance

Stress values closer to 0 constitute a favorable condition. Perfect or poor compliance is derived from stress values obtained in a range between 0.00 and 0.20. Multidimensional scaling analysis also applies R^2 values for the identification of the quality of compliance. R^2 values above a minimum of 0.60 are indicative of acceptable quality of compliance. Values even higher are indicative of close to perfect quality of compliance (Hair et al., 2006: 654).

This study investigates the Islamic banks operating in the QISMUT countries. According to the 'World Islamic Banking Competition Report 2013-14' prepared by Ernst&Young Turkey, an Audit and Counseling Corporation, QISMUT countries (Qatar, Indonesia, Saudi Arabia, Malaysia, UAE and Turkey) which include also Turkey will play an important role in the globalization of Islamic banking industry.

In this respect, the scope of this research is selected to include QISMUT countries in order to be able to reveal the financial disparities and similarities of Islamic banks and to contribute to the literature with valuable outputs. Profiles of these countries with respect to other QISMUT countries are given in Table 2.

Table 2: General Profiles of QISMUT Countries (2013)

	Population (million)	Islamic Finance Assets	Share in the QISMUT countries	Global Share of the Islamic Banking Assets
Qatar	2.2	$54,4 billion	9%	3%
Indonesia	248.5	$21,4 billion	4%	1%
Saudi Arabia	31	$245 billion	43%	16%
Malaysia	29.8	$140 billion	22%	8%
UAE	9.3	$83 billion	15%	5%
Turkey	76.1	$50 billion	7%	2%
Total	396.9	$593.8 billion	100%	35%

Source: Ernst and Young; World Islamic Banking Competitiveness Report 2013–14

Muslim population residing in the QISMUT countries constitutes the potential clientele of Islamic banks. The total population of these six countries adds up to 400 million people. Indonesia is the most crowded QISMUT country. Qatar, on the other hand, is the one with the lowest population density. However, Islamic banking assets in Indonesia are the lowest of all proportionally. This share is slightly higher in countries with strict Islamic rules in effect. QISMUT member Saudi Arabia has a 16% market share in the global Islamic banking market. QISMUT member Indonesia, on the other hand, has the smallest market share with 1%. The total share of these 6 QISMUT countries in the global Islamic banking market is 35%. Saudi Arabia is the leading country in terms of Islamic financial assets with 43% when compared to other QISMUT countries. Indonesia, on the other hand, accounts for the lowest share in this respect (see Table 2). Names of the banks included in the analysis are given in Table 3.

Table 3: Banks which are Included in the Analysis

Countries	Number of bank	Banks included in the analysis
Katar (Qatar)	6	(Q1) Al Khaliji Commercial Bank and Islmaic Banking, (Q2) Commercial Bank, (Q3) Masraf Al Rayan–Qatar, (Q4) Qatar Islamic bank, (Q5) Qatar National Bank, (Q6) Qatar International Islamic Bank
Endonezya Indonesia	15	(I1)Bank Pembangunan Daerah (BPD) Banda Aceh, (I2)PT Bank Tabungan Pensiunan Nasional (BTPN), (I3)PT Bank Danamon, (I4)PT Bank Permata, (I5)PT Bank Sinarmas, (I6)PT Bank Syariah BNI, (I7)PT Bank Syariah BRI, (I8)PT Bank Syariah Bukopin, (I9)PT Bank Syariah Jabardan Banten (BJB), (I10)PT Bank Syariah Mandiri, (I11)PT Bank Syariah Mega Indonesia, (I12)PT Bank Syariah Panin, (I13)PT Bank Syariah Victoria, (I14)PT CIMB Niaga, (I15)PT OCBC NISP
Sudi Arabistan (Saudi Arabia)	11	(S1)Al Rajhi Banking & Investment Corporation, (S2)Alinma Bank, (S3)Arab National Bank, (S4)Bank AlJazira, (S5)Bank Albilad, (S6)Banque Saudi Fransi Islamic Banking, (S7)Riyad Bank, (S8)Samba Financial Group, (S9)Saudi Hollandi Bank, (S10)The National Commercial Bank, (S11)The Saudi Investment Bank
Malezya (Malaysia)	13	(M1)Al Rajhi Banking & Inv. Corp. (Malaysia), (M2)Alliance Islamic Bank Berhad, (M3)Asian Finance Bank, (M4)Bank Islam Malaysia Berhad, (M5)Bank Kerjasama Rakyat Malaysia Berhad, (M6)Bank Pembangunan Malaysia Berhad, (M7)CIMB Islamic Bank Berhad, (M8)Hong Leong Islamic Bank Berhad, (M9)Malayan Banking Berhad, (M10)Maybank Islamic Berhad, (M11)OCBC Al-Amin Bank Berhad, (M12)Public Islamic Bank Berhad, (M13)RHB Islamic Bank Berhad
Birleşik Arap Emirlikleri (UAE)	7	(U1)Abu Dhabi Islamic Bank, (U2)Emirates Islamic Bank, (U3)Sharjah Islamic Bank, (U4)Ajman Bank, (U5)Siraj Islamic Banking, (U6)Emirates NBD PJSC, (U7)Union National Bank
Türkiye Turkey	4	(T1)Albaraka Turk Participation Bank, (T2)Asya Finance Participation Bank, (T3)Türkiye Finance Participation Bank, (T4)Kuwait Turk Participation Bank

Cluster and Multidimensional Scaling analyses involved a total of 56 Islamic banks; 6 operating in Qatar, 15 in Indonesia, 11 in Saudi Arabia, 13 in Malaysia, 7 in UAE, and 4 in Turkey. Banks included in the analysis are given an individual code. Banks will be represented with these codes in the clusters obtained from the analysis (Table 3).

Financial ratios were used in order to identify the financial similarities and disparities between Islamic banks operating in the QISMUT countries by means of Cluster and Multidimensional Scaling Analysis. Financial ratios included in the analysis are given in Table 4.

Table 4: Financial ratios which are Included in the Analysis

Financial Ratio Grouping	Code	Financial Ratio
Profitability	P1	Efficiency Ratio
	P2	Operating Leverage
	P3	Non-interest Income / Operation Income
	P4	Fee Revenue (%)
	P5	Loan Growth (%)
	P6	Deposit Growth (%)
Risk	R1	Loan Loss Provision (% of Avg. Loans)
	R2	Nonperforming Loans (% of Total Loans)
Other Ratios	O1	Tier 1 Risk-Adjusted Capital Ratio
	O2	EOP Loans / EOP Deposits
	O3	Securities % Avg. Earning Assets
DuPont/Earning Power	D1	Pretax ROA
	D2	x Leverage (Assets/Equity)
	D3	Pretax ROE
	D4	Reinvestment Rate

Fifteen financial ratios and variables were used under 4 categories in order to analyze the financial similarities and disparities or the banks operating in QISMUT countries. Analysis includes efficiency ratio, operating leverage, non-interest income/operation income, fee revenue, loan growth, and deposit growth as profitability ratios/variables. Loan loss provision and nonperforming loans/total loans are taken as risk variables. Tier 1 risk-adjusted capital ratio, EOP loans/EOP deposits, and securities earning ratio are included in the analysis as other ratios.   Finally, pretax ROA, assets/equity, pretax ROE, and reinvestment rate are used as DuPont ratios in order to classify the banks in question.

4. FINDINGS

This study aims to identify the financial similarities and outputs of the Islamic banks operating in QISMUT countries and the data collected in this study was investigated using cluster analysis and multidimensional analysis. The analysis results obtained using financial ratios from each bank operating in these 6 countries were then examined for their similarities and disparities. Results from the Cluster Analysis and Multidimensional Scaling Analysis were evaluated separately in order to provide separate results for the analysis periods of 2012-2013-2014.

4.1. Results of the Cluster Analysis

Correct classification rate which is obtained using Discriminant analysis, average shadow stats and Dunn's partition coefficient were used in order to test the number of clusters generated according to the banking data obtained from 56 Islamic banks operating in QISMUT countries and the relevant cluster validity. Cluster validity results are shown in Table 5 for a reliable analysis.

Table 5: Number of Clusters and Cluster Validity Results

# of Clusters	Correct Classification Rate (Discriminant)	Average Shadow Stats	Dunn's Partition Coefficient
2	86%	0.454	0.781
3	**92%**	**0.596**	**0.795**
4	78%	0.454	0.694
5	75%	0.452	0.645
6	67%	0.324	0.620
7	64%	0.358	0.609
8	60%	0.324	0.581

Maximum values of correct classification rate, average shadow stats and Dunn's partition coefficient are considered in order to identify the number of clusters and cluster validity. According to the correct classification rate findings shown in Table 4, it was found that the best cluster structure includes 3 clusters with a rate of 92%. Similarly, average shadow stats value (0.596) and Dunn's partition coefficient (0.795) confirm the best cluster structure to include 3 clusters.

K-Means technique, one of the methods of non-hierarchical clustering, was used in the analysis. This technique pre-estimates the number of clusters. According to the analyses, 3 clusters were identified and the distributions of QISMUT Islamic banks by the years are given in Tables 6, 7 and 8.

Table 6: QISMUT Islamic Banks Distribution in Clusters for 2012

Cluster Number	# of Banks in the Cluster	% of Banks in the Cluster	Banks in the Cluster
1st Cluster	41	73%	Q1,Q2,Q3,Q4,Q5,Q6,I1,I2,I3,I6,I7,I9,I10,I13I14,I15,S1, S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,M1,M3,M5,M6,U1,U3, U4,U5,U6,U7, T1,T2, T3, T4
2nd Cluster	1	2%	I12
3rd Cluster	14	25%	I4,I5,I8,I11,M2,M4,M7,M8,M9,M10,M11,M12,M13,U2

According to the Cluster Analysis results for 2012 (Table 6), 1st cluster includes 41 out of 56 banks in the sample. Thus, 1st cluster accounts for the 73% of all the banks. All 6 Islamic banks operating in Qatar, all 11 Islamic banks operating in Saudi Arabia, and all 4 Islamic banks operating in Turkey fall in this cluster. The 2nd cluster accounts for only one bank. There is only 2% of all the banks included in the analyses fall in this cluster. PT Bank Syariah Panin, a bank operating in Indonesia, is financially different than the other banks included in the sample. The 3rd cluster includes 4 out of 15 Indonesian Islamic banks, 9 out of 13 Malaysian Islamic banks and 1 out of 7 UAE banks. There is 25% of all the banks included in the analyses falling in the 3rd cluster.

According to the cluster analysis results for 2012, Islamic banks operating in Qatar, Saudi Arabia, and Turkey have similar properties in terms of profitability, growth and risk.

Table 7: QISMUT Islamic Banks Distribution in Clusters for 2013

Cluster Number	# of Banks in the Cluster	% of Banks in the Cluster	Banks in the Cluster
1st Cluster	1	2%	I12
2nd Cluster	4	7%	M7,M10,M11,M14
3rd Cluster	51	91%	Q1,Q2,Q3,Q4,Q5,Q6,I1,I2,I3,I4,I5,I6,I7,I8,I9,I10,I11,I13,I14,I15,S1,S2,S3,S4,S5,S6,S7,S8,S9,S10,S11,M1,M2,M3,M4,M5,M6,M8,M9,M12,U1,U2,U3,U4,U5,U6,U7,T1,T2,T3,T4

When the clusters were investigated for the financial variables of 2013 (Table 7), the 1st cluster includes 1 bank (2% of total); the 2nd cluster includes 4 banks (7% of total), and the 3rd cluster includes 51 banks (91% of total). All 6 Islamic banks operating in Qatar, all 11 Islamic banks operating in Saudi Arabia, all 4 Islamic banks operate in Turkey, and all 7 banks operating in UAE fall in the 3rd cluster. All 4 banks included in the 2nd cluster operate in Malaysia. These 4 banks are financially different when compared to the Islamic banks operating in other countries. The 1st cluster accounts for only one bank, PT Bank Syariah Panin from Indonesia. As it was the case for 2012, PT Bank Syariah Panin, a bank operating in Indonesia, was financially different when compared to the other banks included in the sample also in 2013. Islamic banks operating in Qatar, Saudi Arabia, UAE and Turkey have similar properties in terms of profitability, growth and risk in 2013.

Table 8: QISMUT Islamic Banks Distribution in Clusters for 2014

Cluster Number	# of Banks in the Cluster	% of Banks in the Cluster	Banks in the Cluster
1st Cluster	19	34%	I1,I4,I8,I9,I11,I13,S4,S10,M1,M2,M4,M8,M9,M12,U2,U4,T1, T2,T3
2nd Cluster	33	59%	Q1,Q2,Q3,Q4,Q5,Q6,I2,I3,I5,I6,I7,I10,I12,I14,I15,S1,S2,S3,S5,S6, S7,S8,S9,S11,M3,M5,M6,U1,U3,U5,U6,U7,T4
3rd Cluster	4	7%	M7,M10,M11,M13

Banks are found to be distinctly differentiated from each other in 2014. The 1st cluster includes 19 Islamic banks (34% of total), the 2nd cluster includes 33 Islamic banks (59% of total) and the 3rd cluster includes 4 Islamic banks (7%). All 4 banks included in the 3rd cluster operate in Malaysia. All banks included in the 2nd cluster along with all bank operating in Qatar and Saudi Arabia are found to have financial similarities. The 3 Islamic banks operating in Turkey fall in the 1st cluster which indicates a similarity with Islamic

banks operating in Indonesia, Malaysia, and UAE. Islamic banks operating in Qatar and Saudi Arabia have similar properties in terms of profitability, growth and risk in 2014.

Thus the financial similarities and disparities of 56 Islamic banks operating in the QISMUT countries were identified using the cluster analysis. It is important to confirm the classifications obtained using the cluster analysis with Multidimensional Scaling Analysis.

4.2. Multidimensional Scaling Analysis Results

Multidimensional Scaling Analysis makes use of a measure called stress values in order to determine if the number of dimensions used in the graphical setup is acceptable. Table 9 shows the stress values and RSQ values obtained as part of this analysis.

Table 9: Stress and RSQ Results of Multidimensional Scaling Analysis

Analysis Years	Stress Values	RSQ
2012	0.05963	.99560
2013	0.05836	.99586
2014	0.06967	.99300

Stress values were obtained using Kruskal's Stress Formula 1. The 2 dimensions were used for Multidimensional Scaling Analysis. The 4 iterations were conducted until the point the value of stress statistics is smaller than 0.001 for both of these dimensions. Accordingly, stress value for 2012, 0.05963 (0.05 < 0.10), is consistent. Stress values of these 2 dimensions account for 99.560%. Stress value for 2013, 0.05836 (0.05 < 0.10), is consistent. Stress values of these dimensions account for 99.586% in 2013. Stress values for 2014 were found to be 0.06967. This value is an indication of good consistency as it is in the range between Stress values of these dimensions account for 99.300% in 2014. Stress coefficients show that the number of dimensions used in the graphical setup obtained from the Multidimensional Scaling Analysis is acceptable for all three years. RSQ values prove to be quite high for each year.

Figure 1 shows the Euclidean Distance Constellation Diagram for the Multidimensional Scaling Analysis of Islamic Banks operating in QISMUT countries in 2012 while Figure 2 shows the Euclidean Distance Model for the same year.

Figure 1: Euclidean Distance Constellation Diagram for 2012
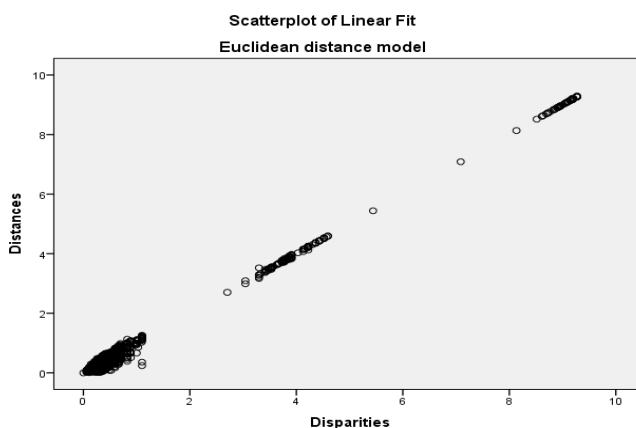
As seen in Figure 1, the distances and disparities obtained from the Multidimensional Scaling Analysis of Islamic banks operating in QISMUT countries are aligned in a linear manner (bottom left to top right). In this context, the purpose of the Multidimensional Scaling Analysis was to measure the similarities between the estimated distances generated according to the disparity matrix and the distance matrix obtained through the use of the direct data. According to the results of this research, it was found that the estimated distances were consistent with the actual values as the estimated values were similar to the ones in the distance matrix obtained from data.

Figure 2: Euclidean Distance Model for 2012

According to the Figure 2, 53 out of 56 banks included in the analysis have financial similarities (accumulated around Euclid) as per the Euclidean distance model which shows the relations between units (QISMUT Islamic banks) on a 2-dimensional space. According to the Euclidean distance model for 2012, 3 banks (I12: PT Bank Syariah Panin, M6: Bank Pembangunan Malaysia Berhad and S2: Alinma Bank) have financial disparities when compared to the other Islamic banks.
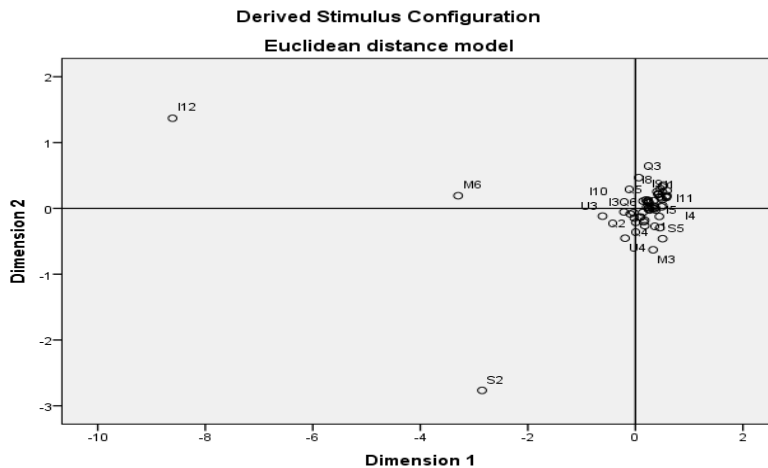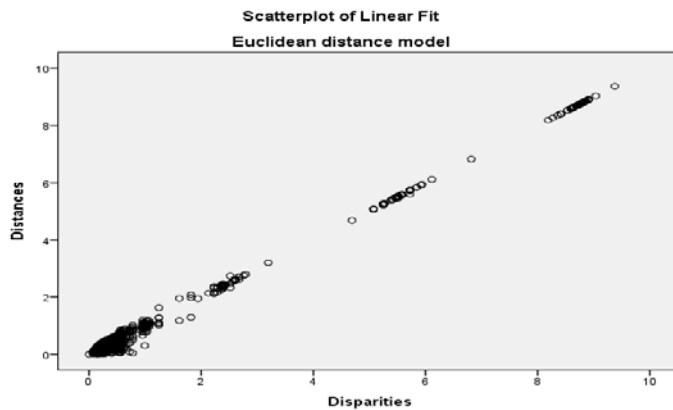
Figure 3 shows the Euclidean Distance Constellation Diagram for the Multidimensional Scaling Analysis of Islamic Banks operating in QISMUT countries in 2013 while Figure 4 shows the Euclidean Distance Model for the same year.

Figure 3: Euclidean Distance Constellation Diagram for 2013

It was found that the distances identified using Multidimensional Scaling Analysis of the QISMUT countries and their disparities have a linear relationship. According to the results of Euclidean distance model for 2013, it was found that the estimated distances were consistent with the actual values as the estimated values were similar to the ones in the distance matrix obtained from data.

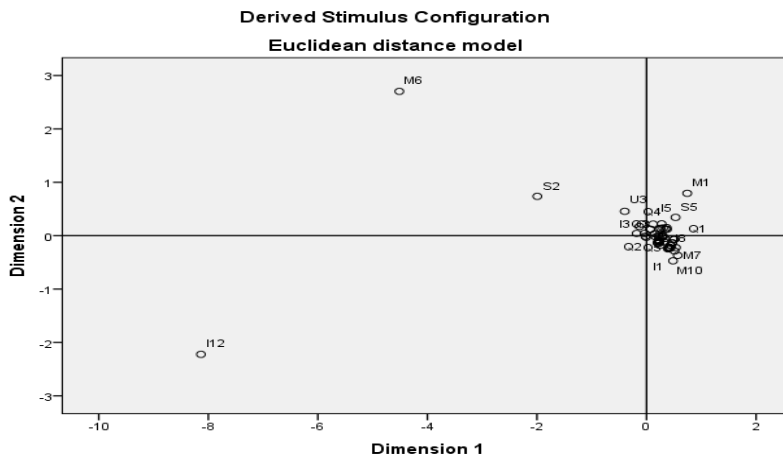**Figure 4: Euclidean Distance Model for 2013**

According to the Figure 4, 53 out of 56 banks included in the analysis have financial similarities (accumulated around Euclid) as per the Euclidean distance model which shows the relations between units (QISMUT Islamic banks) on a 2-dimensional space. According to the Euclidean distance model for 2013, 3 banks (I12: PT Bank Syariah Panin, M6: Bank Pembangunan Malaysia Berhad and S2: Alinma Bank) have financial disparities when compared to the other Islamic banks. Therefore, Islamic banks operating in Qatar, UAE and Turkey have similar properties in terms of profitability, growth and risk in 2013.

Figure 5 shows the Euclidean Distance Constellation Diagram for the Multidimensional Scaling Analysis of Islamic Banks operating in QISMUT countries in 2013 while Figure 6 shows the Euclidean Distance Model for the same year.

Figure 5: Euclidean Distance Constellation Diagram for 2014
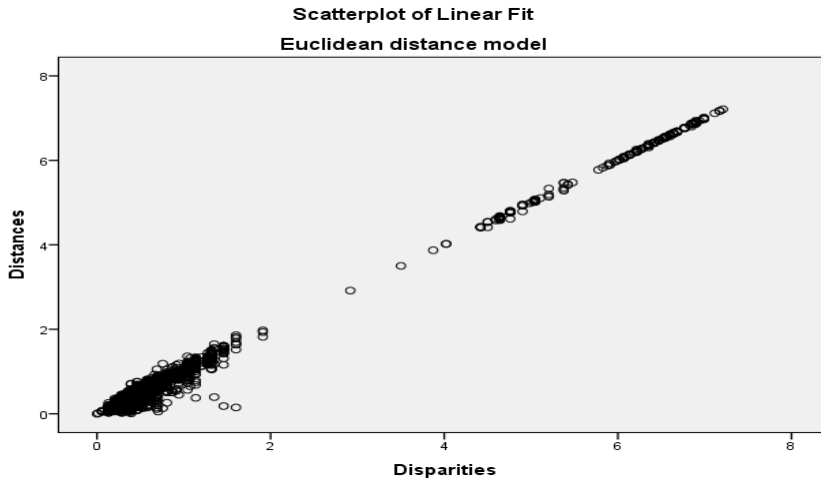

It was found that the distances identified using Multidimensional Scaling Analysis of the QISMUT countries and their disparities have a linear relationship. According to the results of Euclidean distance model for 2014, it was found that the estimated distances were consistent with the actual values as the estimated values were similar to the ones in the distance matrix obtained from data.

Figure 6: Euclidean Distance Model for 2014
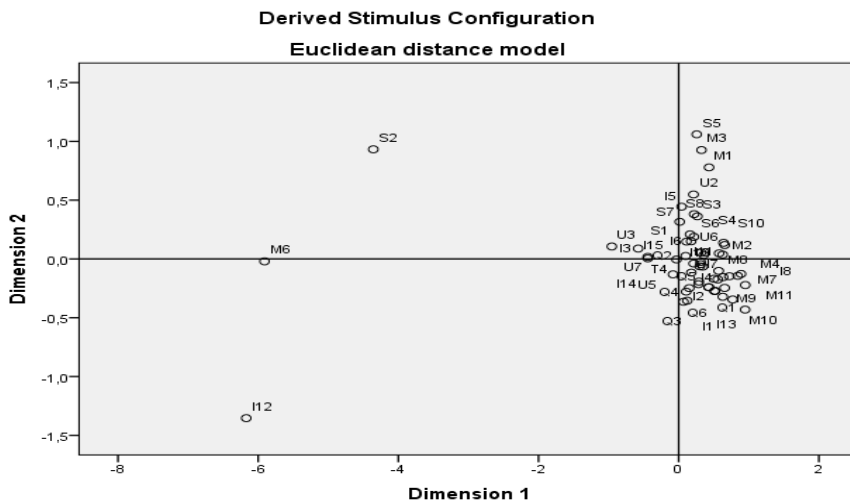
According to the Figure 6, 53 out of 56 banks included in the analysis have financial similarities (accumulated around Euclid) as per the Euclidean distance model which shows the relations between units (QISMUT Islamic banks) on a 2-dimensional space. According to the Euclidean distance model for 2014, 3 banks (I12: PT Bank Syariah Panin, M6: Bank Pembangunan Malaysia Berhad and S2: Alinma Bank) have financial disparities when compared to the other Islamic banks. Therefore, Islamic banks operating in Qatar, UAE and Turkey have similar properties in terms of profitability, growth and risk in 2013.

As it is shown in the Euclidean distance graphs, Islamic banks operating in QISMUT countries are quite similar in terms of their financial ratios collected for 2012 and 2013, thus, clustered very close to each other in the graph. Only 3 of the banks were distant from this cluster. In 2014, on the other hand, distances between banks clustered are slightly expanded when compared to the other years.

5. CONCLUSION

Islamic banking activities, one of the building blocks of Islamic finance, have recently been developing in the global arena. Growing its market share in the global economy, Islamic finance is led by the countries called QISMUT in the recent years. Consisting of Qatar, Indonesia, Saudi Arabia, Malaysia, UAE and Turkey; QISMUT is anticipated to drive the Islamic capital which rapidly grows its market share in the global finance system. Efficient operability of Islamic banks is important for the healthy development of many economies when this substantial market share is taken into consideration.

This study identified the financial similarities and disparities between Islamic banks using cluster analysis and multidimensional scaling analysis. Financial similarity and disparity levels of Islamic banks operating in the QISMUT countries were duly measured. Financial similarities and disparities of Islamic banks were then separately evaluated for a period between 2012 and 2014 using profitability, growth, risk and DuPont ratios.

According to the cluster analysis results for 2012, Islamic banks operating in Qatar, Saudi Arabia, and Turkey have similar properties in terms of profitability, growth and risk. For the same year, 53 out of 56 banks included in the analysis have financial similarities (accumulated around Euclid) as per the Euclidean distance model and Multidimensional Scaling Analysis. According to the Euclidean distance model for 2012, 3 banks (I12: PT Bank Syariah Panin, M6: Bank Pembangunan Malaysia Berhad and S2: Alinma Bank) have financial disparities when compared to the other Islamic banks.

As it was the case for 2012, PT Bank Syariah Panin of Indonesia was financially different when compared to the other banks included in the sample also in 2013. Islamic banks operating in Qatar, Saudi Arabia, UAE and Turkey have similar properties in terms of profitability, growth and risk in 2013. 53 out of 56 banks included in the analysis have financial similarities (accumulated around Euclid) as per the Euclidean distance model which shows the relations between QISMUT Islamic banks on a 2-dimensional space. According to the Euclidean distance model for 2013, 3 banks (I12: PT Bank Syariah Panin, M6: Bank Pembangunan Malaysia Berhad, and S2: Alinma Bank) have financial disparities when compared to the other Islamic banks. Therefore, Islamic banks operating in Qatar, UAE and Turkey have similar properties in terms of profitability, growth and risk in 2013.

According to the Cluster analysis results for 2014, Islamic banks operating in Qatar and Saudi Arabia have similar properties in terms of profitability, growth and risk. For the same year, 53 out of 56 banks included in the analysis have financial similarities (accumulated around Euclid) as per the Euclidean distance model. According to the Euclidean distance model for 2014, 3 banks (I12: PT Bank Syariah Panin, M6: Bank Pembangunan Malaysia Berhad, and S2: Alinma Bank) have financial disparities when compared to the other Islamic banks. Therefore, Islamic banks operating in Qatar, UAE and Turkey have similar properties in terms of profitability, growth and risk in 2013.

As it is shown in the Euclidean distance graphs, Islamic banks operating in QISMUT countries are quite similar in terms of their financial ratios collected for 2012 and 2013, thus, clustered very close to each other in the graph. Only 3 of the banks were distant from this cluster. In 2014, on the other hand, distances between banks clustered are slightly expanded when compared to the other years.

In line with the findings of this study, it would be fair to say that QISMUT countries which will make their mark in the future of Islamic finance and banking have similarities in terms of financial ratios.

This study is an original research measuring the similarities and disparities of Islamic banks operating in QISMUT countries which are expected to lead the future of Islamic banking and finance. In this respect, this study will make a significant contribution to the literature. Future research may focus on extended numbers of Islamic banks operating in QISMUT countries and may diversify the research periods and variables.

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FACTORS INFLUENCING THE CREDIT RATIONING ON THE COMMERCIAL LENDING PROCESS

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ABSTRACT

Adverse selection and moral hazard problem that arise due to asymmetry of information is often observed in banking sector. Accordingly, banks use credit rationing mechanism in order to mitigate the losses that arise due to asymmetric information. In this study the concept of credit rationing mechanism applied by banks is examined by exploring the manufacturing firms from various sectors which applied for a corporate loan in 2103. Logistic regression and discriminant analysis were employed in order to estimate the credit rationing. The results indicate that morality, credit history, and liquidity variables have significant impact in the commercial lending process.

1. INTRODUCTION

An important feature of financial markets is the asymmetry of information that is defined as a situation in which one party –generally a borrower- in a transaction has more or superior information than another (mostly lender) party. The concept of asymmetric information was first introduced through Lemon Theory which was developed by George Akerlof (1970), who was later awarded with the Nobel Prize. Afterwards, this theory was studied in various contexts including labor, insurance, loan and capital markets. Asymmetric information in credit markets arises due to the failure of lenders and borrowers to exchange complete and correct information between each other. In a financial transaction, borrowers will have more information than lenders about their past default and likelihood of subsequent default, ability to repay, and the use of loan. This situation will lead to credit rationing where lenders either will not issue the loan or reduce the amount of loan. According to Frederic Mishkin, asymmetric information in financial markets leads to two primary problems that are Adverse Selection and Moral Hazard.

In financial markets, adverse selection is an *ex-ante* problem that occurs between lenders and borrowers where banks or financial institutions issue a loan to a risky customer. Adverse selection occurs when a borrower with a high credit risk and low credibility is willing to borrow loan and pay the high interest rate.

For example, a bank sets one price (interest rate) for all of its loans and the adversely selected customers are those who are risky ones and have a low potential for repayment of the loan. Adverse selection problem in credit markets can be mitigated through collateral requirements and credit rating services. Moral Hazard is an *ex-post* problem that arises between lenders and borrowers after a transaction occurs. It arises because an individual or institution does not consider the full consequences and responsibilities of its actions and hence has a tendency to act less carefully. In credit markets, moral hazard problem refer to a situation where borrowers do not use the fund for the specified purpose. Moral hazard problem occurs as a result of the inability on part of the lenders in monitoring the operations of borrowers and can be mitigated by close monitoring of the borrowers after a loan is issued (Atiyas et al, 1993:2).While adverse selection problem occurs before the transaction, moral hazard problem is seen after entering into a contract.

Credit rationing is limiting the supply of additional credit (loan) to the borrowers who are even willing to repay with higher interest (Jaffe and Russell, 1976:651). Credit rationing happens when demand for loans exceeds the supply. If lenders limit credits, due to adverse selection and moral hazard, for borrowers who have agreed to repay them, credit (loan) is rationed (Er,2011:311) In the literature, there are two types of theories in credit rationing. The first type of theory about credit rationing was developed by Jaffee and Russell (1976). According to their theory, the credit rationing occurs if lenders issue the credit less than what was demanded by borrowers. The second type of credit rationing theory was developed by Stiglitz and Weiss in 1981. In this theory, they argued that lenders implement credit rationing by declining (denying) the credit application entirely. The rest of this paper is organized as follows; the second part of this paper provides an empirical literature review on credit rationing, in the third part the dataset and methodology are presented, in the fourth part, the empirical result and findings are explained, and the last part concludes the study.

2. LITERATURE REVIEW

The modern literature on credit rationing dates back to John M. Keynes`s studies on Money. Hodgam (1960, 1962) was the first who actually studied the modern credit rationing in his researches. He explained the causes of credit rationing through economic reasons rather than institutional factors. The following researches are conducted in credit rationing from different perspectives. According to Petersen and Rajan, 1994, banking relationships seem to lessen credit rationing because banks can easily monitor and access information regarding borrowers' history and actions. Similarly, Berger and Udell (1995) found that the length of relationship lowers both the loan rate premiums and the likelihood of collateral requirements. Cole (1998) concludes that a previous experience with a lender increases the likelihood of credit availability and thus decreases the credit rationing.

Another important factor that mitigates the credit rationing is the age of the firms. Diamond, 1991, and Oliner and Rudebusch, 1992, have found that in credit rationing firm age is an indicator of firm's quality, since longevity may contain a signal for survival ability and quality of management, as well as the accumulation of reputational capital.

Moreover, the information gap is relatively smaller for older firms given their longer track record (Petersen and Rajan, 1994; Cressy, 1996). In addition; recent studies have indicated that the likelihood of credit rationing increases for more innovative firms. In particular, when the loan applicant requires funding for specific, intangible and highly innovative investment, such as those in R&D, rationing may be more likely (Freel, 2007 and Piga and Atzeni, 2007). External auditing and international accounting standards are also thought to reduce firm denseness by increasing the transparency of financial accounts. Dharan (1993) points out that the auditor's opinion is assumed to convey, without error, the risk characteristics of the firm to the lenders. Given that external auditing is costly, firms that choose to do so actually send a quality signal to potential lenders (Konstantinos and Nicholas 2011). According to Cole, 1998; Rajan and Zingales, 1998; Beck and Levine, 2002; Cowling and Mitchell, 2003, industrial heterogeneity has considerable impact on the credit rationing mechanism. Another factor that affects the credit rationing is the managerial ability (Cavalluzzo et al., 2002). In his study, Hubbard (1998) states that a firm's investment opportunity set may also affect the likelihood of rationing.

3. DATA AND METHODOLOGY

In this study, we obtained data from a state bank (bank-level data) that operates in Gaziantep region in Turkey. The data set includes quantitative and qualitative factors for 100 firms operating in manufacturing sector which applied for a corporate loan in 2013. We were only able to include 77 firms to the analysis due to the missing data of firms. All firms are classified into two groups; non-rationed and credit rationed firms based on loan approval. Accordingly, if a loan application is approved and granted in full then the firm is considered non credit rationed firm. However, if the loan application was rejected or partially granted then the firm is regarded as credit rationed. Thus, the depended variable here takes binomial value 1 for rationed firm and 0 for non-rationed firm. The factors that might influence the credit rationing are indicated as follow, firm size (x1), firm age and ownership structure (x2), bank relations (x3), foreign trade status (x4), the administrative structure (x5), morality (x6), liquidity (x7 (A)), the asset structure (x7 (B)), the capital structure and leverage (x7 (C)), profitability, and productivity (x7 (D)), the performance ratios (x7 (e)) and the credit history (x8). Each factor is scored between 1 and 4 by the bank where 1 indicates lower risk measure and the score of 4 specifies higher risk measure. The variables, abbreviations and codes used in the study are shown in appendix 1.

Firm size is one of the independent variables which defined as total annual net sales of the firms in the sample. As total net sales increases, the credit risk hence probability of credit rationing is expected to decreases. The next independent variable is firm age which indicates the history of the company which is indicator of firm's reputation and livability. Bank relationship variable defined as firm's past experienced with banks and the variable is expected to have negative relationship with credit rationing. Foreign trade (export and import) status; the variable specify whether or not the firm has any international business relationship. Foreign trade variable is expected to have negative impact on the credit rationing. If a firm does not involve any foreign trade, either by exporting or importing, the variable was not used in the analysis.

Administrative structure; the variable indicates the type of management and total experience of the professionals in the firm. Morality is classified as firm's past borrowing experience (how a firm fulfilled its obligations) and higher morality indicates lower credit rationing. Liquidity variable explains the power of firms to meet the short-term liabilities. The higher the liquidity of a firm the lower credit rationing will be. Asset structure variable explains how firm's assets are allocated and effectively utilized? Capital structure and indebtedness; defined as the total debt level and leverage ratio. Profitability and efficiency variable indicate the relationship between firm's sales, profitability and credit rationing. Performance ratios: the ratio measures impact of performance ratio on the credit rationing. Credit history is the last variable in the analysis provides information about a firm's past loan growth and credit information.

4. EMPIRICAL RESULTS

In this study, we first performed a correlation analysis in order to test whether or not there is a significant correlation among the variables. Correlation analysis proves the multicollinearity problem by measuring the linearity of the relationship between variables. Multicollinearity occurs when two or more variables in a model are correlated and provide abundant information about the response. As indicated in appendix 2, no significant correlation was found among the variables. Tolerance and Variance Inflation Factor (VIF) were also examined to test whether or not there is a significant Multicollinearity problem between the variables. Menard (1995) indicates that if the tolerance value is <0.1, then there is a serious multicollinearity problem in the model, and if it is <0.2, then there is a potential multicollinearity problem. According to Myers (1990), the multicollinearity problem appears in a model if the VIF value is greater than 10. Field (2005) states that the average VIF score that is close to 1 indicate that multicollinearity problem does not exist in a model. According to Cokluk (2010), the standard error of regression coefficients (β) should be evaluated in order to figure out the multicollinearity problem. If the standard error of all variables is less than 2, it is considered that multicollinearity problem does not exist.

**Table 1: The test of Multicollinearity Problem with Standard Error,
Tolerance and VIF Values.
Coefficients(a)**

Model		Unstandardized Coefficients		Collinearity Statistics	
		B	Std. Error	Tolerance	VIF
1	(Constant)	-4,218	1,561		
	Size	0,047	0,119	0,668	1,496
	Age	-0,010	0,125	0,734	1,363
	Relation	-0,100	0,207	0,471	2,121
	Export	0,194	0,140	0,729	1,372
	Admin	0,408	0,404	0,494	2,024
	Character	1,201	0,737	0,784	1,276
	Liquidity	0,133	0,090	0,547	1,827
	Asset	-0,129	0,130	0,710	1,408
	Leverage	0,228	0,130	0,454	2,204
	Profit	0,016	0,061	0,768	1,302
	Performance	0,063	0,092	0,823	1,215
	History	0,128	0,068	0,830	1,205

As seen in Table 1, the standard error of the independent variables was found to be less than 2; the tolerance value for all variables was found to be more than 0.2 and the VIF value for all variables appears to be less than 10. Therefore, the problem of multicollinearity between the independent variables does not exist. Durbin–Watson (DW) statistics test is used to identify the presence of autocorrelation problem in the regression analysis. The value of DW statistics lies between 0 and 4. The value close to 0 indicates positive serial correlation, the value close to 4 indicates negative autocorrelation problem and the DW value around 2 indicates no autocorrelation. As seen in Table 2, the DW value was found 2,373 and the result concludes that there is no autocorrelation problem in the model.

**Table 2: Autocorrelation Problem
Model Summary(b)**

Model	Durbin-Watson
1	2,373

a. Predictors: (Constant), History, Export, Character, Leverage, Performance, Asset, Profit, Age, Size, Admin, Liquidity, Relation

b. Dependent Variable: Rationing

4.1. Discriminant Analysis and Results

Discriminant analysis is one of multivariate statistical techniques which aim to predict the relationship between the categorical variables and metric independent variables (Kalaycı, 2008: 335). Discriminant analysis has two main objectives: separation and classification. If the first objective (seperation) was used in an analysis the model is called Descriptive Discriminant Analysis for the second objective the model is specified as Predictive Discriminant Analysis (Özdamar, 1999:320).

SPSS 18.0 statistical analysis program was used to analyze the data. 12 different variables included in the analysis and only 3 variables found as significant determinants of credit rationing. In disciriminant method there are three assumptions to minimize the misclassification and provide optimal analysis: equal covariance, the lack of multiple connections and normal distribution. In order to apply the discriminant analysis for the data, group must have equal covariance matrix. Equal variance assumption is tested by Box's M statistic. The significant Box's M statistics show the deviation from normality or unequal covariance matrix or both (Albayrak, 2006: 63). Although homogeneity of variance and covariance matrix is the main assumptions, discriminant analysis still can be performed where the covariance matrix is not equal. When the data tested by Box-M Statistic, the results indicate that Box's M=35,117, F=5,595, p<0,01, the covariance matrix is not homogenous.

Table 3: Eigenvalue

Function	Eigenvalue	Variance	Cumulative	Canonical Correlation
1	0,388a	100,0	100,0	,529

As shown in Table 3, since initially two groups were determined one discriminant function was derived. The higher Eigenvalue indicate that the larger part of the variance in the dependent variable is explained by the function. Canonical discriminant function explains 100% of the total variance. The resulting function is statistically significant. Eigen value of this function is 0.388.

Table 4: Wilk's Lambda Value

Function Test	Wilks' Lambda	Ki-Square	Sd	Anl.
1	,721	24,082	3	,000

Table 4 indicates the ratio that was not explained by the total variance of discriminant scores of Wilk's Lambda statistics. In the test conducted by Wilks' Lambda, the first function Wilks' Lambda value of 0.721 (i.e. 72.1% of the total variance) cannot be explained by the groups.

Table 5: Canonical Discriminant Coefficients

	Function
	1
Character	6,093
Liquidity	1,124
History	,567
Constant	-16,089

As seen Table 5, among 12 factors 3 variables namely Character, Liquidity and History were found statistically significant and included in the model. The discriminant equation result is given below. The morality variable is the most effective variable for the Z-score value in the discriminant equation.

$$Z_{score} = -16,089 + 6,093 \text{ Character} + 1,124 \text{ Liquidity} + 0,567 \text{ History}$$

Table 6: Average Group Discrimination Function Values

	Function
	1
No Credit Rationing	-0,561
Credit Rationing	0,673

In Table 6, the average separation function scores for each company (group) are presented. In other words it is found that $Z = \frac{N_a Z_b + N_b Z_a}{N_a + N_b} = 0,112$. Accordingly the following classification was carried out; if Z score value is greater than > Z, then there was found credit rationing or vice versa.

Table 7: Discriminant Analysis Classification Success

Discriminant Analysis		Estimated Group			
		0	1	Total	Accuracy Percentage
Observed Group	0	30	12	42	71,4
	1	8	27	35	77,1
	Total	38	39	77	74,0

In table 7, the classification value of the 77 companies obtained from discriminant analysis is presented. The model estimated the credit rationing with 71.4 % (30 out of 42) and 77.1 % (27 out of 35) accuracy for the non-credit rationed and credit rationed firms respectively. The total correct classification success for 77 companies is recorded as 74 %.

4.2. Logistic Regression Analysis and Results

We also employed in order to identify the factors that affect the credit rationing in a loan approval process. Logistic regression or *logit* regression as a statistical modeling technique is used to predict the outcome of a categorical dependent variable, such as class or label, based on one or more independent variables. The purpose of this method is to build the most appropriate model which identifies the relationship between independent and dependent variable with minimum input (variable) (Çokluk, 2010:1359). In general, multivariate logistic regression model is defined as follows (Ozdamar, 2004:590);

$$P(Y) = \frac{e^Z}{1 + e^Z}$$

where Z is a linear combination of independent variables.

$$Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_p X_p$$

where $\beta_0, \beta_1, \beta_2$ *and* β_n are regression coefficients.

In logistic regression method, binary logistic regression analysis is used if the dependent variable consists of categorical variable with two options (Cokluk, 2010:1362-1363). Since the dependent variable is a categorical variable with two different outputs, we used Binary Logistic Regression Analysis in this study.

The hypotheses of the model can be constructed as follows;

$$H_0{:}\beta_0 = \beta_1 = \beta_2 = \cdots = \beta_p$$
$$H_1{:}\beta_0 \neq \beta_1 \neq \beta_2 \neq \cdots \neq \beta_p$$

Table 8: Omnibus Tests of Model Coefficients

	Chi-square	df	Sig.
Step	3,963	1	0,047
Block	29,729	4	0,000
Model	29,729	4	0,000

In Table 8, the omnibus test which measures whether or not they explained variance in a set of data is significantly greater than the overall unexplained variance is presented. The model is found to be significant at the 0.95 confidence level.

Table 9: Model Summary

	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
	76,379	0,320	0,428

In Table 9, Cox & Snell R Square and Nagelkerke R Square scores indicate the amount of variance explained by the logistic model. Higher Nagelkerke R Square score indicates better model fit and the R square score that is equal to 1 shows perfect model fit (Cokluk, 2010:1386). Nagelkerke R Square was found to be 0.428 and the score indicates that 42.8 percent of the model is explained by the independent variables. The -2 log likelihood value is used for investigating the contribution of independent variables to the model and testing the significance of the regression coefficients (Avci, 2011:97). The -2 log likelihood is found to be 76.379 at 95 % confidence level. In the initial model that includes only the constant term, the -2 log likelihood value is found to be 106,107, but at the end of the fourth step, the value is found to be 76,379. The decreasing -2 log likelihood indicates improvement in model-data fit as independent variables are added to the model.

The Hosmer–Lemeshow test is used to measure the goodness of fit for logistic regression models. This test examines whether or not all logistic regression (logit) coefficients (except the constant) term is equal to zero.

H_0: There is no significant difference between observed and predicted value in the model.

H_1: There is significant difference between observed and predicted value in the model.

Table 10: Hosmer and Lemeshow Test

	Chi-square	df	Sig.
	14,771	8	0,064

As seen in Table 10, since the chi-square value of the model with 8 degrees of freedom (14,771) is found to be less than χ^2 (0.05, 8) = 15.51, H_0 hypothesis is not rejected.

Table 11: Classification Table

Observed	Predicted		
	Rationing		Percentage Correct
	0	1	
Rationing 0	34	8	81,0
1	9	26	74,3
Overall Percentage			77,9

In Table 11, the classification scores obtained from logistic regression model are presented. The ratio of the total correct classification of the model at 5% significance level is found to be 77.9%. The model correctly estimates 34 of 42 non-rationed companies and 26 of 35 credit rationed firms.

Table 12: Estimated Coefficients Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Character	11,187	5,691	3,864	1	0,049	72.205,616
Liquidity	0,996	0,441	5,098	1	0,024	2,706
Leverage	1,148	0,605	3,602	1	0,058	3,152
History	0,843	0,389	4,704	1	0,030	2,324
Constant	-29,832	11,800	6,392	1	0,011	0,000

In Table 12, the standard error of coefficients of independent variables (SE), Wald statistics (Wald), significance levels (Sig) and Exp (B) statistics are given. In logistic regression, Wald statistic, which has a specific distribution known as chi-square, is a measure of the significance of β (Cokluk, 2010:1388). The variables including Character, Liquidity and History is found to be significant at 95 % confidence level. The Leverage variable is found to be insignificant at 5% significance level and is not included in the model. Eventually, the model is constructed as follows;

$$\text{In}\left[\frac{P}{1-P}\right] = -29,832 + 11,187 \text{ Character} + 0,996 \text{ Liquidity} + 0,843 \text{ History}$$

According to the model, as all three risk factors increases, the likelihood of a bank's credit rationing increases. Especially, the Character risk factor has significant impact on credit rationing compared to the other two factors.

5. CONCLUSION

In credit markets, asymmetric information problem causes two major problems that are adverse selection and moral hazard. From banking perspective, the problem of information asymmetry leads to increase in operating cost and decrease in productivity, and during the economic or financial crisis period, it causes the bankruptcy of banks. Banks that face the problem of asymmetric information use credit rationing mechanism to reduce the default risk of their non-performing loans. Credit rationing occurs when lenders either does not issue the loan or reduce the amount of loanable funds for the borrowers.

In this study, the factors that affect the credit rationing in commercial loan markets have been investigated by using quantitative and qualitative decision parameters for 77 firms that operate in manufacturing sector. Logistic regression and discriminant analysis were employed in order to estimate the credit rationing. When correlation coefficients between variables, tolerance and VIF scores are examined, it is found that multicollinearity problem does not exist between the variables. The Durbin- Watson test result (DW = 2.373) indicates that there is no autocorrelation problem. The Omnibus test result supports the relationship between the dependent and independent variables.

In this study, we examined probability of credit rationing with 12 different factors and found that morality, liquidity and credit history play significant role in loan approval procedure, as well as in credit rationing. Based on the methods, logistic regression and disciriminant   analysis, there is a positive relationship between credit rationing and character, liquidity and credit history. In particular, the character variable, which is used as a morality risk, is a very important factor for decision makers in banks. In addition, compared to logistic regression, discriminant analysis yields better results on credit rationing estimation. The study can further be developed by using large sample that represents the whole commercial lending process in Turkey along with multiple periods.

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APPENDIX 1: Dependent and Independent Variables

Variables	Definition	Abbreviations	Codes / Value
Y	Credit Rationing	Rationing	1=Yes 0=No
X_1	Firm Size	Size	1= Total Sales >40.000.000 2= Total Sales <40.000.000 3= Total Sales < 8.000.000 4= Total Sales < 1.000.000
X_2	Firm Age and Ownership Structure	Age	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
X_3	Bank Relations	Relation	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
X_4	Foreign Trade Status	Export	1=1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
X_5	The Administrative Structure	Admin	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
X_6	Morality	Character	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
$X_{7(A)}$	Liquidity	Liquidity	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
$X_{7(B)}$	Asset Structure	Asset	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
$X_{7(C)}$	The Capital Structure and Leverage	Leverage	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
$X_{7(D)}$	Profitability, and Productivity	Profit	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
$X_{7(E)}$	The Performance Ratios	Performance	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk
X_8	Credit History	History	1 = Risk Free 2 = Low Risk 3 = Risky 4 = High Risk

APPENDIX 2: Correlation Coefficients between Variables

	Size	Age	Relation	Export	Admin	Character	Liquidity	Asset	Leverage	Profit	Performance	History
Size	1,00											
Age	0,26	1,00										
Relation	0,10	0,33	1,00									
Export	0,33	-0,07	0,01	1,00								
Admin	0,05	0,30	0,60	0,08	1,00							
Character	0,20	-0,03	0,17	0,02	0,19	1,00						
Liquidity	0,05	0,17	0,29	0,16	0,27	0,13	1,00					
Asset	0,24	0,22	0,10	0,21	0,27	-0,11	0,16	1,00				
Leverage	0,16	0,34	0,49	-0,09	0,35	0,07	0,53	0,14	1,00			
Profit	0,17	0,09	0,13	0,12	-0,04	0,10	0,11	0,28	0,25	1,00		
Performance	0,03	0,02	-0,01	0,09	-0,11	-0,14	0,23	0,06	-0,06	-0,08	1,00	
History	0,13	0,20	0,33	0,01	0,20	0,05	0,11	0,02	0,07	-0,04	-0,05	1,00

A STRUCTURAL EQUATION MODEL FOR THE DESCRIPTION AND COMPARISON OF COMPLAINT BEHAVIOUR AFTER PURCHASING OF ELECTRONIC, FOOD AND TEXTILE PRODUCTS

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Keywords:

Consumer Behaviour,
Complaint Behaviour,
Complaint Intention,
Structural Equation
Modelling,
University Students

JEL Classification:
M31, C39, I23

ABSTRACT

This study was undertaken to investigate the complaint behaviour exhibited by university students due to dissatisfactions they experienced after purchasing electronic, food and textile products by using a proposed Structural Equation Modelling (SEM). For this purpose, measurements are performed onan interval scale by using the 5-point Likert in order to measure the agreement level of 329 university students on attitude and behaviour statements oriented at complaints. There are 7 factors in the research model including alienation related with complaint (ALN) and controllability (CON) as exogenous latent variables; perceived value of complaint (VAL), the "complaint will be successful" faith (LKH), complaint intention (CI), explicit complaint behaviour (ECB) and implicit complaint behaviour (ICB) as endogenous latent variables. In this study, the effect of alienation of students from the company they shop and of their belief in controllability of the company on general complaint attitudes and complaint behaviours are tested with 13 hypotheses for electronic, food and textile products separately, and the obtained results are compared. In relation to the three groups, research findings have shown the same results for certain hypotheses and different results for certain other hypotheses.

1. INTRODUCTION

Consumption is an ongoing behaviour since the existence of mankind. Consumers show purchase behaviour in every day with various requirements. As a result of this behaviour, a consumer will show displeasure when he thinks that the product he purchased does not meet his expectations and will exhibit his displeasure as complaint behaviour (Yi, 1990).

Research on consumer satisfaction and complaints began in the early 60s. Following the 90s, in particularly, there has been a significant increase in the number of studies regarding this subject with the development and commencement of the "total quality management" concept which aims to resolve customer dissatisfaction (Yılmaz, 2004a, 2004b).

Today there is a limited tendency to understand consumer complaints despite the importance of listening and resolving consumer complaints. Several elements of consumer complaint behaviour including perceived cost (Richins, 1980), controllability (Folkes, 1984), likelihood of a successful complaint (Granbois et. al.,1977; Singh,1990), behaviour oriented at complaints (Bearden Mason, 1984; Singh and Wilkes, 1996), and environmental demographic diversity (Singh and Wilkes, 1991) have been attempted to determine consumer complaints in the marketing literature on consumer complaints. Hirscbman (1970) suggests that the complaint thought of consumers depends on the fact that behaviour oriented at complaints, perceived value of the complaint and the likelihood of a successful complaint are distinguished (Kim et. al., 2003; Akan and Kaynak, 2008). Bearden and Oliver (1985) found a significant relationship between the resolution of the complaints of consumers and their satisfactions. In his study, Cilly (1987) found a significant relationship between consumer complaints and repurchase. Singh and Wilkes (1996) tested with a multi-stage model personal factors that affect the behaviour and value of a complaint2 which is expected to be based on consumer complaint behaviour. Keng and Liu (1997), in their study looked for a relationship between personal values and consumer complaints behaviour and revealed that the demographic and perceived personal values are related to consumer complaints and argued that income and education levels are notable effective factors.

The Technical Assistance Research Program has conducted research studies revealing that consumers who are satisfied with the handling of their complaints exhibit the same purchase behaviour with a higher tendency than those consumers with or without any complaints or those dissatisfied in any way (Berry and Parasuraman 1997). Stephens and Gwinner (1998) examined the consumer complaints behaviour as cognitive and affective processes in their study and developed a theoretical model. A study carried out by Nyer (2000) concluded that the complaint thought may lead to positive results in favour of consumers in the long term by revealing the reasons for dissatisfaction. Chiu et. al. (2001) investigated complaints about manufacturing defects in the experimental study conducted with their students and determined the perceived price and social class affect on consumer complaint behaviour. Mc Alister and Erffmeyer (2003) attempted to reveal the relationship between consumer dissatisfaction, consumer complaints and marketing failures in their studies. John et. al. (2003) has suggested that personal factors and personal attitudes affect the complaint behaviour and concluded that personality traits and attitude oriented at complaints affect complaint behaviour. Kim et. al. (2003) developed a model in order to examine the perceptual and behavioural effects on consumer complaint intention, by taking the consumer complaints intention as a dependent variable, and personal factors and former complaint experiences as independent variables, and investigated the variables affecting the complaint intention. Tükyılmaz and Özkan (2003) examined the factors affecting consumer satisfaction in their study by taking into account the national customer satisfaction index (NCSI).

The main factors in the NCSI are customer expectations, perceived quality, and perceived value, whereas the indicators are customer complaints and customer loyalty. In a study undertaken by Yılmaz (2004b), it has been shown that the education level and income group affect the complaint behaviour, that a significant negative relationship exists between dissatisfaction and reaction and that reactions that occur are typically complaints directed at the company and return of a product.

Bell et. al. (2004) investigated the domestic market and customer complaint behaviour and examined the affect of domestic market relationships on the customer complaint behaviour in their study. Sujithamrak and Lam (2005) think that the complaint thought also provides quality service to consumers on a prospective basis as well as compensating the unjust treatment they are subjected to. Larivie'Re and Van den Poel (2005) investigated the period after consumer complaints and found in the study they conducted that effective consumers are more prone to complaint behaviour. They also concluded in the same study that the complaint behaviour is related to the rate of feedback received for the complaint, financial compensation and the last complaint behaviour.

Uzkurt (2007) mentioned that concepts such as customer value and satisfaction are concepts that are different but also related to each other in the study he conducted about the effects of customer value and satisfaction on after-purchase trends of customers. He found that the model which reveals indirect and more powerful effect of customer value on after-purchase trends of customers through customer satisfaction is more feasible than the model revealing the direct effect. Yılmaz et. al. (2007), in the study they carried out, modeled the various complaint behaviours which customers' exhibit following purchase.. The model was found to be meaningful and the complaint behaviours shown by the customers are taken as boycott, complaint to the company, seeking his rights through legal channels and seeking his rights by applying to the government.

Akan and Kaynak (2008), in the model they used, examined the effects of five variables (alienation, controllability, attitude oriented at complaints, perceived value of complaint and realizing the likelihood of successful complaint) affecting complaint thoughts of customers. Sun (2009) investigated behaviours exhibited by the customers in case of dissatisfaction following on-line purchase behaviour in his study. Lee et. al. (2010) conducted investigations on whether any relationship exists between purchase behaviour and complaint behaviour and found that there is a positive relationship between the two.

Özer et. al. (2010) specified and classified the reactions in case of dissatisfaction after purchase and compared this classification with those studies available in the current literature. As a result, it is seen that the classification was addressed as a similar and personal reaction, a complaint to the company and as a complaint to a third body. In our study, reactions following dissatisfaction after purchase, which is specified by Özer et. al. (2010), are used and these reactions are discussed in two aspects as "explicit" and "implicit". Burns and Bowling (2010), in the study they carried out, investigated the effect of affective tendencies and negative-positive perceptions of university students on consumer attitudes and behaviour. Satisfaction degrees and service quality perceptions of individuals who have positive emotions were found to be related with each other.

Gökdeniz et. al. (2011) investigated the factors affecting consumer satisfaction after complaint behaviour and concluded that consumer complaints should be evaluated successfully in order to eliminate consumer dissatisfaction, enable repurchase and prevent the adverse word of mouth communication behaviour.

To summarize the above-mentioned literature: Elements of consumer complaint intention and behaviours have been attempted in most studies. Singh and Wilkes (1996) are inadequate to explain the consumer complaints behaviour despite the fact they found the relationship between attitudes and perceptual variables with the complaint response. Most of the studies deal with complaint behaviour that could not be predicted by attitudes and perceptions. A moderator variable is needed to explain the complaint behaviour. This moderator variable is complaint intention. The effect of personal and perceptual attitudes towards complaints in complaint behaviour through complaint intention taken as the moderator variable has been investigated in this study by using a recommended SEM (Structural Equation Modeling).

2. METHOD AND MATERIAL

2.1.The Aim of the Study

Structural Equation Modeling (SEM) is a multi-variable statistical technique which uses a linear approach in order to resolve complex theoretical structures containing intangible facts (Çelik and Yılmaz, 2013). Intangible facts mean latent variables which are set forth via observed variables. SEM enables evaluating causal relationships between these latent variables and testing and developing the theoretical model put forward.

It is thought that this will shed light on research studies in the social sciences; in particular, since their theory is based on intangible structures it becomes very difficult to determine intangible concepts such as intelligence, motivation, emotion, attitude and the relationship between them. Therefore, the researcher must relate the latent variable with the observable variables at the point of default structure in order to define the latent variable functionally (Yılmaz, 2004b).

There are very few studies that explain this complex structure with SEM despite numerous studies in which attitudes and behaviours towards complaints are investigated in the literature. In this study, the complaint attitude and complaints have been explained with SEM.

One of the aims of this study is to determine the factors which effect complaint intention and behaviour of consumers who are university students following their purchase behaviour of electronic products, food and textile products and to investigate the effect of these factors on complaint intention and behaviour using a recommended SEM. Another aim of this study is to specify similarities and differences between complaint intention and behaviour following the purchase behaviour of electronic products, food and textile products.

Ajzen and Fishbein (1980) postulate that complaint intention and behavior can be predicted and explained by the attitude of a consumer. Firstly, the effect of personal attitudes (alienation and controllability) regarding complaints on general complaint attitudes (perceived value of complaint, the "complaint will be successful" faith) is investigated in this study. Subsequently, the effect of these general complaint attitudes on the complaint intention is studied and reflections of complaint intention on complaint behaviour are presented separately for electronic, food and textile products. In the final step, comparison is made for three different situations. Similarities and differences towards complaint intention and behaviours caused by attitudes exhibited by consumers where the concern is an electronic, food or textile product are investigated.

2.2. Research Model and Hypotheses

In this research, firstly, the effect of personal attitudes (alienation and controllability) regarding complaints on general complaint attitudes (perceived value of complaint, the "complaint will be successful" faith) is investigated, later the effect of these general complaint attitudes on the complaint intention is studied and, finally, the effect of the complaint intention on complaint behaviour is analyzed. The model proposed for this purpose is given in Figure 1.

There are 7 factors in the research model: Alienation related with the complaint (ALN), controllability (CON), perceived value of the complaint (VAL), and the "complaint will be successful" faith (LKH), the complaint intention (CI), the explicit complaint behaviour (ECB) and the implicit complaint behaviour (ICB).

A consumer who could not obtain the benefit expected from the company becomes alienated from that company and this alienation feeling may result in a negative attitude regarding the complaint and a perceived value of the complaint which is considerably low and having a weak "complaint will be successful" faith (Westbrook, 1980; Akan and Kaynak, 2008). Companies reassuring consumers about controls in case of dissatisfaction will positively affect the thought of consumers regarding complaints, the perceived value of the complaint and the likelihood of a successful complaint (Day and Landon, 1976).

Figure 1: Research Model
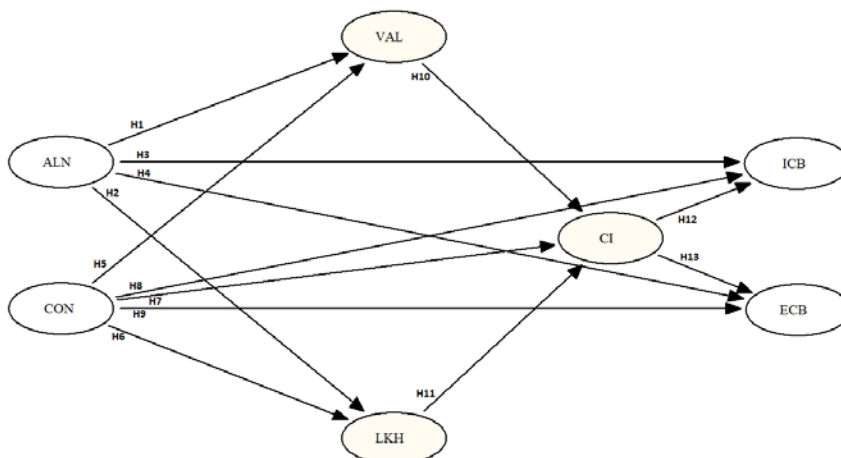
1Alienation: ALN; Controllability: CON; Perceived Value of Complaint: VAL; the "Complaint Will Be Successful" Faith: LKH; Complaint Intention: CI; Implicit Complaint Behaviour: ICB; Explicit Complaint Behaviour: ECB.

Alienation from these personal attitudes, available in the research, is the negative attitude exhibited by consumers towards the company which dissatisfies its consumers (Allison, 1978; Westbrook, 1980; Singh, 1989). Statements devoted to consumer alienation are measured mostly with consumer dissatisfaction and a greater dissatisfaction results in a negative exhibited attitude and/or behaviour (Westbrook, 1980, Kim et. al., 2003). In the light of this information, it can be argued that alienation from the company affects general complaint attitude and complaint behaviour.

H_1 = Perceived value of complaint decreases as consumer alienation increases.

H_2 =.The "Complaint will be successful" faith decreases as consumer alienation increases.

H_3 = Implicit complaint behaviour increases as consumer alienation increases.

H_4 = Explicit complaint behaviour increases as consumer alienation increases.

Controllability from these personal attitudes, available in the research, can be defined as the belief that companies can predict and prevent dissatisfaction of consumers. Therefore, a consumer considers controllability at the heart of responsibility and feels confident in that his complaint will be successful and the perceived value of complaint will increase when he thinks the controllability is high (Kim et. al., 2003). In addition, it is assumed that controllability directly affects the complaint intention or behaviour. The following hypotheses have been developed in order to investigate this issue:

H_5 = Perceived value of complaint increases as controllability increases.

H_6 = The "complaint will be successful" faith increases as controllability increases.

H_7 = Complaint intention increases as controllability increases.

H_8 = Implicit complaint behaviour increases as controllability increases.

H_9 = Explicit complaint behaviour increases as controllability increases.

The perceived value of complaint can be defined as the belief in that complaint behaviour is worth the efforts of the consumer. In that case, the consumer who believes that the potential benefit of complaint behaviour is more than the cost he will be more prone to make a complaint (Kim et. al., 2003). We can consider the following hypothesis to test this issue:

H_{10} = Complaint intention increases as perceived value of complaint increases.

The "complaint will be successful" faith can be defined as the belief of a consumer that the company will do what is necessary in order to eliminate that unjust treatment after the complaint. The company may return the product cost, replace the product, pay for the damage or apologize (Singh, 1990). A consumer will be more prone to make a complaint as long as he believes his complaint will be taken into account. On the other hand, he will remain silent considering that making a complaint is ineffective (Kim et. al., 2003). We can consider this issue with the following hypothesis:

H_{11} = Complaint intention increases as the "complaint will be successful" faith increases.

It is assumed that a consumer with an intention of a complaint will exhibit his complaint behaviour by various behaviour patterns since the consumer will either display an action or will not act in order to conclude his complaint. Resolving the consumer complaints effectively increases consumer satisfaction and the re-purchase tendency. However, it can be seen that consumers who are subject to complaint dissatisfaction show much more displeasure than those making no complaints and exhibit much more adverse word-of-mouth communication (Pei-wu and Yan-qiu, 2006). Consumers show one (or both) of the explicit or implicit behaviour patterns in the event they take action. Seeking his rights by applying to the company, seeking his rights by legal proceedings and seeking his rights with the help of public institutions and organizations; all can be given as examples for the explicit complaint behaviour. Boycotting the company with no future shopping from there again and warning immediate surroundings against the company can be given as examples for the implicit complaint behaviour (Yılmaz, 2007). In this case, we can put forward the following hypothesis:

H_{12} = Implicit complaint behaviour increases as complaint intention increases.

H_{13} = Explicit complaint behaviour increases as complaint intention increases.

2.3. Sample and Data Collection Tool

Participants (as samples) of the study are 329 persons who are were selected by the random sampling method from among the students of the Faculty of Arts and Sciences studying at Eskişehir Osmangazi University in 2011. This type of sampling is a random selection from any part of the universe by the researcher according to the determined sample size. To illustrate, random sampling is taking students as samples in the determined number by going to any faculty. The 14%, 16%, 24% and remaining 46% of students selected with this method consists of 1st year, 2nd year, 3rd year and 4th year students, respectively. At the same time, 60% of the students from the sample were female while 40% were male. This research data was collected with a survey method by means of face-to-face interviews with students. Survey questions were discussed with five specialist teams who worked on this topic before the collection of final data. Subsequently, a pilot study was conducted with 50 university students selected randomly in order to investigate the reliability of the statements contained in the survey. Statements which reduce reliabilitywere either corrected or removed from the survey following the pilot study. Cronbach Alfa values calculated for the reliability of the survey are calculated within the interval of 0.60 – 0.76.

The first part of the survey consisted of 9 demographical questions devoted to obtaining knowledge on some of the personal characteristics of the participants and their experiences in their involvement of previous complaints. The second part consisted of 26 attitude statements related to consumer complaints. The final part consisted of 14 complaint behaviour statements exhibited by participants in the event of dissatisfaction. Measurements were performed on an interval scale by using the 5-point Likert (1. Strongly disagree, 2. Disagree 3. Neither agrees nor disagree, 4. Agree and 5. Strongly agree) in order to measure the agreement of participants on statements oriented at complaints and by using the 5-point Likert (1. Never, 2. Rarely 3. Sometimes 4. Often, 5. Always) in order to measure their behaviour in case of dissatisfaction. Statements towards attitudes consisted of concepts such as alienation from the company, the belief that the company might prevent the dissatisfaction (controllability), the "company will be successful" faith, perceived value of complaint and complaint intention. Statements towards behaviour include the concepts such as explicit and implicit complaints.

The measurement tool used by Kim et. al. (2003) and Akan and Kaynak (2008) is improved in order to measure attitudes and behaviour towards complaints and finalized by adding to this measurement tool the behaviour statements oriented at complaints. Questions towards previous complaint experiences given in the "demographical knowledge" part of the measurement tool used by Kim et. al. and Akan and Kaynak have been measured by Singh (1989, 1990); whereas statements belonging to the alienation sub-dimension (ALN1, ALN4, ALN5, ALN6) from attitude statement by Allison (1978) and Singh (1989,1990); statements belonging to the controllability sub-dimension (CON2, CON4) by Blodgett et. al. (1993), Folkes (1984), Singh and Wilkes (1996); statements belonging to the perceived value of complaint by (VAL1, VAL2) Bagozzi (1982), Richins (1980) and Singh (1989, 1990); statements belonging to the faith sub-dimension that the complaint will be successful by (LKH1, LKH2, LKH3) Day (1984), Richins (1983), Singh (1990); statements belonging to the complaint intention sub-dimension by (CI1, CI3) Day et. al. (1981) and Singh (1989) all with the help of the 5-point Likert scale were used in previous studies. Statements oriented at behaviour statements (e2, e4, e9, e12, e13) have been developed by making use of the studies of Singh (1989), Singh and Wilkes (1996) and Yılmaz (2007). Statements oriented at attitudes and behaviours are given in Table 1.

3. FINDINGS

Whether the university students participating in the research exhibit complaint behaviour has been dealt with according to the education level of their parents, since it is considered that the attitudes and behaviours of individuals is are affected by the education level of their parents. When the education level of their mothers is investigated, it is seen that mothers of 41% of students participating in the research study graduated from secondary school whereas 38% graduated from primary school and 20.4% from undergraduate programs and the remaining from graduate programs. Whereas when the education level of their fathers is investigated, it is seen that the fathers of 42.2% of students participating in the research study graduated from secondary school, 38% from primary school and 17% from undergraduate programs and the remaining from graduate programs.

Each of the electronic, food and textile products were investigated for the research model given in Figure 1. The Confirmatory Factor Analysis (CFA) was used to determine whether measurement models containing each sub-dimension are significant or not by applying the LISREL 8.72 software package. It was found that the measurement models are significant with the help of the results. Subsequently, compliance of the complete model was evaluated for each separate case, with the help of the Fit Index.

A path diagram is drawn by using the LISREL 8.72 software package in order to investigate the predicted relationships with the hypotheses and the Maximum Likelihood method was used to predict the structural parameters. The path diagram of the model is given in Figure 3. The LISREL software package gives the results of analysis as standardized and non-standardized coefficients. In this study, standardized coefficients are used for ease of interpretation. Fit index values regarding compliance of the model are given in Table 1 for electronic, food and textile products. It can be seen that the assumed model is within the acceptable limits according to these results.

Table 1: Standard Fit Index and Fit Values of the Proposed Model

Fit Index	Good Fit	Acceptable Fit	Model 1 (Electronic)	Model 2 (Food)	Model 3 (Textile)
x^2	-	-	281.59 (df=120)	417.05 (df=120)	279.31 (df=120)
x^2/df	$0 \le x^2/df \le 2$	$2 \le x^2/df \le 3$	2.3466	3.4754	2.3276
RMSEA	$0 \le$ RMSEA ≤ 0.05	$0.05 \le$ RMSEA ≤ 0.10	0.064	0.087	0.079
GFI	$0.95 \le$ GFI ≤ 1.00	$0.90 \le$ GFI ≤ 0.95	0.91	0.88	0.90
AGFI	$0.90 \le$ AGFI ≤ 1.00	$0.85 \le$ AGFI ≤ 0.90	0.88	0.82	0.86
SRMR	$0 \le$ SRMR ≤ 0.05	$0.05 \le$ SRMR ≤ 0.10	0.067	0.079	0.076

(See Schermelleh-Engel et. al.., (2003) for Fit Index.)

Chi-square value related to the compliance of the research model has been calculated as 281.59 (df=120, p<0.001) for electronic products, 417.05 (df=120, p<0.001) for food products and 279.31(df =120, p<0.001) for textile products. As the chi-square value calculated for compliance of the model may result in making wrong decisions as it is affected from the size of the sampling volume and thenumber of variables, the

compliance of the model is determined by using the x^2/df index, instead of the value

in structural equation modeling (Schermelleh-Engel et. al., 2003).

The x^2/df value has been found as 2.3466 for electronic products, 3.4754 for food products and 2.3276 for textile products in this study. These values are within the limits of "Acceptable Fit" for electronic products and food products. Values are calculated from other Fit Indexes for electronic, food and textile products and found to be, respectively: RMSEA 0.064, 0.087 and 0.079 (90% confidence interval 0.054 – 0.074); GFI 0.91, 0.88 and 0.90, AGFI 0.88, 0.82 and 0.86. These values show that the research model is acceptable for electronic and textile products whereas not acceptable for food products. SRMR values has been calculated as 0.067, 0.079 and 0.076 for electronic, food and textile products, respectively. These values indicate that the model is acceptable for all types of products.

Complaint behaviour has been discussed in two dimensions such as explicit and implicit complaint behaviour in the model. Findings obtained from the study supports the fact that such a distinction should be considered.

The "alienation from company" factor affects the perceived value of complaint in the positive direction and the "complaint will be successful" faith in the negative way. Whereas the controllability factor effects the "complaint will be successful" faith in the positive direction it does not affect the perceived value of complaint when results relating to electronic products are interpreted in summary.

In addition, the complaint intention factor is affected from the "complaint will be successful" faith even though the controllability factor is not affected by the perceived value of the complaint.

It can be observed that the implicit complaint factor is directly affected by the alienation factor and, to the contrary, it is not directly affected by the controllability factor when factors affecting the complaint behavior is are analyzed. Also, we note that the implicit complaint behaviour is not affected from the complaint intention factor. It became evident that the explicit complaint factor is not directly affected by the alienation and the controllability factors but affected from the complaint intention factor.

It can be seen that the "Alienation (ALN)" latent variable is affected from four matters when the path diagram of electronic products is investigated. There are two matters in the "Controllability (CON)" dependent variable. The independent variable "Companies might prevent consumer dissatisfactions that are likely to occur in the future by taking into account the consumer complaints (CON4.E)" is noteworthy with a coefficient of 0.77 among these matters. The matter "If I believed that companies take my complaint into account they would provide me much better service in the future and I would make complaints about the company (VAL1.E)" which takes the maximum value from among the matters affecting the "perceived value of complaint (VAL)" variable is quite remarkable with a coefficient of 0.88. The coefficient of the matter "When I complained about a situation that did not satisfy me, companies will provide much better service in the future and all consumers will also benefit from this (LKH2.E)," which takes the maximum value among the matters those affecting the " " complaint will be successful" faith (LKH)" variable is found to be 0.93. "Complaint intention (CI) of an individual" is affected from two matters, whereas "Implicit Complaint Behaviour (ICB)" is affected from 3 matters and "Explicit Complaint Behaviour (ECB)" from 2 matters.

The most striking result among these is that ECB is affected by the matter, "I pass my complaints related to dissatisfactions to the consumer advisory service of the company (e.4)" with a coefficient of 0.93.

The factor "Alienation from company"affects the perceived value of the complaint in the positive direction whereas, the "complaint will be successful" faith in the negative direction for food products similar to the electronic products when results related with the food products are interpreted in summary. The controllability factor affects the perceived value of the complaint positively whereas it does not affect the "complaint will be successful" faith contrary to the results obtained for electronic products. The complaint intention factor is affected from the perceived value of the complaint, the "complaint will be successful" faith and the controllability factor.

It is observed that the implicit complaint behaviour is directly affected by the alienation factor. On the other hand, it is not directly affected by the controllability factors when the factors affecting the complaint behaviour are analyzed. The implicit complaint factor is also affected by the complaint intention factor for the food products in contrast to the electronic products. On the other hand, it has been found that the explicit complaint behaviour is affected directly by the alienation factor, whereas it is not directly affected by the controllability factors similar to the implicit complaint behaviour. Similarly, the explicit complaint behaviour is affected from the complaint intention factor. These findings show that the explicit and implicit behaviours lead to similar results in the case of food products in contrast to electronic products.

The "Alienation (ALN)" latent variable is affected by four matters when the path diagram related with food products is analyzed. There are two matters for the dependent variable "Controllability (CON)". The independent variable, "If the companies become careful, they might prevent dissatisfaction of the consumers" draws attention among these matters with a coefficient of 0.88. The matter, "If I believed that the companies take my complaint into account and they would provide me much better service in the future, I would make complaints about the company" which takes the maximum value among the matters those affecting the "perceived value of complaint (VAL)" variable is quite remarkable with a coefficient of 0.93. It has been found that theeffect of this matter on the "perceived value of complaint" variable is also quite considerable for the electronic products. The matter, "When I complained about a situation that did not satisfy me, companies will provide much better service in the future and all consumers will also get benefit from this (LKH2.E)" takes the maximum value among the matters those affecting the ""complaint will be successful" faith (LKH)" variable for the food products similar to the electronic products and the coefficient of this matter was found to be 0.93. The "Complaint intention (CI)" variable is affected from two matters, whereas the "Implicit Complaint Behaviour (ICB)" from 3 matters and the "Explicit Complaint Behaviour (ECB)" from 2 matters.

In summary, the factor "Alienation from company"affects the perceived value of the complaint in the positive direction, whereas the "complaint will be successful" faith in the negative direction and the controllability factor affects the "complaint will be successful" faith and the perceived value of the complaint in the positive direction for textile products similar to the electronic and food products when results related to the textile products are interpreted in summary.

It was found that the controllability factor does not affect the "complaint will be successful" faith for the food products, whereas it does not affect the perceived value of the complaint for the electronic products. The complaint intention factor is not affected from the perceived value of the complaint similar with the electronic products even though it is affected by the "complaint will be successful" faith and the controllability factor.

It is observed that the implicit complaint behaviour is directly affected from the alienation factor similar to the electronic products and food products, whereas it is not directly affected by the controllability factors when the factors affecting the complaint behaviour are analyzed. The implicit complaint factor is also not affected by the complaint intention factor similar to electronic products. The implicit complaint behaviour was found to be affected by the complaint intention factor in the case of food products. It can be seen that the explicit complaint factor is directly affected by the alienation factor while not directly affected by the controllability factors similar with the food products. The explicit complaint behaviour is also affected from the complaint intention factor similar to electronic and food products.

The "Alienation (ALN)" latent variable is affected by four matters when the path diagram related to textile products is analyzed. The dependent variable "Controllability (CON)" consists of the matter, "Companies might prevent consumer dissatisfactions that might occur in the future by taking consumer dissatisfactions into account". The matter, "If I believed that the companies take my complaint into account and they would provide me much better service in the future and I would make complaints about the company" constitutes the variable "perceived value of complaint (VAL)". The matter, "When I complained about a situation that did not satisfy me, companies will provide me much better service in the future and all consumers will also benefit from this" takes the maximum value from among the matters those affecting the " "complaint will be successful" faith (LKH)" variable with a coefficient found to be 0.86. The "Complaint Intention (CI) of an individual" variable is affected from two matters, whereas the "Implicit Complaint Behaviour (ICB)" from 3 matters and the "Explicit Complaint Behaviour (ECB)" from 2 matters.

Standard weights predicted by the Maximum Likelihood Method are given in Appendix 1 for the electronic, food and textile products related to the research model.

The "t" values of the hypotheses for the research model obtained for electronic, food and textile products and whether the hypotheses are supported or not are given in Appendix 2. Hypotheses that are not supported are marked with [NS] in the table.

5. RESULTS AND DISCUSSION

It can be seen that the H1, H2 and H3 hypotheses are accepted for all products, whereas the H4 hypothesis is rejected for electronic products and accepted for food and textile products when the H1-H4 hypotheses, which are constituted in order to investigate the relationship between alienation latent variable with other latent variables are tested.

The H1 hypothesis confirms that the perceived value of complaint decreases in case the consumer is alienated from the company because the consumer thinks that his complaint is not worth the efforts when that he is alienated from the company. The H2 hypothesis shows that a significant relationship was found in a negative direction between alienation from the company and the "complaint will be successful" faith. In other words, his "complaint will be successful" faith will decrease when the consumer is alienated from the company. The H3 hypothesis reveals that a significant positive relationship exists between the consumer's alienation from the company and his non-exhibition of implicit complaint behaviour. As the consumer is alienated from the company, the complaint behaviour shown by him will increase. The consumer alienated from the company will not do any shopping/ deal with the company which dissatisfies him by boycotting it and would warn his immediate surroundings about this issue. Rejection of the H4 hypothesis for electronic products shows that there is no significant relationship between alienation from company and the explicit complaint behaviour. If the consumer alienates from the company, he prefers to boycott the company instead of seeking his rights via company or through legal channels in the case of electronic products. It also indicates that the consumer exhibits implicit complaint behaviour instead of explicit complaint behaviour in the case of electronic products. This result also supports the fact that the implicit and explicit complaint behaviours should be dealt with individually. The consumer exhibits both explicit and implicit complaint behaviour when he is alienated from the company in the case of food or textile products. This result indicates that the consumer does not only seek his rights by boycotting the company but also through legal channels in case of an alienation from the company as when the food and textile products results in health-threatening dissatisfactions. It can be thought that another reason for the relationship between consumer alienation from the company and the explicit complaint behaviour being insignificant for the electronic products in contrast to food and textile products might originate from the specifications of the products. Consumers are protected against "defective goods" within the scope of the consumer protection law. "Defects" of the goods or "consumer misuses" could be easily and immediately demonstrated for food and textile products. However, the electronic products are classified as "complex goods" as their technological level is high and they are multi-functional goods. Misuse by consumer affects effective utilization of the goods significantly in these type of goods. The consumer may think that it is not a very easy and realistic issue to understand whether the problem originated from a "defective good" or from "misuse" for these type of goods.

It can be seen that the H6 and H7 hypotheses are accepted, whereas H5, H8 and H9 hypotheses are rejected for the electronic products when the H5-H9 hypotheses which are constituted in order to investigate the relationship of the controllability latent variable with other latent variables are tested. It is observed that a positive and strong relationship exists between the controllability; in other words, the individual's faith in the companies could prevent dissatisfaction of consumers by predicting them, and the "complaint will be successful" faith and complaint intention. On the other hand, it can be seen that a direct significant relationship does not exist between the controllability and perceived value of a complaint and complaint behaviour in this case. It can be said that the expression given for H4 above also applies for H5.

When an individual thinks that the company could prevent him from dissatisfaction, his "complaint will be successful" faith and the complaint intention increase. Despite this, the complaint behaviour is affected indirectly (through complaint intention moderator variable) by the controllability latent variable. It can be seen that H5 and H6 hypotheses are accepted whereas the H7, H8 and H9 hypotheses are rejected for food products. This case reveals that the consumer's belief in that the company would prevent his complaint increases the perceived value of the complaint, while it does not affect the "complaint will be successful" faith in the case of food products as opposed to electronic products. It can be seen that the H8 and H9 hypotheses are rejected whereas the H5, H6 and H7 hypotheses are accepted for the textile products. The H5 hypothesis is confirmed for food and textile products, whereas H6 for all products and H7 for electronic and textile products. When an individual thinks that the company could prevent his dissatisfaction, his complaint intention will increase in all cases. The H8 and H9 hypotheses are not confirmed for all three cases. It is observed that the controllability factor does not directly affect complaint behaviour in the case of any products.

The H10 hypothesis, which is constructed in order to determine the relationship between the perceived value of the complaint latent variable and the complaint intention latent variable, is rejected for electronic products and textile products and it is concluded that no significant relation exists between these variables. It is concluded for the food products that a significant relationship exists between these variables and that the complaint intention also increases by a perceived value of the complaint increase. The consumer will intend to make a complaint by thinking his complaint behaviour is worth his efforts in case of food products. The H11 hypothesis, which is constructed in order to investigate the relationship between the "complaint will be successful" faith latent variable and the complaint intention latent variable, reveals significant differences between these variables for all products.

The H12 hypothesis which is constructed in order to determine the relationship between the complaint intention and implicit complaint intention has been rejected for electronic products and textile products and it is observed that no significant relationship exists between the complaint intention and implicit complaint behaviour. On the other hand, the H13 hypothesis which is constructed in order to determine the relationship between the complaint intention and explicit complaint behaviour has been accepted for all cases. In this case, we can mention the existence of a significant relationship between the complaint intention and explicit complaint behaviour. The most striking result here is that the complaint intention affects the explicit complaint behaviour for all cases. However, it affects the implicit complaint behaviour for only food products.

It was found in previous studies (see: Kim et. al., 2003; Akan and Kaynak, 2008) that attitude oriented at complaint, the perceived value of a complaint and the "complaint will be successful" faith all affect the complaint intention in a positive way. However, no significant affect of alienation from company was found to exist on complaint intention (Akan and Kaynak, 2008). In this study, it is observed that the complaint intention is affected by the controllability latent variable but the "complaint will be successful" faith and the perceived value of complaint latent variables differ according to the type of products.

When the after-purchase complaint experiences of the students answering questions are analyzed for the last 3 months, it can be seen that 66.3% of them have no complaints against the company whereas 12.8% of them have made a complaint once, 11.6% of them twice, 7% of them three times and the remaining four or more times. Moreover, complaints submitted to the Consumer Protection Association within the last three months constitute only 3.3% whereas the rate of those having made no complaints in this period is 96.7%. In addition, complaints submitted to the Consumer Affairs Pages of Media Organs constitute only 1.2%. From this point of view, it can be seen that the university students do not exhibit too much complaint behaviour and complaints made to a third party/organ is negligibly small. A significant 83.3% of those having made a complaint to the company stated that they have been satisfied with the result of their complaints; whereas almost all of those having made a complaint to a third party/organ have been satisfied with the result of their complaints even though their numbers are so small. A remarkable issue in survey studies is that consumers participating in the survey does not have any knowledge about the existence of a third party/agency where they can make a complaint even though they are university students.

The model proposed in this study should be interpreted as a primary Structural Equation Modeling (SEM) related with the subject and it should be noted that it needs improvement. Therefore, after-purchase intention and behaviour of not only university students but also individuals of all ages and professions could be investigated by keeping the sample volume larger in future studies.

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APPENDIXES

Appendix 1 - Standard Weights for the Research Model

Factors/Matters	Electronics	Food	Textiles
Factor ALN: Alienation			
ALN1: Companies do not care about consumers.	**0.36**	**0.24**	**0.37**
ALN4: Companies do not behave honestly to consumers	**0.52**	**0.43**	**0.56**
ALN5: Consumers are not critical of companies.	**0.64**	**0.65**	**0.68**
ALN6: Companies forget their consumers after their products are sold.	**0.61**	**0.57**	**0.55**
Factor CON: Controllability			
CON2: Companies might prevent dissatisfaction of consumers if they became careful.	**0.65**	**0.88**	**-**
CON4: Companies may prevent consumer dissatisfactions that might occur in the future by taking consumer complaints into account.	**0.77**	**0.60**	**1.00**
Factor VAL: Perceived value of complaint			
VAL1: If I believed that the companies take my complaint into account and provide me much better service in the future, I would make complaints about the company.	**0.88**	**0.93**	**-**
VAL2: If I believed that the companies take my complaint into account providing me much better service in the future this will also provide benefit to other consumers, I would make complaints about the company.	**0.63**	**0.75**	**1.00**
Factor LKH: The "Complaint will be Successful" Faith			
LKH1: When I make a complaint about a situation that does satisfy me, companies would provide me much better service in the future.	**0.75**	**0.70**	**0.82**
LKH2: When I complainabouta situation that does not satisfyme, companies will provide much better service in the future and all consumers will also benefit from this.	**0.93**	**0.93**	**0.74**
LKH3: I will not make any complaints forgetting my shopping/dealing experiences that did not satisfy me.	**0.73**	**-0.22**	**0.14**
Factor CI: Complaint Intention			
CI1: I think makingacomplaint is time-wasting as I know that I will not receive any positive result from my complaint.	**0.72**	**0.72**	**0.73**
CI3: I will seek my rights against the company which dissatisfies me.	**0.63**	**0.50**	**0.42**
Factor ECB: Explicit Complaint Behavior			
ECB2: I would pass my complaints related to my dissatisfactions to the Consumer Protection Association (ALO 175)	**0.30**	**0.57**	**0.61**
ECB4: I would pass my complaints related with my dissatisfactions to the advisory service of the company.	**0.93**	**0.36**	**0.48**
Factor ICB: Implicit Complaint Behavior			
ICB9: Boycotting company with no shopping from there again.	**0.66**	**0.49**	**0.76**
ICB12: I would warn immediate surroundings against the company for not shopping/dealing there.	**0.46**	**0.61**	**0.51**
ICB13: I would not purchase the product of a brand which dissatisfies me.	**0.69**	**0.63**	**0.64**

Appendix 2 - Results of Hypotheses (path coefficients (t values))

	Electronics	Food	Textiles
H1: ALN→ VAL	0.18 (2.37 **)	0.12 (1.69*)	0.14 (2.25**)
H2: ALN → LKH	-0.30 (-3.98***)	-0.51 (-5.90***)	-0.48 (-6.27***)
H3: ALN → ICB	0.29 (3.29***)	0.53 (4.74***)	0.41 (4.90***)
H4: ALN → ECB	0.018 (0.26^{NS})	0.27 (2.35**)	0.34 (3.18***)
H5:CON → VAL	0.086 (1.17^{NS})	0.33 (4.70***)	0.11 (1.95*)
H6:CON → LKH	0.48 (5.67***)	0.11 (3.24***)	0.23 (3.45***)
H7:CON → CI	0.50 (4.43***)	-0.086 (1.51^{NS})	0.093 (2.63**)
H8:CON → ICB	-0.082 (-0.88^{NS})	0.12 (1.45^{NS})	-0.025 (-0.34^{NS})
H9:CON → ECB	0.010 (0.13^{NS})	0.14 (1.27^{NS})	0.14 (1.28^{NS})
H10:VAL → CI	0.11 (1.39^{NS})	0.20 (2.28**)	0.11 (1.32^{NS})
H11:LKH→ CI	-0.18 (-1.97**)	0.52 (5.06***)	0.45 (3.66***)
H12:CI → ICB	0.16 (1.61^{NS})	0.30 (2.77***)	0.12 (1.21^{NS})
H13:CI → ECB	0.49 (2.11**)	0.84 (4.67***)	0.79 (3.71***)
* $p \leq 0.10$, if $|t| \geq 1.65$, **$p \leq 0.05$, if $|t| \geq 1.96$, ***$p \leq 0.01$, if $|t| \geq 1.96$ (supported) ^{NS} not significant (not supported)			

A CONCEPTUAL FRAMEWORK FOR LINE MANAGERS' HRM IMPLEMENTATION EFFECTIVENESS: INTEGRATING SOCIAL CONTEXT AND AMO THEORIES

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ABSTRACT

Over recent decades, there has been an important stream of research that has examined the human resources management (HRM) and organizational effectiveness relationship. However, few of these studies have paid attention to developing perspectives regarding effective HRM implementation. Such implementation is a process that is not only executed by HR managers, for it is also the responsibility of line managers and other employees of the organization. Increasingly, the responsibilities of HRM are being passed on to line managers, who have thus become more involved in dealing with their employees' HRM issues. This study is aimed at investigating the factors that can influence the degree to which effective HR practices are implemented, going further than previous theoretical studies by proposing a conceptual model of HR implementation effectiveness. We incorporate the social context theory and AMO theory into the model. Social context factors of organizational culture, organizational climate, and political considerations as features of the work environment and top management's HR support as a higher-order social context dimension are proposed as drivers for effective implementation of HR systems and practices. The model also considers ability-motivation-opportunity factors as one set of variables that mediates the relationship between social context variables and line managers' HR implementation effectiveness. This study tries to step into an area of study which has not been comprehensively explored by the scholars. It involves putting forward a model of HR implementation effectiveness by considering the role of line managers and a set of propositions for testing in field. The propositions developed in the model provide guidelines for further study in the focal HRM topic that we believe will generate beneficial findings for both practitioners and academics.

1. INTRODUCTION

In recent decades, there has been an important stream of research that has examined the human resources management (HRM) and organizational effectiveness relationship. A few of the most recent studies have been focused on effective HRM implementation (Sikora & Ferris, 2014; Bos-Nehles, Van Riemsdijk & Looise, 2013; Guest, 2011). However, most scholarship has paid attention to the design and quality of HRM practices rather than their implementation in real world contexts (Khilji & Wang, 2006; Wright and Nishi, 2006; Huselid, et al., 1997). It is not merely the quality of a proposed HR system that drives the HRM-organizational effectiveness relationship, for successful implementation is also paramount (Chow, 2012). Vermeeren (2014) goes further when he states that the actual HR system being implemented by organizational members determines effectiveness, rather than the intended HR system as designed by an HR department. That is, HRM implementation is not simply executed by HR managers but also by line managers and employees of the organization. Consequently, there have been increasing calls for line managers to act as business partners in conjunction with HR and other employees regarding HR processes (Renwick, 003). In effect, HRM implementation by line managers in relation to their subordinates' employment issues has become increasingly commonplace in recent years (Bos-Nehles, Van Riemsdijk, Looise, 2013; Maxwell & Watson, 2006). Renwick (2003) notes that significant numbers of line managers want to get involved in sharing HR responsibilities with HR specialists, and that they take these responsibilities very seriously.

However, some academics have highlighted the complex and sometimes conflicting relationship between HR specialists and line managers. Sikora and Ferris (2014) argue that line managers may resist, fail to cooperate or simply ignore their HR responsibilities for various reasons, such as lack of trust between the parties and/or high work load levels. This can lead to lower employee involvement and undesirable employee attitudes and behaviors. In fact, it could be argued that the weaker the line manager involvement, the lower the organizational performance levels will be. Accordingly, Wright, McMahan, Snell and Gerhart (2001) contend that no matter how effective the HR practices are in theory, if line managers are not proactively involved in implementing them, top performance levels cannot be attained by the firm. That is, implementation of effective HR practices is fundamental to employee management success and improved firm performance (Becker & Huselid, 2006; Gratton & Truss, 2003).

The issues noted above prompt our investigation into the factors that can influence the degree to which effective HR practices are implemented. This work goes beyond previous theoretical studies in that it involves putting forward a model of HR implementation effectiveness and a set of propositions for testing in field. We incorporate social context theory (Ferris, Arthur, Berkson, Kaplan, Harrell-Cook and Frink, 1998) and AMO (Ability-Motivation-Opportunity) theory (Appelbaum, et al., 2000) in the model, which is also supported by two different frameworks provided by Sikora and Ferris (2014) and Bos-Nehles et al. (2013). Specifically, Sikora & Ferris (2014) sought to explain line managers' HRM implementation in terms of social contextual factors whereas Bos-Nehles, et al. (2013) applied AMO theory for analyzing line managers' HRM effectiveness.

2. THEORETICAL PERSPECTIVES

2.1. AMO Theory

The abbreviation AMO stands for ability-motivation-opportunity (Appelbaum, et al., 2000). According to AMO, in order for a firm to achieve improved organizational performance, it is necessary that employees demonstrate discretionary effort in performing their jobs as a result of applied HRM practices. The discretionary effort relates highly to the conditions that;

  a. Employees have the required abilities and skills for doing their jobs effectively,
  b. Employees are motivated to put extra effort into performing their tasks,
  c. Employees are provided with the opportunity to use their skills and are encouraged to express themselves.

From the above it can be seen that the AMO model adopts an employee-based perspective for linking people's ability-motivation-opportunity when implementing HRM practices with firm performance (Appelbaum, et al., 2000). By contrast, Bos-Nehles et al. (2013) take a managerial-perspective that focuses on line managers' ability-motivation-opportunity for effective HRM practices, claiming that even well-designed HRM systems do not by themselves guarantee a high degree of effectiveness in HRM implementation, for line managers' performance level is heavily influential on this effectiveness. Further, Alfes, Truss, Soane, Rees, Gatenby (2013) mention that significant differences exist among the intended, implemented and perceived HRM practices. Therefore, it is important to consider the line managers' role in HRM effectiveness. From an HRM perspective, ability refers to line managers' capacity to execute better HR practices such as using appropriate selection, hiring techniques, training instruments, competently assessing subordinates' performance, etc. Motivation pertains to their being willing to accept the HR roles and be rewarded for their effective behaviors, whilst opportunity is about getting the necessary resources and support for accomplishing their HR roles. In keeping with this, Sterling and Boxall (2013) have recently argued that enabled work contexts are important for developing employee abilities and motivation as these environments provide the individuals with opportunities such as information and technology as well as supportive line managers and co-workers.

Under the AMO framework, employee performance is taken as being a function of ability (A), motivation (M) and the opportunity to perform (O). According to the classical work-performance theories put forward by scholars such as Vroom (1964) and Blumberg and Pringle (1982), there should be an interactive effect of these factors for attaining performance. This suggests that ability, motivation or opportunity cannot deliver performance all by themselves and that each should be present to some degree, for if one is absent then performance becomes zero. Recent work by Siemsen, Roth & Balasubramanian (2008) and Boxall and Purcell (2011) supports the complementary effect of the AMO model as depicted by the formula: $P = f(A \times M \times O)$.

2.2. Social Context Perspective

Social context is an important mechanism, involving culture, climate, political considerations and social interaction factors and/or processes that generate an environmental and organizational framework for understanding the link between HRM systems, HR practices and organizational success (Ferris, et al., 1998). These factors/processes act as antecedents for the formulation and development of effective HR systems and practices (Sikora & Ferris, 2014; Bowen & Ostroff, 2004; Ferris et al., 1998). Bowen and Ostroff (2004) have considered the issue from a higher-level social contextual perspective in that they have stressed the importance of top management's HR support for the success of HR. In order to comprehend the social context perspective, it is necessary to make some explanations with regard to these contextual dimensions and their linkages with HRM systems.

Organizational culture refers to the organizationally embedded shared attitudes, beliefs, and core values of a firm's members. Formal management systems including HRM systems and practices as well as informal communication mechanisms provide important indicative cues about the organization's culture. For instance, organizations that are not flexible to change usually have HR systems that are either ignored by the workforce or used ineffectively (Sikora & Ferris, 2014). Organizational climate pertains to employees' common interpretation of the work environment including events, practices, policies, procedures, as well as the sort of attitudes and behaviors that are deemed appropriate (Bowen & Ostroff, 2004). Climates that foster the achievement of performance goals, such as high customer satisfaction, improved service quality, etc., are likely to result in rewards and bonuses for realizing these goals, which in turn will increase line managers' efforts to ensure successful HR implementation. Sikora & Ferris (2014) have found evidence that line managers' achievement of HR tasks correlates with the attractiveness of incentives on offer.

The political perspective in organizations is grounded in the fact that various individuals and groups with diverse interests existing in organizations is a reality of life that has to be lived with (Ferris & Judge, 1991). Organizational politics have been defined as "a social influence process with potentially functional or dysfunctional consequences"(Ferris & Judge, 1991; 449) or as Pfeffer (1981b; 7) puts it; "the study of power in action". Political activities in organization can range from conflicting interest resolution to forging coalitions with diverse interests and using power to influence decision making. Political behaviors are likely to have an impact on HR related actions. For instance, accountability is an important situational characteristic of political behavior and line managers, who are held accountable as the decision makers for selecting employees, may prefer to select individuals who are similar to themselves and tactically work to bring them into the company or have them promoted. In so doing, it is easier for them to build coalitions in order to strengthen their power base in the organization.

As to top management support, as mentioned above, Ferris et al. (1998) focus on the social context perspective as having an influence on HR systems and practices. Bowen and Ostroff (2004) also point to a 'higher-level' social context factor, namely, top management HR support.

Accordingly, as long as top management significantly regards the HR function as providing 'value' to the organization rather than see it merely as a 'cost' and thus, not hesitating to make important investments in HRM, clearly, under such circumstances HR is perceived as a high-credible function with significant authority. Consequently, an important message will be sent to all organizational members that HR has its own 'legitimacy', which will lead to an increase in line managers' efforts towards HR implementation. Cordial social interactions between line managers and the HR Department are likely to have a positive influence on the degree of effectiveness in HRM implementation (Sikora and Ferris, 2014). Moreover, the supportive role of top management regarding HRM practices cannot be disregarded in the social interactions because the success of the HR function in the organization is closely associated with their supportive input. For this reason, the top management HR support dimension is also added to the model of this study.

3. CONCEPTUAL FRAMEWORK AND PROPOSITIONS

3.1. The Model of the Study

In this model, the social context factors of organizational culture, organizational climate and political considerations as features of the work environment are proposed as being the drivers of effective implementation of HR systems and practices. In addition to these dimensions, the model deployed incorporates a higher-order social context factor, namely HR support coming from top management. Bowen & Ostroff (2004) briefly stated that top management should be considered as a factor in their article, but they did not incorporate it into their original model. Taking the AMO perspective into account, our model considers ability-motivation-opportunity factors as one set of mediating variables for probing the relationship between social context variables and line managers' HR implementation effectiveness. Further to this, Boxall and Purcell (2011) assert that employee ability, motivation and opportunity are an essential set of mediators for inclusion in any model of HRM. The model is designed so as to take into account the fact that how well the HRM practices are designed and how effective they are actually implemented can vary. Moreover, no matter how well-set up the HR practices are, they have no far reaching influence on performance when line managers are not able to or do not wish to implement them (Sikora & Ferris, 2014). Hence, it is essential that what is intended to be implemented should actually match with what is put into practice. On the other hand, as HR tasks are increasingly being devolved to line managers individual differences need to be taken into consideration. These stem from their varying abilities and motivation and also the opportunities they expect to take advantage of in the work environment. In addition, the effect of the social context factors on the ability-motivation-opportunity of line managers is also proposed as a topic requiring investigation. As depicted in the model, it is proposed that organizational culture and climate as well as political considerations can either foster or hinder opportunities provided for line managers in the work environment for HR related decision-making and hence, influence their knowledge, skills and motivation level in relation to effective HR implementation.

In general, our model is designed on the assumption that ability-motivation-opportunity and social context factors including higher-order social context dynamics, i.e. top management HR support, play significant roles in line managers' HR implementation effectiveness. The key mediating role of AMO factors between the social-context factors and HR implementation effectiveness relationship is central to the model's construction.

Figure 1: A Theoretical Model for Line Managers' HR Implementation Effectiveness
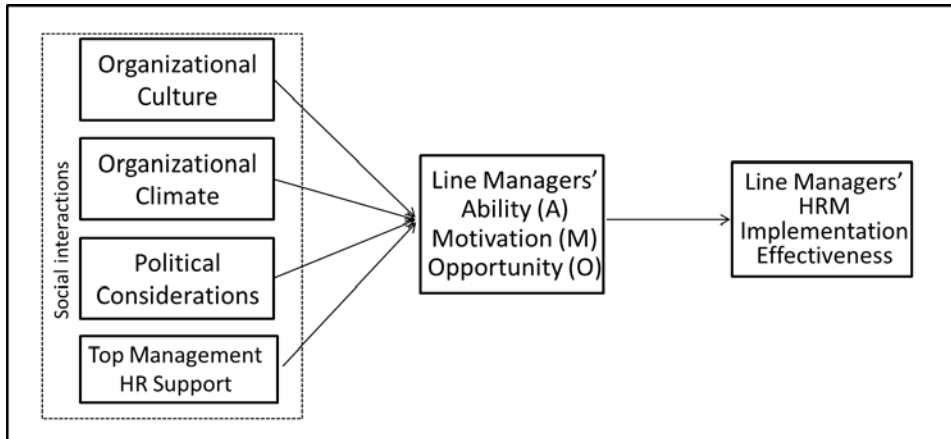
3.2. The Propositions

Organizational culture is made up of a network of values, norms, beliefs, assumptions and experience, which individuals in the organization learn, internalize and share over time (Rousseau, 1990; Schein, 1984). Schein (1984) argues that this culture is a process through which an organization's principles are transfused into its people and also taught to new members. In fact, top management and all employees in the organization learn and adopt the common norms of culture over time. Similarly, Sikora and Ferris (2011) assert that organizational norms and attitudes shape line managers' behavior in relation to implementing business practices. This means that having a well-structured HRM system is important but not necessarily sufficient for its effective implementation.

Adowele and Anthonia (2013) assert that organizational culture is composed of a set of factors according to which human behavior in the organization is established and this varies across organizations. Organizational norms that attach importance to HR practices are more likely to provide the managers with the necessary opportunities to use their skills and also are more likely to motivate them (Sikora & Ferris, 2014). The more organizations focus on training managers and employees in recruitment practices, such as behavioral interviewing or interpretation of data collected about individuals in the selection process, the more skilled they will be at selecting their employees (Omotayo et al., 2013). Regarding the influence of organizational culture on HRM, Nyameh (2013) also finds that there is a positive relationship between the culture, HRM practices and employee's performance and hence, arrives the idea that organizations should place emphasis on managing their cultural dynamics as this can give positive results on performance.

Conversely, when the organizational norms undermine the use of effective HR implementation, then line managers are reluctant to translate people management practices into reality (Sikora and Ferris, 2014).

Proposition 1. *An organizational culture supportive of effective HR practices is positively associated with improvements in line managers' AMO.*

Organizational climate has been defined by many scholars as a shared perception of employees about issues regarding the goals pursued by the organization, the way daily work activities are implemented and the sort of behaviors expected, rewarded or punished (Bowen & Ostroff, 2004). The climate sets the path as to how individuals in the organization are communicated with about HR policies and practices, which helps engender a shared perception about how HR is to be executed (Li, Frankel & Sanders, 2011). What fosters a strong organizational climate are the three features of: distinctiveness, consistency and consensus. That is, such climates contribute not only to strong HRM practices which are also distinctive, consistent among each other and which are collectively agreeable, but also to a convergent comprehension by all members of the organization with regard to these practices. Additionally, Bowen and Ostroff (2004) claim that positive climates help increase the motivation of members of the organization in performing desired skills, attitudes and behaviors. It may also be expected that strong and positive organizational climates provide line managers with the opportunity to participate in HR related decision-making and with the motivation to perform HR tasks appropriately. From this, the following proposition can be inferred:

Proposition 2. *A strong and performance-rewarding organizational climate is positively associated with improvements in line managers' AMO.*

HRM is composed of systems and practices in relation to which political considerations need to be taken into account. This is based on the assumption that political behaviors in organizations, such as coalition formation, lobbying and withholding information affect HRM decisions and actions regarding selection, performance appraisal, etc. (Sikora & Ferris, 2014). An organization might have established very structured and strong human resource management practices which are aimed at fair and objective selection, development and retention of promising individuals. Nevertheless, what is intended can be different from what the actuality is owing to political considerations, for political influence can be exercised in employee management practices both on the applicant/employee side as well as that of the manager. For instance, in the employee selection process managers may be intentionally or unintentionally more motivated to prefer individuals similar to themselves and project positive impressions in order to influence job applicants' job choices (Ferris & Judge, 1991). In which case, line managers might not put effort into using their ability to find the right person for the right job which may result in their unjust attitudes. Greenberg (1988) previously argued that it is not line managers' concern to ensure fairness or justice but to portray an image of fairness. Accountability is one of the dimensions of political behavior, which as Renwick (2000) points out is complementary to responsibility in relation to the execution of line managers' duties. Consequently, as long as line managers are tasked with being held accountable for HR implementation practices, then their motivation and effort for executing them will increase (Sikora & Ferris, 2014).

However, the degree of accountability given to those managers shall not lead them to present favorable impressions in order to seem acceptable to influential others in the organization (Ferris & Judge, 1991).

Proposition 3. *Political considerations focusing on HR accountability are positively associated with improvements in line managers' AMO*.

It is predominantly top management that sets the parameters of the organization at the establishment level. Reagrding which, the senior management of an organization can cultivate the idea that HR is a "business partner" or merely a "passive administrator" (Whittaker and Marchington, 2003). Those managers that view HR as a business partner treat this function equally with the other functions of the organization, thus providing the required resources and support for effective HR practices. In respect of this, a key issue is whether HR responsibilities are explicitly taken as part of the performance criteria in the same way as production and service goals (Whittaker and Marchington, 2003). A company's top management should set policies for full support of HRM practices design and implementation (Camelo Ordaz, De La Luz Ferna´ndez-Alles, Valle-Cabrera, 2008), for by so doing, line managers' AMO will be improved.

Proposition 4. *Greater top management support for effective HR practices is positively associated with improvements in line managers' AMO.*

It has been argued that line managers and those responsible for HR have to be in close partnership in order to deliver effective HR outcomes (Sikora & Ferris, 2014). Regarding which, Torrington and Hall (1996) previously asserted that an HR/line management partnership enables effective HR strategy execution. Social interactions that contribute to their level of partnership in terms of putting HR into effect have been found to be important (Sikora & Ferris, 2014). Moreover, line managers' view of the HR department is a criterion that can improve or impede the level of interaction. For instance, Whittaker & Marchington (2003) argue that some line managers criticize the degree of the HR department's contribution to organizational outcomes, claiming they are not aware of commercial realities and are slow to respond to business needs. They also expect more intensive involvement of HR support, believing that some tasks concerning pay and benefits, the appraisal process as well as health and safety issues require specialist expertise. In addition, coherent systematic support provided by HR specialists and the training of line managers is crucial as some of the latter may lack the appropriate skills for supervising their staff and implementing HRM practices in an effective way. However, Maxwell and Watson (2006) assert that the challenge for line managers and HR specialists does not just rest upon their relationship quality, for it also depends upon the ability and willingness of the former to carry out HR tasks properly (Renwick and MacNeil; 2002:407). Consequently, improvement of the relationship between line managers and HR specialists will motivate the former to use their knowledge and skills for effective HR.

Proposition 5. *Social interactions improving top management/HR/line manager relationships are positively associated with improvements in line managers' AMO.*

Appelbaum et al. (2000) adopt an employee-based perspective in their AMO model, which links people's ability-motivation-opportunity for implementing HRM practices with firm performance.

Further studies have investigated the degree to which ability, motivation and opportunity of line managers predict the effectiveness of their implementation of HRM practices (Bos-Nehles, et al., 2013; Whittaker and Marchington, 2003). Specifically, they aimed to measure the influence of line managers' performance level in terms of their ability, motivation and opportunity in implementing HRM practices, finding that having the skills and knowledge predicted their performance in this regard. In addition, if line managers are provided with clear-cut information with respect to their roles and responsibilities, they will be more effective in implementing HRM practices. Whilst Bos-Nehles et al. (2013) have found no effect of motivation on line managers' performance, Whittaker and Marchington (2003) have elicited that line managers' demotivation to execute HR practices is likely to decrease their level of performance in HRM systems implementation, which supports the following proposition.

Proposition 6. *Improvements in line managers' AMO is positively associated with their HRM implementation effectiveness.*

The proposed model considers ability-motivation-opportunity factors as a set of variables that mediate between the social context variables and line managers' HR implementation effectiveness. It is expected that social interaction factors, such as organizational culture, organizational climate, political considerations, top management HR support and/or social interactions are supportive of line managers' AMO. In turn, AMO level is anticipated to be positively associated with the effective implementation of HRM practices.

Proposition 7. *Improvements in line managers' AMO strengthens the relationship between organizational culture, organizational climate, political considerations, top management HR support and line managers' HRM implementation effectiveness.*

4. DIRECTIONS FOR FUTURE RESEARCH

In the related literature, the relationships among HR specialists, line managers and top management have been explored by various scholars. Some of them have emphasized how top management teams perceive HR professionals and the other staff in the department, whereas others have focused on how the employees and line managers view HRM and its effectiveness. This study has been geared towards an aspect that has not been comprehensively explored by the scholars and that is the vital role of the line managers in the effectiveness of the HRM implementation. The propositions developed through the model offer a new area of study in HRM for researchers that if pursued could lead to beneficial findings both for practitioners and academics. For future research, it is recommended that the above propositions are tested even with the addition of new variables to the model, such as line managers' leadership style (Vermeeren, 2014) and/or employees' perceptions of HR.

5. CONCLUSION

Going beyond previously proposed frameworks, in this study a model of HR implementation effectiveness that incorporates social context theory and AMO theory has been provided. Specifically, several social-contextual factors, including organizational culture, organizational climate, political considerations, top management HR support and social interactions that can influence line managers' ability-motivation-opportunity factors for executing HRM practices have been covered. That is, line managers' AMO factors have been proposed as influencing the effectiveness of line managers' HRM systems implementation. It follows from this that line managers' ability-motivation-opportunity factors can be considered as the mediating dimension between social context factors and their HRM implementation effectiveness. Through this paper, we provide contributions to theory not only by attributing social context factors to the role of line managers in HRM delivery, but also by extending support for AMO as having an impact on their performance. As such, this work goes beyond an employee-based perspective that links employees' AMO with improved firm performance. Another contribution of the paper is that whilst the extant studies have placed emphasis on the close partner relationship between line managers and HR executives for producing effective HR outcomes, we have emphasized the need to extend this to a triad-relationship involving the top management team. For, as principal decision makers, top management and HR executives should be in continuous interaction with respect to the strategic HRM perspective as this would help line managers to embrace the role requirements related to HRM practices.

We have also pointed out how the characteristics of organizational climate dimensions, distinctiveness, consistency and consensus are linked with HRM practices. That is, the stronger the organizational climate, the less the likelihood of ambiguity and the more convergent understandings about HRM policies and practices amongst all members of the organization, the greater the probability of line managers, HR executives and employees willingly working towards effectiveness in HRM systems implementation. Accordingly, the proposed model could lead to valuable insights being uncovered by researchers as it would help them to examine the link between the strength of organizational climates and the strength of the HRM practices. Another inference that can be drawn from the model is that it is not purely the organizational factors, but also managerial contributions via abilities-skills and also opportunities provided to line managers that can bring about effective HRM systems implementation. Furthermore, the social context perspective will help in the understanding of organizational environments as this takes the aspects of political and interactional processes into consideration. Though, accountability as one of the dimensions of political consideration has not been extensively investigated, this study addresses the importance of political behaviors of line managers with respect to HRM implementation effectiveness.

In general, this study with its proposed model has been aimed at identifying the process through which social contextual factors may bring insights regarding line managers' effectiveness in HRM practices implementation. The model also indicates the importance of these managers' AMO aspects as crucial intermediaries between these factors and the effectiveness of line managers' HRM practices implementation.

Further research efforts are necessary for testing this proposed framework so that a more complete model for ensuring HRM implementation effectiveness can be developed. From a practical viewpoint, such endeavors would provide top management teams and HR executives with a roadmap on how to develop line managers so as to ensure their effectiveness regarding HR outcomes.

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CREDIT SMOOTHING AND DETERMINANTS OF LOAN LOSS RESERVES EVIDENCE FROM EUROPE, US, ASIA AND AFRICA

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Keywords:

JEL Classification:

ABSTRACT

This study provides a link between accounting, managerial discretion and monetary policy. Monetary authorities encourage banking institutions to supply credit to the economy. Increased bank supply of credit is a good thing but too much of a good can be a bad thing. This paper investigates under what circumstances excessive loan supply ceases to be a good thing and how bank managers react to this. After examining 82 bank samples, I find that (i) bank underestimate the level of reserves to boost credit supply in line with expectations of monetary authorities, particularly, in Asia and UK (ii) consistent with the credit smoothing hypothesis, US and Chinese banks smooth credit supply to minimize unintended stock market signaling; (iii) managerial priority during a recession is to smooth credit over time rather than to boost credit supply; (iv) non-performing loans, bank portfolio risk and loan portfolio size are significant determinants of the level of loan loss reserves; and (v) credit risk, proxy by loan growth, do not have a significant impact on loan loss reserves but tend to have some significant effect during a recession, particularly, when change in loans is negative. The implications of these findings are two-fold: (i) bank managers use their discretion over reserves to influence bank credit supply; (ii) bank supply of credit is not solely driven by loan demand but by a combination of several factors, particularly, capital market concerns, the need to avoid scrutiny from monetary authorities, and country-specific factors.

1. INTRODUCTION

This paper seeks to provide a link between managerial discretion, an accounting number (loan loss reserves) and monetary transmission mechanism. The paper begins with the well-known premise that monetary authorities supply money or credit to the economy through banking institutions.

If banking institutions decline to supply credit or issue loan, then, these institutions may lose their legitimacy. Therefore, banks will supply credit or loan.

Motivations to increase bank credit supply may derive from the need to generate higher profit or due to policy requirements by central bankers. Managers are, particularly, concerned about excessive supply of bank credit because of its potential to communicate unintended signal to the stock market, particularly, investors. Therefore, managers can expect to take on certain actions to address this concern. Motivated by this concern, this study investigates one possible action that managers might take - credit smoothing. Particularly, I examine whether banks smooth credit over time and under what conditions they do this.

A second motivation for this study is to investigate bank-specific determinants of loan loss reserves, not provisions. Extant research has already investigated the determinants of provisions. However, there is a scant literature on determinants of loan loss reserves[1]. Therefore, this paper aims to fill this gap by examining bank-specific determinants of level of loan loss reserves. I note that banks in several countries have different accounting rules, different supervisory rules, different loan loss policies, and possibly different incentives that might affect provisioning and reserve behavior. To control for these differences, I examine country-specific reserve behaviour.

The findings in the study make some contribution to the existing literature. First, this study contributes to the banking literature by investigating bank-specific determinants of loan loss reserves by extending the provisioning literature to loan loss reserves. An approach unique to this paper is the inclusion of an important determinant, the size of bank loan portfolio rather than the total asset, a common proxy for bank size across mainstream studies[2]. The rational for this is because, intuitively, loan loss reserves should have a direct impact on bank loan portfolio not necessarily on total asset.[3] Third, this study contributes to the monetary economics literature by providing another explanation as to why actual monetary supply outcomes falls below expected outcomes.

The remainder of the paper is organized as follows. Section 2 distinguishes between provisions and reserves. Second 3 review the existing literature. Section 4 discusses the data, sample selection and methodology. Section 5 discusses the main results. Section 6 concludes.

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[1] Hasan and Wall (2004) and Bikker and Metzemakers (2005)
[2] (For example, Bhat, 1996; Ahmed et al., 1999; Lobo and Yang, 2001; Hassan and Wall, 2004; Kanagaretna et al., 2004; El Sood, 2012; Leventis et al, 2011)
[3] Another justification for using loan portfolio size, rather than total asset, is due to my observation that most studies do not find strong significant size effect on provisions and when they do, it is significant mostly at the 10% s.f level. (for example, Laeven and Majononi, 2003). Therefore, provision/reserves tend to have a weak relation to bank size proxy by total asset.

2. LITERATURE REVIEW

2.1. Provisions and Reserves

An important distinction between loan loss provision (LLP) and loan loss reserve (LLR) is needed. Provisions and reserves behave differently.

Provisions are a deduction from gross interest income in the income statement while reserves are yearly accumulation of provisions in the balance sheet. Also, reserves behave like capital and are used to shield banks against unusual expected losses. According to Bikker and Metzemaker (2005), LLP reflect managerial decision at a point in time (annual) while loan loss reserves is the accumulation of annual net provisions over time that reflects actual expected loan losses. Also, loan loss reserve is perceived to be linked directly to the quality of bank loan portfolio and is susceptible to short-term fluctuations arising from macroeconomic developments and the solvency of individual counterparties (Bikker and Metzemaker, 2005). Bikker and Metmaker (2005) went on to investigate whether the same variables that explain provisioning behaviour also explains the behaviour of reserves. They found that the same explanatory variables that explain loan loss provision also explain the level of loan loss reserve but less significantly. However, they concluded that the level of reserve is likely to be influenced more significantly by outside shocks and insignificantly by managerial incentives such as capital management motives and income smoothing motives.

2.2. Theory

The theoretical literature argue that credit risk represents an important driver of the riskiness of banks and that current period loan growth is likely to have an impact on current period provisions (e.g. Liu and Ryan, 2006). In theory, a positive relation between credit risk and provisions is expected (e.g., Liu and Ryan, 2006; Foos et al. 2010). Following this reasoning, incremental increase in loan should lead to incremental increase in reserves (e.g. Kanagaretnam et al, 2003). Also, Laeven and Majnoni (2002) note that continuous increase in bank lending is generally associated with lower monitoring efforts and deterioration in loan quality, thus, necessitating increased provisions. Thus, a prudent bank is expected to report a positive relationship between the level of loan loss reserves and credit risk. A common measure for bank credit risk exposure in the literature is loan growth or change in outstanding loans (e.g. Cavallo and Majnoni, 2001; Laeven and Majnoni, 2002; Lobo and Yang, 2001). Nonetheless, Lobo and Yang (2001) argue that, in reality, the relationship between loan growth and LLP is largely unpredictable due to uncertainty in the quality of incremental loans.

2.3. Determinants of LLR

Provisioning research identify three (3) bank-specific determinants of loan loss reserves: bank asset portfolio composition, credit risk and the state of the business cycle. Many provisioning studies employed these variables as control variables when examining income smoothing practices while few studies employed these variables as bank-specific factors. In this study, I employ these variables as bank-specific factors.

Asset-portfolio risk is an indication of banks' overall risk from the financial analyst perspective. It is a measure of how much loans banks have in relation to total asset. The use of loan to asset ratio as a proxy for overall risk exposure on bank portfolio is common across the literature (e.g. Sinkey and Greenawalt, 1991; Laeven and Majnoni, 200; Hasan and Wall, 2004; Floro, 2010). Intuitively, portfolio risk should influence the level of reserves if bank asset portfolio contains more loans than securitized assets. This is because loan loss reserve tends to behave like capital used as a buffer against losses arising from excessive risk-taking.

Thus, when portfolio risk is high, banks tend to increase LLR as a buffer to absorb losses in the portfolio. The higher the risk, the greater the need for more reserves. Sinkey and Greenawalt (1991) found a significant positive relationship between loan-asset ratio and level of loan loss reserve. Hasan and Wall (2004) investigated the determinants of loan loss reserve and found that loan-asset ratio is significant and positively related to loan loss reserve for US banks and Japanese bank samples but negative and insignificant for Canadian banks. Bikker and Metzemakers (2005) found a significant positive relationship between loan loss reserve and bank portfolio risk. Consistent with prior studies, I expect a positive relationship between reserves and bank portfolio. However, a significant negative relationship, if any, is likely to indicate a largely diversified bank portfolio.

Credit risk, proxy by loan growth, is also a determinant of the level of loan loss reserve. Lobo and Yang (2001) found a significant positive relationship between loan growth and provisions not reserves. Laeven and Majnoni (2002) found a weakly significant negative relationship between loan growth and provisions for Europe, Asia, US and Latin America. Kanagaretnam et al (2003) found a significant positive relationship between provisions and loan growth. Bikker and Metzemakers (2005) found a significant positive relationship between loan loss reserves and loan growth for US banks but insignificant evidence for European banks. Bushman and Williams (2012) found a significant positive relationship between provisions and loan growth. Overall, I hypothesize a positive relationship between bank credit risk exposure (loan growth) and LLR.

Another determinant of the level of loan loss reserves is the state of the business cycle. Bikker and Metzemakers (2005) found strong evidence of procyclical pattern in loan loss reserve during recessionary period for the full bank sample. However, this procyclical behaviour is significant for European banks but insignificant for US banks. Floro (2010) found a significant negative relationship between loan loss reserves and the business cycle for Philippine banks while Ozili (2015) found a negative relationship for Nigerian banks. A positive sign on GDP growth rate would suggest that LLR behaves like capital. That is, banks build up reserves during good times and use up reserves during bad times, thus, a positive relationship.

3. HYPOTHESIS DEVELOPMENT

3.1. LLR and Credit Supply Hypothesis

Monetary authorities tend to facilitate money supply to the economy through banking institutions. As bank loan portfolio increases, the supply of credit to the economy also increases, at least, in principle. Therefore, the size of bank loan portfolio is an indicator of bank credit supply. If monetary authorities want expansionary credit supply and act as a guarantor against significant expected loan losses, banks may have some incentive to underestimate loan loss reserve to boost credit supply (gross loan) to the economy in line with monetary policy expectations. This describes the credit supply hypothesis. Following this reasoning, I hypothesize that, if banks are concerned about meeting monetary policy expectations, a negative relationship between reserves and bank loan portfolio is expected.

H1:   A negative relationship between LLR and loan portfolio size is expected.

3.2. LLR and Credit Smoothing Hypothesis.

Monetary authorities expect banks to increase their supply of bank credit to boost consumption and investment in the economy. This expectation is usually intense to speed up recovery from recession. Also, banks that significantly decrease the size of loan portfolio in bad times tend to attract regulatory attention. Therefore, in order to avoid such regulatory scrutiny, banks tend to smooth the level of credit supply over time. There are two explanations for this.

First, bank managers are concerned that excessive supply of credit can have unintended signaling effect to the stock market (that is, investors might interpret excessive credit supply as a signal for excessive risk-taking which is generally associated low loan quality). Therefore, banks tend to strike a balance between supplying excessive credit to satisfy monetary authorities and the need to prevent unintended signaling effect to the stock market.

Second, increased supply of credit is a good thing to the economy but too much of a good thing can be a bad thing due to adverse selection. Therefore, banks attempt to avoid excessive loan supply by using accounting techniques to influence the size of gross loans.

Following both reasoning, there is a reason to believe that banks tend to smooth credit supply by overstating (understating) loan loss reserves when loan portfolio is expected to be unusually high (low) to minimize unintended signaling to investors and to avoid regulatory attention. This behaviour is described here as 'credit smoothing', hence, the credit smoothing hypothesis.

This hypothesis suggest that, if banks are strongly concerned about the signaling consequences of excessive credit supply, then, banks will use loan-decreasing smoothing strategies to reduce the unusually large size of gross loan during good times and use loan-increasing strategies, in bad times, to boost loan portfolio size when loan size is unusually low to avoid regulatory discipline. Therefore, I hypothesize that the need to avoid unintended signaling tends to motivate managers to smooth bank credit supply.

Thus, a positive relationship between reserves and bank loan size would indicate evidence for credit smoothing. Therefore, the second hypothesis is:

H2: A significant positive relationship between LLR and loan portfolio size is expected.

3.3. Reserves Behaviour during a Crisis

The behaviour of loan loss reserve during a crisis might provide new information about bank managers' priority during the crisis - whether to smooth credit supply or to boost credit supply in line with the expectations of monetary expectations. During recessionary periods, I propose that banks may not necessarily increase the size of its loan portfolio due to credit risk concerns rather banks might understate reserves to boost net loans upwards to satisfy regulators and monetary authorities. Therefore, I expect evidence for credit smoothing during a recession. This expectation is intuitive, particularly, when monetary authorities act as a guarantor against severe credit losses arising from complying with monetary authorities. A negative sign would suggest support the credit supply hypothesis.

H3: A positive relationship between LLR and bank loan portfolio size is expected.

On the other hand, it may be difficult to predict the behaviour of LLR because managerial actions during a recession or crisis are influenced by a combination of factors such as credit risk concerns, expectations of monetary authorities, stock market signaling, state of the business cycle and other country-specific considerations, etc.

4. METHODOLOGY

4.1. Data and Sample Selection

The data include banks' balance sheet information and country-specific macroeconomic indicators obtained from Bankscope database and World Bank databank, respectively, over the period 2004 to 2013. Bankscope is believed to provide the widest coverage of banking data for several countries. I include countries that have bank data from 2004-2013. This period covers a full business cycle for all the countries included. Unfortunately, some crucial variables are not reported for many banking organizations on Bank Scope and even where reported are only available for some years and unavailable for other periods. I have then eliminated banks that over the sample period had no reporting data for crucial variables for four consecutive years of balance sheet observations, in order to control for the consistency and quality of bank reporting. The resulting sample included 82 banks from 11 countries, with a total of 820 bank-year observations. The sample is divided into regions: Europe, US, Asia and Africa.

4.2. Estimation Procedure

Panel data cross-section and time series regression with fixed effect is employed. This is consistent with Cavallo and Majnoni (2001) and Bikker and Metzemakers (2005). I modify the equation to introduce the credit smoothing variable into the model containing other determinants of the level of reserves. I adopt three model specifications.

The first model specifies theoretical determinants of reserves and tests the two main hypotheses. The second model tests the crisis-reserve hypothesis. The third model tests for robustness by employing a more precise measure of credit risk rather than loan growth. Another robustness check examines country-specific regression to control for country-specific differences. The only weakness of bank-country analysis is that it reduces the degree of freedom of bank-country observations. However, this approach is preferred in order to avoid the 'dummy variable trap' arising from using multiple dummy variables to control for multiple cross-country and institutional differences.

Therefore, the econometric specification is given as:

Model 1:

$LLR_{i,t} = NPL_{i,t} + LOTA_{i,t} + LOAN_{i,t} + lnGL_{i,t} + GDPR_j + \varepsilon_{i,t}$

Model 2:

$CRISIS*LLR_{i,t} = CRISIS*NPL_{i,t} + CRISIS*LOTA_{i,t} + CRISIS*LOAN_{i,t} + CRISIS*lnGL_{i,t} + CRISIS*GDPR_j + \varepsilon_{i,t}$

Model 3:

$LLR_{i,t} = NPL_{i,t} + LOTA_{i,t} + negLOAN_{i,t} + lNGL_{i,t} + GDPR_j + \varepsilon_{i,t}$

Where,

LLR = ratio of loan loss reserve to gross loan for bank i at time t

NPL = ratio of impaired loans ratio gross loans for bank i at time t

LOTA = ratio of net loans over total asset for bank i at time t

lNGL = natural logarithm of gross loan for bank i at time t

LOAN = change in gross loan for bank i at time t.

negLOAN = negative change in gross loan for bank i at time t.

GDPR = growth in gross domestic product.

CRISIS = I introduce a financial crisis dummy variable. The dummy variables take a value of one during the financial crisis period (2007-2009) and otherwise, zero.

Bank-specific determinants of interest in this analysis are LOAN, LOTA and lNGL. To test the credit smoothing hypothesis, the key variable of interest is the lnGL variable. The dependent variable is the ratio of loan loss reserves over gross loans. This is consistent with Bhat (2010). Explanatory variables include bank-specific determinants (LOAN, NPL and LOTA) and country-specific determinants (GDPR). At bank level, I employ NPL to control for non-discretionary influences on reserves. This is consistent with prior studies, for example, Beaver and Engel (1996).

NPL, the ratio of nonperforming loans to gross loan is an ex post measure of loan portfolio quality and may contain information on bank risk not captured by traditional measures of risk. I exclude income smoothing and capital management variables from the model because Bikker and Metzemaker (2005) found that the level of reserve had less statistical significance with loan loss reserves

5. DISCUSSION OF RESULTS

5.1. Descriptive Statistics and correlations

Table 1 present the descriptive statistics for the full sample. On average, LLR is 2.58. Notably, LLR is relatively large for Indonesian and African banks and is relatively lower for South African banks. On average, NPL is 4.03 (median=2.88), LOAN is 14.28(median = 11.74; InGL is 17.45 (median=18), LOTA is 51.89 (median =52.50) and GDPR is 4.02 (median=4.00). The correlation statistics in Table 6 report a negative and significant relationship between LLR and InGL while LLR reports a positive and significant relationship with GDPR and NPL is reported. The negative correlation between GDPR and NPL indicates procyclical behavior associated with problem loan.

Table 1: Descriptive Statistics

Var.	Statistic	Full Sample	Region				Some Countries				
			Europe	US	Asia	Africa	UK	China	India	Indonesia	South Africa
LLR	Mean	2.58	2.34	2.18	2.55	3.09	2.13	2.54	1.75	3.86	1.72
	Median	2.04	2.20	1.91	1.98	2.09	1.59	2.30	1.51	2.80	1.75
	S.D	2.34	1.42	1.32	2.09	3.46	1.56	1.67	1.27	2.76	0.69
NPL	Mean	4.03	4.34	3.09	2.95	5.95	4.59	1.83	3.05	4.09	3.67
	Median	2.88	3.74	2.40	2.32	3.97	3.41	1.12	2.99	3.16	3.58
	S.D	4.42	2.76	3.27	3.13	6.63	3.32	2.49	1.44	3.51	1.98
LOAN	Mean	14.28	6.25	9.16	19.27	17.57	6.46	20.84	21.49	27.62	11.92
	Median	11.74	2.24	20.18	16.86	15.99	2.35	16.41	20.53	24.31	12.01
	S.D	20.06	21.10	20.17	19.69	16.30	25.93	18.57	12.36	22.42	11.07
INGL	Mean	17.45	19.05	19.83	17.51	14.53	19.47	19.52	16.56	14.82	17.61
	Median	18.00	20.03	20.17	17.56	14.17	20.34	19.55	16.51	14.96	17.82
	S.D	3.16	2.31	0.94	2.54	3.24	1.86	0.99	0.72	1.99	0.58
LOTA	Mean	51.89	44.76	43.11	55.20	57.21	41.87	54.20	55.35	61.53	61.67
	Median	52.50	41.55	43.86	54.61	56.26	38.78	52.32	58.55	63.15	66.29
	S.D	15.91	15.48	19.17	13.81	12.75	12.45	14.15	8.21	11.42	13.61
GDPR	Mean	4.02	1.09	1.70	6.28	4.66	1.29	10.04	7.54	5.82	3.31
	Median	4.00	2.00	2.00	6.00	5.50	2.00	10.00	8.00	6.00	4.00
	S.D	3.69	2.29	1.89	3.73	2.68	2.11	1.89	2.07	0.39	2.38
Obs			749	170	105	283	190	80	77	59	87	89

5.2. Discussion of Result

Main Result

Regression 1 shows that most variables are consistent with prior expectations. After pooling the full bank sample, NPL, LOTA and InGL report significant coefficient signs. InGL variable reports a significant negative sign in support of the credit supply hypothesis indicating that banks reduce the level of reserves to boost the size of its loan portfolio either to earn high profit or to meet the credit supply expectations of monetary authorities. Unlike Bikker and Metzemakers (2005) and Hasan and Wall (2004)'s findings, the LOTA variable report a significant negative sign for the pooled sample.

The significant and negative sign indicates that bank loan portfolio appears to be largely diversified. LOAN variable did not report any significant sign. This suggests that the level of reserve is not influenced by current credit risk exposure.

Regression 2 in Table 2 reports regional results. NPL is significant across all regional bank samples. Also, InGL coefficient reports a significant positive sign for US banks (t=2.97). This supports the credit smoothing hypothesis. InGL reports a significant negative sign for Asian banks (t=-5.36). This supports the credit supply hypothesis. InGL is not significant across European and African bank samples. Also, LOTA reports a significant negative sign for Asian banks (t=-5.58), European banks (t=-1.89) and African banks (t=-3.28) but not for US banks. LOAN does not report any significant sign for regional bank samples. GDP reports a significant negative sign for US banks only. This indicates procyclical loan loss reserve behaviour.

Table 2: Main Result

		Reg 1	Regression 2				Regression 3		
		Overall	Regional result				Some country-specific results		
		All banks	US	Europe	Africa	Asia	UK	China	India
Varia bles	Exp./ Sign	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)
C	?	3.776*** 4.25	-13.64*** -3.07	2.438*** 2.86	2.026 1.10	14.32*** 8.68	25.75*** 4.42	-10.71*** -3.12	-1.309 -0.29
NPL	+	0.356*** 23.97	0.309*** 6.74	0.401*** 17.97	0.403*** 15.05	0.28*** 10.87	0.42*** 13.91	0.719*** 23.61	0.706*** 9.55
LOAN	+/-	-0.002 -0.71	-0.0005 -0.12	-0.003 -1.001	0.014 1.55	-0.046 -0.14	0.003 0.745	0.009* 1.87	0.017* 1.76
GDPR	-	0.006 0.28	-0.166*** -4.13	0.029 1.38	0.071 1.38	-0.046 -1.29	0.014 0.375	-0.032 -0.69	0.068 1.59
LOTA	+/-	-0.018*** -2.67	0.015 1.09	-0.017* -1.89	-0.049*** -3.28	-0.074*** -5.58	-0.02 -1.55	-0.015 -0.95	-0.056*** 2.72
INGL	+	-0.098** -2.01	0.732*** 2.97	-0.056 -1.37	0.059 0.54	-0.462*** -5.36	-1.271*** -4.11	0.660*** 4.45	0.188 0.69
Adj R		75.28	70.61	82.93	81.66	72.99	83.46	90.8	81.57
F-stat		27.48***	17.65***	35.19***	34.65***	23.42***	31.66***	58.71	21.24
Obsv.		749	105	170	190	283	80	77	59

Robustness Test

i.   Country specific result

To test the argument that country-specific factors may have an impact on the level of bank loan loss reserve, I examine country-specific bank samples. The results are reported in Table 2 and 3. The results indicate that InGL is significant for UK, US, Chinese banks. I find strong evidence for credit smoothing incentives among banks in US, China and Uganda and find strong evidence for credit supply incentives among banks in the UK and Indonesia. This is indicated by the positive and negative sign on the InGL variable, respectively. These conflicting results suggest that managerial discretion on the level of loan loss reserves depend on country-specific factors. Similarly, LOTA report a significant negative sign for banks in India and Indonesia but reports a positive and significant sign banks in France and Germany. LOAN appears to be significant only for African banks, particularly, Kenya and South Africa.

Table 3: Cross-country Regression

	France	Germany	Indonesia	Japan	Kenya	South Africa	Uganda
Var.	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff	Coeff
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
C	2.86	-0.518	18.62***	7.003	15.17***	6.97*	-14.12**
	0.76	-0.48	7.85	1.003	4.67	1.69	-2.64
NPL	0.509***	0.374***	0.313***	0.024*	0.445***	0.17***	0.272***
	9.48	8.55	5.94	1.65	11.65	6.04	4.46
LOTA	0.027**	0.034*	-0.109***	0.003	-0.287***	-0.003	-0.014
	2.34	1.93	-4.81	0.18	-6.21	-0.94	-0.52
INGL	-0.161	-0.027	-0.459***	-0.29	0.065	-0.313	1.293**
	-0.84	-0.74	-4.44	0.34	0.44	-1.32	2.73
LOAN	0.003	0.002	-0.0004	-0.008	0.029*	-0.011**	-0.009
	0.46	0.37	-0.07	-1.61	1.76	-2.44	-0.77
GDPR	0.032	0.003	-0.428	-0.003	0.009	-0.005	0.156
	1.15	0.11	-1.26	-0.17	0.08	-0.32	1.42
Adj R²	89.27	87.11	82.76	27.39	84.53	87.23	83.38
F-stat	34.29***	35.45***	32.76***	3.23	30.81***	43.95***	24.83***

ii.   During financial Crisis

I expand the baseline model to introduce a crisis dummy as shown in Model 2. The results are reported in Table 4 During the crisis, I find strong evidence for credit smoothing across all banks indicated by the InGL coefficient. This indicates that credit smoothing is a top priority for bank managers during recessionary periods. Also, GDPR coefficient report find strong evidence for procyclical loan loss reserve behaviour among US banks but counter-cyclical reserve behaviour among Asian banks.

Table 4: Financial Crisis Regression Result

Variable	Combined Sample	Europe	US	Asia	Africa
	Coeff	Coeff	Coeff	Coeff	Coeff
	(t-stat)	(t-stat)	(t-stat)	(t-stat)	(t-stat)
C	0.0114	-0.002	-0.009	0.008	0.025
	0.29	-0.064	-0.15	0.14	0.27
CRISIS*NPL	0.247***	0.289***	-0.029	0.114***	0.364***
	17.53	7.31	-1.00	4.17	14.21
CRISIS*LOTA	0.006*	0.001	0.001	0.006	-0.034**
	1.68	0.311	0.17	0.92	-2.44
CRISIS*INGL	0.052***	0.042***	0.119***	0.067***	0.131***
	4.93	3.76	6.50	3.47	2.71
CRISIS*LOAN	0.003	0.00001	-0.009**	0.005	0.036***
	1.06	0.98	-2.05	1.06	3.67
CRISIS*GDPR	0.043***	-0.032	-0.436***	0.061***	0.054
	2.81	-1.34	-8.90	2.75	1.31
Adj R²	69.22***	86.05***	85.37***	65.09***	77.63***
F-Stat	20.56	44.42	41.46	16.47	27.25

iii.   Negative Loan Growth

Next, I predict that banks that significantly decrease (increase) loan size (that is, banks with negative loan growth) should have low (high) reserves and vice versa. This implies a positive relationship. This is intuitive because reserves should increase (decrease) as credit risk exposure increases (decreases). However, if a negative sign is observed, this might imply that bank loan loss reserve decisions might be motivated for reasons other than credit risk motivations. This would have serious implication for financial reporting and might be construed as misleading investors. To investigate this, I substitute the LOAN variable with negLOAN variable. I create a dummy variable 'negLOAN' that takes the value of '1' if change in loan is negative, otherwise zero. The negLOAN represent a negative change in loan growth. The model specification is given by Model 3. Table 5 report a significant positive sign on the negLOAN variable for the full bank sample and for US banks. Interestingly, I find a significant negative sign for Chinese banks. Also, Indian banks and African banks report a negative but this sign is insignificant. These findings suggest that some banks appear to have non-credit risk-related motivations for determining the level of reserves as well bank-country and institutional factors.

Table 5: Negative Loan Growth Model

	World	US	Europe	Africa	Asia	UK	China	india
	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)	Coeff (t-stat)
C	3.74*** 4.22	-12.1*** -4.31	2.385*** 2.79	2.769 1.45	13.83*** 8.54	23.44*** 4.36	-6.488** -2.31	3.13 0.92
NPL	0.354*** 24.01	0.278*** 6.25	0.397*** 17.01	0.397*** 15.17	0.285*** 11.14	0.398*** 11.62	0.704*** 25.24	0.687*** 9.32
negLOAN	0.321** 2.46	0.457** 2.39	0.136 1.11	-0.468 -1.13	0.386 1.56	0.143 0.63	-1.726*** -3.39	-0.449 -1.18
GDPR	0.017 0.78	-0.133*** -3.24	0.031 1.47	0.073 1.31	-0.045 -1.27	0.029 0.77	-0.064 -1.55	0.083* 1.93
LOTA	-0.018*** -2.68	0.008 0.56	-0.018* -1.97	-0.048*** -3.19	-0.075*** -5.71	-0.019 -1.44	-0.0176 -1.18	-0.045** -2.29
INGL	-0.103** -2.12	0.709*** 2.97	-0.055 -1.34	0.031 0.27	-0.462*** -5.18	-1.153*** -4.04	0.479*** 3.89	-0.097 -0.48
Adj R²	75.35	72.39	82.95	81.66	73.01	83.42	91.78	76.96
F-stat	27.45***	19.18***	35.26***	33.29***	23.44***	31.57	66.34***	20.37***
Obsv.	745	105	170	190	283	80	77	59

6. CONCLUSIONS

In this study, I investigated (i) the determinants of loan loss reserves, and (ii) whether banks tend to smooth bank credit supply due to unintended signaling effects. I find that the level of loan loss reserve is influenced by bank-specific factors, particularly, loan to asset ratio and loan portfolio size, and insignificantly influenced by current credit risk consideration proxy by loan growth. I conclude that this insignificant effect on reserves suggests that current credit risk tend to be reflected in provisions not necessarily in reserves.

Also, the findings that some banks use loan loss reserves to smooth credit to minimize unintended signaling appears to be in conflict with expectations of monetary authorities, particularly, when significant supply of credit is needed to boost the economy during a recession. Thus, managerial choice to smooth credit during a crisis further amplifies the existing recession. This is not to suggest that credit smoothing is unethical or inappropriate. Rather, I argue that, the appropriateness of credit smoothing tend to depend on the state of the economy when credit smoothing practices takes place. Finally, the extent of credit smoothing will depend on concerns about stock market signaling, the state of the business cycle, institutional and country specific factors and on whether investors view the level of reserve as a value-relevant accounting number.

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APPENDIX 1

Table 6: Full Sample Correlation

Variables	LLR	NPL	LOTA	LOAN	INGL	GDPR
LLR	1.000					
NPL	0.729***	1.000				
	0.000					
LOTA	-0.053	-0.049	1.000			
	0.149	0.174				
LOAN	-0.054	-0.151***	0.169***	1.000		
	0.142	0.000	0.000			
INGL	-0.251***	-0.276***	-0.227***	-0.284***	1.000	
	0.000	0.000	0.000	0.000		
GDPR	0.076**	-0.083**	0.222***	0.379***	-0.311***	1.000
	0.039	0.023	0.000	0.000	0.000	