An Empirical Analysis of Islamic Bond Selection by Individual Dealers: Evidence from Malaysia

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Abstract: This study examines the influence of socio-economic characteristics on dealers' risk attitude and analyses the criteria for Islamic bond selection. Both the log linear and factor analysis are employed as statistical procedures. None of the models employed can sufficiently explain the relationship between risk perceptions and dealers' characteristics. These results confirm that the main effects of education and occupational status influence dealers' perception of risk. The evidence on risk ranking indicates that apart from credit risk, liquidity and inflation risks are among the most important risks perceived by the bond and fund managers. More importantly, it was found that the liquidity has a significant impact on Islamic bond selection. Thus, there is a significant similarity in the bond selection criteria with conventional bonds where liquidity is the most important factor in the investment decision. However, another interesting finding from this study is that the religious factor is also a major reason why bond managers choose Islamic debt securities.

I. Introduction

The nature of investment risk[1] and its role in investment decision-making are extremely important in modern Islamic finance. Much of the recent work in Islamic finance has focused on the viability of interest-free instruments. This literature discusses conceptual issues underpinning the introduction of Islamic bonds. Zarqa (1998), Kahf (1998) and El Gari (1998) focus on the feasibility of sales contracts for the issuance of Islamic bonds; Haque and

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Mirakhor (1998), and Hamoud (1998) discuss the introduction of Islamic financial instruments based on profit-sharing principles.

The purpose of this paper is to test empirically the relationship between dealers' perceptions[2] of risk and their socio-economic characteristics. More specifically, two null hypotheses are tested. The first null hypothesis asserts that risk perception is directly related to the dealer's socio-economic characteristics.[3] The second null hypothesis posits that religion and liquidity play a significant role in the decisions affecting the buying and selling of Islamic bonds. Viewed together, these two null hypotheses assert that there is considerable interaction between the influences of socio-economic factors and religion on the purchase of Islamic debt securities.

A questionnaire survey was employed to test these hypotheses. Briefly, the risk perceptions of individual bond dealers were analyzed through the log-linear model. The results are highly significant and indicate that bond dealers' risk perceptions are influenced mainly by the effects of education, occupation and managerial status. We also examined the criteria that motivate bond dealers when purchasing Islamic bonds. Using factor analysis, we found that bond managers consider the religious and liquidity factors to be among the most important criteria when buying or selling Islamic debt securities.

In Section 2 of this paper, we discuss the literature on risk perceptions and selection criteria for Islamic bonds. In Section 3 we present our method of analysis. Section 4 provides some empirical evidence on dealers' perceptions. In Section 5 we present the conclusions of the paper.

II. Literature Review

Under Islamic finance theory, the act of lending and borrowing money[4] is known as *qarḍ,* while *al-dayn* means debt obligation or liability derived from trading and commercial activities.[5] If the issuance of a bond is based on *qarḍ*[6] the issuers will only guarantee the principal amount borrowed irrespective of the purpose of the loan. However, if a debt instrument is issued through sales transactions such as *murābaḥah* (al Bashir, 2000)[7], *istisnā*[8], *salam*[9] or *ijārah*[10], the issuer who needs financing promises a periodic payment in the form of a profit margin payable to the bond investor. Apart from sales and loan-bonds, *Sharīʿah* allows the creation of financial instruments on the basis of profit-sharing either by way of *mushārakah* (Khan and Mirakhor, 1987)[11] or *muḍārabah* (Khan, 1989)[12]. The bondholder will receive the payment of actual profit generated from the business venture or project financing. The issuer and the bondholders will share the profits.

Numerous studies have shown that the conceptualization of risk perception is important in financial investment decision-making. The perception differs among investors depending upon the influence of individual socio-economic characteristics. Studies by Gooding (1975), Barron (1976), Thaler (1980), Weinstein (1981), March and Shapira (1987), Schurr (1988) and Weber and Milliman (1988) have all suggested different approaches to risk perception. Gooding (1975) argues that stock perceptions are highly related to ex-post risk and return measures. Using three groups of US equity investors, he concludes that the perceptions of non-professionals tend to be more heterogeneous than those of professionals such as portfolio managers. Gooding includes the effects of experience and education on equity investors' perceptions. In contrast, Barron (1976) argues that occupation can affect investors' risk perceptions. However, March and Shapira (1987) argue that actions of senior management have a major effect on investors' perception.

Previous studies provide evidence that risk perception varies with individual experience and situational factors. Rubinstein (1981) extends the previous work in order to take explicit account of situational effects. He argues that investors' attitudes may change due to situational factors that change their perception of investment risk. He also argues that changes in risk preferences do not influence investors' attitudes. Cooper *et al.* (1988) provide further evidence that situational factors can affect differences in risk perception between entrepreneurs and managers. The nature of investors' perceptions also depends upon individual experience in term of the sunk cost effect (Thaler, 1980), negative outcome (Schurr, 1987), past performance (Bottom, 1990), and loss experience or failure (Weber and Milliman, 1997).

Thaler (1980) found that the sunk cost can change investors' perceptions, while Schurr (1987) argues that negative outcomes tend to influence perceived risk attitudes (*ex ante* risk). Bottom (1990), who extended the work of Schurr, examined the effect of past performance on risk perception. Weber and Milliman (1997) also found that a change in an investor's perception could be driven by the experience of failure or loss.

Numerous studies have analyzed the criteria for choosing Islamic banks but no attempt has been made in mainstream publications to examine the area of investment decision-making regarding Islamic bonds. Erol and El Bdor, (1989) and Erol *et al.* (1990), looked at conventional and Islamic banks' customers in Sudan, Jordan and Turkey and found that quality of service and the reputation of the banks were the main reasons why customers selected their banks. Moreover, religion is not the main reason for bank selection.

Kader (1993), Haron *et al.* (1994) and Gerrrad and Cunningham (1997) also found that religion is not a significant factor for patronizing Islamic banks. They found that fixed price funding and the absence of interest are the main reasons for customers selecting their banks. In contrast, Metawwa and Almossawi (1988), who studied bank customers' criteria in Bahrain, found that Islamic principles are the most important criteria for choosing Islamic banks. The three other important factors are reward, the influence of family and friends, and convenient location.

As a result of the emergence of Islamic banking, a considerable amount of theoretical literature has been published concerning the issuance of Islamic bonds. These studies include those by Haque and Mirakhor (1998), Hamoud (1998), Kahf (1998) and El Gari (1998). Haque and Mirakhor (1998) suggest government bonds should be issued on the basis of profit-sharing to finance infrastructure and development projects. They recommend a general index of returns on government papers and trading of the instruments in the stock market. Hamoud (1998) also proposes the issuance of Islamic bonds based on profit-sharing. He argues that the negotiability of *mushārakah* and *muḍārabah* bonds is subject to the rules relating to dominant asset categories such as physical assets, money or debts. Zarqa (1998) and Kahf (1998) suggest the possibility of *istisnā* bonds and *ijārah* bonds respectively. El Gari (1998) further suggests that *salam* bonds could be used for short-term government securities as a substitute for conventional treasury bonds. However, the majority of these studies focus on conceptual bond issuance, *Sharīʿah* aspects and the possible modus operandi. Financial Issues Ltd (2002) examined the pertinent factors in conventional bond selection. They found that price is the main criterion. Other important influencing factors are knowledge of issuers, cash flow, and knowledge of the sector, deal structures, liquidity and bond ratings.

III. Methodology

The data used were obtained from a mid-2002 pre-tested questionnaire survey of individual Islamic bond dealers in Kuala Lumpur Financial District. The overall sample consists of 54 Islamic bond dealers and the questionnaire survey was conducted between 1 July and 30 August 2002.

A stratified sampling procedure[13] was used to obtain a sample of respondents from banking and contractual savings institutions, rating agencies, SPV companies and Islamic mutual/unit trust companies. In distributing the questionnaires, we made every effort to ensure objectivity

and to avoid biased results. We asked the respondents[14] to indicate their level of agreement and satisfaction with various statements by writing numeric values (on a scale of 1 to 3) next to them. The respondents were also required to indicate relative values next to each statement in questions that asked for a ranking to be indicated.

The questionnaire[15] was made up of 40 questions divided into five parts. In part 1, each individual surveyed was asked about their personal characteristics such as income, age, qualification, occupation and managerial status. This simple attribute question aimed to identify the background of the bond dealers. In part 2, the dealers were also asked about the level of risk they were willing to undertake, the duration of the bonds they dealt in and the importance to them of *Sharīʿah* advice. The risk question sought opinions according to type of bond structure and issuers. Two-point risk was categorized as high and low risk. A four-point equal interval importance scale (very important, important, less important and don't know) was used to record their responses to the following question, "Would you consider *Sharīʿah* advice more important than professional advice on Islamic bonds?". A four-way multiple choice answer scheme (less than 6 months, 1-2 years, 3-4 years and more than 5 years) was used to record their responses to the question: "For how long will the bondholders retain their debt securities?".

In part 3, the bond dealers were asked what they thought was true about the bond market's infrastructure, the economic benefits of Islamic debts securities, corporate bonds and the diversification of bond issuers. A dual answer (yes or no) was used to record their responses under these headings.

Parts 4 and 5 were made up of opinion and attitude questions using rating scales. The first seven questions in part 4 asked for the respondents' views on bonds pricing and risk-reward comparisons between Islamic and conventional bonds, while the next three questions aimed to elicit the respondents' awareness of the investment motives, regulatory issues and competition factors relating to Islamic bonds. A total of seven questions were based on semantic differentials of four-point scales whereas a total of three questions were based on value scales of 1 to 3.

Part 5 consisted of 14 ranking questions regarding bondholding, risk perception, bond liquidity, economic needs and functions of Islamic debt, securities, and the demand factor for Islamic bonds. The objective of these questions was to obtain respondents' opinions and attitudes by ranking a list of items. The questions used at least a three-point Likert scale.

Owing to the use of both nominal and ordinal data, it was not appropriate to use parametric[16] techniques such as multivariate regression and econometric analysis, which require interval data. We employed hierarchical log-linear and exploratory analysis for a number of reasons. The log-linear model offers a good statistical analysis for testing associations and interactions of categorical variables. It can provide a solution for a set of categorical dependent variables and for the non-distinctive variable between the dependent and independent variables. A factor analysis was also used to summarize the original large variable set into a simple comprehensible format and to discover the factors which are important when making a buy or sell decision on Islamic bonds.

The data from the 54 responses (which was a 41.5% usable response rate) were tabulated in the form of a log-linear model for analysis. Three hypothetical log-linear models were constructed using an SPSS statistical package as described by Benedetti and Brown (1978). These results are summarized in tables 1 to 3. Each cross-tabulation table combines responses to questions – the three background questions and four 'risk' questions. Each table covers the main and interaction effects of education, occupation and managerial status on the respondents' perception of risk. For example, Table 1 indicates that the main effect is significant as a chi square lower than 0.05. There is a statistically significant difference between the observed frequencies and those predicted by the model. Thus, the conclusion is that the main effects of education, managerial status and occupation appear to influence the respondents' perception that no income will accrue whereas no interaction effects appear to influence the respondents' perception of such risk.

The log-linear procedure was used to test the hypothetical relationship between the respondents' perception of risk and the various independent factors considered collectively, which is explained in the Appendix section. The ultimate objective was to examine whether the main and interaction effects of education, occupation and managerial status have significant influence on the respondents' perception of risk.

The SPSS log-linear model is based on the iterative proportional scaling algorithm with either backward or forward elimination in model building. Using the backward elimination method, we can eliminate all effects if the p values are greater than 0.05, until all interactions have a significance level of 0.05. The final model will thus show the best fitting interactions that can be present in a set of variables. As a non-parametric test, the log-linear

model tests whether association among a set of categorical variables such as education, occupation and managerial status are significant in the model.

The log-linear model tests the following hypotheses:

(i)   Does education affect the dealers' views on risk?
(ii)   Does occupation affect the dealers' views on risk?
(iii) Does the risk perception differ according to managerial status?
(iv)   Do two interactions (of occupation and education or education and managerial status or managerial status and occupation) affect risk perception?

To obtain a log-linear model, the natural logs of cell frequencies were used under the assumption that each cell is statistically independent. By default, the criterion for remaining in a model is to have an observed significance level of less than 0.05 in the likelihood of a change in the Chi-Square ratio. The generation of the independence model is comparable to the Chi-square test of independence between the observed and expected frequencies of the cell count. The Pearson and the likelihood of a change in the Chi-square ratio were computed for the goodness of fit test to identify the best relationship.

The exploratory factor analysis selects a certain set of variables that best represent the dealers' opinions on Islamic bond selection. The *eigen value* reveals the amount of variance in all variables that is explained by that factor. A loading factor which is equal to or greater than the absolute value of 0.5 indicates a determinant of Islamic bonds investment., These results in *eigen values* or variance are summarized in Tables 4 to 6. Table 4 shows the number of factors extracted. Table 5 indicates the minimum number of factors and the maximum percentage of variance. Finally, Table 6 identifies nine factors that were relatively significant from an original set of 23 variables. For example, factor 1 has the highest *eigen value* and variance. This factor reveals that liquidity and *Sharīʿah* reasons are considered the most important factors by the bond dealers.

In the factor analysis[17], a list of 23 variables was likely to have influenced bond dealers' decisions in selecting Islamic bonds. These variables can be clustered into feasible factors and can be simplified into a comprehensible form. To obtain a correlation matrix, a correlation between variables was used for each pair of social characteristics that had a coefficient of at least 0.09. Next, the principal component analysis was used to extract as simple a set of variables as possible under the assumption that the selection of initial

factors was based on *eigen values* greater than one, and the percentage of variance is arrived at by a different set of factors. Finally, factor rotation was employed to transform the factors into a more interpretable form by grouping the variables that had a large loading value. The rotation overcomes the problem of many variables loading on several factors, which makes the result very difficult to interpret. It also summarizes factors that are closely related in the data. These results are shown in Tables 4 to 6.

IV. Results of Analysis

Table 1 reveals that the main effects of education, occupation and managerial factors influence the perception of risk of no income payment received. As noted above, this effect is quite evidently based on the highly significant Chi-square. As expected, the interaction effects on respondents' perceptions are clearly not significant.

Similarly, the chi-square does not meet the criterion level of 0.05. As discussed above, Table 1 shows that neither of the two interaction effects influences the dealers' perceptions of such risk.

Table 1: Risk of No Income Payment and Interrelationship between Education, Job Sector and Managerial level

Design	df	λ^2	P
(EJS)	45	0.474	>0.05
(EJ)	15	20.392	>0.05
(ES)	15	20.287	>0.05
(E)	5	54.21	<0.05
(S)	3	71.690	<0.05
(J*RISK)	9	12.871	>0.05

Note: E= education background of the respondents; J= position of respondent in management; and S= occupation of respondents

Table 2 demonstrates how the three variable independent factors of education, occupation and managerial status affect the dealers' perceptions of lower income. As noted above, the chi-square values show a significant result ($p<0.05$). Thus, it appears that the main effects of educational, occupational and managerial factors contribute significantly to a model in which the predicted frequencies fit the observed frequencies. In other words, looking at the chi-square is non-significant ($p>0.05$), and neither three-way nor two-way interactions contribute significantly to the frequencies predicted

according to the model. The interpretation is that the relationship between education and occupation according to managerial level and the effect of managerial level or education according to occupation do not influence the perception of risk.

Table 2: Risk of Income Lower and Interrelationship between Education, Job Sector and Managerial Level

Design	df	λ^2	P
(EJS)	45	11.111	>0.05
(EJ)	15	17.362	>0.05
(ES)	15	22.245	>0.05
(JS)	9	5.924	>0.05
(S)	3	71.690	<0.05
(E)	5	54.211	<0.05
(J)	3	11.93	<0.05

Note: E= education background of the respondents; J= position of respondent in management; S= occupation of respondents

Similarly, Table 3 shows that neither two-way nor three-way interaction effects of educational, occupational and managerial factors influence the dealers' perceptions of delayed income. These effects are quite evidently based on the non-significant chi-square test statistics ($p > 0.05$). Thus, the main effects of educational, occupational and managerial factors provide an excellent fit to the data ($p < 0.05$). In other words, the three main effects significantly influence the respondents' perceptions of risk.

Table 3: Risk of Delayed Income Payment and Interrelationship between Education, Job Sector and Managerial Level

Design	df	λ^2	P
(EJS)	45	11.395	>0.05
(EJ)	15	20.055	>0.05
(ES)	15	23.910	>0. 05
(JS)	9	6.106	>0.05
(S)	3	69.425	<0.05
(E)	5	52.273	<0.05
(J)	3	10.719	<0.05

Note: E= education background of the respondents; J= position of respondent in management; and S= occupation of respondents

The factor analysis selects a set of variables that best represent the dealers' sampled opinions on the Islamic bonds market. Table 4 shows the number of factors extracted from the 23 variables, and each variable has been standardized to have a variance of 1.

Table 4: Communalities

		Initial	Extraction			Initial	Extraction
1	To Cover Deficiencies	1.000	.763	12	Liquidity Reason	1.000	.703
2	A Most Favorable Alternative	1.000	.803	13	Interest-free Investment	1.000	.719
3	Minimize Impact Financial Market	1.000	.820	14	Sharia Issue	1.000	.774
				15	Alternative Product	1.000	.714
4	Growing Islamic Finance	1.000	.847	16	Regulatory Purpose	1.000	.754
5	Play Supplementary Role	1.000	.773	17	Guaranteed By Bank	1.000	.711
6	Credit Risk	1.000	.792	18	Low Debt Ratio	1.000	.671
7	Inflation Risk	1.000	.784	19	Strategic Company	1.000	.766
8	Event Risk	1.000	.755	20	Strong BOD	1.000	.853
9	Currency Risk	1.000	.736	21	Excellent R & D	1.000	.667
10	Liquidity Risk	1.000	.825	22	The Economics Benefits	1.000	.711
11	Reinvestment Risk	1.000	.795	23	Long Established Company	1.000	.613

Extraction Method: Principal Component Analysis.

Table 5 reveals that 75% of the total variance was attributable to the first nine components, while 14 components only accounted for 25% of the variance. For example, component 2 has a variance of 2.802, which constituted 12% of the total variance of the initial 23 factors.

Table 5: Total Variance Explained

Components	Initial Eigen Values			Extraction Sums of Squared			Loadiptation Sums of Squared Loading		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.132	13.618	13.618	3.132	13.618	13.618	2.535	11.023	11.023
2	2.802	12.182	25.801	2.802	12.182	25.801	2.210	9.609	20.632
3	2.433	10.578	36.379	2.433	10.578	36.379	2.187	9.508	30.140
4	2.102	9.140	45.519	2.102	9.140	45.519	2.136	9.287	39.427
5	1.685	7.325	52.844	1.685	7.325	52.844	1.956	8.506	47.933
6	1.663	7.229	60.073	1.663	7.229	60.073	1.900	8.261	56.193
7	1.321	5.746	65.819	1.321	5.746	65.819	1,490	6.479	62.672
8	1.173	5.099	70.917	1.173	5.099	70.917	1.478	6.425	69.097
9	1.038	4.511	75.429	1.038	4.511	75.429	1.456	6.331	75.429

Extraction Method: Principal Component Analysis.

Table 6 presents the nine components that emerged from the 23 determinants of bonds investment. Factor 1 (*eigen values*=3.132, variance=14%) includes liquidity and *Sharī'a* factors which are considered to be the most important ones that influence bond managers in their decisions. As noted above, the reason is quite evidence-based according to the descriptive statistic where 50% and 60% of dealers agreed with the need for liquidity and frequent bonds issuance, respectively. Factor 2 (*eigen values*=2.802, variance=12%) represents the second most important factor in bond selection. Dealers believe that Islamic bonds provide them with relatively favourable financing sources but the reinvestment risk worries them. The descriptive statistic shows that 60% agreed that Islamic bonds could reduce funding costs and could provide new profit opportunities.

Factor 3 (*eigen values*=2.433, variance=11%) concerns knowledge of the issuers combined with the event risk. Dealers are worried about the risk when making decisions concerning corporate bonds.

Table 6: Result of Factor Analysis of Determinants of Bonds Investment

Factors	Factor Loading
Factor 1 (variance explained 3.132)	
Liquidity reason	0.690
Sharia issue	0.501
Factor 2 (variance explained 2.802)	
Most favourable alternative for financing sources	0.747
Reinvestment risk	0.761
Factor 3 (variance explained 2.433)	
Event risk	0.803
Strategic company	0.662
Factor 4 (variance explained 2.102)	
Excellent R&D	0.744
Regulatory purpose	0.676
Factor 5 (variance explained 1.685)	
Strong BoD	0.798
Long established companies	0.657
Factor 6 (variance explained 1.663)	
Growing Islamic finance	0.768
Supplementary role of long-term funding	0.510
Factor 7 (variance explained 1.321)	
Minimized impact of financial market	0.867
Factor 8 (variance explained 1.173)	
Guaranteed by banks	0.820
Factor 9 (variance explained 1.038)	
Currency risk	0.790

However, they also consider Strategic Company as an important factor. Similarly, Factor 4 (*eigen values*=2.102, variance=9%) and Factor 5 (*eigen values*=1.685, variance=7.3%) reveal the importance of issuers, quality when evaluating corporate bonds.

Regulatory reasons, the credibility of the board of directors, excellent R&D and long establishment of the company are included as criteria for the evaluation of bonds issuers. Factor 6 (*eigen values*=1.663, variance=7%) and

Factor 7 (*eigen values*=1.323, variance=6%) indicate that dealers believe that participation in the Islamic bonds market relates to its supplementary role in long-term funding as well as to support the growing Islamic financial market.

The dealers believe that credit enhancement of issuers would be strengthened by guaranteed bonds. This is indicated by Factor 8 (*eigen values*=1.173, variance=5%). Finally, Factor 9 (*eigen values*=1.038, variance=4.5%) reveals that bond dealers are also concerned about currency risk when buying or selling Islamic bonds.

V. Conclusions and Implications

In summary, the dealers' education, occupation and managerial status are the relevant influences on the perception of risk (no income, delayed income and lower income). This result implies that socio-economic variables can affect dealers' perceptions of the riskiness of their bond investments. Further, first, liquidity and *Sharīʿah* factors are found to be most significant for the selection of Islamic bonds. Second, the quality of bond issuers is also found to be a significant determinant of bond buying or selling decisions. This includes strategic companies, research and development, strong board members, regularity of issues and bank guarantees.

The study carries several implications including directions for further research. First, provides evidence on the perceptions of risk and socio-economic characteristics of individual Islamic bond dealers. Second, while this study is not directly comparable to previous studies as to method or dealer type, the results are generally consistent with previous research concerning the importance of occupation, credit and liquidity risk in influencing Islamic bond dealers. Third, liquidity and *Sharīʿah* factors, which were found to be important in earlier research conducted in the UK and USA, were also found to be important in this research. In other words, the liquidity requirement is also relevant for Islamic bond dealers in their selection criteria. However, bond dealers are also concerned about the Islamic value of debt instruments as the most important criteria when purchasing Islamic bonds. Fourth, this study shows that additional studies of risk perception and socio-economic variables are needed, which should overcome the various shortcomings of this study and other research of this type. These shortcomings include limits of sample, period and area, problems associated with interpersonal comparison of risk perception based on parametric data, a limited methodology (explicitly a multivariate test

to adjust for the impact of various dealers' socio-economic characteristics affecting their risk perceptions), and the need to explore positive aspects of the decision process for other than individual dealers.

NOTES

1. March and Shapira (1987), argue that the definition of risk – the chance that the event in question will happen, which includes skill factors – must take into account the perspective of top executives, and they support Slovic's view that the accepted definition is not in line with the perception of the general public.

2. The term perception is used to mean "the process of becoming aware of objects, events and qualities that stimulate the sense organs" (Ruch, 1963). See also Weber and Richard (1997). Risk perception refers to a person's attitudes towards risk seeking and risk avoidance. In the risk return framework, risk and risk preference are central. It is assumed that greater value and lower risk are desirable and that an investor's preference will determine the risk-value trade-off. In contrast, the expected utility framework considers risk preference as risk.

3. Barron (1976) and Weber (1988) argue that age and occupation will affect an individual's perception of the relative riskiness of the investment alternatives.

4. The Ḥanafī school argues that the addition or surplus stipulated for a loan is restricted to property or commodities which can be measured or weighed such as gold, silver, iron, wheat and the like. Imām Shāfiʿī argues that any additional advantages to the loan are illegitimate only if they are food items and currency in the form of either dirham (gold) or dinar (silver). However, Imām Mālik argues that the prohibition of extra value to the principal amount borrowed should be restricted on absolute money. According to al-Rāzi, the amount of loan enhanced by the lender upon the extension of time is forbidden in Islam and that excess is termed as *riba nasia*. Contemporary jurists argue that paper money, which has replaced gold and silver, may constitute debt usury if the loan transaction stipulates an increase of the principal amount.

5. Qur'ān, *Al-Nisā'*: 4:29: "O you who believe, do not squander your wealth among yourselves in vanity (*bi-l-bāṭil*) except in trading (*tijāratan*) by mutual consent (*'an tarāḍim min-kum*), and do not kill one another".

6. *Qarḍ* involves a transfer of property rights. The lender has the right to claim the principal amount borrowed, nothing more and nothing less.

7. Some contemporary scholars argue that the underlying asset is crucial for the negotiability of a bond. If the real asset dominates the debt, the bond is negotiable at the market price. If the debt outweighs the real asset, the bond shall be subject to par value and shall not be negotiable. The negotiability of the *murābaḥah* bond is subject to the face value. It is not permissible to trade the bond in the secondary market because such a debt is tantamount to *ribā* (as debt is being traded for debt).

8. *Istisnā* means a made-to-order item. It represents a construction or manufacturing agreement and a promise to repay the entire construction cost including profit margin on maturity. The *istisnā* is irrevocable unless, after the construction, the delivered asset does not fulfil the agreed specification.

9. The concept of *salam* involves a forward sale of an asset for a known spot price and the delivery of goods sold at a specified future date. The Ḥanafī school argues that the validity of *salam* depends upon the availability of a commodity between the date of

contract and the date of delivery. However, all the other three schools oppose this view. They argue that the validity of *salam* subject to the availability of the commodity at the time of delivery and not at the time of the contract.

10. *Ijārah* refers to the leasing of a specified asset and a promise of rental payment without the transfer of ownership in the asset. *Ijārah* bonds can represent the right of ownership in the form of each of which has an equal face value. A buyer of one or more of these certificates is technically acquiring a stream of future rental income. *Sharīʿah* allows the bondholders to sell their *ijarāh* certificates to the new buyer independently of other bondholders

11. The term *mushārakah* is derived from the word *shirkah* which means sharing. *Mushārakah* refers to sharing ownership in which all partners contribute funds and have the right to participate in the management of the project. Imāms Shāfiʿī and Mālik suggest that a profit can be shared in proportion to capital contribution. Moreover, Imām Ḥanīfah stresses that the sleeping partner must not claim a share of profits over and above the ratio of capital contribution. Other jurists argue that a share of the profits should be allocated among the partners.

12. In case of *muḍārabah,* the financiers have the right of a share of the profits because they provide the capital. The financier may also have to bear the losses unless they are due to the entrepreneur's negligence. See also Syed Sabiq (1970: 61-62).

13. The sampling frame in this study consisted of the following strata: managers and officers in banking and contractual savings institutions, rating agencies, SPV companies and Islamic funds in mutual/unit trust companies.

14. The respondents were involved in the origination, underwriting, and trading of Islamic bonds.

15. Dillman (1978) suggests that there are four suitable types of questions for inclusion in a questionnaire. These are attitude, attribute, belief and behaviour questions.

16. According to Oakshott (1994), non-parametric techniques are less reliable since they are less discriminating. However, Siegel (1956) argues that a non-parametric test, for example the Mann-Whitney test, is as powerful as the equivalent parametric test.

17. The factor analysis usually involves three stages, namely: Preparation of a correlation matrix; Extraction of initial factors; Rotation to a terminal solution. A correlation matrix involves the computation of all variables and the selection of the relevant components of factors in the sample data. The matrix shows the relevant components or factors that are significantly related to other variables (with a correlation coefficient of at least 0.09). The second step, extraction of initial factors, involves the task of exploring the number of common factors required to describe the data. The objective of the rotation procedure is to group the variables having large loadings (correlation) for the same factors so that each factor will be represented by a unique and specific cluster of variables. The rotation overcomes the problem of many variables loading on several factors which make the results very difficult to interpret.

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APPENDIX

Log-Linear Model Expression:
In general, the log-linear model is expressed as

$$Log \; F_{ij} = \mu + \lambda_i^R + \lambda_j^C + \lambda_{ij}^{RC}$$

where F_{ij} is the observed frequency in the respective cell $R_i C_j$

λ_i^R is the effect of the ith row variable

λ_j^C is the effect of the jth column variable

λ_{ij}^{RC} is the interaction effect for the ith and jth values of the
respective variables

Thus the effects of a particular category of a variable described as the interaction effects and main effect are estimated as follows:

$$\lambda_{ij}^{RC} = Log \; F_{ij} - \mu + \lambda_i^R + \lambda_j^C$$

$$\lambda VAR = \mu_i - \mu$$
where
μ_i is the mean of the logs in the category and
μ is the grand mean.

The same guidelines apply for selecting log-linear models as apply in regression analysis. The model chosen should be the one that best fits the data, be substantively interpretable and be as simple as possible.

Log-linear Model in Analysis of Perception with Socio-Economic Factors:
The full log-linear model in the analysis of risk perception by job category, education and managerial level is expressed as:

$$Log \; (fa) = \mu + \lambda_1^{Edu} + \lambda_2^{Job} + \lambda_3^{Sector} + \lambda_{12}^{Edu*Job} + \lambda_{13}^{Edu*Sector} + \lambda_{23}^{Job*Sector}$$

where
fa is the observed frequency in the respective cell,

$\lambda_1^{Edu}, \; \lambda_2^{Job}, \lambda_3^{Sector}$ is the effect of the main variable and

$\lambda_{12}^{Edu*Job}, \lambda_{13}^{Edu*Sector}, \lambda_{23}^{Job*Sector}$, is the interaction effect.

Rotated Component Matrix:

	Component								
	1	2	3	4	5	6	7	8	9
To Cover Deficiencies A Most Favorable Alternative		.747							
Minimize Impact									
Financial Market							.867		
Growing Islamic Finance						.768			
Play Supplementary Role						.510			
Credit Risk									
Inflation Risk									
Event Risk			.803						
Currency Risk									.790
Liquidity Risk									
Reinvestment Risk		.761							
Liquidity Reason	.690								
Interest-free Investment									
Sharia Issue	.501								
Alternative Product									
The Economics Benefits									
Regulatory Purpose				.744					
Guaranteed By Bank								-.820	
Low Debt Ratio									
Strategic Company			.662						
Strong BOD					.798				
Excellent R & D				.676					
Long Established Company					.657				

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
A. Rotation converged in 17 iterations.