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Organizational Forms in MENA Property-Liability Insurance Industry: The Risk Implications

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Abstract

This paper provides an evidence of the effect of organizational forms on the risk taking behavior, mainly by analyzing stock, mutual and Islamic insurers, between 2011 and 2016, from three countries of MENA's region. Empirical tests are here applied to evaluate risk differences between these three types of ownership structures. We assume that stock insurers are more risky than mutual and Islamic ones and write more business with higher risk.

Keywords: Organizational form, Risk taking, Insurance companies

JEL Classification: G_{22}, G_{21}, L_{22}

1. Introduction

The under-development of the insurance sector in some countries of the MENA region, (generally explained by the religious concerns about insurance), led to the development of Islamic insurance companies (*Takaful)*, based on the Islamic rules (the principles of mutual assistance (*ta'awun*) and voluntary contribution (*tabarru'*)). These Islamic based insurance companies coexist with two other organizational forms: stock and mutual insurance. A stock insurance company is owned by its shareholders. Her profits are distributed to shareholders in the form of dividends. While, mutual insurance is owned by its policyholders, where profits may be distributed to policyholders in the form of reduction on future premium. Then, policyholders and owners are two distinct groups in a stock insurer, while they are one and the same in a mutual.

The existence of these various organizational forms might be explained either from an agency perspective (Mayers and Smith 1988, 1990b), adverse selection (Smith and Stutzer 1990), or the efficiency of risk-sharing arrangements (Doherty and Dionne Doherty 1991). As far as agency problems and adverse selections problems are concerned, it is shown that stock insurance are involved in higher risky activities (Fama and Jensen, 1983a, 1983b and Smith and Stutzer, 1990, Lamm-Tennant and Starks (1993). However, from a Risk-sharing arrangements perspective, we expect mutual companies to insure more risky customers (Dionne and Doherty, 1991 and Doherty *and al.*, 1993).

The relation between organizational forms and the firm decision-making process has been developed in the insurance industry literature addressing ownership structure (Fama and Jensen, 1983a, 1983b; Smith and Stutzer, 1990; Dionne and Doherty, 1991 and Doherty *and al.*, 1993). To the best of our knowledge, all of these previous studies have focused only in mutual and stock insurance types. However, the Islamic insurance risk-taking has not yet been examined. In our setting, we continue in this line of research and we explorer how organizational form affect risk-taking decisions.

In this paper, we study the impact of insurance organizational forms on the firm risk taking behavior and we are particularly interested in Islamic insurance decision-making process. We hypothesize that risk activities differ among the various organizational forms of insurance companies (stock, mutual and Islamic). Since, we are interested to examine whether different organizational forms exhibit diverse risk-taking outcomes, we need to use the loss ratio (Note 1) which measures the underwriting risk. This proxy for risk is applicable for both mutual and stocks insurance companies and allows for risk measurement by line of business (Lamm-Tennant and Starks, 1993).

We find that stock insurers are associated with riskier cash flows when risk is measured by the variance of the loss ratios. Thus, the stock insurance chooses to sign highly risky contracts and to cover insured with high claims. This finding is consistent with the results of Lamm-Tennant and Starks (1993), Viswanathan and Cummins (2003) and Yanase and Asai (2011). Moreover, stock insurers are more concentrated in the riskier lines than are mutual and Islamic insurers.

The contribution of our research to the literature dealing with organizational form and risk taking is twofold. First, and contrary to previous studies on the MENA region, this work is the first to examine the insurance sector. Second, our paper contributes to understanding the difference between stock, mutual and Islamic insurance and to chow that different organizational forms have different strengths in dealing with different lines of business.

In the next section, we discuss the differences between stock, mutual and Islamic organizational forms and classify the risk taking level of each firm. Then, we describe our data and discuss the empirical model for estimating the underwriting risk. Afterwards, we analyze stock, mutual and Islamic insurers by-line of business and draw out the main differences between them. Finally, the last section concludes the paper.

2. Organizational Forms Within MENA Insurance Industry

The range of organizational forms within MENA insurance industry is perhaps among the broadest of any major industry. Included are stock companies that are similar to corporations in other industries where shareholders provide capital to the company, own the residual claims to the company profits and elect the board of directors. Mutuals, which are more like cooperative where customers are the owners of the firm. Finaly, Islamic insurances, which are based on the *Sharia* compliance mutual risk transfer arrangement, involving participants and operators.

We examine the role and the benefits of each organizational to identify the difference between these three legal forms. Stock insurance undertake the risk of the insured for consideration known as premium and promises to pay them the claims on happening of an uncertain event (risk transfer mechanism). The resources of stock insurers are collected by the mandatory contributions (premiums) of subscribers. They are owned by their shareholders who control its operations and reap any profits or sustain any losses which may result. The shares of ownership give them the right to elect the board of directors that oversees company management. Stock insurers provide easier access to capital to pay claims or fund business growth among other business purposes (Mayers and Smith, 1981; Fama and Jensen, 1983). However, their biggest disadvantage is the existence of triangular conflict of interest between the shareholders-managers, shareholders-insured and managers-insured (Mayers and Smith, 1981; Fama and Jensen, 1983 and McNamara and Rhee, 1992).

The mutual insurances are non-lucrative organizations. They operate under a scheme of distribution since they pay social benefits without constituted provisions. Their resources are collected by voluntary social contributions. Mutual insurance companies are owned entirely by their policyholders. Any profits earned are returned to these owners in form of reduced future premiums. The mutual owners (policyholders) have just the right to vote by the purchase of an insurance contract, while the stock owners can increase their vote rights by buying more shares. Their biggest advantage is the elimination of shareholding group having adverse interests with policyholders (Hansmann, 1985). Hence, these firms are characterized by the presence of a single conflict of interests which opposes the owners, who are the insured, and the managers.

The third organizational form, in the MENA insurance industry, is the Islamic insurance which is known as *Takaful* insurance (joint guarantee and mutual cooperation). The development of *Takaful* has been driven by the under-development of the insurance sector in some countries of the MENA region (generally explained by the religious concerns about insurance) and a need to create an insurance proposition that is fully compliant with *Sharia'* (Islamic law). These companies offer insured (participant) a valuable risk management tool based on the principal of *Ta'awun* (mutual assistance) and *Tabarru'* (voluntary donation). According to the Islamic Financial Services Board (IFSB), in the Islamic insurance arrangement the participants contribute a voluntary donation commitment into a common fund (participant fund) that will be used mutually to assist the members against a specified type of damage. The *Takaful* operator who assumes the role of *Wakil* must ensure the good management of the participant fund according to the principles of Islamic finance.

Islamic insurance distinguishes itself from stock insurance with many different features, the main distinction being the fundamental principles that govern each practice. *Takaful* is based on the principle of *Sharia*, where transaction involving *Rib*a (Note 2), *Gharar* (Note 3) and *Maysir* (Note 4) are prohibited. The purpose of *Takaful* is not profits but to uphold the principle of mutual assistance and shared responsibilities to take precautions against risks. Thus, Islamic insurance does not entail a risk transfer mechanism, but is rather a membership contract to a common pool (social function of mutual risk-sharing), of which every participant is entitled to certain benefits but also exposed to some risk of losses. This profit distribution mechanism is defined in advance where operator and shareholders has no claims on underwriting surplus; this reduces the possibility of conflict between participants and shareholders.

3. Organizational Forms and Risk Implications

3.1 Risk Differences Between Stock and Mutual Insurers

According to the agency theory, Fama and Jensen (1983) and Mayers and Smith (1992) point out that, because of the differences in efficiencies of controlling agency costs, stock insurers should held more risky assets that should be observed in lines of business where management discretion is more important. Consequently, they hypothesize that mutuals should be more prevalent in lines of business where management discretion is less important. In addition, Fama and Jensen predict that stock insurers would be associated with more uncertain future cash flows than mutual companies.

Previous researches on stock and mutual insurance risk-taking showed greater portfolio risk of stock insurance, with lower expense preferences, than do mutual insurance. Lamm-tennant and Starks (1993) brought evidence showing that stock insurers take more risks than mutual, where the risk inherent in future cash flows is measured by the variance of the loss ratio. Furthermore, stock insurers write relatively more business than do mutuals in lines and states having higher risk. Similarly, Esty (1994) shows that the incentives to adopt high-risk investment and high payout policies are much stronger in stock than in mutual insurance.

The Smith and Stutzer (1990), Doherty and Dionne (1992) and Doherty (1991) analysis focuse on the efficiency differences of risk sharing between participatory and non-participatory

policies (Note 5). Through a participating policy, the mutual insurers are a more efficient risk-sharing arrangement than can be attained by a stock insurer. The mutual write insurance in high-risk lines more effectively than the stock insurer.

In accordance with the agency theory arguments we propose our first hypothesis:

H_1: Stock insurance take more risks than mutual insurance.

3.2 Risk Differences Between Stock and Islamic Insurers

The risk-taking behavior of Islamic insurance companies has not been well developed in the insurance industry literature. Recent evidence by Hussain and Pasha (2011), Matsawalin *and al.* (2012) suggests that Islamic insurances must be engaged in less risky activities than stock insurance, since Islamic shareholders are conservative and risk adverse investors, while stock shareholders seek to maximize their utility functions. Similarly, these authors suggested that regardless of the chosen operating model, *Wakalah* (Note 6) or *Mudarabah* (Note 7), Islamic insurance remain less risky than stock insurance companies.

Hussain and Pasha (2011), Matsawalin *and al.* (2012) stipulated that Islamic insurance companies rely on the separation of policyholders and shareholders funds, those of participants and those of operators. Shareholders must not realize any loss or profit on their operations in order to comply with the criteria of non-speculation and unauthorized interests. As a result, they are not motivated to engage in highly risky projects.

Thus, consequently to the studies of Hussain and Pasha (2011), Matsawalin *and al.* (2012), we propose our second hypothesis:

H_2: Stock insurance take more risks than Islamic insurance.

These hypotheses clarify the risk-taking behavior of stock versus mutual on the one hand, and stock versus Islamic insurance on the other hand. The agency arguments (Fama and Jensen 1983b, Mayers and Smith 1990b, 1992) imply that stock insurers should be associated with more risky activities, where future net cash flows become more uncertain. Thus, we need a risk measure to test these implications. Such measure must capture the riskiness of future net cash flows on total firm basis. Smith and Stutzer point out that this analysis should be performed by lines of business so that it leads to more pertinent results.

We are here particularly interested in risk differentials between stock and mutual insurance and stock and Islamic insurance, in the accentuation or the attenuation of these differences across lines of business. Given these considerations, the best measure is the variance of an insurer's losses. Thus, we proxy the risky activities of insurer as the variance of the loss ratio (Note 8), which is known as the underwriting risk (Lamm-tennant and Starks, 1993).

4. Data and Methodology

Our research is limited to three MENA's countries, Tunisia, Morocco and Jordon. Thus, to test our hypotheses we obtain our data on MENA property-liability insurance companies from the Tunis stock exchange, Casablanca stock exchange and Amman stock exchange for the period spanning from 2011-2016. We also used the annual reports published by the Tunisian

Insurance Federation, the General Insurance Committee of Tunisia (CGAT), the Moroccan Insurance and Reinsurance Federation and the Jordan insurance federation" (JOIF) to hand collect other financial and non-financial data. We are interested in risk diversification across organizational forms and across lines of business. Thus, we include only stock, mutual and Islamic insurance where there is continuous data for the firm over the entire six years' time period. This final subset includes 58 insurance companies; 30 stock insurance, 17 Mutual and 11 Islamic insurance. This sample covers the majority of all policies written and represents the full data set. The 17 lines of business it contains are classified into accounting practices.

4.1 Risk Analysis Across Organizational Forms

We first test our hypothesis by using a Panel Model. The choice of this model is justified by the presence of variables with two dimensions, one for individuals and one for time. They are usually indicated by *i* and *t*. Thus, we run a set of Panel regressions of the following form:

$$UNDR_{i,t} = \beta_0 + \beta_1 MUT_i + \beta_2 TAK_i + \beta_3 ASSET_{i,t} + \beta_4 GROWTH_{i,t} + \beta_5 DE_{i,t} + \beta_6 ROA_{i,t} + \beta_7 BOARD_{i,t} + \varepsilon_{i,t} \quad (1)$$

$UNDR_{i,t}$ = the underwritting risk (measured as variance of the firm's loss ratio),

MUT_i = a dummy variable that takes the value 1 if the organizational form is the mutual form,

TAK_i = a dummy variable that takes the value 1 if the organizational form is the Islamic form,

$ASSET_{i,t}$ = the size of the company i at the year t (measured as the natural logarithm of the total assets of the firm),

$GROWTH_{i,t}$ = the growth percentage of the premiums value issued by the Insured of the firm iat the year t,

$DE_{i,t}$ = the debt ratio of the firm i at the year t (measured as the ratio between the total value of the debt and equity capital of the firm),

$ROA_{i,t}$=the return on asset of the firm i at the year t,

$BOARD_{i,t}$=the size of the directors board of the firm i at the year t, and

$\varepsilon_{i,t}$= an error term.

The descriptive statistics of the model's variables are reported in Table 1. No difference appears between stock-mutual subset underwriting risk mean and stock-Islamic subset underwriting risk mean. The standard deviations of the insurance size, in the two subsets, are respectively 0.54 and 0.56. As well, insurances companies included in our sample have a homogeneous size.

The development of Islamic insurance, in these three countries improved slightly the premiums growth and has lowered the debt capacity of firms, since the averages of growth and of debt ratio moved from 12.2% to 12.39% and from 0.72 to 0.64. We also notice that the introduction

of these firms did not improve the average performance of the insurance industry in these three countries, since the average of the ROA has not changed. Finally, we found that the average size of the board directors is similar to that of O'Sullivan and Diacon (2003), which reports on a nine board members.

Before proceeding to regression analysis, we tested for possible multi-colinearity of independent variables. Table 2 and 3 reports the matrix correlation results. Based on a sample of stock and mutual insurances, the correlation between the size of the company and the growth percentage of the premiums value issued by the insured (ASSET-GROWTH) is negative and statistically significant. This implies that a large company has a low growth in the issued premiums value. However, the correlations between the size and the debt ratio of the company (ASSET-DE), and the growth percentage of the premiums value issued by the insured and the return on asset of the firm (GROWTH-ROA) are positive and statistically significant. These may indicate that large companies have high debt capacity, and that the premiums value growth is led by good firm performance. By eliminating the mutual companies in this sample and integrating the Islamic insurance companies, the results remain unchanged.

Table 1. Descriptive statistics of variable used in the Panel model

	Stock-Mutual					Stock-Islamic				
	N	Mean	S-Deviation	Min	Max	N	Mean	S-Deviation	Min	Max
UNDR	222	0,60	1,22	0,03	5,56	216	0,61	1,23	0,03	5,56
ASSET	222	7,52	0,57	5,18	8,84	216	7,48	0,56	5,18	8,84
GROWTH	222	12,20	22,67	-83,50	114,61	216	12,38	23,91	-83,50	114,61
DE	222	0,72	0,99	-1,21	6,76	216	0,64	0,87	-0,80	6,76
ROA	222	0,02	0,11	-0,83	0,46	216	0,02	0,11	-0,83	0,45
BOARD	222	9.29	1.35	7	12	216	9	1.31	7	12
MUT	222	0,10	0,31	0	1					
TAK						216	0,08	0,27	0	1

Table 2. Correlation coefficient of independent variables used in the Panel model (stock-mutual)

	ASSET	GROWTH	DE	ROA	BOARD	MUT
ASSET	1					
GROWTH	-0.1626*	1				
DE	0.1871*	0.0187	1			
ROA	0.0460	0.1535*	-0.0422	1		
BOARD	0.0881	0.0683	0.0394	0.1310	1	
MUT	0.1816*	0.0235	0.1164	0.0436	0.3738*	1

*Correlation coefficients are significant at a level of 5%

Table 3. Correlation coefficient of independent variables used in the Panel model (stock-Islamic)

	ASSET	GROWTH	DE	ROA	BOARD	TAK
ASSET	1					
GROWTH	-0.1536*	1				
DE	0.2258*	-0.0203	1			
ROA	0.0527	0.1745*	-0.0294	1		
BOARD	0.0348	0.0181	0.0533	0.1179	1	
Tak	-0.0600	0.0510	-0.1325	0.0088	-0.3063*	1

*Correlation coefficients are significant at a level of 5%

The results of the panel regression are reported in table 4. First, we examined the underwriting risk taking in mutual organizational form compared to stock companies. We have been able to show that the Mutual insurance companies have a negative and statistically significant effect on the underwriting risk (column 1). This result implies that mutual companies take less underwriting risk than stock insurance. It means that the stock insurance chooses to underwrite highly risky contracts and to cover the insured with high claims. This finding is consistent with the results of Lamm-Tennant and Starks (1993), Viswanathan and Cummins (2003) and Yanase and Asai (2011).

Second, we examined the underwriting risk taking in Islamic insurance compared to stock companies. We conclude that the Islamic insurance companies have a negative and statistically significant effect on the underwriting risk (column 2). This finding implies that Islamic companies take less underwriting risk than stock companies. This result confirms that taking excessive risks are disregarded by Islamic insurance contract. Similarly, the shareholders of the Islamic insurance wouldn't achieve either losses or profits on their operations, to meet the criteria of non-speculation and not allowed interests [Hussain and Pasha (2011), Matsawalin *and al.* (2012)]. Indeed, the latters are not motivated to engage in high risky projects. Consequently, the stock shareholders choose to invest their funds in risky projects to improve their profits.

The random effects contribution in the two regressions is average since the R^2 within is, respectively, 0,6287 in the first regression and 0,6351 in the second. Similarly, the share of the inter-individual variability explained by those of explanatory variables is very important given that the R^2between is respectively 0,9892 in the first regression and 0.9963 in the second.

Table 4. Panel regression of organizational form on risk take behavior for 58 insurers

	Underwritting Risk	
	1	2
Organizational Forms		
MUT	-3,70	
	(0,000)*	
TAK		-4,13
		(0,000)*
Indépendant Variables		
ASSET	-2,66	-5,93
	(0,008)*	(0,000)*
GROWTH	3,22	4,60
	(0,001)*	(0,000)*
DE	1,66	4,11
	(0,097)***	(0,000)*
ROA	1,66	1,96
	(0,098)***	(0,050)**
BOARD	-2,57	-3,46
	(0,010)***	(0,001)*
Observations	222	216
R-squared Within	0,6287	0,6351
Between	0,9892	0,9963
Overall	0,9735	0,9693

Note: Values outside of the brackets are the Z and in brackets are the probabilities P>|z|,* coefficients are significant at a level of 1%. ** coefficients are significant at a level of 5%.*** coefficients are significant at a level of 10%.

4.2 Risk Analysis Across Lines of Business

Before concluding, ultimately, that stock insurers take more risk (as measured by the variance of firm loss ratios) than do mutual and Islamic, we examine the risk bearing profiles of organizational type. One measure of risk bearing is the concentration of the premiums earned for each organizational form (stock versus mutual and stock versus Islamic) amongst the various lines of business. This measure can test the relation between the premium concentration and the loss ratio by line of business (Lamm-Tennant and Starks, 1993).

Table 5 shows, by organizational form, the median of the percent average total premium earned across firms in each line. Given that the automobile insurance policies (Auto liability and Auto physical damage) are mandatory, it is not surprising that the highest premium concentration for stock, mutual and Islamic organizations occurs from these two lines of business. Through the 6-years sample period, the average is 14.67% of stock insurer's premium earned in the tow automobile lines compared to 25.57% and 23.48% of the mutual and the Islamic insurers'

premiums. As can be seen in table 4, using the two-sample median test, the difference is statistically significant (Note 9) for 7 of 17 lines. Four lines have higher proportional concentration for mutual insurances and three lines have higher proportional concentration for stock firms. We notice that Islamic insurers haven't a higher proportional concentration compared to stock and mutual organizations. In table 6, we examine these 7 lines and we perform a test on the difference between the medians of the standard deviations of the loss ratio for those lines dominated by stocks versus those lines dominated by mutuals, we find a significant difference (at the 0.002 level). We also find that the total risk is higher in the lines dominated by stock firm (median standard deviation, 6.604) than that for the lines dominated by mutual insurance (median standard deviation, 1.663).Thus, the variance of loss ratios studies, across lines of business, shows that stock insurers take more underwriting risk than mutual insurers. We also find that the highest risk is relatively located in business lines of stock firms.

Table 5. Concentration in lines of business by stock, mutual and Islamic insurers averaged across 2011-2016

	Median % of Firm's Premiums in Line *			Stock Versus Mutual Median Tow-Sample Test		Stock Versus Islamic Median Tow-Sample Test	
	Stock	Mutual	Islamic	Z	Prob> Z	Z	Prob> Z
Lines with more statistically significant concentration by mutuals and Islamic:							
Farmowners multiple peril	0.23	1.86	1.69	4.21	0.0001	4.51	0.0000
Home owners multiple peril	5.32	12.51	13.25	4.44	0.0000	4.23	0.0001
Auto liability	16.78	29.56	27.45	4.15	0.0002	3.45	0.0045
Auto physical damage	12.55	21.57	19.52	3.54	0.0021	2.17	0.0214
Lines with more statistically significant concentration by stocks:							
Workers compensation	12.51	5.89	3.24	-2.85	0.0012	-2.14	0.0013
Marine insurance business	3.78	1.12	0.74	-2.93	0.0004	-2.47	0.0001
Term life insurance	5.31	1.32	0.89	-3.54	0.0041	- 2.98	0.0036
Lines with no significant difference in concentration between stocks, mutuals and Islamic :							
Fire	2,89	2,91	2,61	0,78	0,5017	0,605	0,4007
Commercial multiple peril	1,52	1,12	1,09	-0,74	0,4178	-0,915	0,3168
Glass	0,47	0,36	0,29	0,21	0,6912	0,035	0,5902
Individual health insurance	0,78	0,67	0,52	0,15	0,8422	-0,025	0,7412
Group health insurance	0,58	0,47	0,39	0,42	0,4596	0,245	0,3586

Aviation risk insurance	0,54	0,51	0,45	0,23	0,7261	0,055	0,6251
Personal accident insurance	0,71	0,58	0,54	-0,45	0,6514	-0,625	0,5504
Medical insurance	0,12	0,09	0,04	-0,23	0,3347	-0,405	0,2337
Travel insurance	0,02	0,01	0	0,14	0,765	-0,035	0,664
Reinsurance	0,91	0,99	0,92	-0,21	0,6586	-0,385	0,5576

*****Refers to the median of the percent average total premium earned across 6-year sample period, 2011-16.

Table 6. Standard-deviation of loss ratio in significant lines of business by stock and mutual averaged across 2011-2016

	Stock Versus Mutual Median of Firm's standard deviation of the loss ratio	
Lines with more statistically significant concentration by mutual and Islamic	Stock	Mutual
Home owners multiple peril		
	0.125	0.094
Auto liability	0,721	0,647
Auto physical damage	0,647	0,532
Total	1,707	1,438
Lines with more statistically significant concentration by stocks		
Workers compensation	2.125	0.561
Marine insurance business	2,697	0,478
Term life insurance	1,782	0,624
Total	6,604	1,663
Median Tow-Sample Test		
Z	4.124	
Prob> Z	0,0020	

5. Conclusion

This article examines the relation between ownership structures and insurance companies risk taking behavior of three MENA's countries, Tunisia, Morocco and Jordon, using a data set of about 58 insurance firms for the period spanning from 2011-2016. We estimated panel model explaining the underwriting risk taking in mutuals and Islamic insurance compared to stock companies.

Our first finding allows us to say that mutual companies take less underwriting risk than stock insurance. Thus, the stock insurance chooses to sign highly risky contracts and to cover insured with high claims. This finding is consistent with the results of Lamm-Tennant and Starks (1993), Viswanathan and Cummins (2003) and Yanase and Asai (2011). We also established that Islamic companies take less underwriting risk than stock insurers. This result confirms that Islamic insurances are engaged in less risky activities than stock insurance, since Islamic shareholders are conservative and risk adverse investors, while stock shareholders seek to maximize their utility functions (Hussain and Pasha, 2011; Matsawalin *and al.*, 2012). Furthermore, before concluding, that stock insurers take more risk than do mutual and Islamic, we examine the risk bearing profiles of organizational type, amongst the various lines of business. We find that total risk is higher in the lines dominated by stock firms than for the lines dominated by mutual insurance or that of Islamic insurers, who haven't a higher proportional concentration compared with stock and mutual organizations**.**

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Notes

Note 1. The loss ratio (losses incurred/premiums earned) represents the percent of premiums earned necessary to cover losses incurred); Losses incurred are equal to losses paid adjusted for the change in loss reserves and premiums earned are equal to the premiums written in a year adjusted for the change in the unearned premium serves.

Note 2. *Riba* is the earning of interest.

Note 3. *Gharar* is the presence of uncertainty embedded in the stock insurance products.

Note 4. *Maysir* is the excessive risk or the speculative nature in the stock insurance product.

Note 5. Lamm-Tennant and Starks (1993): «With participating policies the price of the insurance is determined ex post. Consequently, the insured shares in the overall operating risk of the insurance company. In contrast, with nonparticipating policies the price of the insurance is determined ex ante and the insured does not share in the overall operating risk»

Note 6. Under the Wakalah's principle, the group of participants can delegate their rights or investments to the Takaful operator (Wakeel), who then acts as their agent and representative.

Note 7. Under the Wakalah's principle, the group of participants can delegate their rights or investments to the Takaful operator (Wakeel), who then acts as their agent and representative.

Note 8. The loss ratio (losses incurred/premiums earned)

Note 9. The difference is significant at least at a level of 5%.