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The Size and Structure of Market and Efficiency of Insurance Companies in Azerbaijan and Iran countries

Hanifehzadeh Latif

Ardabil Branch, Islamic Azad University, Ardabil, Iran

ABSTRACT

The main purpose of the present research is to determine appropriate structure concerning the size and volume of insurance companies in order to increase the performance, efficiency, and to decrease the average costs of production. Increasing the performance of an insurance company is effective in economic growth and development, monetary and financial stability and economic savings. Under consideration, statistical universe of this research is Azarbayjan and Iran insurance Companies that have been active in insurance
Companies market during 2008, 2009 and2010.In order to test the assumptions of the research, information about financial statements of insurance companies has been studied and analyzed during the three years of 2008, 2009and2010 by using method data envelopment analysis. Findings from the research show that insurance companies in Azarbayjan with large size and more share than market enjoy the highest performance compared to other companies.
In addition, insurance companies in Iran with small size and fewer shares than market enjoy the highest performance compared to other companies. Because of centralization and asymmetric information, large companies with more share than insurance market are encountered with deficiencies and decentralization, removing the monopoly from insurance company seems necessary, and this will be realized by establishing insurance companies with more capital, integrating, and combining them with each other. Improvement in market structure will lead to increase in performance and economic savings of insurance companies. Increase in economic savings at economic macro levels will result in increase in insurance coefficient penetration, satisfaction of insured parties and growth and flourish in insurance industry.
Key words: Economic saving – capital asset ratings – scale Efficiency – Economic Efficiency – Technical Efficiency-coefficient penetration.

INTRODUCTION

Because of low insurance coefficient penetration, influence of insurance and lack production of insurance premium in Azarbayjan and Iran insurance industry it is necessary to done many investigations in the Azerbaijan and Iran in the insurance market. With comparing the influence coefficient of the insurance companies in Azerbaijan and Iran with world insurance companies, it becomes clear that influence coefficient at the year of 2008 of Iran is 1.35 and the Azerbaijan is .44 and at the same time in the world is 7.7 and in the Asia is 5.95.

Therefore it is necessary should be investigated the ways of increasing insurance premiums and increasing the coefficient influence of insurance in Iran and Azerbaijan. Using the advantages of increasing production capacity and increasing production insurance which has the influence coefficient that coefficient influence of insurance is the most important sign of economical and cultural development in the world could have development through insurance industry expansion.

In order to measure the performance and efficiency of stock exchange companies, Fama and Fritch (1995) opened a new door in the field of researches on efficiency and performance measurement of companies (CAPM) by adding the two variables company size and ration of book value to stock market value together with fixing the weaknesses of rating model of capital assets (6).

In order to measure the performance of markets and economic savings and efficient use of limited resources, professional bodies in countries, and even as continental, are actively researching. In order to decrease the average costs of production, integration benefits and combining the companies have always been considered by economic managers and policy makers. One of the several effective factors in performance of companies and macro economy is the size of active companies in each industry. In case of

***Corresponding Author:** Hanifehzadeh Latif, Ardabil Branch, Islamic Azad University, Ardabil, Iran.

insurance company, in the present research we are to introduce the best structure from the viewpoint of size and volume of the insurance company, which has the best performance and efficiency for realizing the performance of insurance market and development of insurance industry.

Regarding the lowness of output and efficiency of insurance companies in Azerbaijan and Iran and lack of development in life insurance and many difficulties that insurance companies are engaged in, the present research and researches about efficiency and yield of insurance companies can serve and guide investors, supervisors, and decision makers on economic macro policies. Since central insurance in Iran and Azerbaijan's insurance supervision branch of economical organization as a supervisor, institute directly intervenes on the logic of act of establishments and activities and capitals of insurance companies, the present research can be used as a necessity and urgency.

This research will be continued in five sections as follows: 1 – subject literature 2 - methods of efficiency measurement 3 – research methodology 4 – testing and analyzing the assumptions of research – 5 – conclusion and proposals.

1- Subject Literature:

a) Theoretical Foundations of the Research:

Using integration and combination of companies and development of activities of companies at international level in order to increase the yield and efficiency have always been considered. Through integration and renewing the structure, try to increase financial power and decrease their costs in order to be active in an optimized manner.

Upon encountring the partial Competetion conditions and monopoly, what reaction do the companies show themselves and what effect this will have on their efficiency and yield.

The present research is to answer this important principle:

Enjoying what size and what volume of capitals do commercial insurances in Azarbayjan and Iran take the advantage of efficiency and are active at optimized level of scale and if, economical conditions and market capacity will allow this task or not? In addition, whether the share which is more than local market will have more efficiency or not?

b) Research Background:

In order to be sure of efficiencies of companies that have been entered in integrations and for being aware of scale savings wide researches have been done. In their paper entitled "Studying Technical Efficiency of the yield compared to Some Selections of Public and Private Insurances" during the years 2005-2006, Mr. Jafar Ebadi and Hojjatollah Bagherzadeh studied the technical efficiency of insurance companies active in Iran insurance market and the result from their research showed that insurance companies with large sizes that more shares of insurance market are available for them, are at subtractive ages compared to the scale (1).Cominz Tenison and Weis studied the relationship among integration and ownerships and efficiency and scale savings of life insurances in America during the years 1995-1998. Results from their research showed that companies that have entered in integration and bear large sizes were efficient and enjoyed scale efficiencies (15).

In 1992, David Kamins and Mary Weis evaluated technical efficiencies of America insurances. They studies the companies in three sizes of small, average and large. Results showed that large companies enjoyed more technical efficiencies than small ones (4).

Fan, Van Kapa and Berain (2007) estimated the efficiencies of 14 European countries. They calculated the size and structure of market in terms of efficiency. Their studies showed that during the study period the size of company and local market share were determining factors in efficiency. Larger companies and those with more shares than those of market tended to be deficient (17)

In 2005, Kinka due to a research showed that there was positive and significant relationship between the size of European companies and profitablity (14). In 2005, Bokhari showed that in England large companies are in better situations concerning profitability and yield (3). In 2006, Lawrence showed that the size of Australian companies are effective in their efficiencies and yield (18).

2. Concepts and Methods of Measuring the Efficiency

In this research for researching about insurance companies efficiencies in Iran and Azerbaijan we have used this method: 1-data enveloped analysis method which is one of the most valid and best methods in efficiency measurement.

A: Data envelopment analysis Method

Farrell (1957) is among the persons who have worked a lot in the field of efficiency and he has also offered a method to evaluate it, and later this was led to a method named as data envelopment analysis. In his paper (1957) bearing the title "Measuring the Production Efficiency he has defined efficiency of the company as" the high ratio of production of an output to the amount of an input". According to this definition, Farrell has also described different kinds of efficiencies as follows [7]:

1. Technical efficiency (offers the efficiency of a company in gaining maximum amount of output from a given set of inputs). 2. Allocative efficiency (was defined as the ratio of economic efficiency to technical efficiency). 3. Economic efficiency (was defined as the ratio of the least possible expense to the existent expense).

In order to evaluate the efficiency different methods have been offered by researchers and they may be classified into two groups of:

1. Parametric Methods

2. Non parametric Methods

Data envelopment analysis Method may be introduced as one of non-parametric methods. In this method, using techniques of linear planning considered units are evaluated. The Paper (CCR) that was published by Charnes, Cooper & Rhodes (1978) in 1978 introduced the DEA (Data Envelopment Analysis) method for the first time. This is one of the most important non-parametric methods for measuring the efficiency in which the efficient boundary is experimentally estimated based on available information. In addition, since in attaining the boarder function, all data is given developmentally it is called data envelopment analysis [13]. In order to measure the efficiency by DEA - a computer software named DEAP is used which is based on input for production and X1 and X2 variables, as well as output Y. Technical efficiency graph in the state of the two (X1 and X2) inputs and an output (Y) is shown in figure one.

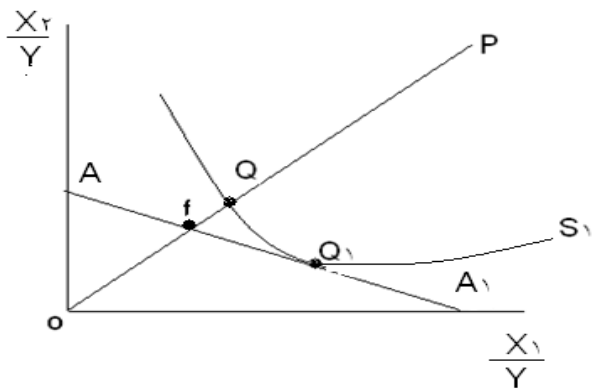


Fig. 1: Displaying Technical Efficiency in the State of Two Inputs and One Output Concerning Z Company

In figure 1 the points located on the curve will offer equality of SS" of technical efficiency if a company uses certain amounts of inputs (specified on point P) to produce an output unit. Technical non-efficiency of the company is shown by distance QP. In percent terms, the ratio QP/OP shows technical efficiency and it can be reduced without reduction in production. According to Farrell's definition, technical efficiency is measured by the ratio TE=QP/op which is an amount between 0 and 1. In general, technical efficiency (meaning being located on similar production curve (SS')), specialized efficiency (meaning being located on the line of production expense (AA')), and economic efficiency are obtained on the tangent point of similar production curve (SS') and similar line (AA').

Inputs and Outputs:

In most studies that have been done on efficiency and earnings scale labor force and fixed assets of the companies have been used as inputs, such as Deacon's study (2001), and in some studies more inputs have been used. For example, in their studies, Tone kaoru, sahoo, & Biresh (2005) have used the business, borrowed capital, labor force, and shareholders' capitals services as outputs. However, in most of the studies labor force and fixed assets have been used as the main inputs [14]. (The present research uses data

envelopment analysis method to calculate efficiency and earnings scale of insurance companies). In addition, inputs, assets, shareholders' rights, labor force, insurer expenses, and outputs including insurer's earned and investment earned, and added value, which are computed as the following, have been used:
Added value = earned premiums + income due to investment – payable commission – claims and expenses of insurers

3- RESEARCH METHODOLOGY

From the viewpoint of purposes, this research is an applied one because it has studied the relationships between variables and insurance market and is to state the relations and offer strategies to increase the efficiency of insurance companies in market. This is a descriptive research and enjoys inductive approach and it uses of survey method for collecting and measuring the information on the basis of inputs and outputs data. Also, have been used descriptive methods for describing the model (data envelopment method) .its time domain is all of active insurance companies in Azerbaijan and Iran at the level of insurance market in the years beginning from 2008 to 2010 that have gained activity certificates from the Azerbaijanis' Department of insurance supervision and central insurance of Islamic Republic of Iran.

Model variables:

In this research include input and output variables that input variables consist of assets, labor forces and insurer expenses and outputs includes insurer[s] earned and added value.

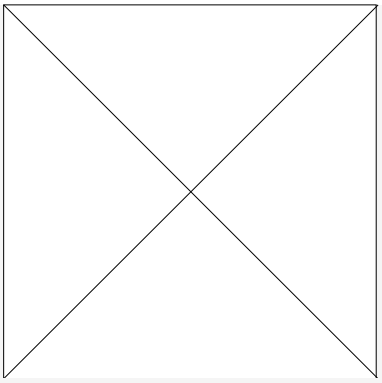
Research software:

In order to measure performance and estimating several numbers of parameters of production has been used from a computer software (DEAP) version2.1 which is provided by TOM Coli from New England University with fixed output assumption.

Research model:

a. The measurement method of Technical and scale efficiency:

In order to measure the performance and estimating the parameter of several number of production function is used mathematical model in phase environment which was completed in 1978 by Charnes, Cooper & Rhodes and became known as the CCR model, the performance assessment index, each decision maker unit is same input and output parameters of model. For each input or output elements must be found several weights till all input and output, converted to a balanced input and output.



If the number of firms n each of the vector of input i x, which includes m inputs to the vector product (service) r that Y contains s product (service) is able to convert. Linear programming to measure the firm assumption p that will be called the decision maker unit p (DMU P) is as the following models:

$$\text{Min:} hp$$

$$i=1,\ldots\ldots m \qquad \geq 0 \text{S.t: } h\,p\,x_i\,p - \sum_{j=1}^{n} \lambda_j x_{ij}$$

$$\mathbf{Yrp+\sum_{j=1}^{n} \lambda jYrj \geq 0 \qquad r=1,\ldots\ldots s \qquad -}$$

$$\mathbf{\lambda i \geq 0}$$

assu. constant output $\mathbf{\sum_{j=1}^{n} \lambda j = 1}$ **j=1,2,……. n**

assu.variable output $\mathbf{\sum_{j=1}^{n} \lambda j = 0}$

In this linear model the amount of aim function is hp and coefficient of λj consider as unknown which can earn the optimum amount by solving the liner programming model.
Hp: is the ratio between input and outputs which are between 0, 1. if the used amount be equal with optimum amount In this way h is equal to one that shows the firm is efficient.
Yj is output and Xj is a vector which has k^*1 dimension consists of input and λj is a vector which has n^*1 dimension consists of fixed numbers.

B. the evaluation method of economical efficiency:
Assume that our data consists of **m** input and **s** output for each one of **n** companies. The **j** company (j = 1,2,……. N) From one input vector m^*1 vector $xi=(x_1,x_2,\ldots\ldots X_m)$ use for producing an output vector $Y=(Y_1, Y2, \ldots.. Y_s)$ Which X is an input matrix m^*n vector and Y is an output matrix of s^*n vector and it shows variable for all **n** companies as model. In the first stage linear planning will be as follows:

$$\text{Min: } WiXi^*$$

$$\text{S.t:} \quad Xi^* - \sum_{j=1}^{n} \lambda jxij \geq 0 \qquad i=1,\ldots\ldots m$$

$$-Y\,r + \sum_{j=1}^{n} \lambda jYrj \geq 0 \qquad r=1,\ldots\ldots s$$

$$\lambda i \geq 0$$

assumption. constant output $\sum_{j=1}^{n} \lambda j = 1$ j=1,2,……. N

assumption.variable output $\mathbf{\sum_{j=1}^{n} \lambda j = 0}$

In this model wi is the product vector's of cost and Xi* (which can solve by linear planning) is the product vector's which cause minimizing the firm cost with same price Wi and production limit of Yi. Wi is an input vector cost m^*1 for **j** company which is equal with input vector Xi and Xi is the input vector for minimizing the **j** company, expenses (which solve by linear planning) in the second stage the economic

efficiency of j company that is the **ratio of the least possible expense to the existent expense** would be calculated as:

CE = Wi Xi /WiXi

Efficiency amount is between 0, 1. Economic efficiency with amount 1 shows a company which is efficient in expenses. 1_CE shows the amount of expenses that company can, not to reduce and have the minimum amount of output..

A. Data Gathering Method:

Data and information gathering has taken place in the library and field forms Statistical universe of the present research are 28 active companies in Azerbaijan and19 active companies of Iran at insurance market level, which have been under supervision of Azerbaijanis' Department of insurance supervision and central insurance of Islamic Republic during the years 2008-2010. In order to test the theories and analyze them the method of data envelopment analysis and have been used

b) Research Assumptions:

Concerning increase in yield and efficiency of insurance companies through integration and combination of the companies and regarding the shares of companies from insurance market, two assumptions take place based on the purposes of the research, which are as follows:

1- Insurance companies with large sizes have higher yield and efficiency compared to the insurance companies with small and average.

2- Companies that more shares of market are available for them are more effective than other companies.

a) Testing the Research Assumptions Using Data envelopment analysis Method in Azerbaijan country:

Based on results from data and information analysis using data envelopment analysis method that has been collected using DEAP software and shown in tables 1 and 2, it became clear that insurance companies with large sizes are more efficient than other companies. In addition, it became clear that companies with more shares than that of market are more efficient than other ones. So, both assumptions of the research "1 – Insurance companies with large sizes enjoy higher efficiency and yield than insurance companies with small and average sizes. 2 – Companies with larger shares than that of market are more efficient than other companies" are approved.

Table No. (1) Average Efficiency Comparison of Insurance Companies in 2008-2010 (separately)

1. Insurance companies with large sizes 2. Insurance companies with Average
3. Insurance companies with small sizes

Insurance companies with small sizes			**Insurance companies with Average sizes**			**Insurance companies with large sizes**		
Scale Efficiency	Economic Efficiency	Technical Efficiency	Scale Efficiency	Economic Efficiency	Technical Efficiency	Scale Efficiency	Economic Efficiency	Technical Efficiency
.76	.58	.08	.74	.53	.24	.53	.55	.41

Source: research calculation

Table No. (2) Average Efficiency Comparison of Insurance Companies in 2008-2010 (separately)

1. Insurance companies with large shares of market 2. Insurance companies with Average shares of market 3.
2. Insurance companies with small shares of market

Insurance companies with small shares of market			**insurance companies with Average shares of market**			**insurance companies with large shares of market**		
Scale Efficiency	Economic Efficiency	Technical Efficiency	Scale Efficiency	Economic Efficiency	Technical Efficiency	Scale Efficiency	Economic Efficiency	Technical Efficiency
80.	.47	18.	70.	51.	08.	46.	54.	39.

Source: research calculation

The result of research with method of comprehensive analysis of the information in based on first hypothesis and has been shown in the1and 2 tables. The constant expenses will decrease with production increase and companies try to obtain the large share of market and decrease production expenses thus the first hypotheses of this research is approved.

Base on the second Hypothesis should see Low insurance coefficient penetration and less insurance premium and law less share of the insurance market on the base of large number law and being asymmetrical information in the insurance market it caused high damage and less effective. The result of the investigation in Azerbaijan is equal with all investigation held above.

b) Testing the Research Assumptions Using Data envelopment analysis Method in Iran:

Based on results from data and information analysis using data envelopment analysis method that has been collected using DEAP software and shown in tables 1 and 2, it became clear that insurance companies with small sizes are more efficient than other companies. In addition, it became clear that companies with fewer shares than that of market are more efficient than other ones. So, both assumptions of the research "1 – Insurance companies with large sizes enjoy higher efficiency and yield than insurance companies with small and average sizes. 2 – Companies with larger shares than that of market are more efficient than other companies" is refused and are not approved.

Table No. (1) Average Efficiency Comparison of Insurance Companies in 2008-2010 (separately)

1. Insurance companies with large sizes 2. Insurance companies with Average sizes
3. Insurance companies with small sizes

Insurance companies with small sizes			**Insurance companies with Average sizes**			**Insurance companies with large sizes**		
Scale Efficiency	Economic Efficiency	Technical Efficiency	Scale Efficiency	Economic Efficiency	Technical Efficiency	Scale Efficiency	Economic Efficiency	Technical Efficiency
.76	.58	.51	.74	.53	.34	.53	.55	.22

Source: research calculation

Table No. (2) Average Efficiency Comparison of Insurance Companies in 2008-2010 (separately)

1. Insurance companies with large shares of market 2. Insurance companies with Average shares of market
3. Insurance companies with small shares of market

insurance companies with small shares of market			**insurance companies with Average shares of market**			**insurance companies with large shares of market**		
Scale Efficiency	Economic Efficiency	Technical Efficiency	Scale Efficiency	Economic Efficiency	Technical Efficiency	Scale Efficiency	Economic Efficiency	Technical Efficiency
.80	.47	.53	.70	.51	.34	.46	. 54	.15

Source: research calculation

But, according to results from efficiency measurement using data development analysis method that have been shown in tables 1 and 2, because of centralization and monopoly in insurance market, insurance asymmetric information and lack of competitive atmosphere and lack of forming insurance companies with more capital than that of average capital of insurance companies with large sizes are not efficient, Therefore, the first assumption is refused and is not accepted, however, in case of the second assumption of the research it can be said that because of lack of competitive atmosphere and presence of fixed and same tariffs, insurance companies do not pay attention to customers' risks. They attempt to obtain more shares of insurance market. With lack of price of insurance products in a fair manner and lack of paying attention to the risk of insured to obtain more shares of market cause to deficiency. Therefore, the second assumption of the research is also refused and are not confirmed and accepted.

5. Conclusion and Proposals

According to studies and obtained results from using methods, data envelopment analysis to measure efficiency and yield of insurance companies it was cleared that the efficiency of insurance companies in Azerbaijan is less and at low level. Insurance companies with large sizes and more shares of insurance market enjoy more ability in relation to controlling the expenses and obtaining the maximum outputs

compared to inputs, and this result is the same as result from all research mentioned above. To increase the efficiency of the companies and controlling and decreasing expenses by companies based on ration output to input we give the following suggestions:

1- Because of less life of insurance companies in Azerbaijan the government must, prepare the framework of more control and supervision of the insurance companies,
In addition, use the standards of "international association insurance supervision".
2-Because of efficiency is low and the production of insurance premium is less .state must be protect the insurance companies by determine and approving the rule and law of activities of insurance companies and do the affairs about the increasing the capitals of insurance and try to increase the culture of usage from insurance services and encourage the people to use the insurance services.
3-Because of life of insurance companies in Azerbaijan is less and the people have not confidence to insurance companies and drawing the value of damages or claims of them thus the state and insurance supervision must do more efforts about coordination between insurer and insured and development of insurance industry.

According to studies and obtained results from using method, data envelopment analysis to measure efficiency and yield of insurance companies in Iran it was cleared that the efficiency of insurance companies is less and at low level. Insurance companies with small sizes and less shares of insurance market enjoy more ability in relation to controlling the expenses and obtaining the maximum outputs compared to inputs; which reason will investigate below

Regarding the above mentioned cases and structural weakness for reducing the average expenses of production some proposals are offered for the purpose of increasing the efficiencies of insurance companies and their ability to control expenses and increasing the outputs compared to the inputs:
1 - Preventing the monopoly and centralization in insurance market through establishing insurance companies with capitals and asset values more than the average value of capital and assets of insurance companies.
2 – Price liberalization of insurance products by insurance companies and dismantling the tariff system in pricing.
3 - Using financial control system and using final cost system for pricing the insurance products.
4 –Required researches to be done on liberalization rate and centralization in insurance market.
5 - Required researches to be done on asymmetric information in insurance market. In addition, detailed studies and researches to be done in case of reasons for presence and creating asymmetric information in insurance companies and the mode of eliminating them.

In order to boom up the insurance market and help the insurance market efficiency to be realized, competitive atmosphere should govern in insurance market, tariff system should be eliminated and financial control system should be replaced with it. Removing the monopoly and decentralization in insurance market will provide creating competitive atmosphere, and pricing the insurance products in their just manners. According to ranking the customers on risk basis, compensation for reciprocal expenses among insured groups (law risk, high risk) will not be possible because insurance compatible information will be created in market and this will lead to efficiency and increase in profits of insurance companies.

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