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Measuring Productivity of Agricultural Insurance in Iran: A Different Approach

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ABSTRACT

Two models are commonly made use to explain the behavior of insurance industries, namely: risk-pooling and the risk-absorbing models. Neither of the two models provides an acceptable definition of insurance output in the economies experiencing high inflation rate. To address the deficiencies of the present models, an alternative was proposed in the current study as based on the theory of index number. To verify the reliability of the suggested model, all the three models were tested using times series data from Agricultural Insurance Fund in Iran. The first two models failed to provide a meaningful indication of growth of Total Factor Productivity (TFP) in insurance Fund over the period of study while, results of the productivity estimation in the context of the proposed model show more consistence with reality and demonstrate an acceptable trend. Thus, the proposed model seems to have the merit of being considered as an alternative one in evaluating the productivity improvement in Agricultural Insurance Fund in Iran and as well in other developing countries experiencing high inflation rate.

Keywords: Iran, Modified Agricultural Insurance Model, Productivity, Risk-absorbing Model, Risk-assuming Model.

INTRODUCTION

Evaluation of Insurance company performance is important for all parties in the industry namely; policyholders, regulators, and insurance managers. One way of analyzing this performance is to trace the productivity of the insurance firm over time. However, an evaluation of productivity requires correct specification and determination of inputs and outputs. The conceptual and empirical problems in measurement of insurance outputs and inputs have resulted in a long-standing debate among researchers. This debate is well reflected in the remark made by Griliches regarding the service industry output. Griliches stated: "The conceptual problem arises because ... it is not exactly clear what is being transacted, what the output is, and what services correspond to the payments made to services industry providers" (Griliches, 1992). Bradford and Logue make a similar remark with respect to insurance: "In the case of property-casualty insurance, it is not clear what one means by "price" or "quantity" (Bradford and Logue, 1998). Insurance differs from cars and computers because there is no agreed-on unit that provides a place to start. Accordingly, most of the literature on measuring insurance output amounts to debate over the output units.

Generally, two models are commonly used to explain the behavior of insurance firms and accordingly define the insurance output. These are the risk-pooling and the risk-absorbing models. Net premium is used as an index of the output in the first model and gross income is selected as a measure of insurance output in the second model. Most

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individuals who are associated with national accounts advocate risk-pooling view of insurance. Examples are Hill (1998) and Walton (1993), Collins (1993), and Hirshhorn and Geehan (1977; 1980). On the other hand, many researches including Hornstein and Prescott (1991), Popkin (1992) and Sherwood (1999), advocate the risk-absorbing view of insurance company.

However, neither of the two models provides an acceptable definition of insurance output in the economies experiencing high inflation rate. To address the drawbacks of the present models, an alternative one was proposed in the current study as based upon the theory of index number.

METHODOLOGY

Modeling Insurance Firm Behavior

Two models are commonly made use of to explain the behavior of insurance industries. The first model treats an insurance firm as a cooperative in which the members (policyholders) are undertaking common risks by paying membership fee and participating in pooling of the risk, which means the policyholders retain the risk in this model. In this risk-pooling view of insurance, the insurance company (cooperative) is a facilitator and an administrator; it collects the premiums and pays the claims of the policyholders. As Dohm and Eggleston (1998) asserted "Pooling of risk defines the insurer as an intermediary among various policyholders, where the insurer's function is to collect premiums and appropriately disperse them to claimants". In this model, net premium (premium minus claims) is used as an index of the output. The report of the Oslo meeting of the Voorburg Group (1992) recommends premiums minus claims as the international measure of insurance output for industry statistics. Based on this model, the current price value of the service is the insurance company's administrative expenses for operating the pool plus profit. The price of insurance is the service fee charged for administering the pool on behalf of the policyholders.

The second model considers an insurance firm similar to a production firm which produces the service of "risk absorption". That is, in the risk-assuming or risk-absorbing view of insurance, the policyholders buy the service of having their assets or income protected against loss. Within this approach and as Bradford and Logue stated: "An insurance company is a financial intermediary whose main line of business is the sale of a particular type of contingent contract, called an insurance policy" (Bradford and Logue, 1998). In this risk-absorbing view of insurance, the service provided by the insurance company to policyholders is the reduction of risk. Thus, the current price output value of output is measured by the number of policies sold times the quantity of risk assumed in each policy. The insurance premium is the price charged for assuming risk, so the price of insurance is the risk-adjusted premium. Accordingly, this model uses gross income as a measure of insurance output.

The rationale for the risk-assuming view of insurance follows from the observation that the insurance policy is what insurance companies sell, the premium is their revenue from it, and claims are a cost to the insurance companies. As Ruggles stated: "What households are purchasing is protection against loss, and the cost of such protection . . . consists of the full premium and not the net premium" (Ruggles, 1983). Denny has equally asserted: "The output of the insurance company is the quantity of risk shifted to the insurance company" (Denny, 1980).

Based on the above discussion, the ongoing debate on modeling behavior of insurance firms is finding a measure that can appropriately define the insurance output, as there is no consensus on this issue. A different but related debate is whether to use the real price or current price for measuring output. These challenges are important

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since, the choice of output affects the measure of insurance industry productivity.

Griliches (1992) states that risk is a form of quantity, the assumption of risk is a quantity insured times the probability of loss, and to the extent that the probability changes, there is a change in the quantity of risk assumed. But the question is how to deflate the current prices. As Triplett and Bosworth (2004) argue, "any satisfactory measure for the output of the insurance industry must also imply a price index. Conversely, a proposed measure of the output of insurance that does not imply the specification of a price index is not an adequate measure of quantity either. Deflation is not just an afterthought or just an implementation issue; the price index is an inherent part of measuring output, whether or not measures of real output are actually produced by deflating by a price index". Moreover, as Griliches noted, the price index must in some manner handle the assumption of risk.

In an inflationary economy like the Iranian economy, the current price output is apparently an inappropriate measure of output in measuring insurance productivity. Furthermore, once an insurance company like Agricultural Insurance Fund (AIF) in Iran, frequently experiences loss in providing insurance services, the net premium view of insurance which results in negative output is an inappropriate measure in explaining the behavior of the insurance company. Given that, and considering what Griliches noted concerning the price index that must in some manner handle the assumption of risk, an alternative approach in measuring output for the Iranian Agricultural Insurance Fund which is to measure total factor productivity of this institution is proposed.

Similar to the risk-absorbing view of insurance, the Insurance Fund is considered as a firm producing "support against production loss". The support is defined in terms of the "insurance policies" supplied to the policyholders. Each insurance policy is considered as a separate product, since it covers a different level of risk and it has a different price (premium). However, unlike the risk-absorbing model, the gross revenue is not taken as the insurance output. The output in our model is an implicit quantity index which is measured by dividing the gross revenue index by index of the output prices (premiums) using the theory of index number (Diewert, 1981). The latter price index seems to bear the potential to handle the "assumption of risk" pointed out by Griliches. Furthermore, in this model, payments to the policyholders are considered to be inputs. However, unlike the risk-absorbing model, the payment is not to buy repair services, instead it is used to buy the policyholders' confidence, since without having such an important input (confidence) the Fund will not be able to sell any services. The other inputs are labor, capital and materials.

Data and Variable Definition

The Agricultural Insurance Fund was established in 1984. It started with covering two crops; sugar beet, and cotton, and in two provinces of Khorasan and Mazandaran. At present it covers more than 50 products including crop plants, livestock and fisheries, horticulture, pastures as well as forests. In each case it offers various insurance options, each with a different premium. In total, more than 100 insurance policies are offered by this insurance Fund in Iran. Some of the policies most frequently Practiced by the Fund are earthquake, storm, hail, drought, flood, frost, and heat for field crops, horticultural crops, and as well for pasture products, different diseases, wildlife attacks, along with various accidents for livestock and fisheries. Total revenue received from selling these policies constitutes the Fund's income, and an implicit quantity index of the insurance policie is considered to be the major Fund's output. In addition, since for most of the insurance policies there is some lag between receiving insurance revenues in the cropping

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season and paying indemnity at the harvest, the Fund invests the excess reserves and gains some income considered as a secondary output of the Fund in this study. Table 1 reports the Fund's activities in terms of the number of policies sold, number of indemnities paid. Also, this Table shows the value of total net premium, value of investment income, and the share of premium revenue of each group of agricultural activities in total income of the Fund**.**

The Fund is one of the affiliated companies of the Iranian Agricultural Bank, called "Bank Keshavarzi" in local langue, a state-owned bank. Some branches of the Bank and about 428 agencies are involved in providing insurance services to the agricultural producers. Therefore, payment to the bank and other agencies are part of the Fund's operating expenditure. In addition, the Fund utilizes the primary inputs, labor and physical capital (building-office space, machineries, equipments), and intermediate inputs (Materials) such as office supplies and utilities (water, electricity, gas, telephone, etc.) to carry out various insurance policies. Table 2 presents share of each of the input groups in total cost of the Fund.

The theory of production postulates the relationship between the quantity of output produced and the quantity of inputs utilized in the production process, given the production technology. Accordingly, to determine the aggregate average product, which is defined as Total Factor Productivity (TFP), the most important issue is to specify and relate appropriately the outputs produced at any period of time to their corresponding inputs. Furthermore, to compute Total Factor Productivity in the growth accounting framework, one needs to aggregate data on quantities of individual inputs and outputs into aggregate input and output indices. The indices that have been used most frequently in the literature to aggregate individual data and to analyze productivity changes are those of Fisher (1992), Tornqvist (1936) and Malmquist (1953). The benefits in using such indices as Fisher and Tornqvist's lie in that they do not require the estimation of technology; in fact, only quantities of output and input, as well as, prices are needed. As Diewert (1981) asserted, since the Tornqvist index formula is exact for the translog specification, and uses the average factor shares in the base and comparison years as the weights in aggregating outputs as well as inputs, it is the superlative index formula.

In the growth accounting methodology, TFP measure is defined as the ratio of an output quantity index, $Q(w_0, w_t, q_0, q_t)$, to an input quantity index, $X(p_0, p_t, x_0, x_t)$, (Diewert, 1992). That is,

$$TFP(q_0, q_t, w_0, w_t, x_0, x_t, p_0, p_t) = \frac{Q(q_0, q_t, w_0, w_t)}{X(q_0, q_t, p_0, p_t)} = \frac{(Q_t / Q_0)}{(X_t / X_0)} \quad (1$$

where q and w are vectors of output quantities and prices, respectively. Similarly, x and p are the respective vectors of input quantities and of input prices. The subscripts *zero* and t denote the base year and the end year periods. Equation (1) shows that the index of TFP is a function of the output and input prices and quantities for the two periods. Thus, changes in prices affect the values of the TFP index, directly as the weights or indirectly in computing the revenue and cost shares in the process of constructing the output and input quantity indices.

The growth rate of total factor productivity is defined as the rate of change of TFP over time. In other word, the growth rate of TFP is the growth rate of output minus the growth rate of inputs. This can be represented by the following equation:

$$\ln\left(\frac{TFP_1}{TFP_0}\right) = \ln\left(\frac{Q_1}{Q_0}\right) - \ln\left(\frac{X_1}{X_0}\right) \quad (2$$

where $ln\ (TFP_t/TFP_0)$ is the growth of Total Factor Productivity from period *zero* to period t, $ln\ (X_t/X_0)$ is the growth of input quantities, and $ln\ (Q_t/Q_0)$ is the growth of output quantities over the same period.

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Table 1. Information on Insurance Fund Activities and Income Structure.

Year	No. of policies [a]	No. of indemnity payments [a]	Net premium Million [b] Rials	Investment Income [a] Million Rials	Apiculture share [c]	Poultry share [c]	Livestock share [c]	Field crops, horticultural products, pasture, forest, fisheries' Share [c]
1984-85	29,808	225	348	4	0.000	0.000	0.000	1.000
1985-86	33,086	1,771	429	5	0.000	0.000	0.000	1.000
1986-87	78,459	3,613	581	7	0.000	0.000	0.000	1.000
1987-88	84,770	2,609	441	6	0.000	0.000	0.000	1.000
1989-90	97,665	3,450	667	8	0.000	0.000	0.000	1.000
1990-91	120,005	3,498	311	6	0.000	0.000	0.000	1.000
1991-92	157,137	6,588	20	10	0.000	0.000	0.000	1.000
1992-93	247,938	34,468	-6,063	25	0.000	0.000	0.000	1.000
1993-94	260,215	30,445	-4,919	59	0.000	0.000	0.000	1.000
1994-95	305,438	20,714	744	66	0.000	0.000	0.000	1.000
1995-96	406,155	53,572	-6,039	115	0.000	0.000	0.000	1.000
1997-98	421,484	33,417	710	89	0.000	0.000	0.000	1.000
1998-99	405,974	37,414	-3,747	81	0.000	0.029	0.216	0.755
1999-2000	403,860	40,257	-13,881	2	0.001	0.049	0.231	0.718
2000-001	397,848	29,233	-659,881	91	0.004	0.036	0.138	0.822
2001-002	416,334	36,222	34,352	1,517	0.007	0.033	0.202	0.758
2002-003	410,976	71,318	-76,953	7,671	0.007	0.066	0.355	0.573
2003-004	755,247	213,170	-574,966	27,301	0.008	0.033	0.132	0.527
2004-005	1,001,738	467,751	-620,349	28,069	0.004	0.097	0.131	0.768
2005-006	1,203,496	907,368	1,011,132	29,486	0.001	0.043	0.021	0.934
2006-007	1,556,825	972,990	-1,207,007	32,623	0.002	0.008	0.056	0.934

Source: [a] Unpublished data from Agricultural Insurance Fund; [b] one US dollar is almost 9850 Rials, [c] C*alculated* by authors, based on original data from Agricultural Insurance Fund.

Table 2. Share of inputs in total cost over 1984-85 to 2006-007**.**

Year	Indemnity	Capital	Labor	Payment to agencies	Materials
1984-85	0.379	0.199	0.225	0.084	0.113
1985-86	0.564	0.041	0.081	0.168	0.147
1986-87	0.709	0.025	0.060	0.100	0.107
1987-88	0.669	0.034	0.163	0.053	0.081
1989-90	0.687	0.025	0.139	0.124	0.025
1990-91	0.696	0.013	0.094	0.06	0.137
1991-92	0.91	0.006	0.044	0.031	0.009
1992-93	0.977	0.001	0.008	0.012	0.003
1993-94	0.954	0.005	0.016	0.021	0.005
1994-95	0.903	0.008	0.038	0.041	0.01
1995-96	0.943	0.003	0.014	0.035	0.005
1997-98	0.855	0.004	0.027	0.101	0.012
1998-99	0.871	0.003	0.023	0.083	0.02
1999-2000	0.845	0.045	0.02	0.075	0.016
2000-001	0.991	0.002	0.001	0.005	0.002
2001-002	0.775	0.035	0.026	0.134	0.031
2002-003	0.887	0.018	0.016	0.072	0.008
2003-004	0.965	0.003	0.004	0.022	0.005
2004-005	0.963	0.003	0.005	0.024	0.004
2005-006	0.968	0.002	0.005	0.022	0.004
2006-007	0.974	0.001	0.004	0.017	0.004

Source: Calculated by authors based on original data from Agricultural Insurance Fund.

To show the proposed approach in measuring the Fund's outputs and inputs in computing TFP, the data over the period of 1984-2007 from Agricultural Insurance Fund was utilized while using Tornqvist indexing procedure. The Tornqvist index of TFP is given as:

$$\left(\frac{TFP_t}{TFP_0}\right)^T = \frac{\prod_{i=1}^{m}\left(\frac{Q_{it}}{Q_{i0}}\right)^{1/2(R_{i0}+R_{it})}}{\prod_{i=1}^{m}\left(\frac{x_{it}}{x_{i0}}\right)^{1/2(S_{i0}+Sit)}} \qquad (3$$

where the S_{io} and S_{it} are the cost shares of the *i*th input in the reference and comparison years. Similarly, R_{io} and R_{it} are the revenue shares of the *i*th output in the reference and comparison years. In addition, to compare the results of thus obtainedmodel with those of the risk-pooling and risk-absorbing models, TFP, based on these two models, was computed as well.

To calculate the aggregate index of the output for risk-pooling model (the index of net premium), the gross premium and the total indemnity payments were firstly computed for each of the covered activities. Then, the indemnity payments were subtracted from the gross premiums to generate net premium which then summed up the overall activities to provide total net premium. Finally, the latter data series were transferred to a simple index by dividing each of the observations by observation in the based year, *viz.* the year 1999-2000. This results in an index of aggregate output which is presented in Table 3, column 5.

A similar procedure was followed to generate an aggregate index of output

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Table 4. Indices of aggregate inputs in alternative risk models**.**

Year	Modified Risk-absorbing model	Risk-absorbing model	Risk-pooling model
1984-85	4.15	4.15	2.73
1985-86	5.52	5.52	6.77
1986-87	9.24	9.24	6.67
1987-88	7.70	7.70	4.96
1989-90	10.26	10.26	5.80
1990-91	13.58	13.58	7.95
1991-92	19.46	19.46	7.95
1992-93	39.70	39.70	11.50
1993-94	51.58	51.58	21.27
1994-95	52.77	52.77	20.93
1995-96	71.80	71.80	28.07
1997-98	71.44	71.44	43.18
1998-99	64.51	64.51	53.56
1999-2000	100.00	100.00	100.00
2000-001	110.72	110.72	126.60
2001-002	104.33	104.33	122.93
2002-003	129.49	129.49	129.71
2003-004	287.23	287.23	160.71
2004-005	297.13	297.13	158.06
2005-006	343.03	343.03	178.22
2006-007	377.00	377.00	171.07
Annual growth rate	23.95	23.95	21.78

(reported in Table 3, column 4) for the risk-absorbing model, using gross premium instead of net premium data.

Calculation of aggregate index of output for the modified model is more complicated, as we need to derive an aggregate index of output price based on the Tornqvist indexing formula, shown in the numerator and denominator in (3). This requires calculating (a) an index for the gross revenue (premium), (b) an aggregate index of output price, and (c) an implicit index of aggregate quantity by dividing the index of gross revenue by index of aggregate output prices. The difficult part is calculating the aggregate output price index. This needs (i) generating a simple price index for each of the insurance policies (providing more 100 simple price indexes, as each policy with a different premium is considered as a separate output) (ii) computing the share of each policy in gross premium for each year during the period of study, (iii) determining a base year for the index, then using Tornqvist indexing formulae. This gives an index of aggregate output price as presented in Table 3, column 2. This procedure results in an implicit index of aggregate output quantity as reported in Table 3, column 3.

After computing index of aggregate output, one is in need of an index of aggregate inputs. As already explained, the inputs are the same for the risk-absorbing and the modified models. However, the input for the risk-pooling differs considerably, as in the latter model indemnity payment is not considered as the cost of input. To provide an index of aggregate inputs, we have to follow a similar procedure like what we did in calculating the index of aggregate output prices. That is, one needs (a) to calculate the share of each input in total cost of the Fund, (b) to construct a series of simple individual indices for each of the inputs mentioned before, and (c) to compute an index of aggregate input using the Tornqvist indexing

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Table 5. Indices of TFP in Alternative Risk Models.

Year	Modified Risk-absorbing model	Risk-absorbing model	Risk-pooling model
1984-85	93.81	31.68	-92.82
1985-86	83.41	33.69	-46.19
1986-87	114.47	29.70	-63.61
1987-88	122.32	26.56	-64.94
1989-90	142.26	29.74	-83.89
1990-91	132.39	16.68	-28.74
1991-92	128.76	18.53	-2.68
1992-93	125.57	23.14	378.20
1993-94	106.39	41.86	164.65
1994-95	118.46	45.62	-27.87
1995-96	116.77	55.85	152.03
1997-98	120.86	71.48	-13.34
1998-99	155.73	117.86	49.31
1999-2000	100.00	100.00	100.00
2000-001	104.65	174.21	3755.02
2001-002	119.98	229.42	-210.23
2002-003	136.16	240.17	384.85
2003-004	132.63	329.04	2455.29
2004-005	176.63	453.08	2699.83
2005-006	152.15	2891.92	-4206.86
2006-007	99.23	1182.91	4946.08
Annual growth rate	0.27	18.81	-220.84

formulae. This would end up to the input indices reported in Table 4.

RESULTS AND DISCUSSION

Table 1 provides a clear picture of changes and expansion of the Iranian Insurance Fund activities over time. The number of insurance policies has increased from 29,808 in 1985 to 1,556,825 in 2007, a 52 times increase over 21 years. The number of insured products that received indemnity increased from 225 to 972,990 cases (a 4,324 fold increase in indemnity payment) over the study period. Since 1999 the coverage of insurance has been extended to livestock and poultry industries while a year later various policies were offered to apiculture, and honey producing activities. Yet, the share of the insurance revenue from these three groups of activities is reported to beless than 7 percent in 2007. As shown in Table 1, the net premium amounts to negative for almost 50 percent of the years over the study period. The negative net premium occurs more frequently in the latest years. The low rate of premium and the systematic risk facing the producers of field crops, horticultural products, as well as pasture are the main reasons for such losses in the Insurance Fund in Iran. Since there does not exist any reinsurance provision in Iran for agricultural products' insurance, the government of Iran must cover all the above expenses and losses.

Table 2 presents cost structure of the the Insurance Fund in Iran. According to this Table, the share of indemnity payments has increased over time while the shares in all the other factors have been reduced. This means that the cost of capital, labour, materials, and payment to service agencies per each sold policy and per each indemnity payment has declined. This clearly implies that the productivity of all factors used in providing insurance services by the Fund has improved over the study period.

Table 3 presents the measured indices of output based on the two current risk

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models; the risk-pooling and the risk-absorbing models, *vs.* the proposed model in this study. As shown in the last column of this table, the output index is negative for many years of the study period. This is exactly the main drawback of risk-pooling model addressed in the literature mentioning that the output could not be negative by economic definition. According to this index, output of the insurance Fund shows a negative annual growth of 247.17 percent during the study period. As already mentioned, the Fund has experienced considerable growth in offering different insurance policies and paying indemnity. Thus, the negative annual growth of output derived from risk-pooling model failed to appropriately reflect the reality of the Fund expansion.

The index of gross premium (column 4) as a measure of insurance output overstates the output expansion in the Fund, since it reflects both output growth as well as increase in the rate of insurance premium. As Table 3, column 2 indicates, the annual growth rate of premium has been about 16 percent during the study period. Hence, 47.24 percent annual growth rate of output calculated based on the risk-absorbing model could not reveal the reality of output growth in the Iranian Insurance Fund. On the contrary, output index calculated based on the proposed model seems more promising as the calculated output is not negative and it excludes the effect of any change in premium rate over time. According to the latter model, the Insurance Fund has experienced a growth of 24.29 percent per annum.

Table 4 shows the indices of aggregate inputs in three alternative risk models. Based on the first two models, aggregate input indicates a growth of 23.95 percent per annum, while this is 21.78 for the risk-pooling model. The difference between the two series arises from the fact that the indemnity payments are not in the list of the inputs in the risk-pooling model while they constitute an important factor in the other two models. Thus, depending on the growth of this input, the growth rate of the input index differs in risk pooling model as compared to the other two models.

Table 5 presents Total Factor Productivity (TFP), calculated according to the three alternative models. These indices are calculated by dividing the index of aggregate output by the index of aggregate input, using Formula (3) for each of the three models. The annual growth rate of TFP presented in the last row of this Table shows the difference between the annual growth rate of output and input indices. Based on the risk-pooling model of insurance, the Iranian Insurance Fund shows a negative growth rate of 220.84 percent per year during the study period. The negativity of the TFP growth rate comes from the negativity of output index in this model. As pointed out before, the Fund has experienced considerable productivity improvement in the individual factor input. Thus, the negative TFP growth indicated by the risk-pooling model does not reflect realities in the Insurance Fund in Iran. On the other hand, since the output index of the risk-absorbing model overstates the real output growth of the Fund, the calculated TFP based on this model also overstates the TFP growth rate in the Fund over the period of study. The annual growth rate of the TFP represented by the modified model proposed in this study seems more logical and promising as the calculated output index more appropriately reflects the expansion experienced by the Fund in the study period. Based on the latter model, and ignoring the observation for the last year, which seems very exceptional, the annual growth rate of TFP shows to be 2.45 percent. This seems very logical given the economic environment in Iran.

CONCLUSIONS

There is a long-standing debate among researchers on assessing input, output, and productivity in service sector. Given the

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drawbacks of the current two risk models in evaluating the performance of the insurance firms in the inflationary economies, an alternative model called the modified risk-absorbing model was proposed. This model takes into account the high rate of inflation in an economy like that of Iran in computing the index of aggregate output. Comparing the outcome of the proposed model with those of the other two models, it seems the proposed model is superior to its alternatives since it better specifies the input and output in insurance industry and provides acceptable performance results. Based on this model, the performance of the agricultural Insurance Fund over the period 1998-2007 seems promising.

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اندازه گیری بهره وری بیمه کشاورزی در ایران: یک رویکرد متفاوت

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چکیده

بطور کلی دو مدل برای توضیح رفتار صنعت بیمه وجود دارد: مدل اشتراک ریسک و مدل جذب ریسک. هیچیک از این دو مدل تعریف قابل قبولی از محصولات ارائه شده توسط شرکت های بیمه در کشور هایی با نرخ تورم بالا فراهم نمی کند. بر همین اساس در مطالعه حاضر یک روش جایگزین با بهره گیری از تئوری عدد شاخص پیشنهاد شده است. برای این که مناسب بودن این روش مورد ارزیابی قرار گیرد، بهره وری بر اساس هر سه مدل و با اطلاعات سری زمانی صندوق بیمه کشاورزی ایران محاسبه شده است. نتیجه محاسبات انجام شده حاکی از آن است که مدل اول در ارائه معیاری قابل قبول از رشد بهره وری در بیمه کشاورزی موفق نیستند در حالی که مدل پیشنهادی به درستی توانسته است واقعیت های عملکرد بیمه کشاورزی در ایران را بازگو نماید. بنابراین بنظرمی رسد الگوی پیشنهادی دارای پتانسیل خوبی برای اندازه گیری و ارزیابی بهره وری بیمه کشاورزی در اقتصاد های تورمی است و استفاده از آن در چنین شرایطی توصیه می شود.

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