Some Considerations on Productivity and Performance in Insurance

Preliminary findings of a study of the Italian insurance industry

by Antonio Borghesi *

1. Nature and object of this discussion

The discussion which follows sets out to illustrate the preliminary findings of a study recently undertaken by the Institute of Industrial, Banking and Service Sector Studies of the University of Verona. This research, which is partly financed by the Ministry of Universities, aims to consider all problems relative to the *selection and choice of an insurer*.

The object of the study would not have held much interest in the past when the Italian insurance market was for the most part protected.¹ Together with the many disadvantages such a protected market had for the would-be policy holder (oligopoly, the formation of price cartels, premiums being adapted to the least efficient operators, etc.), there was nevertheless the advantage that the idea of an insurance company's going out of business was purely hypothetical and need not for all practical purposes be taken into account. In fact, when an insurance company was no longer in a position to meet its commitments, the system intervened with some form of rescue operation which eliminated or limited the negative consequences for the policy holders via a disguised form of loss sharing.

Over recent years, however, and particularly as a result of the application of EEC directives aimed at standardizing the legislation of member states, there has been a continual move back to competition in the Italian insurance market. Deregulation of the sector will be fully implemented in time for the introduction of the Single European Market at the beginning of 1993 and there is good reason to believe that from that date on choosing an insurance company will once again, like the choice of any other service, become a matter requiring caution. This will be especially true for companies seeking insurance.²

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¹ This would seem to be an almost obligatory stage for all European countries, including Great Britain. Cf. Ratcliff A. R. N. (1983), p. 237.

² Borghesi, A. (1985), p. 280.

A selection process such as to guarantee a properly considered choice of insurer must, in our opinion, involve an assessment of at least three parameters:³

1. economic/financial and asset-related reliability;
2. level of service;
3. cost.

It is within this frame of reference that it becomes important to study the performance of insurance companies.

Such a study involves the measurement of a wide range of parameters, including:

1. the *efficiency* with which each insurance company employs the incomes it receives;
2. the *level of service* offered, its quality, image, and most importantly the extent to which it satisfies the needs of the consumer;
3. the *sales rate*, by which we mean the yearly increase in earned premiums.

2. Some problems of definition

We feel a brief discussion of what we mean when we use certain commonly recurring terminology would be useful.

By *efficiency* we mean a generic measure of performance, defined by the relationship between the results achieved and the range (in quality, quantity and value) of means employed; or we could say the relationship between the input and output of a given productive unit or of a subsystem or productive phase of that unit.⁴

If both the results achieved and the means employed are expressed in terms of physical quantities the result will offer an index of *technical efficiency or productivity*.

If, on the other hand, the terms of the relationship are expressed in monetary quantities, the result will give an index of *economic efficiency* or, as we put it, *economy*.

The extent to which an organization achieves its own goals and predetermined objectives we refer to as the company's *effectiveness*.

It goes without saying that any assessment of the performance of an organization must take into account both efficiency and effectiveness, the former offering a measurement of the situation within the company and the second a measurement of its relationship with the world around it.⁵

The notion of productivity may take on different meanings depending on whether we are talking about the distinct elements of production or production as a whole.⁶ The two concepts are differentiated by using the terms, *specific or partial productivity* and *total or global productivity*.

³ There is general agreement in the literature here, though with some difference in emphasis. Cfr. Greene M. R. – Trieschmann G. S. (1981) p. 110 and following; Williams C. A. – Heins R. M. (1976), p. 439 and following; Greene M. R. – Serbein D. S. (1981), p. 351 and following; Pfeffer I. – Klock D. R. (1974), p. 458 and following.

⁴ Panati G. (1973), p. 27.

⁵ Baccarani C. (1987), p. 91.

⁶ Fourastié J. (1959), p. 51 and following.

Productivity indices offer objective criteria for a rationalization of operations since they allow for research into the possible maximization of physical results achieved with respect to the means employed. As has rightly been pointed out, however, an improvement in productivity is a necessary, but not a sufficient condition for improvement in a company's economy.⁷

Moving from the concept of productivity to that of economy implies giving economic values to the terms of the ratio used to calculate productivity. The concept of economy thus corresponds to a study of ways of minimizing the monetary cost necessary for returning a given result. Measurement of economy allows us to verify the level of productivity, since an improvement of the latter may have been achieved with a higher than proportional increase in relevant costs. When looking at the parameters that make up economy, particular attention should be given to profitability, which expresses the ratio of profit to owned capital or total capital invested.

Profitability gives us at once:

1. an indication as to whether the company would be a good investment;
2. an indication of an objective to be achieved.

Comparisons of a company's economy at different moments in time (an important method for determining whether performance is improving or deteriorating) require that the relationships involved:

1. are calculated with price levels kept constant;
2. are considered in relation to any variation in the composition of inputs and outputs.⁸

Finally, it is worth remembering that an overall consideration of efficiency indices, that is a calculation of the efficiency of a whole industrial sector, will allow us to make comparisons between individual companies in the sector and to establish their relative positions. This presupposes, however, that the companies under consideration produce the same product or offer the same service, and even when this is the case there remains the question of differences in quality due to different technologies or other factors.⁹

3. Effectiveness, efficiency, productivity, economy and profitability in insurance companies

We could hardly not agree with Carter's reflections on the problems involved in calculating the performance and efficiency of insurance companies,¹⁰ in particular with reference to:

- the conceptual and practical problems that have to be overcome if one is to measure performance;
- the fact that the reading and interpretation of any efficiency index requires special caution in the absence of which one might arrive at mistaken conclusions;
- the difficulties of defining the product or service of the insurance company;

⁷ Panati G. – Golinelli G. (1989), p. 105.

⁸ Lawlor A. (1985), pp. 42-46.

⁹ Kendrick J. W. (1985), p. 114.

¹⁰ Carter R. L. (1979), p. 175 and following.

- the problems involved in calculating profitability as a result of difficulty in establishing what is the numerator (the profit) and what is the denominator (the capital invested). For an appreciation of the problems on the profit side, one need only consider the duration of insurance contracts, particularly in the area of life insurance, and the question of whether or not to take into account capital gains and losses; as far as the capital is concerned there is the problem of whether or not to include the technical reserves, which would make comparisons with other sectors impracticable.

However, despite all the various problems of interpretation, theory and practice, it is our opinion that the parameters used for assessing the performance and efficiency of businesses in other sectors, and in particular the manufacturing sector, should be considered. After all, the banking sector poses analogous problems, yet still applies the same parameters.¹¹

What we do feel should be stressed is that while some indices are neither more nor less than those applied to any business activity (eg. those which refer to labour), others take on precise connotations as a result of the peculiar nature of the insurance business and should always be calculated for each single branch of a company's activities.

So, to give an example, identification of the level of effectiveness, while acknowledging that this depends to a large extent on quality-related factors, can nevertheless be calculated by resorting to a series of quantitative indicators, from which one can then draw valuable conclusions on the quality of the company's performance. In the area of insurance, without in any sense pretending to be exhaustive, examples of such quantitative indicators could include:¹² the number of claims paid in a year in relation to the number of claims made; the average time taken to pay claims; the number of new insurance products put on the market each year; the number of legal cases begun each year in relation to the number of claims made; the interest rate offered to life-insurance policy holders; the number of complaints presented to the surveillance body, and so on.¹³

Likewise, indicators of productivity could be: the number of policies per employee; the value insured per employee, value of premiums paid per employee, etc.

Indicators of economy could include: the claims ratio (ratio of incurred losses to earned premiums); the purchasing expenses ratio (ratio of expenses for purchasing and production to earned premiums); the management expenses ratio (ratio of general administrative expenses to earned premiums), the expenses ratio (ratio of global expenses for both purchasing and management to earned premiums), and finally the combined or trade ratio, that is the sum of the claims ratio and the expenses ratio.

Finally, profitability indicators could be taken to include: the ratio of charges on assets and loans to income from assets and loans; the ratio of the costs of technical management (by which we mean insurance management in the strictest sense) to the income proceeding from it; the ratio of earnings from management of real estate to money invested in real estate; the ratio of the profit or loss ensuing from technical management to earned premiums; and the ratio of yearly profit or loss to owned capital.

¹¹ Gregermann I. B. (1987), p. 338 and following.

¹² Borghesi A. (1988), p. 32.

¹³ Pfeffer I. – Klock D. R. (1974), p. 408.

4. Problems involved in measuring the performance of Italian insurance companies

One of the major problems one usually faces when trying to assess the performance of insurance companies is the lack of data available.¹⁴

This is particularly true in Italy where only after the law by which the country adopted the EEC Directive on damage insurance, did insurance companies begin to formulate unified and obligatory balance sheets and income statements in such a way as to allow for analysis.¹⁵

Even now, the situation seems designed more to aid the work of the surveillance body, presently known as ISVAP (Institute for the Surveillance of Private Insurance Arrangements) than to give clear information to everybody about the way insurance companies are managed. So much so that certain analyses, including calculation of the solvency margin, are only possible if one can get hold of data that the companies are obliged to send to the surveillance body.

In this regard, we feel it would be worth proposing two alternative measures to be undertaken at European level.

The first consists either in introducing a unified method of balance sheet and income statement presentation for all European insurance companies, or at least obliging companies to publish such information as would make accurate calculation of the above-mentioned indices possible.

The alternative would be to try to get companies to provide such information voluntarily through the creation of an independent body capable of offering an information service giving details of reliability parameters and levels of service in the companies in the sector. Such a body¹⁶ would certainly be justifiable, given the size of the European Insurance market as a whole, and could produce an annual classification of companies, obliging them, if they are not to be left out of the classification, to provide the information which at present they keep secret.

5. Preliminary findings of our study of the performance and efficiency of insurance companies operating on the Italian market

Despite the difficulties and limitations already discussed, we are nevertheless attempting to calculate some of the indices described above using what data is in the public domain.

During this first phase of our research we have restricted the study to the indices of economy and profitability, since they are simpler to calculate than the others, in that they can be deduced from companies' annual balance sheets and income statements.

In particular, we considered the following indicators:

¹⁴ Regarding which, Carter R. L. (1979), p. 177, points out that although a certain amount of progress has been made, the analysis of Lengyel S. J. (1947) still holds good thirty years after it was written.

¹⁵ Ceriani G. (1984), p. 217.

¹⁶ For example, in the USA the *Best Insurance Report* has been available for many years now. Considering 11 balance sheet and income statement indices the Report gives its assessments of the insurance companies, assessments which are given serious consideration by policy holders.

- A) The claims ratio = incurred losses/earned premiums
- B) The purchase expenses ratio = expenses for purchases, production and organization/earned premiums
- C) The management expenses ratio = general administration expenses/earned premiums
- D) The total expenses ratio = purchasing expenses + administrative expenses/earned premiums
- E) The combined or trade ratio = claims ratio + the total expenses ratio
- F) Charges of assets and loans/earnings from assets and loans
- G) Costs of technical (typical) management/earnings from technical management
- H) Earnings from management of real estate/investment in real estate
- I) Profit or loss ensuing from technical (typical) management/earned premiums
- L) Operating profit or loss/capital owned.

Our findings are shown in Tables 1 and 2. Table 1 shows overall results for all companies operating in the damage insurance market in Italy, while Table 2 shows results for all companies operating in the life insurance market in Italy. The data refers to balance sheets of 1986.

For each index we have calculated the mean, the standard deviation, the coefficient of variation, maximum and minimum values, asymetry and kurtosis.

Table 1
Indices of efficiency and profitability of companies operating in damage insurance in Italy in 1986 (in percentages)

INDEX	M	S.D.	C.Var.	Min.Val	Max.Val	As	Kur
A	79.68	54.41	68.29	-50.00	700.00	8.06	95.38
B	21.00	23.61	112.42	-60.00	175.00	2.99	18.77
C	10.99	152.03	1382.77	00.00	1300.00	6.85	51.89
D	32.00	150.72	471.03	00.00	1300.00	6.43	46.94
E	111.68	157.89	141.38	-50.00	1400.00	6.08	41.96
F	6.28	25.50	405.87	00.00	207.14	5.40	36.61
G	99.93	9.68	9.68	30.00	118.18	-4.17	24.26
H	7.25	7.53	103.84	00.00	63.64	3.14	23.13
I	0.26	34.04	12972.18	-135.71	150.00	0.66	7.64
L	8.37	170.75	2039.29	-916.67	1950.00	7.08	96.84

Table 2
Indices of efficiency and profitability of companies operating in life insurance
in Italy in 1986 (in percentages)

INDEX	M	S.D.	C.Var.	Min.Val	Max.Val	As	Kur
A	129.27	96.29	74.49	-195.83	426.73	-0.89	5.34
B	111.88	922.17	824.25	-6800.00	934.62	-7.25	54.42
C	36.21	461.41	1274.20	-2900.00	1600.00	-3.81	30.65
D	148.09	1116.64	754.01	-7333.33	2050.00	-5.48	35.99
E	277.36	1156.75	417.05	-7529.17	2050.00	-5.54	36.37
F	10.91	15.26	139.82	00.00	68.89	2.32	8.60
G	105.62	7.03	6.65	80.09	133.22	0.00	8.01
H	12.60	6.97	55.29	00.00	24.66	-0.95	2.09
I	-142.76	972.56	-681.23	-961.54	7095.83	7.10	52.92
L	13.58	95.88	706.09	-26.00	740.63	7.39	56.04

The tables presented above, as well as more analytical tables here omitted due to lack of space, enable us to make the following observations, always remembering that these results are still preliminary and will require further verification. First of all we can see that the average claims ratio for companies offering damage insurance in Italy is around 79%, with a minimum of -50% for the company Aachener und Muenchen and a maximum of 700% for Multiassicurazione Cotoni. In the life insurance sector on the other hand the average ratio is 130%, with extremes of -195% for Italica Dival Vita and of 426% for Riunione Adriatica di Sicurtà.

The average purchasing ratio is 21% and is fairly concentrated with a minimum of -60% for Assicurazioni Internazionali and a maximum of 175% for National Union Fire. In the life sector the average ratio is 11%, though here there is a considerable spread, with a minimum of -6800% for Italica Dival Vita and a maximum of 943% for Lavoro e Sicurtà.

Administrative expenses appear to be less important with an average of 11%, but again the spread is considerable, with a minimum 0.00% for Mutual Firc Marine & Inland and a maximum of 1300% for Taisho Marine and Firc. In the life insurance sector on the other hand the average is 36%, with extremes of -2900% for Meie Vita and 1600% for Sara Vita.

The total expenses index for the damage sector shows an average of 32% but with a considerable spread and, obviously, extremes equal to those shown for the preceding index. In the life sector on the other hand the average is 148% with a minimum of -7333% for Italica Dival Vita and a maximum of 2050% for Sara Vita.

The combined or trade ratio gives an average of 111% with a minimum of -50% for Aachener und Muenchen and a maximum of 1400% for Taisho Marine and Fire. In the life sector the average is 277% with extremes equal to those for the preceding index.

The ratio of charges for assets and loans to earnings derived from assets and loans showed an average, for the damages sector, of 6 %, but with a wide spread, the minimum being 0.00 % (a number of companies returned this result since they obviously do not have earnings of this kind) and the maximum 207 % for Alpi Assicurazioni. In the life sector the average was 11 % with a maximum of 68 % for Gan Vie.

The ratio of costs to earnings in the area of technical management showed an average of 100 %, with only a very modest spread. The minimum result of 30 % came from Euritass and the maximum of 118 % from Gothacr Versicherung. The life sector showed similar results, the average being 105 %, the minimum 80 % for Assicuratrice Edile and the maximum 133 % for Italica Dival Vita.

Profitability on real estate investments was, on average, 7.25 %. The spread was fairly small with a minimum of 0.00 % for companies which do not make investments of this kind, and a maximum of 63 % for Lloyd Italiano. In the life sector the index was decidedly better, with an average of 12 % and a maximum of 24 % for FATA.

The profitability of capital owned was, on average, 8 %, but the spread was considerable with a minimum of -916 % from R + V Allgemeine Versicherung AG and a maximum of 1950 % from Cigna Insurance. Again the life sector was able to show a higher level of profitability with an average of 13.5 %.

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