AUTO INSURANCE IN ITALY

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BIOGRAPHY:

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ABSTRACT:

The paper describes the motor market in Italy and the impact that the EC directive may have over the next few years. The structure of the rating system, the level of tariffs deductibles, cover and policy duration are also described. Currently the third party motor tariffs are controlled by the State and the paper describes the methodology used by the Filippi committee to determine the level of the Bonus-Malus Tariff. Finally, the paper briefly describes the general approach to reserving in Italy and the role of ISVAP, the regulatory authority.

1. INTRODUCTION

1.1 Motor third party liability, or *Responsabilita' Civile Auto* (RCA), is the largest class of business in the Italian insurance market; in 1989 it represented 44% of the total volume of non-life business and more than 33% of the total insurance premium volume.

1.2 Table 1 analyses the premium volume for all classes of insurance over the past three years.

Table 1
Insurance Premium Volume

Lit. Billion	1987	1988	1989
RCA	8,283	8,820	9,852
Other	9,802	10,986	12,527
Total Casualty	18,085	19,806	22,378
Life Insurance	4,994	6,304	7,319
Total	23,079	26,110	29,697

Source: ISVAP

1.3 The total market has grown over the period 1987 to 1989 at an average rate of around 13%, compared with an average inflation rate of 5% in 1988 and 6.6% in 1989. The proportion represented by RCA has started to decline in

response to the growth of the Life section, but it is still fairly substantial compared with the 20% average in other European countries.

1.4 Another peculiar aspect of the Italian market is the strong presence of foreign insurers. Table 2 shows details of this involvement.

Table 2
Foreign Presence in the Italian Market

	1987	1988	1989
1. **Number of Companies**			
Italian Controlled Companies	n/a	123	115
Foreign Controlled Companies	n/a	62	76
Representatives of Foreign Companies	n/a	57	57
		242	248
2. **Market Shares of Non-Italian Controlled Companies**			
Proportion of Total Market (%)	25	30	34.9
Prop'n of Casualty Market(%)	27	33	39.6

Source: ISVAP

1.5 This is not just the result of acquisition of local companies by foreigners: in the last two calendar years 9 foreign insurers received authorisation to underwrite life business in Italy and another 5 have received authorisation for life business in the first four months of 1990.

1.6 The real impact of foreign ownership can be fully

appreciated only when we look at the percentage of the total premiums written by these insurance companies (in the second part of Table 2).

1.7 These overseas companies include RAS, owned by Allianz from Germany, which ranks second, after Generali, with 7.04% of the total premiums written in 1989.

1.8 For RCA business only, the market share of foreign-owned companies increases to 43.7% with 2 (RAS and Lloyd Adriatico) out of the top 5 companies in terms of premiums written in 1989, having overseas owners.

2. RCA - BACKGROUND

2.1 Motor liability insurance became compulsory in Italy in December 1969 and since then it has always been kept under strict supervision. Every year (normally around April) the Ministry of Trade and Industry (the body in charge of regulating this sector), through CIP (Prices Inter-Ministerial Committee) and supported by a special committee of technicians called "Commissione Filippi", determines the new premium rates to be effective from the date stated by CIP (1 May 1991 for the latest tariff).

2.2 From 1971, for each company writing RCA business it is mandatory to co-insure 2% of every risk in their RCA portfolio with a body called "Conto Consortile" managed by INA, the State owned company which also has specific indirect supervisory powers. The main purpose of this compulsory cession is to provide a database from which to obtain statistics for the whole market: each company, in fact, has to provide a magnetic tape containing all their exposure and claims details. This way Conto Consortile ends up with having the same details available to the original insurer.

2.3 These statistics are analysed by ANIA, the national association of insurance companies, as well as the Filippi Committee. On the basis of this analysis the insurance companies, either directly (as has happened in 1990) or through ANIA, present their requests for tariff increases

to the Ministry. The new tariffs, once these requests have been examined by the Filippi Committee, are then approved, through CIP, by the government.

3. THE IMPACT OF THE THREE EC DIRECTIVES

3.1 The first Motor Insurance Directive (1972) introduced compulsory third party motor liability insurance into every member state. The directive also obliged every member state to provide minimum cover (Green Card) for policyholders when travelling in community countries and not just in the state of the vehicle's registration.

3.2 Italy, like the UK and Netherlands, introduced a law restricting third party insurance cover for loss or injury in its own territory. Therefore a policyholder wishing to travel overseas has to notify his insurer and pay an additional premium.

3.3 UCI (Italian Central Office), created in 1953 following the recommendation of a United Nations subcommittee on road transportation, is an association of insurance companies writing RCA business and has two principal tasks:

- supplying their members with Green Cards for their policyholders and dealing on their behalf with the equivalent bureaux existing in other countries (EC and non EC);

- handling claims incurred within Italy involving cars registered overseas.

Currently all companies authorised to write RCA business (127) are members of this body.

3.4 The Second Motor Directive (1984) required that liability insurance for motor vehicles should be extended to include property damage. It sets minimum insured amounts for property damage and injury and was to be effective by the end of 1990. The minimum level of cover is 350 ECU for each injured victim, regardless of the number of people involved in the accident, with an overall limit - material damage plus bodily injury - of 600,000 ECU per accident. Guarantee funds were required to be set up in each member state to provide for compensation to victims of hit and run drivers and for uninsured losses.

3.5 The mandatory minimum cover in Italy, following this directive, has gradually been increased through the years and, since 1 July 1990, is now in line with these specified levels, going from Lits 500, 200, and 50 million for the overall claim, bodily injury and material damage respectively, to Lits 1,500, 700, and 300 million.

3.6 The Italian guarantee fund for victims of hit-and-run drivers, is called "*Fondo Garanzia Vittime della Strada*" (FGVS) and is financed by a percentage loading applied to the pure premium net of administration costs. This percentage loading in 1989 was 1.5%.

3.7 The third motor insurance directive (December 1988) aims

to resolve inconsistencies affecting passenger cover and ensure that comparable cover is provided regardless of where in the community the accident occurs. In other words compulsory cover is required for all passengers, except for those who knowingly ride in a stolen vehicle.

3.8 By the end of 1991 it is expected that the EC directive on the liberalisation of auto liability insurance will be approved: this will mean open competition among all the EC countries, which is currently limited to just large commercial risks.

3.9 The single European market will then mean the removal of all general tariffs, fixed premium rates and agreed prices; the Italian companies too will be free to set their own rates like any other EC insurer. In section 10 and 11 we shall describe how the legislation is going to change to meet this requirement.

4. RATING SYSTEMS - General

4.1 The structure of the principal tariff which is being used was introduced at the end of 1975 and is a Bonus-Malus tariff without deductibles. Figures from "Conto Consortile" show that this tariff currently applies to 98% of all motor vehicles insured in Italy. The remaining tariffs structures, which were operating before 1975, all include deductibles.

4.2 Lloyd Adriatico, a company owned by Swiss Re, uses a unique tariff structure with deductibles called "4R". This tariff applies different deductibles, expressed as percentages of the premium, according to the number of claim-free years.

4.3 For rating purposes, all motor vehicles are subdivided into 6 groups:-

I private motor vehicles

II taxis

III buses and coaches

IV lorries and trucks

V motorcycles and scooters

VI vehicles for special use.

4.4 Motor boats, on the other hand, are subdivided into three groups. One covering public boats, another covering private boats, and the third covering those used for competitions and other sporting activities.

4.5 The Bonus-Malus tariff applies to sectors I and II; those tariffs with deductibles and the special tariff "4R" apply in groups I, II, III and IV. For group V, the full tariff is applied; in other words the claim is paid in full up to the limit of the cover purchased and the claim does not directly affect the level of the renewal premium.

4.6 Each risk is classified according to four characteristics:

- the power of the vehicle insured (5 subclasses);
- the geographical zone of registration (8 subclasses);
- the Bonus-Malus class to which the risk is allocated; and
- the cover limits (3 components).

4.7 The three components of cover are: a limit per event, a limit for bodily injury, and a limit for material damage.

4.8 The premium is calculated by taking the basic tariff, fixed by the Government (see paragraph 2.1). This is multiplied by various coefficients relating, as said before, to the power of the vehicle, the geographical zone of registration, the cover limits (see Table 6) and the Bonus-Malus class to which the risk is allocated (see Appendix 1).

4.9 Currently the tariff structure is under review and one of the results is likely to lead to the incorporation of two additional characteristics:- the age and the occupation of the driver, similarly to the UK and various other European countries. Unlike in the U.S., where age is a controversial rating variable and the profession of the driver is unlikely to be allowed as a rating factor, in Europe, as far as we know, these two characteristics are perfectly acceptable.

4.10 So far the criterion of years of driving experience, apparently, has not been considered but the review has not been finalised yet.

5. THE BONUS-MALUS SYSTEM

5.1 According to this system, the premium rate increases or decreases depending on the presence or absence of claims during the observation period. During this period the vehicles insured are allocated to classes, the so called "*Classi di Merito*", each corresponding to decreasing or increasing premium levels, according to a pre-fixed table.

5.2 Until recently there were 13 different classes or levels, of which the sixth (for risks previously insured with the Bonus-Malus formula) or the seventh (for risks insured for the first time with the Bonus-Malus formula) were the starting classes. There were seven bonus classes and five malus classes. (See Appendix 1)

5.3 For each class, factors are used to calculate the corresponding premium. Such factors produce reductions up to 30% for the best classes (Ib, Ia, I) and increases up to 100% for the worst class (11).

5.4 From 1 May 1991, the number of classes will be increased to 18, while the factors will range from a minimum of 50% to a maximum of 200% (See Appendix 2).

5.5 According to the revised Bonus-Malus system, there will be a movement of one bonus class if no claims occur during a policy year. Otherwise there will be a two class movement

for one claim during the observation period, or three classes for each additional claim.

5.6 The existing insureds will be gradually moved from the 13 classes into the 18 classes system by mean of a conversion table (see Appendix 3) applicable to the renewals occurring on or after 1 May 1991.

5.7 Until May 1991, the contract would have been moved to a particular Bonus-Malus class either once the insurer had made partial payments on the claim occurring in the period of observation or, following a notification, once the insurer had set up a reserve.

5.8 From May 1991 the variation in the tariff, in the case of material damage claims, will take place only when the claim is finalised (it might be worth mentioning that almost 94% of reported claims relate to material damage). In the case of bodily injury, given the difficulty of finalising claims quickly, the setting up of the reserve will be sufficient to justify the change of class.

6. TARIFFS WITH DEDUCTIBLES

6.1 In 1989 the structure of the tariffs which depended on deductibles rather than the Bonus-Malus structure were based on the mechanical characteristics of the vehicle. The categories commonly used are:-

- for vehicles up to 10 HP: deductible of Lit.s 60,000 or Lit.s 100,000;

- for vehicles from 10 to 14 HP: deductible of Lit.s 100,000 or Lit.s 200,000;

- for vehicles over 14 HP: deductible of Lit.s 200,000 or Lit.s 300,000.

6.2 In addition to the basic deductibles, additional deductibles are added if the vehicle is insured for the first time or the vehicle is transferred from a previous insurer under the Bonus-Malus system and it would have been allocated in Malus class 7 to 11 inclusive, as indicated by the documentation provided by the previous insurer. New vehicles being insured are allocated an additional deductible as per Bonus-Malus class 7. Table 3 indicates the additional deductibles applying for Bonus-Malus classes 7 to 11 inclusive.

Table 3
Additional Deductible
(Amounts in 1989 Lit.s)

Class (*) Allocation	Up to 10HP	Between 10 and 14HP	More than 14HP
7	10,000	16,000	21,000
8	21,000	31,000	42,000
9	31,000	47,000	62,000
10	42,000	62,000	84,000
11	52,000	79,000	105,000

(*) This is the class allocation resulting from the documentation issued by the previous insurer.

6.3 Also this type of tariffs are fixed by the Government, after the Filippi Commission has analysed the relevant data supplied by Conto Consortile.

6.4 The appropriate tariff for 1989 was 75% (lower deductible) and 72% (higher deductible) of the equivalent, in terms of the mechanical characteristics of the vehicle, class 6 Bonus-Malus tariff.

7. MINIMUM COVER AND POLICY DURATION

7.1 The amount of minimum cover required ("*Massimale*"), is periodically upgraded. It was last increased as at 1 July 1990. Different levels of cover can be selected under each of 3 categories and varying amounts above the minimum legal requirement.

7.2 The categories are:-

- an overall claim limit regardless of the number of people involved in the accident;

- per person claim limit for bodily injury claims only; and

- a claim limit for material damages and for damage to animals only.

7.3 There are several combinations of limit available: six for buses, seven for agricultural machines and ten for all other risks. New limits for different risks, together with the corresponding premium factors, are included in Appendix 4.

7.4 In general the policy period cannot exceed 12 months. In some cases, however, it is possible to have policy periods

exceeding 12 months (eg the policy period for leased vehicle can be equal to the leasing period).

7.5 For contracts covering a policy period shorter than 12 months, the premium is calculated pro-rata plus 15% of the annual premium. Temporary policies for durations longer than six months are not allowed.

8. CONSTRUCTION OF THE BONUS-MALUS TARIFF: AN EXAMPLE

8.1 The Filippi Committee has developed a model to determine the basic Bonus-Malus tariff. The process is quite detailed and complicated and we have therefore decided to describe only the main steps. The complete analysis carried out by the Filippi Commission is described in a long document which, for obvious political reasons, has a very restricted circulation.

8.2 As mentioned before, there are 13 classes and a risk insured for the first time is placed in class number 7 (class number 6 if the risk has been previously insured with a different tariff from Bonus-Malus).

8.3 At each renewal date the risk is allocated to a new class according to the rules stated in Table 4, based on the number of claims (ie claims for which either there has been a partial payment or a reserve has been set up) notified during the previous policy period.

Table 4
Bonus-Malus Transfer Rules

Current Class Allocation	New Class Allocation				
	0 Claims	1 Claims	2 Claims	3 Claims	4+ Claims
1B	1B	1A	1	2	3
1A	1B	1	2	3	4
1	1A	2	3	4	5
2	1	3	4	5	6
3	2	4	5	6	7
4	3	5	6	7	8
5	4	6	7	8	9
6	5	7	8	9	10
7	6	8	9	10	11
8	6	9	10	11	11
9	7	10	11	11	11
10	8	11	11	11	11
11	9	11	11	11	11

8.4 To each class corresponds a reduced or increased premium rate, compared with the one applicable to class number 6. The scaling factors used are as shown in Appendix 1.

8.5 The insured who wants to renew his policy with a different insurer, possibly using a different rating system, has to show documentation stating the class to which it was allocated by the previous insurer.

8.6 The remainder of this section will consider the procedure used by the Ministerial Commission to determine the change

in the Bonus-Malus tariff for private cars (Group I).

8.7 Bearing in mind what already said in paragraph 4.8, the main steps of this process are:

a) calculating of the average pure net premium;
b) calculating of the average tariff premium;
c) calculating of the rate of increase to be applied to the tariff in force;
d) calculating of the premium factors corresponding to the various rating variables considered;
e) calculating of the premium factors corresponding to the various Bonus-Malus classes.

a) CALCULATION OF THE AVERAGE PURE NET PREMIUM

8.8 As mentioned in paragraph 4.8, the premium for each vehicle is calculated by multiplying the basic premium by factors corresponding to the four characteristics: Bonus-Malus class, geographical area, mechanical power and cover limits.

8.9 Let *D+2* be a given calendar year. The statistical data, on which the tariff for year *D+2* is to be based, relates to the calendar year *D* and normally become available in the second half of *D+1*. This statistical information is based on a sample taken from data relating to around 100 companies writing RCA business.

8.10 These data are as at 31 December of the year D and include:

- the number r of vehicles/year on the roads during year D and, relating to these r risks, the number n of claims notified in the year;

- the number of claims settled during year D, subdivided by year of occurrence;

- the number of claims outstanding at the end of year D, subdivided by year of occurrence;

- the amount of settlement payments, net of finalisation costs in year D, subdivided by year of occurrence;

- the total amount of case reserves set up at the end of year D plus partial payments made in year D on all claims, subdivided by year of occurrence;

- the total premiums P_D earned during year D.

8.11 The average technical risk premium P is given by

$$P = f\,C$$

where f is the claim frequency and C is the average claim cost.

8.12 To estimate the average claim frequency for year *D+2*, we need to analyse the trend of claim frequencies over the past few years (up to *D+1*), after allowing for IBNR claims.

8.13 The claim frequency for year *D+1*, for which only partial data are available, is estimated comparing the first 6 month figure for *D+1* with the corresponding figures relating to the first 6 months in year *D* and/or earlier years, using a sample from companies for which the claims data are processed fairly promptly.

8.14 On the basis of this analysis we can select the claim frequency assumption for the new tariff. Table 5 shows the claims frequency observed in the period 1980 to 1988 inclusive.

Table 5
Claims Frequency

Calendar Year	%
1980	14.67
1981	13.96
1982	13.48
1983	12.93
1984	12.96
1985	12.80
1986	12.99
1987	13.56
1988	13.23

8.15 The average claim cost C for a policy written with the new tariff (allowing for the effect of inflation caused by delays in claims settlements but excluding any allowance for the investment income produced by the claims reserves) is given by

$$C = \mathrm{Sum}_{k=0}^{s}\ C_{D,D-k}\ q_{D,D-k}\ B_{D,D-k}\ [G\ I_{D+2+k,D}+(1-G)\,I_{D+3+k,D}]$$

where

$C_{D,D-k}$ is the average settlement cost (net of settlement expenses which are covered by additional loadings) in year D for claims which occurred in year $D-k$;

$q_{D,D-k}$ is the settlement frequency in year D for a claim which occurred in year $D-k$, obtained by taking the

difference between $Q_{D,D-k}$ (cumulative settlement frequency up to year *D* for claims which occurred in year *D-k*) and $Q_{D,D-k+1}$ (cumulative settlement frequency up to year *D* for claims which occurred in year *D-k+1*);

$B_{D,D-k}$ is the adjustment factor to allow for changes in the composition of the exposure between generation of claims in terms of vehicle power and increases in the statutory minimum limits of cover;

G represents the proportion of claims which, coming from policies written in year *D*, will occur in year *D*, while *(1-G)* represents the proportion of claims occurring in year *D+1*;

$I_{D+2+k,D}$ is the claim inflation factor to be applied to the settlements paid in year *D+2+K*, currently expressed in *D* values;

S represents the number of years it takes a generation of claims to be fully settled.

8.16 To assess the investment income produced by the claims reserves it is assumed that 1 July in year *D+2* is the average date for booking the premiums, 1 October is the average date for investing the premiums, and 1 January in year *D+3* and subsequent are the dates of disinvestment of the amounts necessary to settle claims according to the pattern described by the values q_k projected in the future.

8.17 Assumptions on partial payments, are made so that the average investment period t_k of the amounts allocated to pay claims settled k years after the year of occurrence can be calculated.

Examples of values of t_k calculated in the past assuming a maximum claim settlement period of 9 years are given below.

$$t_0 = 0.4$$
$$t_1 = 1.26$$
$$\ldots\ldots\ldots$$
$$t_9 = 8$$

8.18 The long term investment rate i used mainly reflects the expectations about the "Cost of Living Index" as well as the expected yields obtained on various forms of investments. It is selected by the Filippi Commission and it is normally the cause of very heated discussions with ANIA. For the new tariff, for instance, ANIA had estimated a rate of 9% (slightly lower that the one adopted in the previous year due to the expected downward trend in interest rates) while the Filippi Commission has used a rate of 9.5% based on the assumptions of a "correct and efficient" investment of the technical reserves.

8.19 The figures published by ISVAP (Istituto per la Vigilanza sulle Assicurazioni Private e di Interesse Colletivo) and relating to the 1989 financial year show that 34.8% of the companies have realized a rate between 5% and 8% while 30.5% have achieved a rate between 8% and 10%; 8.7% of the companies have managed less than 5% while 10.4% have

earned more than 12%.

8.20 The formula for C then becomes:

$$C = \text{Sum}_{k=0}^{s} C_{D,D-k}\ q_{D,D-k}\ B_{D,D-k}[GI_{D,D+2+k,D}+(1-G)I_{D+3+k,D}](1+i)^{-t_k}$$

8.21 To obtain the pure premium the value C is increased by a percentage factor A which represents the statutory expense loading to cover some claims handling expenses ("Spese di Resistenza").

The average pure net premium is therefore

$$P^N = f\ (1+A)\ C$$

b) CALCULATION OF THE AVERAGE TARIFF PREMIUM

8.22 Applying the various loadings to P^N, we obtain the corresponding average tariff premium P^T:

$$P^T = \frac{P^N}{1 - b(1 - a) - (g+d)}$$

where:

a represents the administration costs expressed as proportion of the tariff premium;

b is a percentage, applied to the tariff premium P^T net of the administration costs, which represents the statutory levy for the FGVS;

g is the percentage of the tariff premium necessary to cover acquisition, administration costs, and some liquidation costs;

d is the percentage of the tariff premium necessary to finance SOFIGEA (not included in the latest tariff since SOFIGEA has recently been dismantled).

It is worth noticing that, at this stage, no explicit contingency loading has been taken into consideration. The loading *g* applied to the pure premium for administration, acquisition and liquidation costs, however, is intended to contain a theoretical profit margin of around 3%. Until recently this loading too, as everything else, was fixed by the Commission. From 1989 this loading has been partially liberalised, in a sense that each insurance company is now free to choose a percentage, provided it is included in the pre-fixed range 25.5% to 29%. It is interesting to notice that:

- most of the insurers have choose the maximum allowed;

- the market figures produced by ISVAP show an average expense ratio around 30%.

c) CALCULATION OF THE PERCENTAGE INCREASE/DECREASE TO BE APPLIED TO TARIFF D+1

8.23 It is necessary to determine the size of the change to be applied to the *D+1* tariff, currently in force, to obtain the level of tariff P^T relative for year *D+2*. This is given by

$$P^T/P_{D+1}$$

8.24 P_{D+1} represents how much premium income would be generated for year *D+2* by the *D+1* tariff. This is estimated starting from the average tariff premium per vehicle/year $P^{(m)}_D$ relating to year *D*, and is given by:

$$P_{D+1} = e\ (1+j)\ [p(1+h) + (1-p)]\ P^{(m)}_D$$

where

p is the proportion of premiums earned in *D* but based on the *D-1* tariff;

h is the percentage change in the tariff between *D-1* and *D*;

j is the percentage change between tariff *D+1* and *D*;

e is the adjustment factor to allow for the change in class allocation of the population insured with a

Bonus-Malus tariff, when the risks are moved from the observed class in tariff *D* to the new class in tariff *D+2*.

8.25 The details of the calculations to obtain *e* are included in Appendix (5). Values of $e<1$ indicates an average movement of the risks insured towards *Bonus* classes with values of $e>1$ indicating an average movement of the risks insured towards *Malus* classes.

d) CALCULATION OF THE PREMIUM FACTORS FOR EACH CHARACTERISTIC OF THE VEHICLE INSURED

8.26 Once the general average tariff premium P^T is determined, the specific premium factors for each Bonus-Malus class relating to the three characteristics have to be calculated. As already mentioned, the three characteristics are:-

- geographical registration area of the vehicle (*x*)
- mechanical power of the vehicle (*y*)
- amount of cover (*z*).

8.27 Conto Consortile provides information regarding:

- frequency and average claim cost subdivided by

geographical area;

- frequency and average claim cost subdivided by mechanical power of each vehicle;

- average claim costs and claim frequencies, subdivided by the cover limits for bodily injury, material damage and overall claim, for each of the cover limits in force.

8.28 If we let P_{xyz} be the premium for the risk cell with factors (x, y, z) and $P^{(R)}$ is the portfolio reference premium, we have

$$P_{xyz} = P^{(R)}\ a_x\ b_y\ g_z.$$

Therefore the individual cell premiums are determined once the parameters a_x, b_y, g_z (estimated from the statistical data provided by Conto Consortile) are known and the portfolio reference premium has been calculated.

8.29 Given that r_{xyz} is the number of risks belonging to cell class (x, y, z), then

$$\text{Sum } r_{xyz}\ P_{xyz} = P^{(R)}\ \text{Sum } r_{xyz}\ a_x\ b_y\ g_z = rP^T$$

from which we can work out $P^{(R)}$ and, from the previous equation, we can obtain the tariff premiums specific for each class.

8.30 The values of coefficients a_x, b_y, g_z used for the 1989 tariff are shown in the Table 6.

Table 6
Tariff Coefficients (1989)

y	Area of Regist'n	a_y	Power	b_y	Cover Limit (*)	g_y
1	IA	1.00	≤10HP	1.00	500 200 50	1.00
2	IB	0.86	10->12HP	1.45	700 300 100	1.04
3	IIA	0.78	12->14HP	1.58	800 400 100	1.06
4	IIB	0.73	14->18HP	2.05	1,000 500 200	1.08
5	IIIA	0.68	->18HP	3.15	1,000	1.11
6	IIIB	0.63			1,500	1.14
7	IVA	0.55			2,000	1.15
8	IVB	0.50				

(*) All values in this table are expressed in Lits million and refer to cover limits, applicable to the overall claim, bodily injury and material damage respectively, valid up to 30 June 1990. These are only part of the classes considered by the 1989 tariff. For other combinations of cover limits the corresponding coefficients are calculated by extrapolation.

e) CALCULATION OF THE PREMIUM FOR EACH BONUS-MALUS CLASS

8.31 Once $P^{(R)}$ has been determined, we need to calculate the premium $P'^{(R)}$ corresponding to class 6 (or any other class we choose as reference) to which we shall give weight 1.

8.32 Based on the estimated allocation in year *D+2* to the various classes (see Appendix (5)), let the average premium received by the company in year *D+2* (using $P^{(R)}$ as reference premium) be *U*% of the premium for class 6. We then need to multiply $P^{(R)}$ by the coefficient *U*% to obtain $P'^{(R)}$, the reference premium for class 6.

8.33 We can, then, calculate P_{xyz} for class 6 and, through the factors relating to other classes, all the premiums for all other classes.

9. TECHNICAL RESERVES

a) CLAIM RESERVES

9.1 At the end of a financial year, the statutory reserve for outstanding claims liability on RCA business cannot be lower than 75% of the premiums earned during the year of occurrence of each of the last five generations of claims less the amounts of claims paid and related claims handling expenses.

9.2 From a technical point of view, this process is a simple statistical method based on loss ratios, which applies a fixed "estimated ultimate loss" to each generation. The 75% loss ratio, according to the experience to date, is definitely lower than the average loss ratio experienced by the market. The figures published by ISVAP as at 31 December 1989 show so far the following loss ratios:

1983	87.28%
1984	84.35%
1985	81.65%
1986	83.00%
1987	87.50%
1988	89.82%
1989	92.85%

9.3 Furthermore this 75% loss ratio implies a five-year claim life, which is far shorter than the actual duration of

payments experienced by the Italian market.

9.4 It is also worth considering a further aspect of the law. This states that, if the ratio between technical reserves (premiums plus claims) and gross premiums is substantially less than the corresponding ratio for similar companies, the supervisory body will request the company to demonstrate the adequacy of these reserves.

9.5 To enable control in respect of this minimum reserve limit (as well as more generally the adequacy of these RCA claim reserves), the law requires each company to file a special form showing claims development details. From this data it is then possible to construct claims run-off triangles and analyse trends of the average claim costs.

9.6 Each company will also need to file a separate return showing the IBNR reserves, to be calculated using a "statistical method".

9.7 The law also requires each company to have the balance sheet certified by an auditing company, with a specific section, dedicated to the certification of the technical reserves, signed by a qualified actuary. It must be stressed that this certificate provides an opinion on the suitability of the method used rather than the adequacy of the reserves themselves.

9.8 The most common system of calculating the outstanding claim reserve is case estimation of each claim at every year end. For fairly homogeneous portfolios, the valuation is also done using statistical methods, which adopt average claims, as well as case estimates for those claims with particular characteristics or which involve sizeable amounts. Increasingly companies are internally adopting actuarial methods.

9.9 These reserves are then examined by ISVAP, the supervisory body established in 1982.

9.10 ISVAP at first, when checking certified claim reserves, will mainly examine the documents produced by the actuary-auditor (which will include, besides the results of the certification, the analytical reports describing the details of the actuarial opinion).

9.11 The next stage involves the application of various statistical methods to the data relating to a particular company as well as several companies combined. This is done to analyse the sensitivity of the results to changes in the assumptions for each method as well as to compare results obtained from different methods.

9.12 In order, in their opinion, to improve this stage of the process, ISVAP has recently purchased the system marketed by Ben Zenwirth of Australia.

9.13 It is important for ISVAP to be able to act promptly in case of inadequate reserves. Therefore they believe that by adopting various statistical methods, they can determine a minimum value under which any claims reserve included in a balance sheet will be investigated further.

9.14 This minimum value is calculated using assumptions about finalisation rates, the number of non-zero claims, the number of re-open claims, average claim cost and so on, which are more optimistic than those reflecting actual company experience.

9.15 In other words, the ISVAP actuary constructs a "minimum basis" which, by virtue of the assumptions selected, represents a reasonable minimum amount to be put in the company's balance sheet.

9.16 In our opinion a weakness of this procedure is certainly represented by the danger of choosing over optimistic assumptions, given the management conditions of certain companies.

b) PREMIUM RESERVES

9.17 The statutory unearned premium reserve, gross of reinsurance cessions, must be equal to the fraction of premiums earned in the subsequent financial years, net of tax and acquisition costs.

9.18 The assessment is made using the "pro-rata temporis" method based on the tariff premium net of acquisition costs. Companies are however allowed to adopt an alternative calculation based on a minimum proportion of 40%.

c) CLAIMS EQUALISATION RESERVES

9.19 ISVAP has often stressed the need to introduce a claims equalisation reserve to deal with unfavourable fluctuations in the experience because of deterioration in the claim frequency or inadequate tariffs.

9.20 Currently hail business is the only class for which there is a statutory requirement for a claim equalisation reserve. For RCA business these reserves are still optional and only occasionally used.

10.1 Table 7 shows the financial results for the whole market in the years 1986 to 1988 and the growing difficulties this class is going through.

Table 7
RCA - Results

In Lit Billion	1986		1987		1988	
	Amount	%	Amount	%	Amount	%
Written Premiums	7,625	100.00	8,299	100.00	8,838	100.00
UPR Incr/(Decr)	(341)	4.5	(232)	2.8	(207)	2.3
Incurred Claims	(6,033)	79.1	(6,822)	82.2	(7,613)	86.1
Claims Expenses	(607)	8.0	(627)	7.6	(710)	8.0
Commissions	(982)	12.9	(1,071)	12.9	(1,152)	13.0
General Expenses	(671)	8.8	(739)	8.9	(791)	8.9
Other	19	0.2	38	0.5	50	0.6
Invest. Income	938	12.3	1,029	12.4	1,143	12.9
Other Income	49	0.6	65	0.8	208	2.4
Result	(3)	0.0	(60)	0.7	(234)	2.6

Source: ISVAP

10.2 There has been a deterioration of the loss ratio from 79.1% to 86.2% over the period 1986 to 1988. In 1988 the insurance loss reached 2.6% of the premiums.

10.3 In 1989 the experience worsens with a 7.5% rise in the number of claims reported combined with a steep increase in

repair costs. The written premiums have gone up by 11.4% to Lit 9,845 billion while the loss ratio as gone up to 98% of premiums earned. The investment income on technical reserves has remained unchanged while the insurance loss has reached Lit 586 billion equal to 6% of earned premiums.

10.4 The initial indications relative to the first six months show that the figures for 1990 are even worse. The expense levels are high and would indicate a need for them to be reduced if there were to be freedom of competition.

10.5 Furthermore, there are some administrative problems which affect the results for this class of business. Frequent irregularities have been recorded in the application of the tariffs so as to produce a reduction in the average premium level per policy. Improvements made in this area would help the overall profitability of the business.

10.6 According to figures produced by Conto Consortile, the vast majority of risks are allocated to the bonus classes while only 16.03% of risks are allocated to the Malus classes. This situation is very different from other countries, as shown in Table 8 although the tariff structures are not directly comparable.

Table 8
Risk Allocation to the Various Bonus-Malus Classes

Class	F	D	I	JAP	NL	CH
22						0.30
21						0.31
20						0.27
19						0.33
18		0.13				0.41
17		0.17				0.46
16		0.89		0.58		0.65
15		6.40		0.82		0.83
14	0.54	1.12		1.13	3.46	0.93
13	1.08	8.75	0.02	1.63	3.38	1.88
12	6.13	7.36	0.07	2.11	9.29	2.01
11	2.31	7.82	0.29	8.62	7.81	2.21
10	8.57	6.90	0.90	7.04	7.00	8.16
9	8.67	5.67	7.50	6.68	6.56	7.18
8	8.32	5.11	7.25	5.71	5.88	6.58
7	8.59	4.55	6.61	5.39	5.43	6.08
6	7.12	3.99	5.62	4.65	6.00	5.46
5	6.00	4.73	5.26	4.81	5.31	4.92
4	5.17	4.17	4.99	4.40	4.53	5.91
3	4.45	3.40	5.10	5.55	3.74	5.38
2	3.74	3.24	7.28	4.60	3.25	4.42
1	29.26	25.57	49.08	36.24	28.32	35.27

Source: The Journal of Risk and Insurance.

10.7 The discussion is very active, especially with the current need to bring the Italian legislation in line with those of the other EC countries where there is free competition.

10.8 From one side the companies accuse the Government of fixing too low tariffs (the tariff annual increase goes directly through the inflation index); Signor Filippi, on the other hand, accuses the insurers not to be able to do their own business properly. Caught in the middle are the policy holders who demand a system which allows more extended covers as well as quicker claim assessments and settlements.

10.9 It is true that there is some lack of knowledge and skills of behalf of certain insurers causing irregularities and a very slow, inefficient service; but it is also true that a lot of problems which result in delays and higher costs are due to the external environment.

10.10 Quite a lot of claims, for instance, are disputed and the average waiting period to have these cases heard in Court is very long, as well as the length of the proceedings themselves.

10.11 Furthermore, for material damages, the repair costs have registered continuous and uncontrollable increases; so far ANIA has failed to reach any accord with the car repairers, unlike its equivalent in France which has succeeded in controlling this aspect by arranging particular agreements.

10.12 Everybody however agrees that the entire RCA system needs to be radically changed and all these matters are

currently under review, in conjunction with the big reform that should prepare the Italian market for a "soft landing towards Europe".

11. RCA - TOWARDS TARIFF LIBERALISATION

11.1 The Senate Committee for Industry has drafted a reform to the law governing RCA insurance, intended to become effective on 1 May 1991. This reform aims to manage the transition period from the actual administered tariff system to the complete liberalisation in 1995. It contemplates a "controlled tariff" based on a system currently used elsewhere (notably in France) - the so-called "*Tariffa di Riferimento*".

11.2 Under this proposed new system, the general policy conditions and the tariffs for each type of risk will be set each year by ISVAP. Each insurance company will be free to adopt this tariff or calculate its own, provided that the differences between their own tariff and that determined by ISVAP are contained within certain minimum and maximum percentage limits set by ISVAP.

11.3 Not everybody agrees with this solution: many argue that ISVAP should just determine the pure premium. The individual insurer would then be left to determine the loadings, which would also include an allowance for the investment income on the reserves.

11.4 None of the parties involved has so far expressed doubts on the effectiveness of the Bonus-Malus system; this is not surprising given that, as mentioned at the start, the

owners of 98% of the motor vehicles insured in Italy have chosen the Bonus-Malus tariff, as opposed to the other types of tariff available.

11.5 From a technical point of view this could be justified by the fact that the only rate variables have been: the amount of cover, the mechanical characteristics of the vehicle and the geographical zone of registration. This means that only very few characteristics of the risk are explicitly allowed for in the calculation of the premium. All the others are left to be incorporated in the Bonus-Malus classification on the basis of the actual claim experience of the vehicle.

11.6 Theoretically, by increasing the number of rate variables used, we can claim to define the exposure exactly, and all risks become perfectly rated and homogeneous. In this contest then, the Bonus-Malus system (apart from its action as claim deterrent) would become less efficient, compared with other rating systems. It would then only be a question of chance (rather than objective differences in the characteristics of the risks not adequately taken into account by the premium formula) for any one risk to be hit and so charged a higher premium.

Bonus-MALUS FACTORS

IN FORCE TO MAY 1991

	Class		Premium Factor
Bonus	1		.70
	1A		.70
	1B		.70
	2		.75
	3		.80
	4		.85
	5		.92
	6		1.00
Malus	7		1.15
	8		1.32
	9		1.52
	10		1.75
	11		2.00

BONUS-MALUS FACTORS

IN FORCE FROM MAY 1991

	Class		Premium Factor
Bonus	1		.50
	2		.53
	3		.56
	4		.59
	5		.62
	6		.66
	7		.70
	8		.74
	9		.78
	10		.82
	11		.88
	12		.94
	13		1.00
Malus	14		1.15
	15		1.30
	16		1.50
	17		1.75
	18		2.00

CONVERSION TABLE

	Class	Number of Claims				
		0	1	2	3	4+
1. Old Risks						
	1B	6	8	10	12	14
	1A	6	9	11	13	15
	1	7	10	13	16	17
	2	8	11	14	17	18
	3	9	12	15	18	18
	4	10	13	16	18	18
	5	11	14	17	18	18
	6	12	15	18	18	18
	7	13	16	18	18	18
	8	14	17	18	18	18
	9	15	18	18	18	18
	10	16	18	18	18	18
	11	17	18	18	18	18
2. New Risks						
	1	1	3	6	9	12
	2	1	4	7	10	13
	3	2	5	8	11	14
	4	3	6	9	12	15
	5	4	7	10	13	16
	6	5	8	11	14	17
	7	6	9	12	15	18
	8	7	10	13	16	18
	9	8	11	14	17	18
	10	9	12	15	18	18
	11	10	13	16	18	18
	12	11	14	17	18	18
	13	12	15	18	18	18
	14	13	16	18	18	18
	15	14	17	18	18	18
	16	15	18	18	18	18
	17	16	18	18	18	18
	18	17	18	18	18	18

NEW LIMITS FOR ROAD MOTOR VEHICLES

(in Million Lit.s)

	Total Claim	Bodily Injury	Material Damage	Premium Factor (*)
Cars, trucks, Operating machinery and trolleys	1,500	700	300	1.08
	3,000	1,000	500	1.10
	3,000	1,000	1,000	1.11
	1,500	1,500	1,500	1.13
	2,000	2,000	2,000	1.14
	3,000	3,000	3,000	1.17
	4,000	4,000	4,000	1.19
	5,000	5,000	5,000	1.20
	7,000	7,000	7,000	1.22
	10,000	10,000	10,000	1.25
Buses and Coaches	4,000	700	500	1.08
	5,000	700	500	1.09
	4,000	4,000	4,000	1.16
	5,000	5,000	5,000	1.17
	7,000	7,000	7,000	1.19
	10,000	10,000	10,000	1.22
Motorcycles and Scooters	1,000	700	200	1.10
	1,500	700	300	1.11
	2,000	1,000	500	1.12
	3,000	1,000	500	1.13
	2,000	2,000	2,000	1.17
	3,000	3,000	3,000	1.20
	4,000	4,000	4,000	1.22
	5,000	5,000	5,000	1.23
	7,000	7,000	7,000	1.26
	10,000	10,000	10,000	1.29

(*) Applicable to the 1989 tariff premium from 1 July 1990.

METHOD OF ESTIMATING THE PREMIUM ADJUSTMENT FACTOR TO ALLOW FOR CHANGES IN THE ALLOCATION OF RISKS TO THE VARIOUS BONUS-MALUS GROUPS FROM ONE YEAR TO ANOTHER

The model used to describe how the insured risks become allocated to the various Bonus-Malus classes over time is based on a stochastic process. This method estimates the changes in allocation of the risks from one year to the next. Such changes in the distribution of risks affect the average portfolio premium.

This means that we have to assess the correction necessary to the *D* premium to allow for the changes in the composition of the population between year *D* and *D+2* in order to assess the correct reference premium $P^{(R)}$.

It is assumed that the system regulating the evolution over time is Markovian of the first order. In this situation, the "system" means the insurance contract covering a vehicle which, as the contract is renewed, moves from one level to another according to the rules given in Table 4.

The process assumes that there is an initial allocation to the various levels and that a matrix of conditional probabilities for transition between levels is produced. It is assumed that the conditional probabilities are independent of time when changes are made (renewal dates). In other words, the process is a Markovian chain. This is assumed to be acceptable as the period is short and therefore the distribution of "N" claims which affect a risk will remain unchanged as do the transition rules as given in Table 4.

Using Table 4, the transition matrix is constructed. If p_{ij} indicates the conditional probability of the system to move from i to j and if p_k = Prob{N=K} with K = 0, 1, 2, 3, 4 (p_4 is the probability of having 4 or more claims in the year), assuming

$$e_{ij}(k) = \begin{cases} 1 \text{ if the risk moves from i to j, following k claims} \\ 0 \text{ otherwise} \end{cases}$$

we then have

$$p_{ij} = \text{Sum}^{4}_{k=0}\ p_k\ e_{ij}(k)$$

with i and j belonging to the set I [the numeric set (1, 1a, 1b, ..., 11) which codifies the classes]. Given this and assuming the allocation of vehicle/year to the various classes at a certain date (for example the date when a particular tariff is approved) is known, and assuming appropriate assumptions about the annual increase in the risks insured are selected it is possible to estimate the allocation after one, two, three, or more years.

Based on these assumptions and the resulting projections, it is possible to calculate, for each subsequent year to that observed, the average "adjusted" premium.

Assuming $a_h(D)$ represents the proportion of $r(D)$ (risks observed during year D) allocated to class h and if P_h is the premium relating to that class normalised by $P_6 = 100$, the average normalised premium corresponding to year $D+t$ is given by

$$P(D+t) = \text{Sum}\ a_h(D+t)\ P_h,$$

with t = 0, 1, 2, ... and h belonging to I.

Similarly, the proportions $a_h(D+t)$, assuming the group of risks observed to be closed to new entrants and exits, are calculated by iteration as follows

$$a_h(D+t) = \text{Sum}\ a_i(D+t-1)\ p_{ih},$$

with h belonging to I.

If it is assumed that there is an annual rate of increase e due to new entrants and no exits in subsequent years, $a_h(D+t)$ becomes

$$a_h(D+t) = \frac{1}{1+\ell} \text{ Sum } a_i(D+t-1)\ p_{ih},$$

for h not equal to 7,

$$a_7(D+t) = \frac{1}{1+\ell} (\text{Sum } a_i(D+t-1)\ p_{i7} + \ell).$$

Given the levels of frequency of claims and the limitation rules used it is the experience in Italy that the calculated average normalised premiums reduces over time, ie the insured population tends, with time, to concentrate in the bonus classes as opposed to the malus classes.

It is now possible to adjust the tariff *D* to *D+2*. Let *P(D)* and *P(D+2)* be the average normalised premiums for the tariff years *D* and *D+2*, the average tariff premium changes according to the ratio *P(D+2)/P(D)*. This ratio, defined by *e* in section 8, is the adjustment factor for the average tariff premium from *D* to *D+2*.

So, for *e*=0.9, the insurer, in the absence of other variations and adjustments, would receive on average a premium income in *D+2* equal to 90% of his premium income in *D*.