

NOTES ON OTHER ACTUARIAL JOURNALS

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FRANCE

Bulletin Trimestriel de l'Institut des Actulaires Français, 66, 1955

RAZOUS, P. *Les inflations monétaires à travers l'histoire*, pp. 77-156. A historical review of successive inflations in France after 1715, 1918, and the 1939 war is followed by an analysis of the present situation and possible ameliorative measures. The author advocates (1) less financial optimism generally, (2) better discipline among the people, and (3) a realization by everyone of his civic responsibility.

SAVIGNON, E. *Quelques suggestions pour l'utilisation d'une calculatrice électronique par une Compagnie d'Assurances sur la Vie*, pp. 173-230. The article is written from the standpoint of a French industrial insurance company and discusses the advantage of a single record for each policy incorporating both renewal and valuation data. The routine of renewals in the industrial branch is described in some detail.

ARIBAUD, H. *Le délai d'attente dans certains systèmes financiers et ses conséquences*, pp. 255-302. A discussion of the operations of capitalization societies issuing capital redemption bonds with annual drawings by lot to accelerate payment of the capital sum.

ITALY

Giornale dell'Istituto Italiano degli Attuari, 18, 1955

GINI, C. *Estensioni e portata della teoria della dispersione*, pp. 1-14. The variance ratio of a one-way classification is interpreted in Lexian terms.

FINETTI, B. DE. *La struttura delle distribuzioni in un insieme astratto qualsiasi*, pp. 15-28. A penetrating discussion of a general non-topological, incompletely additive measure theory.

ZWINGGI, E. *Di una forma speciale dell'assicurazione mista: 'Insurance for face amount or reserve if greater'*, pp. 29-34. Considers a joint-life endowment assurance under which the sum assured is (a) $1 + k_2$ if both lives survive to maturity, (b) unity (or the policy value if greater) if (x) dies before (y), and (c) $1 + k_1$ ($0 < k_1 < k_2$), or the policy value if greater, if (y) dies before (x). The approach is via Cantelli's 'capitali accumulati', and the procedure may be compared with Seal's discussion of the problem posed by Nesbitt and van Eenam in *T.S.A.* 4 (see *J.I.A.* 79, 104).

JECKLIN, H. *Sulla rappresentazione delle curve della riserva matematica per mezzo di iperboli*, pp. 35-42. A continuation of the notes appearing in the previous issue of the *Giornale* on approximate calculation of endowment assurance policy values.

MAZZONI, P. *Sulla costituzione di un capitale per inseguimento*, pp. 43-58. If a loan is to be repaid in a currency the value of which varies in such a way that $Q(t)$ is the value of the loan at time t ($t=1, 2, \dots, n$), the amount to be amortized in any year may be fixed alternatively at

$$Q(0)/s_{\overline{n}|i} + \Delta Q(t-1) v^{n-t}$$

$$\text{or} \quad \{Q(t-1) + \Delta Q(t-1) s_{\overline{n}|i}\}/s_{\overline{n}|i}$$

$$\text{or} \quad Q(1)/s_{\overline{n}|i} + \sum_{r=1}^{t-1} \Delta Q(r)/s_{\overline{n-r}|i}.$$

A numerical example is provided and indicates that the first alternative is the most practical.

OTTAVIANI, G. *Sul concetto di infinito nella matematica applicata*, pp. 59-70. An analogy is drawn between the passage to the limit in the addition theorem of probability and in compound interest problems.

SWITZERLAND

Mitteilungen der Vereinigung schweizerischer Versicherungsmathematiker,
55, 1955, Part 3

ZWINGGI, E. *Vermehrungsrate der stabilen Bevölkerung und Variation der Sterblichkeit*, pp. 391-4. The net reproduction rate r is defined by

$$\int_0^{\infty} e^{-r y} {}_0p_y f(y) dy = 1,$$

where $f(y)$ is the force of fertility. When the mortality is changed to $\mu'_y = (1 + \alpha) \mu_y$, the new value of r may be obtained approximately without construction of new life-table functions and moments. Numerical example.

NOLFI, P. *Zur mathematischen Darstellung des Nutzens in der Versicherung*, pp. 395-407. The 'utility' of a given type of assurance is defined as a function of the payment to be made and the need of the assured. The situation is treated as a two-person game between the assured and a combination of assurer, re-assurer and chance. The assured then has to find a mixed strategy which maximizes his utility for a given cost. The theory is applied to investigate the relative merits of an annuity and a capital sum.

ÅKERBERG, B. *Some notes on Lidstone's and other approximations to temporary life annuities when the force of mortality is $(1+k)\mu_{x+t}$* , pp. 409-15. Lidstone's formula,

$$(\bar{a}_{x:\overline{n}|})^{-1} \sim 2(\bar{a}_{x:\overline{n}|})^{-1} - (a_{\overline{n}|})^{-1}, \quad (1)$$

and two other formulae,

$$\bar{a}_{x:\overline{n}|} \sim (\bar{a}_{x:\overline{n}|})^2 / \bar{a}_{\overline{n}|} \quad (2)$$

and

$$\bar{a}_{x:\overline{n}|} \sim 2\bar{a}_{x:\overline{n}|} - \bar{a}_{\overline{n}|}, \quad (3)$$

are deduced from a common source. It is then shown that, subject to weak restrictions, these three approximate expressions for $\bar{a}_{x:\overline{n}|}$ successively decrease and that the exact value either lies between (1) and (2) or, if n is sufficiently large, exceeds (1). The author writes, without prior definition, e.g. $\bar{a}_{x:\overline{n}|}^{(k)}$ for $\bar{a}_{x:\overline{n}|}$ when μ is $(1+k)\mu$, and p for $\bar{P}$.

SPRING, O. W. *Die maschinelle Berechnung der Erneuerungsfunktion*, pp. 417-22. A punched-card method of evaluating a convolution of the type

$$f(r, t) = \sum_{s=a}^b f(r-1, t-s) q(s).$$

RUFENER, E. *Überlebensordnungen, für welche sich der Leibrentenbarwert durch Zeitrenten darstellen lässt*, pp. 423-73. An extension of papers by Jecklin and Leimbacher and the author (see *J.I.A.* 80, 116 and 81, 309). The general equation

$$\bar{a}_{x:\overline{n}|} = \sum_{r=1}^k A_r(t, \delta) \phi_r(x) \quad (k \geq 2)$$

implies that L_x satisfies a linear homogeneous differential equation of the k th order with constant coefficients. The analogous relation for $\bar{a}_{x:\overline{n}|}$ is also studied. Explicit results are given for $k=3$.

DALCHER, A. *Statistische Schätzungen mit Quantilen*, pp. 475-98. It is supposed that a parameter of a probability distribution can be written as a linear function of k quantiles of the distribution. An unbiased estimate of this parameter is based on k sample quantiles and their coefficients chosen to minimize the asymptotic variance of the estimate. Numerical results with k -values up to 5 are provided for the parameters of the normal, Cauchy and exponential distributions.

HOFMANN, M. *Über zusammengesetzte Poisson-Prozesse und ihre Anwendungen in der Unfallversicherung*, pp. 499-575. If each individual has a certain degree of 'accident proneness' and if his accidents are distributed according to a Poisson law the number of accidents occurring among N individuals will be distributed according to a 'compound Poisson' law. In particular, if the degree of accident proneness is a Type III distribution the compound Poisson degenerates into a negative binomial. The author derives two bivariate distributions the marginal distributions of which are negative binomials and applies one of them successfully to the number of work-connected and other accidents suffered by 1196 male workers during the nine years 1944-52. The second part of the paper, describing the numerical results, may be read independently of the first.

LEUENBERGER, F. *Zur mathematischen Theorie der Einkommensverteilung in Abhängigkeit von Alter und Zeit*, pp. 577-615. An extension of a paper by E. Kaiser (see *J.I.A.* 82, 147) on the subject of income distributions. The present paper makes different assumptions regarding the form of the function of income distributions (regarded as a function of age and income, independent of time) and examines the solutions arising when the income distribution at the lowest age has the form of (a) the Pareto and (b) the Pearson Type III, distributions.