International Journal of Forecasting's Best Paper Award Announced, 1994-1995

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The Directors of The International Institute of Forecasters are proud to announce the award for the best research paper in forecasting published in the *International Journal of Forecasting* in the years 1994-1995. The award is made by vote of the directors and associate editors. The award is jointly shared between P. Geoffrey Allen, University of Massachusetts, Amherst, and David Vere-Jones, University of Wellington, New Zealand.

P. Geoffrey Allen (1994), “Economic forecasting in agriculture,” *IJF*, 10, 81-135.

Research on agricultural forecasting dates back to the 1920s. In his paper, "Economic Forecasting in Agriculture,” Geoffrey Allen reviewed and annotated almost four hundred studies and used meta-analytic procedures to assess their impact. It is a long paper (55 pages), a length justified in light of its contribution. It is clearly the most important review of agricultural forecasting published.

Despite the substantial research efforts, Allen's review reveals that only modest improvements have been achieved in agricultural forecasting. The primary reason for the disappointing results is that agricultural researchers have typically used faulty validation procedures. For example, they confuse “fit” with forecast validity, and they fail to compare their approaches against alternative procedures. In addition, they seldom provide full-disclosure, so when improvements do occur. one is unable to understand precisely why. Of course, until approximately 1970, this criticism applied to forecasting research in all fields, and it still applies to many.

Allen's paper should be read by those outside of agricultural forecasting because there is much to learn about methodological issues. Consider some historical examples. An empirical study by M. Ezekiel in 1927 led to the conclusion that it is useful to combine forecasts, well before the landmark contributions by Cragg and Malkiel in 1968 and by Bates and Granger in 1969. Henry Wallace's discovery of judgmental bootstrapping (that is, the development of a model of the forecaster's rules) in 1923 predated other work on this important technique by four decades.

Some of the conclusions may be upsetting to researchers, such as the finding that highly complex methods are of little value. In addition, there are surprises. Why is it that econometric models, which are expected to do well when one has good knowledge about relationships, do poorly for short-term forecasts in comparison with naive extrapolations? And why do weighted combinations of forecasts do well, in contrast to their poorer performance in other areas of forecasting?

Allen's paper provides a foundation for further research on agricultural forecasting, Those doing research in the area will find it an invaluable source, and it will aid reviewers in determining whether authors are aware of relevant literature. In addition to its substantive contribution. Allen's paper is well written. It had been nominated for the Quality of Communication Award of the American Agricultural Economics Association in 1995.

Allen's paper was published with commentaries by D. Bessler, J. Freebairn, W. G. Tomek, and J. S. Armstrong (on pages 137-149 of the same issue). A comment by D. Chen was published on pages 597-599, followed by Allen's reply on 601-602.

Comments by J. Scott Armstrong, The Wharton School

David Vere-Jones (1995), “Forecasting earthquakes and earthquake risk,” *IJF*, 11, 503-538.

Forecasting earthquakes is probably a very old topic, but as a scientific area of research on formulating probabilistic models for earthquake occurrence it is relatively young. The paper by David Vere-Jones on earthquake prediction gives the reader a comprehensive tour in that difficult and even controversial area. Strategies of how to model occurrences of such a strongly nonlinear phenomenon vary widely. The paper opens with a discussion of what actually should be predicted and highlights different risk concepts. According to the author there is the geophysical risk, the expected rate of occurrences in unit time over a given magnitude within a given region. This is what the scientists should primarily he concerned with. The paper also mentions the engineering risk: the occurrences of exceedances of a specified level of ground motion at a particular site or the economic risk which is the expected wealth loss at the unit lime.

The statistical theory of point processes provides a theoretical framework for prediction models. and the paper contains a very clear discussion of different approaches. This also involves a discussion of data sources, as different information sets give rise to different models. There exists no single set of reliable forecasting variables, and seismological explanations of occurrences compete with geological ones. The paper expertly discusses different models based on these two main categories of data.

The interest of scientists in the area has partly focused on estimating background rates This approach may give general predictions of occurrence but excludes time-variation in risks. Including the possibility of time-varying risks of course means new challenges to the earthquake forecasters. The paper contains an interesting discussion of model selection problems and presents a set of current models that explicitly allow the geophysical risk, e.g., by the inclusion of explanatory variables, to be time-varying.

Predicting with time-varying risk models immediately leads to the question of calling an earthquake alert. An alert has important consequences independent of whether an earthquake actually occurs or not within the prescribed time. Thus calling an alert has recently been viewed as a problem of optimal decision-making, and the paper outlines the issues and the methodology there. The reader is reminded of social and political issues which in practice obscure considerations of cost and the rational use of resources. The risk of media making the scientist look foolish in the public eye may be greater far earthquake forecasters than most other representatives of the forecasting community.

This is a clear, wide-ranging and competently written paper that deserves to be read by earthquake experts and non-experts alike.

Comments by Timo Terasvirta, Stockholm School of Economics