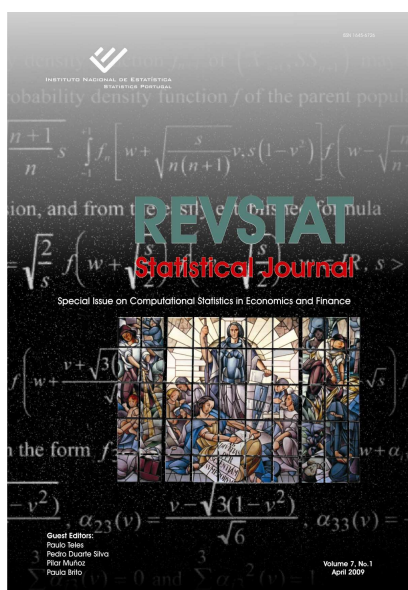31 December, 2009

Multithemes

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REVSTAT-Statistical Journal

REVSTAT-STATISTICAL JOURNAL, Volume 7, N.º 3 – November 2009

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This Volume of **REVSTAT: Volume 7, No. 3 - November 2009**, includes four articles. Their abstracts are presented below:

COMPARISONS OF THE PERFORMANCES OF ESTIMATORS OF A BOUNDED NORMAL MEAN UNDER SQUARED-ERROR LOSS
Authors: *Yiping Dou* and *Constance Van Eeden*.

This paper is concerned with the estimation under squared-error loss of a normal mean θ based on $X \sim N(\theta, 1)$ when $|\theta| \leq m$ for a known $m > 0$. Nine estimators are compared, namely the maximum likelihood estimator (mle), three dominators of the mle obtained from Moors, from Charras and from Charras and van Eeden, two minimax estimators from Casella and Strawderman, a Bayes estimator of Marchand and Perron, the Pitman estimator and Bickel's asymptotically-minimax estimator. The comparisons are based on analytical as well as on graphical results concerning their risk functions. In particular, we comment on their gain in accuracy from using the restriction, as well as on their robustness with respect to misspecification of m.

LIMIT MODEL FOR THE RELIABILITY OF A REGULAR AND HOMOGENEOUS SERIES-PARALLEL SYSTEM
Authors: *Paula Reis* and *Luísa Canto e Castro*

In large-scale systems the study of the exact reliability function can be an intricate problem. In these cases it is better to admit that the number of system components goes to infinity so as to find asymptotic models that give a good interpretation of the reliability. In this paper we will use some results of extreme value theory to obtain the asymptotic distribution of the reliability of a regular and homogeneous series-parallel system.

HIGH QUANTILE ESTIMATION AND THE PORT METHODOLOGY
Authors: *Lígia Henriques-Rodrigues* and *M. Ivette Gomes*

In many areas of application, a typical requirement is to estimate a *high quantile* χ_{1-p} of probability $1-p$, a value, high enough, so that the chance of an exceedance of that value is equal to p, small. The semi-parametric estimation of high quantiles depends not only on the estimation of the tail index γ, the primary parameter of extreme events, but also on an adequate estimation of a scale first order parameter. The great majority of semi-parametric quantile estimators, in the literature, do not enjoy the adequate behaviour, in the sense that they do not suffer the appropriate linear shift in the presence of linear transformations of the data. Recently, and for heavy tails ($\gamma > 0$), a new class of quantile estimators was introduced with such a behaviour. They were named PORT-quantile estimators, with PORT standing for *peaks over random threshold*. In this paper, also for heavy tails, we introduce a new class of PORT-quantile estimators with the above mentioned behaviour, using the PORT methodology and incorporating Hill and moment PORT-classes of *tail index* estimators in one of the most recent classes of quantile estimators suggested in the literature. Under convenient restrictions on the underlying model, these classes of estimators are consistent and asymptotically normal for adequate k, the number of top order statistics used in the semi-parametric estimation of χ_{1-p}.

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TOWARD THE DEFINITION OF A STRUCTURAL EQUATION MODEL OF PATENT VALUE: PLS PATH MODELLING WITH FORMATIVE CONSTRUCTS

Authors: *Alba Martinez-Ruiz* and *Tomas Aluja-Banet*

This paper aims to propose a structural equation model which relates the variables that determine the patent value. Even though some patent indicators have been directly used to infer the private or social value of innovations, the results suggest that patent value is a more complex variable that may be modeled as an endogenous unobservable variable in a first- and in a second-order model, and which depends respectively on three and four constructs. Such variables include the knowledge used by companies to create their inventions, the technological scope of the inventions, the international scope of protection, and the technological usefulness of the inventions. The model allows the conceptualization of patent value into a potential and a recognized value of intangible assets, aiming toward an index construction approach. Partial least square (PLS) path modelling is performed as an exploratory model-building procedure. We use a sample of 2,901 patents granted in the United States in the field of renewable energy.