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NOTES

CORRECTION TO
"AN ELEMENTARY THEOREM ON THE PROBABILITY OF LARGE DEVIATIONS"

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The correctness of Section 4 in the above paper (*Ann. Math. Statist.* **43** 181–192), which gives examples on the necessity of the conditions of Theorems 2.1 and 2.2, has been open to question. The purpose of this correction is to clarify the discussion of that section and to give a necessary and sufficient condition for Theorems 2.1 and 2.2 to remain valid.

The appropriate choice of the sequence $\{\delta_n\}$ is critical for correct application of these theorems. This was apparent to us from the start and has also been pointed out in a personal communication from Professor J. C. Fu of the University of Toronto. One may usually choose a sequence $\{\delta_n\}$ with $n^{-1}\log\delta_n = o(1)$ such that condition (2.1) fails when the conclusion of the theorem is still valid. However, in the examples we have seen, there does exist a satisfactory sequence $\{\delta_n\}$ which satisfies (2.1).

We have since discovered the following analogue of Theorem 2.1.

THEOREM. *Suppose that X_n is an absolutely continuous random variable with density $f_n(x)$. Then the following is necessary and sufficient for* (2.3). *For each $\varepsilon > 0$,*

$$n^{-1}\log\left[f_n(\phi_n + e^{-\varepsilon n}) + P(X_n > \phi_n + \gamma_n)/f_n(\phi_n)\right] = o(1) \qquad \text{as} \quad n \to \infty\,.$$

The proof is similar to the proof of Theorem 2.1, and with some modification we get an analogue of Theorem 2.2. This eliminates all consideration of the sequence $\{\delta_n\}$.

CORRECTIONS TO
"ASYMPTOTIC EXPANSIONS RELATED TO MINIMUM CONTRAST ESTIMATORS"

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The above paper (*Ann. Statist.* **1** 993–1026) contains among others the following errors page 1002: In Proposition 1 read "$h(\cdot, \theta, \tau) \equiv 1^{(1)}(\cdot, \tau), \tau \in \Theta$" instead of "$h(\cdot, \theta, \tau) \equiv 1^{(1)}(\cdot, \theta), \theta \in \Theta^c$."

page 1003: Theorem 5: Read "*all compact K*" instead of "*some compact K*" and "$|t| < c_K n^{\frac{1}{2}}$" instead of "$t \in R$."

page 1007: In the formula for q_{21} add the term $+a_{10}a_{11}$.

page 1013: Lemma 4 (ii): Read

$$\lim_{A\to\infty} \sup_{\theta \in K} \sup_{|\tau-\theta|<e_K} E_\theta(|g(\cdot, \theta, \tau)|^s 1_{\{x \in X: |g(x,\theta,\tau)|>A\}}) = 0 .$$

page 1016: Lemma 8: Assume that in addition the regularity conditions of Theorem 1 are fulfilled. In the formula for $R_3{}^*$ add the term $+R_1R_2{}'$.

page 1017: Lemma 9: The proof contains a slip in (9.17). One has to assume L_4 instead of L_3, furthermore that the conditions are fulfilled for $(\theta, \tau) \to h(x, \theta, \tau)$ as well as for $(\theta, \tau) \to h(x, \tau, \theta)$, and that $\tau_n = \theta + n^{-\frac{1}{2}}t$. The applications made of this Lemma remain valid.

page 1024, line 26 and page 1025, line 6: Read (6.2) instead of (6.4).

CORRECTION TO "THE INVARIANCE PRINCIPLE FOR ONE-SAMPLE RANK-ORDER STATISTICS"

BY PRANAB KUMAR SEN

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In the above paper (*Ann. Statist.* **2** 49–62) it has been correctly pointed out by Professor R. H. Berk that in Theorem 2.1, (2.8) is valid only when $F(x)$ is symmetric about 0. This naturally localizes the scope of the theorems to the usual case of distributions symmetric about zero. For distributions, not necessarily symmetric about origin, under the conditions of Chernoff and Savage [1], Sen and Ghosh [2] have obtained stronger invariance principles. The question remains open whether the Chernoff–Savage conditions can be replaced by the weaker conditions in this paper for arbitrary F.

REFERENCES

[1] CHERNOFF, H. and SAVAGE, I. R. (1958). Asymptotic normality and efficiency of certain nonparametric test statistics. *Ann. Math. Statist.* **29** 972–994.

[2] SEN, P. K. and GHOSH, M. (1973). A Chernoff–Savage representation for rank order statistics for stationary ϕ-mixing processes. *Sankhyā Ser. A* **35** 153–172.