A comparison of the Bayesian and frequentist approaches to estimation, Francisco Samaniego, Springer Series in Statistics, Springer Verlag, New York, ISBN 978-14419594094 (hardcover, $80), xiii+225 pages, by Christian P. Robert, Université Paris-Dauphine, Institut Universitaire de France, and CREST, Paris.

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Readership: intended to be broad, including an advanced undergraduate audience, but students may lack the necessary maturity for this endeavour and the book would more likely benefit more senior readers.

A Comparison is pleasant to read, written in a congenial style (especially the final "fatherly advices"!), and the decision-theoretic background is well-set. Its self-declared purpose of "identify[ing] the boundary between Bayes estimators which tend to outperform standard frequentist estimators and Bayes estimators which don't" is commendable in that an objective comparison of Bayesian versus frequentist estimators should appeal to anyone. However, the focus of *A Comparison* ends up being too narrow to appeal to a wide audience, given that the book revolves around papers written jointly or singly by the author on this topic and that it is set within a point estimation framework where there exists a "best" unbiased estimator, a condition absent from most estimation problems (Lehmann and Casella, 1998). (Other inferential aspects like testing are not covered.)

Towards the comparison of frequentist and Bayesian procedures, since under a given prior G, the optimal procedure always is associated with G, *A Comparison* introduces a "true prior" G_0 that should calibrate the comparison. Unsurprisingly, the conclusion is that if G is close enough to G_0, then the Bayesian procedure does better than the frequentist one. Since this improvement depends on an unknown "truth", the practical implications are

limited. From a Bayesian perspective, inference under "wrong" priors has been studied in the 90's as Bayesian robustness (Berger et al., 1996).

A Comparison insistance in using conjugate (proper) priors is inappropriate in conjunction with shrinkage estimation, since truly Bayesian shrinkage estimators correspond to hierarchical priors (Berger and Robert, 1990). Furthermore, the appeal of self-consistency (Chapter 6) is limited: a prior is self-consistent if, when prior expectation and observation coincide, prior and posterior expectations are equal. This constraint focus on a zero probability event and is not parameterisation-invariant, while being restricted to natural conjugate priors, e.g. excluding mixtures of conjugate priors.

Chapter 9 offers a new perspective on non-identifiability, but focus on the performances of the Bayesian estimates of the non-identifiable part. The appeal of the Bayesian approach is rather to infer on the identifiable part by integrating out non-identifiable parameters. Chapters 10–11 about combining experiments are interesting but a modern Bayesian analysis would ressort to a non-parametric modelling rather than to empirical Bayes techniques.

In conclusion, *A Comparison* does not revolutionarise the time-old debate about the relevance of Bayesian procedures towards frequentist efficiency or about relying on frequentist estimates under weak prior information. Given my reservations, I would have difficulties to advertise it as a textbook.

Bibliography

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Lehmann, E. and Casella, G. (1998). *Theory of Point Estimation (revised edition).* Springer-Verlag, New York.