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CRITERIA FOR EVALUATION OF ECONOMETRIC MODELS: A CORRECTION

BY W. A. JAYATISSA

In a recent article in this Journal, Dhrymes *et. al.* [1] attempt to extend the single equation stability testing procedure to the case in which the reduced form of a linear simultaneous equation model is used to forecast m new observations on each of G endogenous variables. This analysis would seem to be incorrect. The authors show correctly that:

$$(e_0^G)'[\Sigma^{-1}\otimes(I_m+X_0S^{-1}X_0')^{-1}](e_0^G)\sim\chi^2_{mG}$$

under the null hypothesis of no structural change. They also argue correctly, that $(T-K)\hat{\Sigma}$ has a Wishart distribution, with $(T-K)$ degrees of freedom, where $\hat{\Sigma}$ is an estimate of the covariance matrix Σ. But they then implicitly assume that $(T-K)[\hat{\Sigma}\otimes(I_m+X_0S^{-1}X_0')]$ has a Wishart distribution with $(T-K)$ degrees of freedom. This result is correct for $m=1$, but the theorem quoted does not apply to the case $m>1$ and there is no reason to suppose that the authors' conclusions are generally valid.

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REFERENCES

[1] Phobus J. Dhrymes, E. Philip Howrey, Saul H. Hymans, Jan Kmenta, Edward E. Leamer, Richard E. Quandt, James B. Ramsey, Harold T. Shapiro and Victor Zarnowitz (1972), "Criteria for evaluation of Econometric Models", *Annals of Economic and Social Measurement*, 1, 291–324.

[2] Anderson, T. W. (1958), *An Introduction to Multivariate Analysis*, Wiley.

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REPLY

BY SAUL H. HYMANS

We attempted to derive a finite sample test to investigate structural stability for the case in which the reduced form of a linear simultaneous equation model is used to forecast m new observations on each of G endogenous variables. For $G=1$, the appropriate test-statistic is well-known and is given by our expression (11). Our expression (12), which we thought provided an appropriate test statistic for both $m>1$ and $G>1$, is correctly pointed out by Jayatissa to be generally valid only for $m=1$ and $G\geq 1$. Our expression (13), which provides an asymptotic test-statistic for $m>1$ and $G>1$ in the presence of lagged endogenous variables, is also valid when there are no lagged endogenous variables present. The asymptotic test-statistic is therefore useable to test for structural stability with m and G each greater than unity, provided the original sample size is "large".

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