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Chow G C. Tests of equality between sets of coefficients in two linear regressions. *Econometrica* **28**:591-605, 1960.
[Cornell University, Ithaca, NY]

Having estimated a linear regression with p coefficients, one may wish to test whether m additional observations belong to the same regression. This paper presents systematically the tests involved, relates the prediction interval (for $m=1$) and the analysis of covariance (for $m>p$) within the framework of general linear hypothesis (for any m), and extends the results to testing the equality between subsets of coefficients. [The *Science Citation Index*® (*SCI*®) and the *Social Sciences Citation Index*® (*SSCI*®) indicate that this paper has been cited in over 605 publications since 1960.]

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"The research took place while I was an assistant professor at the School of Industrial Management (now the Sloan School) of the Massachusetts Institute of Technology in 1958. I had completed my PhD dissertation at the University of Chicago in 1955 and published it as a book.[1] In 1958, A.C. Harberger of the University of Chicago solicited a contribution from me to the volume *The Demand for Durable Goods*, which was being edited by him and would be published by the University of Chicago Press.[2] I decided to investigate whether the statistical demand functions, estimated by using annual data up to 1953 and reported in the 1957 book, had remained stable in the years from 1954 to 1957. The statistical test developed was reported in the cited article.

"Later on, a test of equality of regression coefficients became known as the 'Chow test' in the econometrics literature. If there are sufficient observations to estimate all the parameters in two separate regressions, a test of the equality between the regression coefficients using the analysis of covariance was well known in 1958, as I pointed out in the 1960 article. However, in my problem, there were not enough observations to estimate a second regression using the data from 1954 to 1957, and a test for this case was not well known. Furthermore, a second approach to testing the stability of regression coefficients is to use the predictions based on one regression and examine whether the observations generated by a second regression model for a different time period or different set of circumstances fall within the prediction intervals of the first regression. I showed the relationship between this prediction interval approach and the analysis of covariance approach.

"This article has been cited often not because of its contribution to statistical theory, but because of the wide applicability of the methods presented. An important objective in science is to provide hypotheses that will yield accurate predictions. If economic relations are to yield good predictions, they should remain stable over time. This testing of the temporal stability of economic relations is an important problem in applied economics. My article may have stimulated the interest of economists in the question of stability of economic relations. The article was motivated by an important applied problem and its practical relevance explains its popularity.

"A recent article covering the same topic is 'Generalized Chow tests for structural change: a coordinate-free approach' by Jean-Marie Dufour."[3]

1. **Chow G C.** *Demand for automobiles in the United States: a study in consumer durables.* Amsterdam: North-Holland, 1957. 110 p.
2. ----------. Statistical demand functions for automobiles and their use for forecasting. (Harberger A C, ed.) *The demand for durable goods.* Chicago: University of Chicago Press, 1960. p. 147-78.
3. **Dufour J M.** Generalized Chow tests for structural change: a coordinate-free approach. *Int. Econ. Rev.* **23**:565-76, 1982.

