



**Compare Two Approximate Degrees of Freedom Tests for
Heteroscedastic ANOVA**

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Abstract

F-test is commonly used while heteroscedastic variances are often encountered in real data. However, although F-test works well under homogeneous variance assumption, it will result in a large bias when variances are heteroscedastic. To correct this bias, Keselman, Carriere, and Lix (1995) (Keselman in short) and Jin-Ting Zhang (2012) (Zhang in short) suggested two approximate degrees of freedom tests (ADF tests in short) for heteroscedastic variances data. Although both Keselman's and Zhang's tests are ADF tests, Keselman suggested a Welch-James procedure while Zhang provided a Hotelling test. In this paper, comparison of these two ADF tests on both size controlling and powers will be shown theoretically and experimentally. As simulation results shown, both ADF tests provide excellent results in size controlling and powers over a wild range of simulation model configurations.