

# **A GLS-based Wald Test for Portfolio Efficiency under Serial Correlation**

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## **Abstract**

In this paper, we propose a generalized least squares (GLS)-based Wald test statistic for testing portfolio efficiency under serial correlation. Our test statistic is shown to asymptotically follow the chi-squared distribution, avoid the over-rejection problem that arise when using Gibbons et al.'s (1989) test statistic under serial correlation. Thus we apply the GLS-based Wald test statistic proposed in this paper to examine the validity of Fama and French's (1993; 2015) multifactor models. As a result, we empirically confirm that the null hypothesis under serial correlation is more likely to be rejected when we use Gibbons et al.'s (1989) test statistic, in contrast to our GLS-based Wald test statistic.

Keywords: GLS-based Wald Test; Portfolio Efficiency; Serial Correlation; Over-rejection.

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