Abstract: Applied researchers frequently log-transform positive outcomes and estimate by OLS. While convenient, this transformation can yield biased conditional means when the true model is multiplicative. We develop a formal test of whether log-linear OLS consistently estimates slope coefficients in an exponential mean specification. The test proceeds by estimating the multiplicative model with Poisson or Gamma pseudo-maximum likelihood (PPML, GPML), constructing implied residuals in the log-transformed regression, and testing their orthogonality. If the test is not rejected, log-OLS delivers consistent elasticities, though the conditional mean of levels remains multiplicative; if rejected, log-OLS is invalid even for slope parameters. Monte Carlo simulations confirm good finite-sample performance. We apply the test in three canonical settings: gravity models of international trade, firm-level investment in Sri Lanka, and U.S. health care expenditures. In all three, the log-linear model is rejected in favor of multiplicative estimators, validating concerns about retransformation bias and heteroskedasticity. Our procedure provides a practical diagnostic for model choice in applied work with positive dependent variables.