

# DISTRIBUTION FUNCTIONS FOR THE SADF AND GSADF TESTS FOR BUBBLES

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## Abstract

In this paper we estimate response surface functions for two recently developed econometric tests for asset price bubbles—the SADF (Phillips, Wu, and Yu, 2011) and GSADF (Phillips, Shi, and Yu, 2015) tests. We show how our results can be used to approximate finite sample critical values and  $p$ -values, while significantly reducing the high computational costs that have been involved in applying these tests thus far, due to their recursive (SADF) and double recursive (GSADF) nature. The resulting critical values and  $p$ -values are more accurate than those used previously in the literature. We illustrate the use of our results with an empirical application to historical stock and house price data.

*Keywords:* Response surface function, unit root test, mildly explosive root, SADF test, GSADF test, bubbles

*JEL Classification:*

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