

Conducting event studies with Asia-Pacific security market data

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Abstract

We investigate the effectiveness of several well-known parametric and non-parametric event study test statistics with security price data from the major Asia-Pacific security markets. Extensive Monte Carlo simulation experiments with actual daily security returns data reveal that the parametric test statistics are prone to misspecification with Asia-Pacific returns data. Two non-parametric tests, a rank test [Corrado and Zivney (Corrado, C.J., Zivney, T.L., 1992, The specification and power of the sign test in event study hypothesis tests using daily stock returns, *Journal of Financial and Quantitative Analysis* 27(3), 465–478)] and a sign test [Cowan (Cowan, A.R., 1992, Non-parametric event study tests, *Review of Quantitative Finance and Accounting* 1(4), 343–358)] were the best performers overall with market model excess returns computed using an equal weight index.

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1. Introduction

“Tall oaks from little acorns grow.” *Ante litteram* event studies by Ball and Brown (1968) and Fama et al. (1969) planted seeds of financial research that continue to flourish decades later.¹ Event studies are now widely-used in accounting, finance, economics, management, and marketing research. While event study methodology has advanced over the years, the basic design

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¹ “To quantify the enormity of the event study literature, we conducted a census of event studies published in 5 leading journals... for the years 1974 through 2000. The total number of papers reporting event study results is 565” (Kothari and Warner, 2005).

varies little and most event studies report empirical results in a similar form facilitating comparison with others.

The importance and popularity of financial event studies across the business disciplines have generated a keen interest in studies evaluating their effectiveness in realistic settings. Almost exclusively, these studies use Monte Carlo simulations with actual daily security returns data since the most realistic method to evaluate event study test statistic performance is with the data actually used in event studies. The genre-defining studies of [Brown and Warner \(1980, 1985\)](#) predicate the importance of using data from the true return generating process to evaluate test statistic performance.² The number of such studies is now quite large.³ We shall not attempt a review of this broad body of literature as several excellent reviews are already available.⁴ However, we restate some patent conclusions from a few major papers investigating short-term event study methodology as a backdrop to this paper. [Brown and Warner \(1985\)](#) conclude that standard parametric event study tests are generally well-specified with good test power when used with returns data from the New York and American stock exchanges. [Corrado \(1989\)](#) demonstrates that a non-parametric rank test adapted to an event study setting is well-specified with New York and American stock exchange data and provides an improvement in test power over parametric tests. [Corrado and Zivney \(1992\)](#) and [Cowan \(1992\)](#) show that a non-parametric sign test is also well-specified with an improvement in test power over parametric tests. [Campbell and Wasley \(1993\)](#) demonstrate that standard parametric event study tests were poorly specified with NASDAQ returns data but the non-parametric rank test in [Corrado \(1989\)](#) was robustly specified with these data. These conclusions have remained intact in subsequent studies. This paper investigates the issue of whether and how well these conclusions extend to Asia-Pacific security market data.

Investigations of event study methodology have almost exclusively focused on United States security markets. However, strong growth in the Asia-Pacific economies and their financial markets has created a rising tide of research focusing on this region. Despite this surge, investigations of event study methodology with non-U.S. security market data in the genre of [Brown and Warner \(1980, 1985\)](#) are almost non-existent.⁵ This deficiency was lamented over a decade ago by [Kang and Stulz \(1996\)](#), but the issue has so far lain dormant.⁶ We address this deficiency by investigating the performance of a battery of popular event study test procedures with security returns data from the major Asia-Pacific security markets. These test statistics are fully described in Section 4 and include two parametric *T*-tests — the first proposed in [Patell \(1976\)](#) and [Dodd and Warner \(1983\)](#) and the second proposed in [Sanders and Robins \(1991\)](#) and [Boehmer et al. \(1991\)](#); a bootstrap test procedure — proposed in [Kramer \(2001\)](#); two non-parametric rank tests — the first proposed in [Corrado \(1989\)](#) and the second proposed in [Corrado and Zivney \(1992\)](#); and two non-parametric sign tests — the first proposed in [Corrado and Zivney](#)

² Other classic papers in this genre are [Bernard \(1987\)](#), [Collins and Dent \(1984\)](#), [Dyckman et al. \(1984\)](#), and [Jain \(1986\)](#).

³ We sincerely apologize to the authors of so many fine papers on event study methodology not cited in this paper as inclusion would extend the list of references to a prohibitive length.

⁴ Authoritative reviews covering the broad spectrum of event study methodologies are [Campbell et al. \(1997\)](#), [Kothari and Warner \(2005\)](#), and [MacKinlay \(1997\)](#).

⁵ A search uncovered four published studies examining event study procedures with non-U.S. data: [Bartholdy et al. \(2007\)](#), [Hamill et al. \(2002\)](#), [Maynes and Rumsey \(1993\)](#), and [Shevlin \(1981\)](#).

⁶ “There is no study for Japanese security markets evaluating the empirical properties of test statistics for event studies, suggesting that our test statistics ought to be interpreted with caution, especially in the cases where the parametric and non-parametric test statistics lead to different conclusions” ([Kang and Stulz, 1996](#)).

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