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A Note on Event Studies in Finance and Management Research

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Event studies are a common research method in finance and management research. This note argues that the validity of inferences based on announcement effects hinges critically on controls for confounding events and appropriate statistical tests. We present a unique case where data is available for a replication of two key studies. Specifically, we examine and demonstrate the importance of systematic confounding information on findings of the effect of corporate name changes on stock market reactions. We demonstrate that systematic confounding events are critical challenges when testing theories about investors' reactions in finance and management research.

JEL Codes: G14; G34

1. Introduction

Event studies remain to be an important research methodology in finance and management research. We argue that although the event study method may seem straightforward and noncontroversial, its critical assumptions and requirements can still be poorly addressed, leading to false empirical and theoretical interpretations. Building on the vast literature on the do's and don'ts of event studies (c.f., Brown and Warner, 1980, 1985; Corrado, 2010; McWilliams and Siegel, 1997), we revisit specific methodological issues related to confounding events and the use of adequate statistical tests.

When conducting an event study, one first needs to identify the initial announcement date, and exclude all events that are announced with stock price relevant information, other than the event studied. Importantly, some types of news are released jointly on a systematic basis (c.f., Conroy, Eades and Harris, 2000; Nayak and Prabhala, 2001). A researcher should be able to identify systematically correlated news, because even in large samples, systematic biases will not disappear. A second and related issue is that the researcher needs to understand well the data characteristics, including those related to trading volume, return variance and the existence of outliers, in order to decide on the use of appropriate statistical tests. Employing the adequate statistical tests — parametric, non-parametric or a combination of both — is crucial for making correct statistical inferences.

Reconsidering the event study design in the name change literature allows us to revisit the critical challenges in the event study methodology. Specifically, we replicate two event studies on corporate name changes, i.e. Cooper, Dimitrov and Rau (2001) and Lee (2001), and highlight the importance of addressing issues related to confounding events and alternative

statistical tests. Moreover, we shed light on the seemingly contradictory findings as to whether investors react irrationally to corporate name change announcements.

Revisiting the evidence of Cooper, Dimitrov and Rau (2001) and Lee (2001), controlling for confounding events and using different statistical tests, we find no significant evidence of a name change effect. We demonstrate that their results are primarily caused by confounding events, i.e. joint announcements of cosmetic name changes with significant business events like reverse mergers—a mechanism of going public in which a private firm is merging with an empty public shell that was particularly common in the Internet bubble. Importantly, reverse mergers lead to significant positive returns given that a firm is restructured from an empty shell with no business, assets and cash flows into a firm with an existing business, assets and expected cash flow (Feldman and Dresner, 2009; Gleason, Rosenthal and Wiggins, 2005). Consequently, the results in Cooper, Dimitrov and Rau (2001) and Lee (2001) are in line with the returns documented in the literature on reverse mergers (e.g. Aydogdu, Shekhar and Torbey, 2007; Floros and Sapp, 2011 and Gleason, Rosenthal and Wiggins, 2005). Notably, the reverse merger announcement effects are subject to documented problems in event study methodologies such as event-induced variance and thin trading, which has an important impact on statistical inferences.

The paper is organized as follows. In Section 2, we discuss the findings of the name change literature and the event study method. In Section 3, we describe the approach used in our replication study and in Section 4 we present the results of this replication. Section 5 concludes.

2. Event studies and the name-change literature

Corporate name changes are common corporate events, and are potentially associated with shareholder wealth effects. Using the event study method researchers have examined stock

market reactions following corporate name changes announcements.[1] From the perspective of the rational agent-based financial economics and existing empirical evidence, we have good reasons to believe that firm value is a function of fundamentals, like business activities, financial structure and governance characteristics. Hence, for a company name change to have a value effect (beyond fundamentals), some form of irrationality by investors is typically postulated. In order to examine name changes effects, research focuses on so-called 'cosmetic' name changes, which are not accompanied by other business news and substantive business changes. For this reason, the cosmetic name change literature is a meaningful testing ground for confounding events.

The event studies on name changes announcements have yielded mixed evidence. That is, while some studies on name changes do not find significant abnormal returns when firms cosmetically change their names (Bosch and Hirschey, 1989; Horsky and Swyngedouw, 1987; Karpoff and Rankine, 1994; Kot, 2011; Lee, 2001 and Wu, 2010), other studies find that name changes provide firms with a large and permanent value increase, which is not transitory and in some cases even persists up to 120 days after the announcement (Cooper, Dimitrov and Rau, 2001; Cooper, Khorana, Osobov, Patel and Rau, 2005; Cooper, Gulen and Rau, 2005).

Those studies that do not find significant returns related to cosmetic name changes show that confounding effects are a critical issue in explaining abnormal returns. For instance, Horsky and Swyngedouw (1987), Bosch and Hirschey (1989) and Karpoff and Rankine (1994) find positive abnormal returns, but argue that the results they observe are driven by name changes of firms that are undergoing business restructuring and outliers. Kot (2011) finds that announcements of cosmetic name changes have insignificant returns, whilst name changes that

[1] For a tabulated overview of the related studies, please see the online appendix accompanying this paper.

go along with substantive business changes lead to positive abnormal returns. Similarly, Lee (2001) in the context of dot.com name changes during the Internet bubble finds statistically insignificant average abnormal returns for cosmetic name changes and a significant and large abnormal return of 316 percent for name changes that happen with substantive corporate events. Wu (2010) provides a comprehensive study of the market reactions of name changes of US listed firms in the period 1980–2000, including Internet-related name changes and concludes that corporate name changes usually foreshadow a substantial change in the business. These findings demonstrate the relevance of the substantive business changes as confounding events in name change event studies.

However, other studies find that corporate name changes can lead to significant, large and even non-transitory abnormal returns. Among the studies, which find that name changes lead to positive short- and/or long-term abnormal returns, Cooper, Dimitrov and Rau (2001)—similar to Lee (2001)—examine the effect of dot.com name changes during the Internet bubble. Specifically, Cooper, Dimitrov and Rau (2001) find a high and significant average abnormal return, which is non-transitory, and ranges between 18 and 214 percent.[2] A follow-up study by Cooper, Khorana, Osobov, Patel and Rau (2005) shows that firms earn positive abnormal returns when they delete dot.com from their name after the burst of the Internet bubble. A third study is by Cooper, Gulen and Rau (2005) which examines the effect of mutual funds' name changes, and finds that mutual funds which change their names to reflect a current hot investment style earn an average cumulative abnormal flow.

Indeed, the evidence is mixed on whether cosmetic name changes lead to positive returns, beyond the effect of substantive corporate events that accompany name changes. In order to

[2] Moreover they state that all of the name changes in their sample are cosmetic, i.e., they indicate to have excluded from their sample "stocks that experience a contaminating news event such a merger, issuance of stock, earning announcement, and so forth during the event window period" (2001: 2374).

address this issue, we focus on the two studies by Cooper, Dimitrov and Rau (2001) and Lee (2001), which find diverging evidence regarding the name change effect, while studying the same empirical setting, i.e., dot.com name changes during the Internet bubble.

3. Steps in the Event Study Method

In this section we set up our replicative event study by following a step-by-step approach on the basis of the decisions a researcher needs to make. We do this by replicating the name change studies by Cooper, Dimitrov and Rau (2001) and Lee (2001), paying particular attention to confounding events that go along with name changes. The data used in Cooper, Dimitrov and Rau (2001) is published in a related chapter (Cooper and Rau, 2003), whereas the name changes used in Lee (2001) are listed in the paper itself.[3]

3.1 Event Date

Identifying the correct event date is the first step of the event study. Although this seems a trivial step, in practice finding the initial date on which information is released to the market is non-trivial, because of the many communication channels between firms and investors. Firms' press releases and the business press serve as the main source for the event date.

With respect to the event date, Cooper, Dimitrov and Rau (2001) explain that in many cases no information on the actual announcement date was available. In these cases the authors took the effective date as an event date, i.e. the date the firm started trading under the new name on the OTC Bulletin Board (OTC BB). In a few cases the announcement date and effective date coincided (Cooper, Dimitrov and Rau, 2001: 2375). Lee (2001:796) used the date when the name

[3] The complete replication information can be found in the online appendix accompanying this paper.

change was announced in a set of thirteen business press outlets, between January 1st 1995 and June 15th 1999.[4] In our replication, we verify the event date using Factiva and in particular PR Wire, Business Wire and Dow Jones Publications and the OTC BB website (www.otcbb.com) for the effective name change date.

3.2 Event Window and Confounding Events

When the correct event date is identified, one needs to decide on the event window and examine whether there are other corporate events or news taking place in the event window that may affect the market reactions. A short event window reduces the likelihood of having confounding events and increases the reliability and validity of event studies (Brown and Warner, 1985; Lyon, Barber, and Tsai, 1999). A common practice in the event study literature is to use a two to three day window surrounding the event; that is the day before the event (day −1), the day of the event (day 0), and day after the event (day +1). Nevertheless, also short windows require checking for confounding events that could be affecting the market reactions.

Lee (2001) follows this practice and uses the three-day event window in calculating the abnormal returns (-1, +1). Lee (2001) distinguishes between cosmetic name changes (i.e., image only as she calls it) and those that happen together with substantive corporate events, like "internet-related acquisitions, closings of retail outlets, and alliances with other internet firms" (2001:796). Cooper, Dimitrov and Rau (2001) use multiple windows ranging from the five days surrounding the event (-2, +2) up to hundred and twenty days (+1, +120) following the name change announcement. The authors indicate to have excluded from their sample "stocks that

[4] Associated Press Newswires, Business Wire, Canada Newswire, Canadian Corporate News, Dow Jones News Service, Dow Jones Newswire, Knight-Ridder Tribune Business News, the New York Times, PR Newswire, The San Francisco Chronicle, and The Wall Street Journal.

experience a contaminating news event such a merger, issuance of stock, earning announcement, and so forth during the event window period" (2001: 2374).

To examine for confounding events in the Lee (2001) sample we use an event window of two days before and after the name change (-2, +2) given that she uses a three-day window for her market reaction (-1,+1). For the Cooper, Dimitrov and Rau (2001) sample we decide to examine for confounding events in the window of -15 to +15 days around the name change event, given that +1, +120 day window for which they examine abnormal returns is long and very likely to be associated with confounding news. For both samples, first, we read all name change announcements and business news in the respective windows in order to identify potential confounding news and verify whether the name change is cosmetic. Next, we examine each firm by reading the SEC filings of the public firm before and after the name change. In this way we are able to identify name changes that are associated with a substantive change of the company, like reverse mergers. That is, we identify reverse mergers and shell companies using the 8K form, the latest filed annual (10-K) and/or quarterly report (10-Q) prior to the reverse merger and/or the 10-B/10-SB form for registration of securities.

Finally, we categorize the events in three groups: unconfounded name changes, (ii) name changes confounded by reverse mergers, and (iii) name changes confounded by business restructurings and/or acquisitions and mergers. Below we provide examples for each category.

(i) *Unconfounded name changes (i.e., cosmetic name changes)*. An example of a name change with no confounding events is the case of Axxess changing its name to Financialweb.com. Cooper, Dimitrov and Rau (2001) identify January 6th 1999 as the event date, whilst we track a name change announcement already on December 11th 1998; "Axxess Inc. to

Change Name to Financialweb.com Inc." (Source: PR News Wire). In fact, on the Cooper, Dimitrov and Rau (2001) date the name was officially changed on the OTC BB.

(ii*) Confounded by a reverse merger*. According to Cooper, Dimitrov and Rau (2001) on February 26th 1999, Data Growth changed its name to PhotoLoft.com. We find that the name change was announced together with a reverse merger in a Business Wire press release on the date identified by Cooper, Dimitrov and Rau (2001), titled "Photoloft.com makes an announcement" (Source: Business Wire, February 26, 1999) in which it is stated that Data Growth acquitted PhotoLoft.com and as part of the acquisition it raised $1 million. Moreover, we examine the related SEC filing and find that PhotoLoft.com was founded in 1993 as AltaVista Technology and at the time of the reverse merger it had shareholders' equity value of $2,528,300. Similarly, Lee (2001) characterizes the transition from "Charter Investor Relations of North America" to "Millionaire.com" as a name change. However, in a press release titled "Millionaire.Com Completes Acquisition of Lifestyle Media Acquisition Corp" (Business Wire, December 15, 1998) it is stated that as part of the acquisition the company raised $1 million, changed its name from Charter Investor Relations of North America Inc., to Millionaire.Com.

(iii) *Confounded by business restructurings and/or acquisitions*. We categorize as business-restructuring events those when the name change is announced together with, and as a result of, relevant business developments. According to Cooper, Dimitrov and Rau (2001), Equity Growth Systems on July 21st 1999 announced a name change to AmeriNet Group.com. We track the news release titled "AmeriNet Group.com Inc., Formerly Equity Growth Systems Inc., Announces Name/Ticker Change and Strategic Developments" (Source: Business Wire, July 12, 1999), which also states relevant business developments: strategic goals of acquiring and

expanding Internet-related businesses; hiring of a new corporate spokesperson; closing of a limited offering of convertible debentures and hiring new auditors.

3.3 Calculation of Abnormal Returns and Statistical Tests

For the calculation of abnormal returns, Cooper, Dimitrov and Rau (2001) and Lee (2001) use the market-adjusted model

$$AR_{it} = R_{it} - R_{mt} \quad (1)$$

where R_{it} is the return for firm i on day t, and R_{mt} is the AMEX Inter@ctive Index return in Cooper, Dimitrov and Rau (2001) and the Nasdaq Composite Index in Lee (20001). The market-adjusted model is convenient, since it does not require beta estimation process and can be the only method used when there is no stock price data prior to the event, as in the case of IPOs.[5]

With respect to the calculation of the statistical significance of the abnormal returns vis-à-vis the null hypothesis of a zero return, we discuss two important characteristics in the Cooper, Dimitrov and Rau (2001) and Lee (2001) samples; (i) the confounding events cause abnormal increases in variance (i.e., event-induced variance) and (ii) the firms are particularly thinly traded.

Cooper, Dimitrov and Rau (2001) test the significance of the abnormal returns using the Brown and Warner (1980, 1985) dependence adjustment method, by estimating the variance using portfolio-level time-series data from an estimation period outside of the estimation window (-13 to +6 days):

[5] While Brown and Warner (1980) suggest that this technique is comparable to the market-model, using the market-adjusted model can be problematic when share prices have high (low) betas because it overestimates (underestimates) the size of the abnormal return. Cooper, Dimitrov and Rau (2001) attempt to also calculate the market model abnormal returns (2001: 2382-2383), however they have available data to compute the beta for 19 of the firms in their sample.

$$T = \frac{\sum_{t=l}^{k} AR_t}{\sqrt{\sigma^2_{holdout} \times M}} \quad (2)$$

where $\sigma^2_{holdout}$ is the variance of the abnormal return computed over the holdout period, *t = -30* to *-16,* and *M* is the number of days from *t =l* to *k.*

However, upon closer examination we observe that the data in Cooper, Dimitrov and Rau (2001) is subject to event-induced variance, i.e., a large number of their observations are reverse mergers and business restructurings, which are not traded prior to announcement of the event. This means that the Brown and Warner's (1980, 1985) dependence adjustment method is misspecified as it underestimates the variance used in the calculation of the *T*-test and rejects the null hypothesis too often. For cases with event-induced variance Brown and Warner (1985) suggest that their test in misspecificed, and recommend using a parametric test based on the standard errors from the cross-section of the event window abnormal returns (Cross-sectional *T*-test from now on):

$$T = \frac{\sum_{i=1}^{N} \frac{(CAR_i)}{N}}{\sqrt{\sigma^2\ (CAR_i)}} \quad (3)$$

where CAR_i is the cumulative abnormal return in an event window, *N* is the number of observations, and σ^2 is the variance estimated from of the average abnormal returns.

Similarly, Boehemer, Masumeci and Poulsen (1991) and Cowan (1992) suggest using a parametric test in conjunction with a Sign test as it can mitigate the problem of event-induced variance. Moreover, given that these firms are traded on the OTC BB, they are particularly thinly traded. Cowan (1992) suggests that nonparametric tests are more appropriate for thinly traded stocks because thin trading can violate the assumptions of parametric tests. He shows that the Generalized Sign test, which is based on the percentage of positive abnormal returns in an estimation period, is well specified. In fact, Lee (2001) acknowledges that the stocks in her data

are thinly traded and that there are outliers, and so uses both the Generalized Sign test and the Rank test. Even though, the Rank test is more powerful than the Sign test under conditions of thin trading, Cowan and Sergeant (1996) argue that the Rank test is powerful only in case there is no event-induced variance, which is not the case for the Lee (2001) sample. Moreover, the Generalized Sign test, compares the proportion of the positive versus the negative abnormal returns at the time of the event to the proportion from a period unaffected by the event, usually the pre-event estimation period. However, in the case of the reverse mergers, the shell companies have mostly no trading activity during the pre-event period and thus their returns are predominantly zero. Thus, the Generalized Sign test is misspecified. Hence, we use the Traditional Sign test, which is commonly used in the in event studies of name changes (Bosch and Hirschey, 1989; Karpoff and Rankine, 1994; Wu, 2010):

$$T = \frac{\frac{P}{N} - 0.5}{0.5\sqrt{(N)}} \tag{4}$$

where *P* is the number of firms with a positive abnormal return in the event window, and *N* is the number of firms.

In summary, from the discussion above we conclude that the Cross-sectional *T*-test in conjunction with the Traditional Sign test, is an adequate way to test whether the announcements in the Cooper, Dimitrov and Rau (2001) and Lee (2001) are associated with abnormal returns; given that under the discussed constraints, this combination of test statics is less sensitive to event induces variance, thin trading and outliers. Moreover, these are the two tests, besides the Brown and Warner (1980, 1985) crude adjustment method, which have been predominantly used in the event studies of name changes.

4. Replication Results

4.1 Event Dates and Confounding Events

With respect to the event dates we find 55 dates to be the same as Cooper, Dimitrov and Rau (2001), while 35 dates are different. Regarding the Lee (2001) sample we confirm 32 name change dates, and find different dates for 27 cases. We summarize the differences in dates in Table 1, Panel A.

After adjusting the announcement dates and controlling for confounding events we categorize events on the basis of the confounding information. As presented in Panel B of Table 1, we find that in the sample in Cooper, Dimitrov and Rau (2001) 40 observations are name changes announced with and as a result of reverse mergers, 27 are business restructurings, and the remaining, 23 are non-confounded cosmetic name change announcements. Similarly, in the Lee (2001) sample we find that 12 of the name changes go along with reverse mergers, 23 with business restructurings, and 22 are cosmetic name changes.[6].

4.2 Replication with the Revised Date and Controlling for Confounding Events

In Table 2, Panel A for comparison purposes we show the results in Cooper, Dimitrov and Rau (2001) and in Panel B we present the abnormal returns and the significance of the 70 cases, with revised dates. These results are not too different from the ones reported by Cooper, Dimitrov and Rau (2001) because of the large windows the authors use and the fact that the results are mainly driven by the business restructuring and reverse merger announcements whose revised event dates usually fall in the Cooper, Dimitrov and Rau (2001) event windows.

[6] Lee (2001) lists 59 cases, out of which one case was announced together with earnings news, i.e., the name change from "Group V" to "TotalAxcess com". In addition we cannot find information for one case; specifically the name change from "OneStopCar of Florida" to "OneStop.com", which we have left out as uncategorized.

With the revised dates we have share price data for the 23 cosmetic name changes without confounding events. As shown in Panel C, using the Brown and Warner (1980, 1985) method we find significant abnormal returns in the window -15 to +2. This is because the average abnormal return in this event window is 45%, and driven by the outlying observation US Amateur Sports that changed its name to EcomEcom.com which had abnormal return of 516%, and underwent substantive business changes 20 days after the name change. Importantly, if this observation is removed from the sub-sample of cosmetic name changes, the Brown and Warner (1980, 1985) test is insignificant.

Further, we calculate the abnormal returns for the 25 cases of name changes announced with reverse mergers. The results, in Panel D, show that there are large and significant returns associated with the announcement of a reverse merger. In fact, according to the Brown and Warner (1980, 1985) method, the abnormal returns of 135% and 184% in the event windows 0 to +1 and -2 to +2 are highly significant. These results are confirmed by the Cross-sectional *T*-test, which shows positive and significant returns in all the windows. Also the name changes announced with business restructurings—29 cases in Panel E—show positive and significant abnormal returns, even though of lower magnitude compared to the reverse mergers.

Next, we replicate Lee (2001). In Table 3, Panel A for comparison purposes we show the results in Lee (2001). Panel B presents the abnormal returns and the significance of the 46 name changes for which we find stock price data, with revised dates and confounding events categorization. First, the mean and the median values we observe are mostly in line with Lee (2001). Using the Rank and the Traditional Sign tests, we find that dot.com name changes are associated with positive abnormal returns. This finding is not confirmed with the cross-sectional

T-test, due to the large outlying values.[7].Next, in Panel B, we categorize the name changes as cosmetic and substantive. Similar to Lee (2001), using the Rank test, we find that the cosmetic name changes are not associated with abnormal returns, whereas the substantive name changes lead to large positive and significant returns. These results are confirmed with the Sign-test, but not with the Cross-sectional *T*-test. Additionally, in Panel C, we show the name changes associated with reverse mergers and other restructuring events and find that both subgroups are associated with positive and significant abnormal returns.

Lastly, we examine the reactions to the announcements of reverse mergers both in Cooper, Dimitrov and Rau (2001) and Lee (2001) with the sample of reverse mergers we gathered that are not associated with Internet-related name changes. The results are presented in Table 4. As it can be seen, the investors react positively to all reverse mergers with private firms that have an Internet business. Moreover, we find no statistical difference in the abnormal returns between the reverser mergers with and without a dot.com name change. These results suggest there was not a dot.com name change effect to the stock market reactions of the reverse mergers announcements.

4.3 Did Investors Know They Were Buying Reverse Mergers and Not Just Name Changes?

Given that reverse mergers partly drive the results in Cooper, Dimitrov and Rau (2001) and Lee (2001), we ask whether investors were able to distinguish between reverse mergers and name changes. This is an important question, because the inferences of Cooper, Dimitrov and Rau (2001) and Lee (2001) remain valid in the case investors held the belief that the firms they were investing in only changed their names. We therefore study the press releases of the 40 reverse

[7] Dropping the observation of Millionarie.com, which was a reverse merger and experienced abnormal return of over 5000%, the Cross-sectional *T*-test becomes significant.

mergers with name changes in the Cooper, Dimitrov and Rau (2001) sample and the 12 in Lee (2001). We find that 35 companies in the sample in Cooper, Dimitrov and Rau (2001) and 10 in Lee (2001), explicitly announce either "going public" or a "reverse takeover/merger/acquisition" or a "merger/acquisition/takeover". Clearly, in the majority of the announcements, investors were informed about the reverse mergers.

Moreover, we explicitly observe instances where investors acknowledge that name changes were in fact reverse mergers. Namely, we inspect one of the most famous investment forums at the time; siliconinvestor.com (Van Bommel, 2003), and we see that investors actively discussed reverse merger companies. Namely, 30 out of the 40 reverse mergers in Cooper, Dimitrov and Rau (2001), and 8 out of 12 in Lee (2001) are discussed on the forum as Internet-related reverse mergers. Hence, we conclude that investors were able to distinguish reverse mergers from name changes.

5. Conclusion

We started this paper by noting that the event study method even though straightforward has critical requirements, which when poorly addressed influence empirical interpretations. We demonstrated this by revisiting two relatively recent event studies on corporate name changes and stock market reactions. Specifically, we focused on the event date uncertainty and confounding events in Cooper, Dimitrov and Rau (2001) and Lee (2001), both of which examine and find high abnormal returns associated with name changes.

By revisiting these studies, and revising the event date and confounding events, we demonstrate the effects of confounding events. The findings in Cooper, Dimitrov and Rau (2001) and Lee (2001) are in large part driven by name changes that happen together with and as a result

of substantive business events, like reverse mergers. Hence future studies on the role of corporate names in the context of financial markets should carefully consider the fact that name changes are often times endogenous corporate decisions. However, we do not argue that corporate names are irrelevant. In fact, as the most recent literature on the topic shows, some corporate names can play an important role in driving investors' attention (Green and Jame, 2013; Bae and Wang, 2012). As such we call for future studies to examine potential effects between name changes and business restructuring announcements (c.f., Easton, 1991). Is there an enhancing or diminishing effect for announcements of business restructurings that go along with name changes?

More generally, our study highlights the challenge of identifying (systematic) confounding events. We recommend that researchers use independent raters to code their data when manually collected, and to test for interrater reliability, which should improve both the reliability and the validity of the event study design. In line with this argument, we demonstrate and recommend that event studies need to be replicated in order to allow multiple judgments about confounding events. In line with McWilliams and Siegel (1997) we strongly recommend for researchers to "report firm names and event dates in data appendix" (1997: 652). Providing transparent information allows not only for replication, but also for extension of the reported findings.

References

Aydogdu, Murat, Chander Shekhar and Violet Torbey (2007) Shell companies as IPO alternatives: Analysis of trading activity around reverse mergers, *Applied Financial Economics* 17, 1335-1347.

Bae, Kee-Hong, and Wei Wang (2012) What's in a "China" name? A test of investor attention hypothesis, *Financial Management* 41, 429-455.

Boehmer, Ekkehart, Jim Masumeci and Annette B. Poulsen (1991) Event study methodology under conditions of event-induced variance, *Journal of Financial Economics* 30, 253-272.

Bosch, Jean-Claude, and Mark Hirschey (1989) The valuation effects of corporate name changes, *Financial Management* 18, 64–73.

Brown, Stephen J., and Jerold B. Warner (1980) Measuring security price performance, *Journal of Financial Economics* 8, 205-258.

Brown, Stephen J., and Jerold B. Warner (1985) Using daily stock returns: The case of event studies, *Journal of Financial Economics* 14, 3–31.

Conroy, Robert M., Kenneth M. Eades and Robert S. Harris (2000) A test of the relative pricing effects of dividends and earnings: Evidence from simultaneous announcements in Japan, *Journal of Finance* 55, 1199-1227.

Cooper, Michael J., Orlin Dimitrov and P. Raghavendra Rau (2001) A Rose.com by any other name, *Journal of Finance* 56, 2371-2388.

Cooper, Michael J., Ajay Khorana, Igor Osobov, Ajay Patel and P. Raghavendra Rau (2005) Managerial actions in response to a market turndown: Valuation effects of name changes in the dot.com decline, *Journal of Corporate Finance* 11, 319-335.

Cooper, Michael J., and P. Raghavendra Rau (2003) The dot.com premium: Rational valuation or irrational exuberance? in Joseph A. McCahery and Luc Renneboog (eds), *Venture Capital Contracting and the Valuation of High Technology Firms* (Oxford University Press), 297-317.

Cooper, Michael J., Huseyin Gulen and P. Raghavendra Rau (2005) Changing names with style: Mutual fund name changes and their effects on fund flows, *Journal of Finance* 60, 2825-2858.

Corrado, Charles J. (2010) Event studies: A methodology review, *Accounting & Finance* 51, 207-234.

Cowan, Arnold R. (1992) Nonparametric event study tests, *Review of Quantitative Finance and Accounting* 2, 343-358.

Cowan, Arnold R., and Anne M.A. Sergeant (1996) Trading frequency and event study test specification, *Journal of Banking and Finance* 20, 1731-1757.

Easton, Stephen (1991) Earnings and dividends: is there an interaction effect?, *Journal of Business Finance and Accounting* 18, 255-266.

Feldman, David N., and Steven Dresner (2009) *Reverse Mergers and Other Alternatives to Traditional IPOs* (Bloomberg Press, New York, NY).

Floros, Ioannis V. and Travis R.A. Sapp (2011) Shell games: On the value of shell companies, *Journal of Corporate Finance* 17, 850-867.

Gleason, Kimberly C., Leonard Rosenthal and Roy A. Wiggins (2005) Backing into being public: An exploratory analysis of reverse takeovers, *Journal of Corporate Finance* 12, 54-79.

Green, Clifton T. and Russell Jame (2013) Company name fluency, investor recognition, and firm value, *Journal of Financial Economics* 109, 813-934.

Horsky, Dan, and Patrick Swyngedouw (1987) Does it pay to change your company's name? A stock market perspective, *Marketing Science* 6, 320-335.

Karpoff, Jonathan M., and Graeme Rankine (1994) In search of a signaling effect: The wealth effects of corporate name changes, *Journal of Banking and Finance* 18, 1027-1045.

Kot, Hung W. (2011) Corporate name changes: Price reactions and long-run performance, *Pacific-Basin Finance Journal* 19, 230–244.

Lee, Peggy M. (2001) What's in a name.Com?: The effects of '.Com' name changes on stock prices and trading activity, *Strategic Management Journal* 22, 793-804.

Lyon, John D., Brad M. Barber and Chih-Ling Tsai (1999) Improved methods of tests of long-horizon abnormal stock returns, *Journal of Finance* 54, 165-201.

McWilliams, Abagail, and Donald Siegel (1997) Event studies in management research: Theoretical and empirical issues, *Academy of Management Journal* 40, 626-657.

Nayak, Subhankar, and Nagpurnanand R. Prabhala (2001) Disentangling the dividend information in splits: A decomposition using conditional event-study methods, *Review of Financial Studies* 14, 1083-1116.

Van Bommel, Jos (2003) Rumors, *Journal of Finance* 58, 1499–1520.

Wu, Yi Lin (2010) What's in a name? What leads a firm to change its name and what the new name foreshadows, *Journal of Banking and Finance* 34, 1344–1359.

Table 1: Comparison of the revised event dates and confounding events

Panel A: Event date adjustment	Cooper, Dimitrov and Rau (2001)	Lee (2001)
Same day	55	34
Different day	35	24
- Later announcements	0	16
- Earlier announcements	35	8
Total	90	58
Panel B: Confounding events		
No confounding events	23	22
Confounding events:		
- Reverse mergers	40	12
- Restructuring, M&A and/or other	27	24
Total	90	58

This table summarizes the comparison between the samples in Cooper, Dimitrov and Rau (2001) and Lee (2001) and our replication. Panel A reports the difference in dates. Panel B reports the categorization of the name changes based on confounding events using the revised dates.

Table 2: CARs with revised dates and confounding events for the Cooper, Dimitrov and Rau (2001) data

Event Period	(-15,-2)	(0,1)	(-2,2)	(2,15)	(1,30)	(1,60)	(1,120)
Panel A: Name changes in Cooper, Dimitrov and Rau (2001) (n=95)							
CAR %	42	25	63	12	10	30	42
Brown and Warner (1985) *T*-test	5.40*	8.55*	13.8*	1.59	0.89	1.90*	1.86*
Panel B: Name changes, corrected dates (n=70)							
CAR %	52	53	73	24	59	75	87
Standard deviation	111	193	57	142	161	188	147
Brown and Warner (1985) *T*-test	3.29*	8.89*	7.74*	1.55	2.56*	2.29*	1.88
Cross-sectional *T*-test	3.92*	2.67*	3.17*	3.58*	3.49*	3.88*	3.86*
Sign test (p)	0.00*	0.63	0.00*	0.00*	0.01*	0.00*	0.00*
Panel C: Cosmetic name change (n=23)							
CAR %	45	4	7	11	11	16	21
Standard deviation	112	41	42	32	61	82	123
Brown and Warner (1985) *T*-test	5.78*	1.22	1.52	1.43	1	1.01	0.92
Cross-sectional *T*-test	1.96	0.43	0.83	1.71	0.92	0.98	0.84
Sign test (p)	0.21	0.21	0.68	0.09	0.68	0.68	0.68
Panel D: Substantive name change announced with a reverse merger (n=25)							
CAR %	52	135	184	29	108	129	143
Standard deviation	99	257	290	70	210	229	241
Brown and Warner (1985) *T*-test	1.42	9.47*	8.38*	0.80	2.01	1.70	1.33
Cross-sectional *T*-test	2.65*	2.63*	3.17*	2.1*	2.58*	2.81*	2.98*
Sign test (p)	0.03*	0.13	0.03*	0.11	0.04*	0.01*	0.04*
Panel E: Substantive name change announced with business restructuring (n=22)							
CAR %	59	11	16	33	53	74	91
Standard deviation	128	27	32	61	80	107	162
Brown and Warner (1985) *T*-test	3.37*	1.7	1.5	1.88	2.09*	2.07*	1.79
Cross-sectional *T*-test	2.15*	1.93	2.27*	2.5*	3.12*	3.26*	2.64*
Sign test (p)	0.13	0.52	0.00*	0.05*	0.13	0.05	0.83

This table shows the market-adjusted cumulative abnormal returns, expressed in %, relative the AMEX Inter@ctive Week Internet index for a subsample of 70 companies, from the 95 companies in Cooper, Dimitrov and Rau (2001), using corrected event dates. The CARs are calculated using the methodology in Cooper, Dimitrov and Rau (2001). For comparison purposes, Panel A presents the CARs and the Brown and Warner (1985) *T*-test for the full sample in Cooper, Dimitrov and Rau (2001) as presented on p. 2378, Table I. Panel B shows the CARs with revised dates, for the subsample of 70 name changes, the minimum and maximum value, the standard deviation and three different tests of significance: Brown and Warner (1985), Cross-sectional *T*-test and a Sign test. For the Sign test we present the p-values. Panel C reports the same results for a subsample of 23 name changes with no confounding events. Panels D and E report the CARS, their distribution and significance for a subsample of 25 and 22 name changes that are announced with a reverse merger or other restructuring.

Table 3: CARs with revised dates and confounding events for the Lee (2001) data

Panel A: Name changes in Lee (n=56)

	Full Sample	Subsample: Cosmetic name changes	Subsample: Substantive name changes
CAR(-1,1)	N=59	N=31	N=28
Mean	167.85	29.83	316.09
Median	2.70	-0.49	4.71
Rank test	3.87*	0.91	2.19*
Generalized Test	3.96*	0.85	2.23*

Panel B: Name changes with corrected dates and confounding events (n=47)

	Full Sample	Subsample: Cosmetic name changes	Subsample: Substantive name changes
CAR(-1,1)	N=46	N=19	N=27
Mean	149	6.4	249
Median	5.9	3.0	11.8
Rank test	2.70*	0.12	2.94*
Cross-sectional *T*-test	1.34 ł	0.80	1.32 ł
Sign test	0.00*	0.50	0.00*

Panel C: Name changes with reverse mergers and other business restructurings

	Subsample: Reverse Mergers	Subsample: Other business restructuring
	N=8	N=19
Mean	648.3	81.2
Median	18.4	7.0
Rank test	1.75ł	2.29*
Cross-sectional T-test	1.0	1.50ł
Sign test	0.03*	0.00*

This table shows the market-adjusted cumulative abnormal returns (CARs), expressed in %, relative the Nasdaq Composite Index, for a subsample of 47 companies, from the 58 companies in Lee (2001), using corrected event dates. The CARs are calculated using the methodology in Lee (2001). For comparison purposes, Panel A presents the CARs and the significance statistics for the full sample in Lee (2001) as presented on p. 799, Table 2. Panel B shows the CARs with revised dates, for the subsample of 47 name changes, both cosmetic and those with substantive events. Please note that cosmetic name changes correspond to what Lee (2001) calls "image only", whereas the substantive name changes correspond to what Lee (2001) calls "strategic name changes". Panel C reports the same results for a subsample of the name changes with confounding events, further splitting the sample in those that happen with reverse mergers and other restructuring events. The test statistics we present we present are the Cross-sectional *T*-test, the Sign test and the Rank test. For the Sign test we show the p-values, and for the Rank test the z-values. Significance tests: p< .05 level *, p<0.10 ł.

Table 4: CARs of reverse mergers announcement, with and without dot.com name changes

Panel A: CARs for the different reverse merger subsamples

	All	Subsample: With dot.com name change	Subsample: Without dot.com name change
CAR(-1,1)	N=45	N=30	N=15
Mean	242	310	105
Median	39.3	21.8	57.5
T-test	2.11*	1.82	2.23*
Sign test (p)	0.00*	0.00*	0.00*
Rank test (z)	4.64*	3.47*	3.12*

Panel B: Difference in means between reverse mergers with and without dot.com name change

T-test	0.84
Wilcoxon-sign rank	-0.46

This table presents the CARs of reverse mergers. Panel A reports results for the sample of reverse mergers in Cooper, Dimitrov and Rau (2001) and Lee (2001) (n=30) and the sample of reverse mergers without dot.com name changes (n=15). The test statistics we present are the Cross-sectional *T*-test, the Sign test and the Rank test. For the Sign test we show the p-values, and for the Rank test the z-values. . Panel B reports the difference in means between reverse mergers with and without dot.com name change. Significance tests of .05 level are noted with a *.