

# The change in trading activity on volatility and adverse selection component: evidence from ADR splits

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## Abstract

We examine the change in volatility, adverse selection cost, and trading activity for all American Depository Receipts stock splits over the period of 1994–1999. We find higher return volatility, more trading activity (mainly small trades), and lower adverse selection cost post a split. Furthermore, our regression results suggest that the increase in volatility is mainly due to heightened trading activity, while the lower adverse selection cost is primarily the result of higher percentage of noise trading on split-up stocks. © 2002 Elsevier Science B.V. All rights reserved.

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## 1. Introduction

The purpose of this study is to investigate the behavior of volatility, trading activity and the adverse selection component of the bid–ask spread surrounding American Depository Receipts (ADR) stock splits. Prior studies document that return volatility and trading activity increase in general post splits. In particular, consistent with the notion that stock splits attract noise traders because of their preference for low-priced shares (Black, 1986), Schultz (2000) find that the number

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of small trades is higher post splits for a sample of NYSE stocks, and Jiang and Kim (in press) observe similar increase for an ADR sample. However, the results on adverse selection cost around stock splits are quite mixed. Easley et al. (2001) provide evidence that adverse selection cost decreases slightly while Desai et al. (1998) find the contrary. Since adverse selection component of the bid–ask spread is not directly observable, empirical results are sensitive to the methodology used to derive this component. Few efforts have been made to examine the cause of the change in adverse selection cost around splits. Extant literature also has not reached a consensus as to what is the cause of the change in volatility. The observed increase in volatility is found to be associated with small trades (Kamara and Koski, 2001) and total number of trades (Desai et al., 1998).

In this paper, using a sample of ADR, we provide additional evidence on the change in trading activity, volatility and adverse selection cost following stock splits. We use the decomposition models proposed by Glosten and Harris (1988), and Lin et al. (1995) to derive the adverse selection cost. In a recent study by Van Ness et al. (2001), these two decomposition methods are considered effective in capturing the information asymmetry because of their higher correlation with other commonly used measures of information asymmetry.

Our results on volatility and trading activity are quite consistent with other findings. However, the results on adverse selection cost suggest a significant decrease post stock splits. In addition to the conventional pre- and post-split periods, we also include several more sub periods to test alternative hypotheses of stock splits. We fail to find a significant change in adverse selection cost post-announcement (from its pre-announcement level), suggesting that stock splits acting as an informational signal has rather limited impact. Further, a comparison of the adverse selection costs before and after an ex-split date renders support to the notion that stock splits provide brokerage firms with higher incentives (through earning larger spreads) to promote the split-up shares. Hence, adverse selection cost becomes lower post ex-split date due to a higher percentage of noise trading.

The causes of the observed volatility increase and the decline in adverse selection cost are further examined. After controlling for the effect of bid–ask spread, volume, market wide volatility and split factor, we find that volatility increase is highly associated with overall trading activities (total number of trades), but has no correlation with change in small (noise) or large (informed) trades. Findings on the cause of adverse selection cost suggest a different story. Our results lead us to conclude that more noise trading post a split is the primary reason for a lower adverse selection cost.

We discuss data and methodology in Section 2 and Section 3. Empirical results are reported and discussed in Section 4 and the final section contains a summary.

## **2. Data source and sample selection**

A sample of 62 ADR splits between 1994 and 1999 were initially identified from the CRSP Data File. We include all ADR splits, even though a firm may have had

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