Unchecked manipulations, price–volume relationship and market efficiency: Evidence from emerging markets

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A R T I C L E I N F O

A B S T R A C T

This paper investigates how unchecked manipulations could cause frequent trade-induced manipulations and weak-form market inefficiency in South Asian stock markets [Bombay Stock Exchange (BSE), Dhaka Stock Exchange (DSE) and Karachi Stock Exchange (KSE)]. Specifically, the paper analyses the price–volume relationship as one of the many cases of market inefficiency. By employing various econometric tests, this paper first provides conclusive evidence of market inefficiency in these markets. It then extracts evidence of manipulation periods from legal cases and analyses price–volume relationship during these periods. The paper finds that there exists market-wide trading-induced manipulations, where excessive buying and selling causes prices to inflate artificially before crashing down. The paper concludes that South-Asian markets are inefficient in the weak-form.

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1. Introduction

Anecdotal evidence has always existed regarding manipulative practices taking place in the South-Asian stock markets of Bangladesh, India and Pakistan. Recent studies also have found empirical evidence of such manipulations, ranging from insider information to "pump and dump" and excessive speculation in these markets (see Khwaja and Mian, 2005; Khanna and Sunder, 1999). This paper analyses price volume relationship to investigate whether trading-induced or volume-driven manipulation exists in the South Asian stock markets. A trading-induced or volume-driven manipulation as identified by Allen and Gale (1992) is analogous to "pump and dump" of Khwaja and Mian (2005). It involves manipulators buying excessive stocks in order to artificially inflate prices, thus giving the uninformed trader the impression of higher future prices, then selling the stocks, causing the price to fall sharply. Theoretical studies, including those of Allen and Gale (1992) and Jarrow (1992) have argued that it is not possible to have profitable volume-driven manipulations in the presence of market efficiency. The presence of market manipulations therefore suggests that South-Asian markets are inefficient. To corroborate this, the first part of the paper employs empirical testing. It uses three different tests, namely the Ng–Perron unit root test (which is argued to have better power than Dickey Fuller or augmented DF unit root tests), variance-ratio tests (both traditional and rank and sign based tests), and the modified GPH (Geweke and Porter-Hudak, 1983) test proposed by Andrews and Guggenberger (2003). Since prior literature provided the results based on the unit root tests (but not the NG–Perron test) and Lo and McKinlay's variance ration tests, in this paper, we only report the results based on Wright's (2000) variance ratio test and the modified GPH test of Andrews and Guggenberger.[1] This not only helps us to conserve the space but also removes a misconception that unit root tests can be used to evaluate the random walk. In effect, the unit root tests are designed only to determine whether a series is difference stationary or trend stationary. Since the errors are allowed to be an arbitrary zero-mean stationary process under both the unit root null and alternative hypothesis, the focus of the unit root test is not on the predictability of stock prices, as it is under the random walk hypothesis. Unit root tests are therefore not designed to detect predictability, but are insensitive to it by construction. If the price sequence follows a random walk, however, it must not only contain a unit root, but the increments must be unpredictable (uncorrelated). A test of the random walk is therefore concerned with predictability of the increments and not simply whether the process is a unit root. Hence, this paper does not report the unit root test results.[2] Nonetheless, our results from all variants of tests provide conclusive evidence of weak-form market inefficiency in the South Asian stock markets.

The second part of the paper attempts to understand the nature of price–volume relationships as a case of market inefficiency and trade-induced manipulations. To facilitate this, the study uses evidences from legal cases to identify manipulation periods. Here, it is to be noted that this study focuses on the cases where the manipulations were big enough to cause the entire price index to move.[3] The paper then analyses the contemporaneous volume–price relationship during these manipulative periods, in order to show that there is a strong positive relationship between prices and volume during the "pumping" period, and a strong negative relationship between them during the "dumping" period. It is also found that the volume was significantly higher during the manipulation period than in the pre- and post-manipulation periods. These results corroborate the case evidence that manipulative bubbles were caused by excessive buying, and later burst by the selling of stocks. The paper concludes that South-Asian markets are inefficient, and hence are a breeding ground for market manipulations.

The remainder of the paper is organized as follows. Section 2 provides the background and literature review. Section 3 discusses the market background and the presence of manipulative practices

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[1] Prior literature that uses unit root and variance ratio (VR) tests includes Chiang et al. (2010), Azad (2009b), Cooray and Wickremasinghe (2007) and Islam and Khaled (2005), among others. The test statistics from the unit root test and Lo–McKinlay (1988) VR tests are not reported in this paper but can be obtained from authors on request.

[2] We thank an anonymous referee for this suggestion to explain why unit root test is not needed to detect whether a time series process follows a random walk.

[3] Many such cases are reported, but we chose the cases which are big enough to have been reported by many newspapers and the SEC (Securities and Exchange Commission) of the respective countries. We use the Factiva database to find such news releases. In this paper, we only consider the price index and not stock level price because we want to show that the manipulation is so intense that it even causes large movements in price index of those emerging markets.