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Deviations in expected price impact for small transaction volumes under fee restructuring

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Abstract

We report on the occurrence of an anomaly in the price impacts of small transaction volumes following a change in the fee structure of an electronic market. We first review evidence for the existence of a master curve for price impact on the Johannesburg Stock Exchange (JSE). On attempting to re-estimate a master curve after fee reductions, it is found that the price impact corresponding to smaller volume trades is greater than expected relative to prior estimates for a range of listed stocks. We show that a master curve for price impact can be found following rescaling by an appropriate liquidity proxy, providing a means for practitioners to approximate price impact curves without onerous processing of tick data.

Keywords: price impact, fee structure change, market regulation, master curve, market microstructure, electronic limit order book

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1. Introduction

Large market orders submitted to electronic trading platforms have the tendency to deplete more than the inventory available at the best bid/offer level at time of transaction. This provides a mechanistic account for change in prevailing asset prices. Observation of this phenomenon has translated to various views on the definition and estimation of the impact of a single transaction as a component of transaction cost, where the latter includes easily measurable fees and commissions as well as indirect levies such as the component of price impact.

With trade volumes increasing 10-fold in developed markets through the 1990's, it became possible to quantify regularities in price response to establish the relationship between averaged price shifts and transaction volumes [1–10]. This has led to a more refined but heuristic definition of price impact as *the correlation between trade size and direction and the resultant price change*.

In a study of 1000 stocks listed on the New York Stock Exchange for 1995-1998, it was determined that inclusion of an adjustment for the liquidity variation for stocks in different market capitalisation classes provided a calibration of a single representative price impact function for the entire market [1].

Measuring by market capitalisation, the Johannesburg Stock Exchange (JSE) is one of the top 20 stock exchanges in the world, where current JSE market capitalisation of 1 trillion USD

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