

## **High Frequency Analysis of the Index-Stock Relationship**

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December 2010

### Abstract

The relationship between the market Index and its constituent stocks is a very complicated one. While the index is a weighted average of the stocks, it has been found that for long time scales (one day or longer), it has a stronger affect on the stocks than the stocks have on it. How does this interaction change in short time scales? The aim of this work is to explore this interaction using high frequency data, for both transaction data and the book bid-ask spread. We will show, using a correlation based analysis approach, that in short time scales, stocks have a stronger influence on the Index. Furthermore, we will show that in short time scales, there is an observed reversed relationship between the transaction prices, and the book order prices. We suggest that these findings shed new light on the implications of high frequency trading, and that based on our findings, the price of the Index should be published on a more frequent basis, such as every 1 second.

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