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## **Trading Nokia: The Roles of the Helsinki vs. the New York Stock Exchanges**

**W**hen a stock is listed in multiple exchanges around the world, the connection between its price formation processes in the different markets becomes an important and interesting issue. Is perhaps one market leading the other in incorporating new information into the price of the stock? Discovering such patterns

could be important information to traders and investors in choosing their trading venue. It could also provide important insights into the functioning of various market places, and it could reveal information about the type and sophistication of traders in these markets. Understanding the international price formation process of stocks may also shed light on the question of why companies in the first place cross-list their stocks in multiple markets.

Moreover, in a case like Nokia, an international giant and a Finnish national pride, which is the object of our study, we might simply be curious to know whether “we Finns” (the Helsinki Stock Exchange) still know best what is happening in Nokia, or do others (the New York Stock Exchange) set the pace of its price movements.

An obvious approach to study whether one market leads the price discovery over another is to test whether very short term intraday movements of a stock price in the first market can predict the movement in the next instance of the same stock in the other market. However, such an approach restricts attention to the common opening hours of the two markets. In this paper, we use an alternative approach that allows us to make inferences of the information content of trades with Nokia’s share in Helsinki and in New York also when only one of the markets is open. Thereby we may get a more complete picture of the roles of the two markets in processing new information concerning Nokia’s price than by just studying the overlapping trading time.

In particular, our approach empirically investigates the relationship between Nokia’s price durations (the time lapse between consecutive price changes) and trading volume. Previous research has suggested that trades mo-

tivated by the possession of private information of well informed traders tend to cluster (causing a peak in trading volume) and hence cause price changes (shorten price durations). Trades motivated by liquidity needs do not cause significant price changes (have no effect on price durations).

We find that only in New York Nokia’s high trading volume tends to shorten its price durations both during and outside the common opening hours with Helsinki. This suggests that New York is the market where new private information mostly gets reflected in Nokia’s price whereas Helsinki accommodates more liquidity oriented trading. The facts that the average trade size and the number of large trades are bigger in New York (although the total trading volume is larger in Helsinki, explained by the sheer number of trades), and that transaction costs are lower in Helsinki, also conform to this interpretation of the special roles of the two market places for Nokia. Nonetheless, the common trading hours clearly seem to be the most active time for information intensive trades in both markets.

Due to the large number of observations when using intra-daily data, our study only covers the time period of November 2000. This should be taken as a caveat when generalizing our findings. ■