



The day of the week effect on stock market volatility and volume: International evidence

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Abstract

This study investigates the day of the week effect on the volatility of major stock market indexes for the period of 1988 through 2002. Using a conditional variance framework, we find that the day of the week effect is present in both return and volatility equations. The highest volatility occurs on Mondays for Germany and Japan, on Fridays for Canada and the United States, and on Thursdays for the United Kingdom. For most of the markets, the days with the highest volatility also coincide with that market's lowest trading volume. Thus, this paper supports the argument made by Foster and Viswanathan [Rev. Financ. Stud. 3 (1990) 593] that high volatility would be accompanied by low trading volume because of the unwillingness of liquidity traders to trade in periods of high stock market volatility.

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1. Introduction

Calendar anomalies (weekend effect, day of the week effect, and January effect) in stock market returns has been widely studied and documented in finance literature. These investigations have covered equity, foreign exchange, and the T-bill markets. Studies by Cross (1973), French (1980), Gibbons and Hess (1981), Keim and Stambaugh (1984), Lakonishok and Levi (1982), and Rogalski (1984) demonstrate that there are differences in distribution of stock returns for each day of the week.

Other researchers have investigated the time series behavior of stock prices in terms of volatility by using generalized autoregressive conditional heteroskedasticity (GARCH) models.¹ For example, French et al. report that unexpected stock market returns are negatively related to the unexpected changes in volatility. Campbell and Hentschel (1992) argue that an increase in stock market volatility raises the required rate of return on common stocks and hence lowers stock prices. These studies generally report that returns in stock markets are time varying and conditionally heteroskedastic. None of these studies, however, test for the possible existence of day of the week variation in volatility.

For a rational financial decision maker, returns constitute only one part of the decision-making process. Another part that must be taken into account when one makes investment decisions is the risk or volatility of returns. It is important to know whether there are variations in volatility of stock returns by the day of the week and whether a high (low) return is associated with a correspondingly high (low) volatility for a given day. If investors can identify a certain pattern in volatility, then it would be easier to make investment decisions based on both return and risk. For example, Engle (1993) argues that investors who dislike risk may adjust their portfolios by reducing their investments in assets whose volatility is expected to increase. Uncovering certain volatility patterns in returns might also benefit investors in valuation, portfolio optimization, option pricing, and risk management.

This study investigates the day of the week effect in stock market volatility and volume using the major stock market indexes of Canada, Germany, Japan, the United Kingdom, and the United States. This paper also examines whether the observed volatilities on various days of the week are related to trading volume, indirectly testing the Admati and Pfleiderer (1988) and Foster and Viswanathan (1990) models. Empirical findings show that the day of the week effect is present in both the return and the volatility equations. We observe the highest volatility of returns on Mondays for Germany and Japan, on Fridays for Canada and the United States, and on Thursdays for the United Kingdom. The lowest volatility of returns occurs on Mondays for Canada, Tuesdays for Germany, Japan, the United Kingdom, and the United States. The lower trading volumes occur on Mondays and Fridays for Japan, the United Kingdom, and the United States, and the highest trading volume occurs on Tuesdays for each market. The findings support the Foster and Viswanathan argument that the high volatility would be accompanied with low trading volume due to unwillingness of liquidity traders to trade in periods where the prices are more volatile.

¹ Among these studies are Akgiray (1989), Campbell and Hentschel (1992), French, Schwert, and Stambaugh (1987), Glosten, Jagannathan, and Runkle (1993), and Hamao, Masulis, and Ng (1990).

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