Chapter 2
Interactions Between Macroeconomic Variables and Stock Market Indices: Evidence From Germany, Denmark, and Spain, Including the Period of Crisis

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ABSTRACT

The relationship between the performance of capital markets and changes in several macroeconomic variables has worried many researchers over time. This chapter focuses on two main areas: 1) the analysis of the behavior of per capita consumption and private investment expenditure using the model ARMA (m, n), and the impact of economic crisis on them, and 2) the examination of causal relationships between key macro-variables and selected key stock exchange indices. The analysis is carried out for the period 1995-2013 for Germany, Denmark, and Spain, which were selected on the basis of their economic position (GDP) in the European Union (E.U.). From the research, the authors found that the crisis of 2008-2009 had effects on households and businesses, which reduced their planning horizon with respect to consumption and investment. Regarding the second part of this study, the authors used the Granger causality test to find that the stock index DAX of Germany determines, to some extent, the changes in macroeconomic variables.

LITERATURE REVIEW

The sharp fall observed in the capital markets in the summer of 2008, was a kind of announcement of the economic cycle that will ensue for the global economy. The markets have a tendency to discount the negative or positive developments in the real economy, but the factors that lead participants in a massive liquidation of securities have not been analyzed in detail yet.

Based on the efficient markets hypothesis and the assumption of rational expectations, the asset prices are significantly dependent by variables which can describe the state of an economy. This conclusion is consistent with classical valuation models (Merton; 1973, Ross; 1976, Cox et al; 1985 etc.).

Attempting a brief historical review, it is noted that many studies have been conducted in recent decades to examine the variables that affect the capital markets or equity portfolios returns. Fama (1981), using data from the American stock market for the period 1953-1977 found empirically that stock returns depend negatively by inflation, while they are positively correlated with yields of Treasury notes and measurements for future economic activity, capital cost and the efficiency of the capital stock. Geske et al. (1983) studied the negative relation between the performance of the S&P500 and changes in short-term interest rates for the period 1947-1980, which ultimately integrates the non-expected inflation, through a process of interactions between fiscal policy and those involved in the market. Chen et. al (1986), examined the effects of expected and unexpected inflation, yields and Treasury bonds, industrial production, consumption and oil prices on stock prices, concluding that consumption was the only variable that was statistically not significant. As dependent variables we used the New York Stock Exchange (NYSE) index with equal weighting per share, weighted by market capitalization for the period into consideration from 1958 to 1984. Bong-Soo Lee (1992) examined the reverse effects. More particularly he took under consideration the weighted NYSE index after the Second World War (1947-1987) and found that stock returns are prior to the economic activity, but they cannot explain the volatility of inflation. Fama and French (1989), used data from the NYSE index for the period 1927 till 1987 to conclude that the expected returns determine significantly the observed ones which, in a significant extent, are defined by the consumption pattern, in accordance with the theories of the permanent income and life cycle (Modigliani - Brumberg; 1955 and Friedman; 1957). Specifically, during periods of growth when incomes are high relative to wealth, households increase savings desiring smooth consumption in the present and the future, which leads to a decline in interest rates and expected returns. The reverse happens in times of recession when the decline in income reduces savings. Therefore, from a theoretical aspect, the economic conditions are moving in the opposite direction in relation to the yields. Coming into the 1990s, Fama (1990) found empirically that a
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