THE INTERRELATIONSHIPS BETWEEN U.S. AND FOREIGN EQUITY MARKET YIELDS: TESTS OF GRANGER CAUSALITY

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Abstract. This study examines the interrelationships between yields on the U.S. and several foreign market portfolios over the 1980-89 period. Tests of Granger causality are used to investigate the effects of uni-directional causality, bi-directional causality, and contemporaneous adjustment in the determination of market rates of return. The results indicate that international equity market returns are largely contemporaneously determined, and the significance of contemporaneous effects varied over time. Uni-directional and bi-directional causality were found to be relatively weak.

Numerous studies have explored the interdependencies among international equity markets. In investigating the degree of capital market integration, Agmon [1972, 1973] found some evidence of a multinational market, consisting of a central market, the United States, and three peripheral markets, Germany, the United Kingdom, and Japan. Although stock prices in the peripheral markets were determined to respond immediately to price changes in the U.S. market index, no significant relationships were found to exist among the peripheral markets. Joy et al. [1976], in a study of co-movements

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in returns, found low levels of correlation among major European equity markets. Similar results were obtained by Swanson [1980] in a study of the co-movements in returns between several markets over the 1960-69 and 1970-79 periods. An important finding of this study was that, with the exception of Canada, weak correlations existed between the U.S. and other markets. By analyzing patterns in equity returns, Ibbotson, Carr and Robinson [1982] were able to identify distinct "blocs" of markets possessing strong correlations in returns. The determinants of these co-movements were hypothesized to be geographical proximity, trade and institutional barriers, and cultural similarities.1

While these studies of the co-movements in returns have established to some degree the levels of interdependency among the major equity markets and have explored the benefits to be obtained from international diversification, few have directly addressed the issue of causality. Furthermore, much of the research which has been undertaken during the past two decades on the international transmission of interest rates has been concerned with short-term yields. Many of these studies, moreover, have focused primarily on the U.S. dollar, investigating the relationships between domestic and Eurocurrency deposit rates. Studies performed in the 1960s and early 1970s tended to view the U.S. market as isolated, in an economic policy sense, from other national markets, with the result that only uni-directional causality, from the U.S. to foreign markets, was considered [Hendershott 1967; Kwack 1971; Levin 1974]. More recent studies, however, have taken into account the increased market integration which has occurred during the past decade and have investigated the existence of bi-directional causality [Kaen and Hachey 1983; Hartman 1984; Swanson 1988].

The increased integration of the international financial markets has affected the relationship between monetary policy and the short-term rate of interest and may, in the case of the U.S., impede the ability of the Federal Reserve to simultaneously achieve inflation, employment, and trade balance goals. Specifically, due to greater market integration the relative importance of economic policies of foreign nations may have increased in the past decade, with the result that the relationship between domestic monetary policy and short-term rate movements has become more unpredictable.

While greater integration of the short-term financial markets does have important economic consequences, the increased integration of capital markets, including the international equity markets, has serious implications for the efficient international allocation of capital, the levels of capital market volatility, the appropriate degree of multinational regulatory coordination, and the efficacy of economic policies in achieving long-term investment and output goals. In considering these issues, the relationships between international capital market yields is of considerable importance. The purpose of this study is to extend the research on the international transmission of interest rates through an examination of the interrelationships between