

# Estimation of Common Factor in International by Dr. Suluck Pattarathammas

## **Abstract**

This dissertation consists of three essays, which investigate information transmissions among national stock markets. Kalman filtering is applied to estimate common factors in international stock returns and volatilities.

The first essay is titled “Common Factor in International Stock Returns”. Returns in national stock markets exhibit strong interdependence. Among these markets, the U.S. market has ability to explain and predict the movement of other markets. In this study, we examine the mechanism that constitutes this ability. We propose two competing hypotheses. Under the first hypothesis, the U.S. return is a common or world factor that drives returns in all national markets. Hence, all the national market returns must be explained by the U.S. return by the construction. The predictive ability results from the delayed reaction of markets to the U.S. returns on earlier dates. Under the second competing hypothesis, the U.S. return and other national market returns are driven by a common factor and by the idiosyncratic factors of their own. The explanatory ability is from the common factor that moves all the returns together; the predictive ability is from the delayed reaction of markets to the common factor, which has already been responded by the U.S. market on earlier dates. We use daily return data on the U.S., Canadian, U.K., German and Japanese markets from January 5, 1987 to December 22, 2000 (2,646 observations) for the tests. Our results support the second hypothesis. The U.S. market is not the world factor.

The second essay is titled “Common Factor in International Stock Volatilities”. Volatility spillovers across national stock markets have been found in