

# International stock markets of the G5-countries: econometrical modelling

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## Abstract

Liberalisation of the capital movements during the past 30 years is assumed to lead to a higher integration degree of international capital markets. The international stock markets, especially the emerging markets in East Europe, Russia and China, could offer higher potential benefits for investors. At the same time these investments could be associated with a high risk related to the economic and political situation in the (particular) country. However, the existence of the long-run structural equilibrium linkages among international stock markets in general improves the risk position of the investors, at least theoretically. In this respect the international integration of the capital markets and associated with it diversification strategies are of special interest to investors.

Having found out the long-run linkages between major stock markets, the first part of the work is an investigation of short-run comovements of the stock markets after different shocks. Then the following questions deserve to pay attention. To what extent a market deviates from the existing long-run equilibrium after unexpected news in the own or another market? How long does the system require to return to the stable long-run equilibrium? Which market or markets have crucial impact on the rest of the system?

An additional challenge of the work has become the choice of the relevant empiric methods. Cointegration proved to be a powerful technique for investigating interdependencies and common trends among instationary time series, providing a sound methodology for modelling both short- and long-run dynamics in a multivariate system. Cointegration means that despite being individually nonstationary, a linear combination of two or more time series

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can be stationary. In the short-run, time series across stock markets may deviate from each other, but market forces, investors' tastes and preferences will bring them back to their long-run equilibrium. At the same time the cointegration is associated with a error-correction-model (ECM) developed by Engle and Granger (1987). ECM combines the short-run behaviour of variables with their long-run equilibrium relations, which is based on the economic theory.

The statistical data used in this study consists of the real monthly stock index prices of five major stock markets, the so called G5-countries. The sample period is from June 1964 to October 2004. The analyzed data converted both in euro and in local currency terms. The perspective of German investors who are not insured against the exchange rate risk is taken into account by currency conversion. The analysis of the co-movement of major stock markets begins with the examination of the classical assumption of the empiric tests, and then proceeds with the correlation analysis for the share indexes and their returns. Accordingly, the share indexes were tested for stationarity, integration order and cointegration. The ECM for different models variations was estimated and a structural analysis was carried out with the Granger-causality-tests, the Impulse-Answer-Functions and the variance decomposition.

**Keywords:**

Stock Prices, International Diversification, Long-Run Equilibrium, Cointegration, Error-Correction-Model.