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Can macroeconomic variables explain long-term stock market movements? A comparison of the US and Japan

Andreas Humpe & Peter Macmillan

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Abstract

Within the framework of a standard discounted value model, we examine whether a number of macroeconomic variables influence stock prices in the US and Japan. A cointegration analysis is applied in order to model the long-term relationship between industrial production, the consumer price index, money supply, long-term interest rates and stock prices in the US and Japan. For the US, we find the data are consistent with a single cointegrating vector, where stock prices are positively related to industrial production and negatively related to both the consumer price index and the long-term interest rate. We also find an insignificant (although positive) relationship between the US stock prices and the money supply. However, for the Japanese data, we find two cointegrating vectors. We find for one vector that stock prices are influenced positively by industrial production and negatively by the money supply. For the second

cointegrating vector, we find industrial production to be negatively influenced by the consumer price index and a long-term interest rate. These contrasting results may be due to the slump in the Japanese economy during the 1990s and consequent liquidity trap.

Notes

[1] Chen et al. (1986) use a PVM framework to investigate the impact of systematic risk factors upon stock returns, through factor influences on future cash flows or the discount rate of those cash flows. They found that the yield spread between long- and short-term government bonds, expected inflation, unexpected inflation, industrial production growth and the yield spread between corporate high- and low-grade bonds significantly explain stock market returns.

[2] In Japan, the Nikkei fell almost 75% over the 13 years from 1990.

[3] The derivation of the PVM could easily be extended to allow a time-varying expected discount rate.

[4] See inter alia Fama (1981), Chen et al. (1986), Schwert (1990), Mukherjee and Naka (1995), Cheung and Ng (1998) and Binswanger (2004).

[5] For example, see Chen et al. (1986) and Mukherjee and Naka (1995).

[6] Full unit-root test results are available on request. Note we use the Schwarz Information Criteria (SIC) in order to determine lag length in our tests.

[7] These restrictions identify the two cointegrating vectors and are found to be binding using a Lagrange Multiplier test. The relevant Chi-square (2) test statistic is 0.079, which is insignificantly different from zero.

[8] They also find two cointegrating vectors, although only reported coefficients for the vector with the highest eigenvalue.

[9] For example, Mukerjee and Naka find a negative coefficient on the long-term interest rate and a positive coefficient on the money supply for their cointegrating vector.

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