

Value matters: Predictability of Stock Index Returns

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Abstract

The aim of this paper is twofold: to provide a theoretical framework and to give further empirical support to Shiller's test of the appropriateness of prices in the stock market based on the Cyclically Adjusted Price Earnings (CAPE) ratio. We devote the first part of the paper to the empirical analysis and we show that the CAPE is a powerful predictor of future long run performances of the market not only for the U.S. but also for countries such as Belgium, France, Germany, Japan, the Netherlands, Norway, Sweden and Switzerland. We show four relevant empirical facts: i) the striking ability of the logarithmic averaged earning over price ratio to predict returns of the index, with an R squared which increases with the time horizon, ii) how this evidence increases switching from returns to gross returns, iii) moving over different time horizons, the regression coefficients are constant in a statistically robust way, and iv) the poorness of the prediction when the precursor is adjusted with long term interest rate. In the second part we provide a theoretical justification of the empirical observations. Indeed we propose a simple model of the price dynamics in which the return growth depends on three components: a) a momentum component, naturally justified in terms of agents' belief that expected returns are higher in

bullish markets than in bearish ones; b) a fundamental component proportional to the log earnings over price ratio at time zero. The initial value of the ratio determines the reference growth level, from which the actual stock price may deviate as an effect of random external disturbances, and c) a driving component ensuring the diffusive behaviour of stock prices. Under these assumptions, we are able to prove that, if we consider a sufficiently large number of periods, the expected rate of return and the expected gross return are linear in the initial time value of the log earnings over price ratio, and their variance goes to zero with rate of convergence equal to minus one. Ultimately this means that, in our model, the stock prices dynamics may generate bubbles and crashes in the short and medium run, whereas for future long-term returns the valuation ratio remains a good predictor.

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