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Predictability of short-horizon returns in international equity markets

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Abstract

This paper examines the predictability of equity index returns for 18 developed countries. Based on the variance ratio test, the random walk hypothesis can be rejected at conventional significance levels for 11 countries with daily data and for 15 countries with weekly data. Monthly indices may well be characterized as a random walk for the majority of countries. The excess returns from buying past winners and selling past losers are positive and particularly striking for daily data, where they are not only statistically significant but also economically important in the absence of transaction costs. Imposing a reasonable transaction cost substantially reduces the profitability.

JEL classification: G15; G12
Keywords: International equity markets; Predictability; Variance ratio; Momentum strategies

1. Introduction

Whether security returns are predictable using their past history has been a focal point of research in the empirical finance literature. Tests for predictability have important implications for asset pricing and market efficiency. In an efficient capital market, equity prices reflect currently available information and one should not be able to predict future returns by using historical returns data. Therefore, if returns are predictable, it could imply market inefficiency unless the predictable variation can be reconciled with an equilibrium asset-pricing model. Over the past 2 decades, the extent of international investments has been steadily increasing. Investors (both institutional and individual) now allocate a substantially

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higher proportion of their financial wealth in international assets than 2 decades ago. However, our knowledge of predictability of security prices has primarily been drawn from studies on the U.S. market. As capital markets become more globally integrated, understanding the behavior of international equity prices is of increasing importance. In this paper, we employ the variance ratio test to investigate whether equity returns exhibit predictable variation for 18 developed countries over the period 1979–1998 and examine the implications of the results for international momentum strategies.

The theoretical underpinnings of tests for predictability are based on the idea that security prices follow a random walk, whereby price changes are unpredictable in an efficient market. A number of researchers study the predictability of U.S. equity returns at weekly or monthly horizons. These include, for example, Conrad and Kaul (1988), Lo and MacKinlay (1988, 1990), Jegadeesh and Titman (1993), and Chan et al. (1996), among others. Other researchers, such as DeBondt and Thaler (1985, 1987) and Kim et al. (1991), investigate the predictability of long-horizon (often including multiyear) U.S. equity returns.

Several researchers also examine the predictability of international equity returns. For example, Poterba and Summers (1988) study equity returns for the U.S. as well as 17 other countries and find positive serial correlation at medium horizons and negative serial correlation over longer horizons, although they cannot statistically reject the random walk hypothesis. Richards (1997) and Balvers et al. (2000) find evidence of mean reversion and return predictability across national equity markets. Chan et al. (2000), Griffin et al. (2003), Bhojraj and Swaminathan (2001), and Rouwenhorst (1998) document the profitability of international momentum investment strategies.

The above studies are mainly based on medium- to long-horizon returns. This paper focuses on the predictability of short-horizon returns (daily and weekly). To provide a comparison with previous studies using monthly data as well as with our own results, we also conduct the same tests using monthly returns. Apart from applying known techniques to new data, our paper has several interesting findings, which contributes to the literature on the behavior of international asset prices.

Firstly, we examine the predictability of short-horizon returns for 18 developed countries using the variance ratio test, which has not been pursued in previous research. This is a useful complement to the findings of Lo and MacKinlay (1988) for the U.S. We find that for daily equity returns, the null hypothesis of a random walk can be rejected at conventional significance levels in favor of positive serial correlations for 10 countries and in favor of negative serial correlation for one country. The null cannot be rejected for the other seven countries, including the United States. These results provide an interesting comparison to French and Roll (1986), who report that the average daily autocorrelations for all NYSE and AMEX stocks are positive for the first order and negative from the second to the 13th order. French and Roll (1986) employ data from 1963 to 1982, while our sample covers the period 1980 to 1998, almost nonoverlapped with their sample. Our results suggest that the U.S. market may be more efficient in the most recent 2 decades than 2 decades ago. Our findings of positive daily serial correlation for the other 10 countries are in contrast with French and Roll's (1986) results for the U.S.

Secondly, through simulations, we investigate the robustness of the variance ratio test. We find that inference on the random walk hypothesis is sensitive to currency denomination, return horizon, and distributional assumptions.