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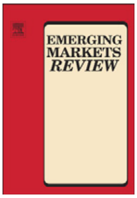

A risk-based explanation of return patterns—Evidence from the Polish stock market ☆

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ABSTRACT

Using both sorting and cross-sectional tests, this paper investigates the patterns in the average stock returns related to stock fundamentals, past return performance, idiosyncratic risk, and turnover in the Polish equity market for the period 2002–2011. To examine the persistence of the patterns, we apply the Monotonic Relation test of Patton and Timmermann (2010). The results favour the book-to-market ratio as a determinant of the cross-sectional variation of stock returns while momentum remains insignificant. The Fama and French (1993) three-factor model, which uses local size and value risk premiums adjusted for the skewed size distribution of the sample, captures most of the recognised anomalies. Further, we show that Polish domestic SMB and HML factors are not correlated with their U.S. and German counterparts.

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1. Introduction

For over twenty years, detecting the determinants of disperse cross-sectional performance of stocks has been one of the most rapidly expanding areas in the asset pricing literature. The popularity of this branch of modern finance is at least twofold. First, numerous patterns in average stock returns, i.e., the dependencies between stock characteristics and stock returns, have been documented since the early eighties, and the research in this field still continues.[1] Second, a failure of the empirical tests on the Capital Asset Pricing Model (CAPM) questioned the importance of mean-variance based beta factor as a unique risk measure and intensified the debate about the multidimensional character of risk.[2] The resulting incorporation of additional arbitrage premium-based risk factors into asset pricing models proposed by, e.g., Fama and French (1993) or Carhart (1997), considerably weakened the dominance of the CAPM as a pricing model. Recently, numerous studies use the three-factor model as a return-generating process for the U.S. equity market.[3]

The empirical success of the multifactor models lacks, however, a theoretical foundation and therefore remains a controversial and intensively discussed issue. The risk-based explanation for the existence of predictable patterns in average returns relies on disperse sensitivity of stocks (portfolios) to underlying risk factors. It also concentrates on linking of risk factors mimicking premiums with fundamental risk sources. At the same time, many scholars argue that market inefficiency and behavioural biases are responsible for the existence of return patterns. Yet another reason might be market microstructure frictions or data snooping. To exclude the latter argument and deliver further robustness tests, many out-of-sample studies that use non-U.S. data were published. Firstly, researchers concentrated primarily on advanced markets and delivered evidence for the common risk factors in, e.g., Japan, United Kingdom (Chan et al., 1998) or for a sample of few European markets (Heston et al., 1995; Rouwenhorst, 1998). With time, the research on emerging markets (EMs) developed, as they were considered to be an attractive independent sample. In general, as shown in Table 1, these studies deliver results that are consistent with the U.S. evidence documenting excess returns that are related to attributes such as size, value, liquidity or momentum.

EMs attract international investors for two reasons: the potential to generate high average returns and the opportunity to diversify portfolios.[4] The theoretically desirable reduction of non-systematic risk comes not only from the expansion of the efficient frontier, i.e., having access to a wider spectrum of investment opportunities, but also from the segmentation of EMs from the developed capital markets. Harvey (1995) and Bekaert and Harvey (1997) show that, even after emerging markets opened for foreign investors and capital, they remained dominated by domestic market participants who select their portfolios based on local economic and market movements rather than global trends. Bekaert and Harvey (2002) conclude that, despite increasing integration between EMs and developed markets in the post-liberalisation period, the EMs

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[1] Banz (1981) finds that investors require a higher return for holding small firms (measured by capitalisation) rather than large ones. Stattman (1980) and Rosenberg et al. (1985) show that firms with high levels of book-to-market ratio are mostly in poor financial condition, which decreases stock price; Basu (1977, 1983) shows that stocks with low price–earnings ratios earn more than predicted by the market model and vice versa; DeBondt and Thaler (1985) find that long-term past returns (three- to five-year horizon) tend to reverse; Jegadeesh and Titman (1993, 2001) investigate portfolios built on short-term past returns of common stocks and show that stocks with higher average past returns (up to one year) tend to generate higher returns over a three- to twelve-month holding period. Amihud and Mendelson (1986), Amihud (2002) and others find a positive relationship between a stock's illiquidity and the average returns. Ang et al. (2006) and Ang et al. (2009) argue that stocks with low idiosyncratic volatility generate higher returns. For further examples, see, e.g., Fama and French (2008).

[2] Fama and French (1992) show that the positive relationship between the market beta and the average return disappears in the post-1970s period. The CAPM is also unable to explain the returns of portfolios that are related to the predictable cross-sectional variation in stock returns. The unexplained patterns are therefore called the CAPM anomalies.

[3] See, e.g., the literature discussing the role of idiosyncratic volatility in asset pricing, where individual risk of a given stock is calculated relative to a three-factor model, e.g., Ang et al. (2006). There is also much research investigating the momentum effect on equity markets worldwide. The literature lacks, however, corresponding evidence about performance of the four-factor model of Carhart (1997) when explaining expected returns. For most recent results, see Fama and French (2012).

[4] The high average returns are achieved because of the risk related to political instability, forms of government, level of corporate governance and/or geographical location. These sources of uncertainty are weakly correlated with global economic performance. EMs also have superior growth prospects.

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