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Size, value, and momentum in emerging market stock returns

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ABSTRACT

In this paper, we examine value and momentum effects in 18 emerging stock markets. Using stock level data from January 1990 to December 2011, we find strong evidence for the value effect in all emerging markets and the momentum effect for all but Eastern Europe. We investigate size patterns in value and momentum. After forming portfolios sorted on size and book-to-market ratio, as well as size and lagged momentum, we use three well-known factor models to explain the returns for these portfolios based on factors constructed using local, U.S., and aggregate global developed stock markets data. Local factors perform much better, suggesting emerging market segmentation.

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1. Introduction

There is a considerable empirical research identifying value and momentum effects in the U.S. and other developed equity markets. Despite the fact that emerging stock markets constitute an increasing share of the world equity market, there are fewer empirical studies that investigate value and momentum effects in these markets. Until recently, the development of the empirical literature on cross-sections of stock returns in emerging markets has been hampered by the availability of high quality and comprehensive data. Following the pioneering studies in the 1990s by Bekaert and Harvey (1995), Harvey (1995), and Bekaert et al. (1998a,b), several papers have explored various characteristics of emerging stock markets. Studies that have focused and documented the presence of value and momentum effects in emerging equity markets include, for example, those of Fama and French (1998), Griffin et al. (2003), and Rouwenhorst (1999). These studies find that (1) value stocks with higher book equity-to-market equity (B/M) ratios have higher average returns than growth stocks

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which have low B/M ratios and (2) stocks with large cumulative returns over the past year continue to do better. However, these studies provide no details as to the size patterns in value and momentum effects.

The purpose of this paper is twofold. First, we look more closely at the size patterns in value and momentum in the equity market of 18 emerging market countries. Second, we investigate the integration of emerging markets with that of the U.S. equity market. To do so, we try to explain the local cross-sections of value and momentum stock returns using the U.S. factors as well as local factors and compare the performance of local and U.S. factors.

We can summarize our four principal finding as follows. First, we confirm the existence of value and momentum effects in emerging markets, providing fresh "out-of-sample" evidence for the results that have been documented in the literature. Second, for emerging markets we find that the value effect is fairly similar across small and large capitalization stocks (henceforth small and big stocks), a finding that is not consistent with what has been reported in developed markets. In contrast, the momentum effect we find in emerging markets is meaningfully larger for small stocks, a result consistent with the findings for developed markets. Third, in line with the findings in developed markets, our empirical evidence for emerging markets indicates that returns associated with value and momentum are negatively correlated. Lastly, in asset pricing tests explaining the returns of portfolios formed based on value and momentum measures, the economic performance of local factors is significantly better than the U.S. factors, suggesting emerging market segmentation.

Our market integration results add to the literature which focuses on aggregate market returns (see, for example, Bekaert et al., 2002, and Bekaert and Harvey, 2003). To the best of our knowledge, our paper is the first to construct for the emerging markets the B/M ratio and momentum explanatory factors as well as cross-sections of portfolios formed on these characteristics similar to studies focusing on the U.S. and developed markets (see, for example Fama and French, 1993, 2012; Griffin, 2002, and Rouwenhorst, 1998). In what follows, we briefly describe the dataset used in this study and our methodology, then we expand upon each of these four results in some detail.

We use stock level data from 18 emerging countries available from Datastream from January 1990 to December 2011 and group the countries into three emerging regions: Asia, Latin America, and Eastern Europe. In our asset pricing tests, we try to explain the returns of local size and B/M and size and momentum portfolios typical in the literature. We evaluate the performance using three well-known models. To analyze the degree of market integration between emerging equity markets and the U.S. equity market, we estimate separate regressions using local factors as well as the U.S. factors. We also use the factors calculated using the data from global developed stock markets.

The paper is structured as follows. In Section 2 we discuss both our methodology for capturing the expected returns via three widely used asset pricing models and the statistical test that we employ to test for model performance. The data and the variables used are described in Section 3. Our findings are the subject of Section 4 and Section 5 concludes our paper.

2. Methodology

2.1. Models for explaining stock returns

To explain stock returns, we use the three models which we describe in this section. The three models estimated from cross-sectional data are the capital asset pricing model (CAPM) – an equilibrium model that assumes returns depend solely on the market in general (see Lintner, 1965, and Sharpe, 1964) – the Fama–French three-factor model (Fama and French, 1993), and the Carhart four-factor model (Carhart, 1997). The corresponding regression equations are given in Eqs. (1), (2), and (3)below:

$$\text{CAPM}: \quad R_{i,t} - RF_t = a_i + b_i[RM_t - RF_t] + e_{i,t} \tag{1}$$

$$\text{Fama--French Model}: \quad R_{i,t} - RF_t = a_i + b_i[RM_t - RF_t] + s_i SMB_t + h_i HML_t + e_{i,t} \tag{2}$$

$$\text{Carhart Model}: \quad R_{i,t} - RF_t = a_i + b_i[RM_t - RF_t] + s_i SMB_t + h_i HML_t + w_i WML_t + e_{i,t}. \tag{3}$$

In the regression equations, $R_{i,t}$ is the return on portfolio i for month t; RF_t is the risk-free rate, RM_t is the market return; SMB_t is the difference between returns on diversified portfolios of small stocks and big stocks;

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