



# Robustness of size and value effects in emerging equity markets, 1985–2000

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Received 21 November 2001; received in revised form 10 December 2001;  
accepted 14 December 2001

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## Abstract

We examine the robustness of size and book-to-market effects in 35 emerging equity markets during 1985–2000. Mean returns for high book-to-market firms significantly exceed mean returns for low book-to-market firms. These findings are robust to tests that control for size effects and that remove extreme returns. Similarly, mean returns for small firms exceed mean returns for large firms. But, the firm size results lack robustness to the removal of extreme returns. Moreover, significant size effects are found in tests that define firm size relative to the local market average, but generally are not found in tests that use absolute firm size. Our findings are confirmed by cross-sectional regressions that control for systematic risk at the global and local levels. © 2002 Elsevier Science B.V. All rights reserved.

*Keywords:* Book-to-market; Market capitalization; Emerging equity markets; Robustness

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## 1. Introduction

Fama and French (1992, 1996, 1998) examine a number of securities markets and show that the common stocks of small firms generally provide higher mean returns than do the stocks of large firms and that stocks with low market price compared to book value, earnings, dividends, or cash flow generally outperform those at the

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opposite end of the value scale. These empirical observations are known as the firm size (or 'size') and book-to-market equity ('BE/ME' or 'value') effects. The work of Fama and French, and of others who have addressed size and BE/ME issues, challenges the validity of the Capital Asset Pricing Model (CAPM) because under the CAPM the only risk factor that affects the expected return of a security is the security's systematic risk, commonly measured by beta. Size and BE/ME effects are anomalies relative to the CAPM. Accordingly, the validity of size and BE/ME effects (as well as other empirical anomalies) is a controversial issue in empirical finance.<sup>1</sup>

The validity of size and BE/ME effects has been questioned by a number of scholars.<sup>2</sup> One approach has been to ask whether the effects hold generally or if they sample-specific; for example, Black (1993) and MacKinlay (1995) raise these issues. Early evidence on the size and BE/ME effects relied on Compustat-based samples. Davis (1994) provides evidence consistent with the value and size factors based on data that predates the Compustat tapes. Kim (1997) finds value and size effects remain after testing a sample that includes all non-Compustat firms.

Fama and French (1998) address the sample-specific nature of their results by studying global equity markets. They provide evidence on 13 developed countries over 1975–1995 and find statistically significant BE/ME and other value effects in 12 of them.<sup>3</sup> They also examine data on 16 emerging markets. They point out that

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<sup>1</sup> Empirical research has identified a number of factors that are associated with observed stock returns. These factors include: firm size (Banz and Rolf, 1981; Reinganum, 1982; Keim, 1983 and Fama and French, 1992); the ratio of price to earnings (Basu, 1997, 1983; Reinganum, 1981 and Cook and Rozeff, 1984); the ratio of price to book value (Rosenberg et al., 1985; Fama and French, 1992 and Hawawini and Keim, 1991, trading volume (Roll, 1981); and momentum (Brennan et al., 1998), among others. Loughran (1997) observes seasonality in the BE/ME factor and notes that small growth stocks have especially low returns in the United States.

<sup>2</sup> For example, Berk and Jonathan (1995, 1997) argue that a firm's market value measures risk and, thus, that the existence of market value effects does not invalidate the CAPM. He develops a theory arguing that the market value of the firm predicts expected returns because market value is negatively related to the unmeasured risk of the firm, and he shows that after controlling for size as measured by market value, other size proxies such as book value of assets and sales are unrelated to average returns. Black (1995) warns against using models based solely on empirical observations but which lack theoretical motivation. To provide a rationale for the value premium, Fama and French (1995) show that firms with high BE/ME ratios often are distressed firms, characterised by depressed earnings and highly uncertain future earnings. Chen and Zheng (1998) find that value stocks are characterized by high financial risk, high earnings uncertainty and high distress (proxied by frequency of dividend cuts). In contrast, Daniel and Titman (1997) contend that the risk model cannot be distinguished from a behavioral overreaction model (see De Bondt and Thaler, 1985, 1987) since both models are consistent with relative distress compensation factors. Davis et al. (2000) address this dilemma by showing that the size and BE/ME patterns in average returns are better explained by rational compensation for risk than by an overreaction hypothesis. Taking a different approach, Chan et al. (1998) examine the ability of different factors to explain correlations across stocks returns. The authors find that firm size and BE/ME are two of the more important sources of covariation among stock returns for the US, UK and Japanese equity markets. These findings support the argument that size and BE/ME proxy for priced risk factors.

<sup>3</sup> Similarly, Arshanapalli et al. (1998) examine 18 global stock markets and find superior performance associated with size and BE/ME.

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