



The cross-section of stock returns in frontier emerging markets ^{☆,☆☆}

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ARTICLE INFO

Article history:

Received 4 November 2010

Received in revised form 21 July 2012

Accepted 31 August 2012

Available online 8 September 2012

JEL classification:

F21

F30

G11

G15

Keywords:

Alpha

Emerging markets

Frontier markets

Momentum effect

Size effect

Value effect

ABSTRACT

We are the first to investigate the cross-section of stock returns in the new emerging equity markets, the so-called frontier emerging markets. Our unique survivorship-bias free data set consists of more than 1400 stocks over the period 1997 to 2008 and covers 24 of the most liquid frontier emerging markets. The major benefit of using individual stock characteristics is that it allows us to investigate whether return factors that have been documented in developed countries also exist in these markets. We document the presence of economically and statistically significant value and momentum effects, and a local size effect. Our results indicate that the value and momentum effects still exist when incorporating conservative assumptions of transaction costs. Additionally, we show that value, momentum, and local size returns in frontier markets cannot be explained by global risk factors.

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1. Introduction

Traditional emerging markets have developed rapidly over the past decades, both economically and financially. A group of countries less developed than emerging markets with established stock exchanges has appeared on the radar screen of global investors. These new emerging markets as a group are also known as frontier emerging markets, or in short, frontier markets. These countries vary greatly in their economic development. The GDP per capita in 2008 of Bangladesh, for example is just \$497

[☆] This research paper is available online at: <http://ssrn.com/abstract=1600023> and www.robeco.com/quant.

^{☆☆} We would like to thank Guido Baltussen, Jules van Binsbergen, David Blitz, Charles Calomiris, Ana Carmen Díaz-Mendoza, Leo de Haan, Jaap van der Hart, Campbell Harvey, Emre Konukoglu, Hao Jiang, Simon Lansdorp, Bill Miles, Lord Mensah, Marcel Moellenbeck, Pim van Vliet, seminar participants of Erasmus University Rotterdam (The Netherlands), Groningen University (The Netherlands), South Western University of Finance and Economics (Chengdu, China) and Maastricht University (The Netherlands), and conference participants of the 18th Spanish Finance Forum (Alicante, Spain), 3th Emerging Markets Group Conference (London, United Kingdom), 14th Conference of the Swiss Society for Financial Markets Research (Zurich, Switzerland), the 2011 Eastern Finance Association Annual Meeting (Savannah, United States), and the 2nd World Finance Forum (Rhodes, Greece) for valuable comments and Jornt Beetstra, Weili Zhou, and Liz Bond for excellent research and editorial assistance. The views expressed in this paper are not necessarily shared by Robeco or any of its subsidiaries.

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while that of Slovenia is \$27,019.¹ The market capitalization of stocks in frontier emerging markets in October 2008 is \$113.6 billion.² Although still smaller than traditional emerging and developed stock markets, these markets are becoming more important, as evidenced for example by recent listings of new mutual funds and exchange-traded funds on frontier markets.³ In addition, for academics, frontier emerging markets are an untapped data source that provides excellent out-of-sample research opportunities.

Investors who are interested in improving the risk-return trade-off of their portfolios could expand their investment opportunity set by including frontier equity markets. Goetzmann et al. (2005) indicate that investors should be willing to keep expanding their investment horizon to new equity markets to get a better diversified portfolio. Speidell and Krohne (2007) also mention diversification benefits as a key motivation for investors to include frontier markets in their investment portfolios. Berger et al. (2011) investigate whether frontier equity markets are integrated with developed equity markets and conclude that this is not the case. These studies have in common that they consider frontier markets as a group or consider them at the country level. However, little is known about the risk, return, and diversification characteristics of return factors based on individual stock data in frontier markets.⁴ Our unique survivorship-bias free data set on individual stock characteristics in frontier markets allows us to construct portfolios based on other characteristics than the country of stock exchange listing. Hence, we are able to investigate the existence of value, momentum, size, and low-risk effects in these markets over the period 1997 to 2008 and gauge how much stronger these effects are when employed at the stock rather than the country level. Moreover, our data enable us to investigate whether investment strategies based on these cross-sectional stock attributes are correlated between developed, emerging, and frontier markets. Our paper aims to fill these gaps in the literature.

This paper contributes to the literature on at least three dimensions. First, our results provide out-of-sample evidence for the existence of value, momentum, and local size effects. Sorting stocks in frontier markets on value characteristics, such as book-to-price ratios, momentum characteristics, such as past 6-month returns, or market capitalization per country yield statistically significant positive excess returns for the top quintile portfolios versus the index of 5% to 15% per annum. Our study extends the results by Fama and French (1998) and Rouwenhorst (1999) for international evidence on the value effect. Our results also reinforce the international evidence of the momentum effect reported by Griffin et al. (2003) and Rouwenhorst (1998, 1999). Our results are further empirical evidence that value and momentum are present everywhere, as suggested by Asness et al. (2009). The presence of a local size effect confirms evidence in Europe by Heston et al. (1999) and emerging markets by Rouwenhorst (1999). Our results are important, as frontier markets are least integrated with developed and emerging equity markets, yet, the cross-section of stock returns seems to produce excess returns on exactly the same factors.

Second, we are the first to investigate the profitability of value and momentum effects in frontier markets in detail when faced with real life market imperfections. We incorporate transaction costs estimates of 2.5% per single-trip transaction from Marshall et al. (2011) covering bid-ask spreads, market impact and commissions. We deem this to be a conservative estimate as we consider the largest half of our sample and apply a one-month lag between ranking and portfolio formation to account for possible opportunity costs. Our empirical findings indicate that transaction costs have a large impact on the profitability of value and momentum strategies. However, we still observe economically and statistically significant returns of approximately 6.6% to 7.7% per annum after incorporating transactions costs for value strategies and net returns of 4.6% to 7.2% for momentum strategies. These findings seem to be inconsistent with market efficiency.

Third, we analyze whether exposure to global risk factors can explain the existence of the factor anomalies and whether the factors are prone to extreme downside risk. We document that the value, momentum, and local size effects in frontier markets cannot be explained by value, momentum, and local size effects in developed and emerging markets. This indicates that the excess returns are not caused by exposures to global risk factors and implies that our findings are independent of the existence of the effects in other markets. In addition we show that the downside risk of value, momentum and local size portfolios in frontier markets is lower than can be expected based on the assumptions of normality. Hence, we deem it unlikely that downside risk can explain the empirical results we document.

Our paper is organized as follows. We start in Section 2 by describing the data and methodology used in our analyses. We investigate the value, momentum, size and low-risk effect in more detail in Section 3. In Section 4 we incorporate transactions costs in order to determine whether the cross-sectional return patterns still exist when faced with real life market imperfections. In Section 5 we investigate whether value, momentum, and local size effects in frontier markets can be explained by global risk factors. Finally, Section 6 concludes.

¹ Data source: World Bank Development Indicators, available online at <http://data.worldbank.org>. For comparison the GDP per capita of some other countries: Brazil \$8,205, Russia \$11,832, India \$1,019, China \$3,267, Afghanistan \$366, Portugal \$22,923, and the United States \$46,350.

² This is the market capitalisation of the constituents of the Standard & Poor's Frontier Broad Market Index. Actual market capitalisation is higher because of exchange listed stocks that are not in this index and adjustments made to exclude the market capitalization part of the company that is inaccessible to (foreign) investors.

³ For example, the Harding Loevner Frontier Emerging Markets Institutional (ticker: HLFMX) fund was launched on 27 May 2008 (total assets 5/31/2012: \$68 mln), the Morgan Stanley Frontier Emerging Markets (ticker: FFD) fund was launched on 22 August 2008 (total assets 3/31/2012: \$78 mln), the Templeton Frontier Markets (ticker: TFMAX) fund was launched on 14 October 2008 (total assets 4/30/2011: \$383 mln), the Forward Frontier Markets (ticker: FRNMX) fund was launched on 31 December 2008 (total assets 5/31/2012: \$70 mln) and the Guggenheim Frontier Markets (ticker: FRN) exchange-traded fund was launched on 12 June 2008 (total assets 4/30/2012: \$137mln). Sources: Morningstar and Yahoo Finance.

⁴ A notable exception is Girard and Sinha (2008), who use individual stock data of frontier markets to assess the importance of political risk in frontier market investments.

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