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Recent trends in relative performance of global equity markets

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ABSTRACT

This paper analyses the performances of 22 developed and 18 emerging markets over the period 2003–2010. The performance is assessed each year in a multi-dimensional risk-adjusted return framework using data envelopment analysis, and the trend in the performance is estimated in a fixed effects panel data model. The results reveal positive trends in only a small percentage of developed (9%) and emerging (11%) markets. A high percentage (45%) of developed markets show a gradual decline in performance, compared to emerging markets (11%). However, the developed markets outperformed the emerging markets from 2004 to 2008. Even though the emerging markets subsequently outperformed the developed markets in 2009 and 2010, their performance weakened from 2009 to 2010, whereas the performance of the developed markets improved. There is evidence of a positive association between equity market performance and market capitalisation and turnover. It appears that equity market performance is not related to inflation or gross domestic product per capita. According to the overall ranking, Malaysia is the best performer, followed by the USA, the Philippines, Israel and Switzerland. A discussion of the robustness of the results to three alternative performance measures (the Sharpe ratio, Treynor ratio and average excess returns per unit of downside deviation) is provided.

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1. Introduction

Have developed markets performed better than emerging markets on average, and has one given equity market performed better than the other global equity markets in the cross-section over a certain time period? These questions are critical for both global investors and those with long investment horizons. Each major index typically focuses on one market in a particular country, and therefore, the performance of a given equity market may be tracked through the movement in the price of the relevant major index. The common practice is to base any commentary on the equity market performance on the year-to-date return or yield.

Another paradigm of performance measurement is the risk-adjusted return. Such measures have become increasingly important because the trade-off between risks and returns is the main focus of investment analysts. The risk-adjusted return is typically assessed through conventional ratios such as the Sharpe ratio (Sharpe, 1964) and the Treynor ratio (Treynor, 1965). One limitation of such conventional ratios is that they compute the performance using a single measure of returns (single output variable) and a single measure of risks (single input variable), and therefore may be thought of as measuring the performance in one dimension. We assess the risk-adjusted performance using data envelopment analysis (DEA). In DEA, the relative performance can be assessed based on several return factors (multiple output variables) and several risk factors (multiple input variables) together, and therefore the risk-adjusted performance may be considered as being measured in a multi-dimensional framework. The conventional ratios consider only one risk factor and one return factor at a time, although several risk characteristics of the investment may be important for the investor (Meric and Meric, 2001), and therefore the conventional ratios could lead to misleading conclusions (Thanassoulis, 2001). The strength of DEA stems from the fact that it requires minimal assumptions about the relationship between the risk and return factors.[1] Further, DEA assesses the 'best' performance rather than estimating the average.[2]

Relative performance assessment is not new to the finance literature. A large number of studies have used DEA to assess the relative performances of institutions in the financial services sector; see Berger and Humphrey (1997) for a review of 130 DEA applications in finance. Financial applications of DEA in recent times include an assessment of the relative performances of banks (McEachern and Paradiet, 2007), mutual funds (Basso, 2003), insurance companies (Eling and Luhnen, 2010) and equity markets (Galagedera, 2010). A collection of DEA applications in a wide range of areas is listed by Charnes et al. (1994).

DEA models assess performance in the cross-section. When panel data are available, the Malmquist productivity change index can be used to calculate the change in productivity (performance) across two periods. Färe et al. (1992) compute a Malmquist index of productivity change under the DEA framework.[3] We focus on the trend in performance over a number of periods. This is important, because it is plausible that equity market returns computed over a short period may reflect investor sentiment on the strength of the economy or expectations about a given market's future potential, rather that the market's actual performance. We obtain an overview of the market's ability to sustain its performance in the long run by evaluating the performance over a series of short periods and estimating the trend in performance over the full period. Such information may be useful for framing trading strategies, especially for traders with long investment horizons.

The aim of this study is to provide an overview of the impact of pro-market reform, economic development and regional and global financial crises on the long- to medium-term performance of equity markets. In a sense, this study is a stocktake of global equity markets from an operational perspective.

[1] In the parametric methods, the analyst has to specify the shape of the frontier a priori, and is therefore prone to misspecification. DEA establish a frontier of best performance based on known levels of attainment, and assess performance relative to the established frontier.

[2] Statistical regression based procedures estimate the average performance.

[3] For the reasons given in Section 3.1, we assess equity market performance using a variable returns-to-scale (VRS) DEA model. Grifell-Tatjé and Lovell (1995) argue that estimates of productivity change based on the Malmquist productivity index may be biased under VRS. Hence, we do not use the Malmquist productivity index, and therefore do not measure productivity change.

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