Emerging Markets Review 26 (2016) 153–173

Contents lists available at ScienceDirect

Emerging Markets Review

journal homepage: www.elsevier.com/locate/emr

Stock return predictability and determinants of predictability and profits

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ARTICLE INFO

Article history:
Received 31 August 2015
Received in revised form 31 October 2015
Accepted 20 December 2015
Available online 28 December 2015

Keywords:
Stock returns
Predictability
Profits
Sectors
Mean-variance
India

ABSTRACT

We examine stock return predictability for India and find strong evidence of sectoral return predictability over market return predictability. We show that mean-variance investors make statistically significant and economically meaningful profits by tracking financial ratios. For the first time in this literature, we examine the determinants of time-varying predictability and mean-variance profits. We show that both expected and unexpected shocks emanating from most financial ratios explain sectoral return predictability and profits. These are fresh contributions to the understanding of asset pricing.

1. Introduction

Stock return predictability has been one of the most researched topics in empirical asset pricing. There is voluminous literature on the use of financial ratios as predictors of stock returns (see, inter alia, Fama and French, 1988; Lamont, 1998; Welch and Goyal, 2008; Rapach et al., 2010; Gupta et al., 2014). The empirical findings on predictability have not met with any consensus, thereby triggering a methodological response. Studies began by addressing fundamental econometric issues which were prevalent in the earlier literature. These issues mainly relate to the predictor variable, that is, whether or not the predictor variable is persistent and endogenous (see, inter alia, Campbell and Yogo, 2006; Lanne, 2002; Lewellen, 2004; and Stambaugh, 1999) and whether the predictive regression model is heteroskedastic (see, Westerlund and Narayan, 2012; Westerlund and Narayan, 2015).

In this paper we contribute to the stock return predictability literature by investigating whether financial ratios predict sectoral stock returns on the Indian stock exchange. Our empirical investigation is based on four

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http://dx.doi.org/10.1016/j.ememar.2015.12.003
1566-0141

specific approaches. First, we use a time-series predictive regression model proposed by Westerlund and Narayan (2012; 2015) to examine the null hypothesis of no predictability based on a generalised least squares estimator (GLS). The main advantage of this test is that it accounts for all three salient features of the data and model, namely, predictor persistency and endogeneity, and model heteroskedasticity. Second, we extend the GLS-based predictive regression model to a time-varying model thereby extracting and observing predictability (or lack of it) over time. Third, using the time-series predictive regression estimates we treat them as a dependent variable and regress them on expected and unexpected financial ratio shocks. Our goal here is to examine what determines predictability over time. Fourth, we expand on the economic significance aspect of our paper by estimating, using forecasted returns, profits for a mean-variance investor who is faced with a mean-variance utility function. This analysis results in a time-series of profits per sector. We then examine the determinants of this sectoral profitability by regressing profits on expected and unexpected financial ratio shocks. To the best of our knowledge, ours is the first paper to undertake this type of analysis.

These approaches allow us to conclude with the following key findings. First, while evidence of market return predictability is weak, sectoral return predictability is strong. Second, dividend–payout ratio and dividend yield turn out to be the most popular predictors, predicting returns for all the 12 sectors, while earnings–price ratio turns out to be the second most popular predictor—it predicts returns for five sectors. The book-to-market ratio, by comparison, appears to be the least popular predictor, predicting returns for only two sectors. Third, the predictability of sectoral stock returns is supported by evidence that all financial ratio-based forecasting models offer investors statistically significant profits. However, profits vary by sector and some of the sectoral profits are in excess of the market profits. Fourth, we find that while expected financial ratio risks explain predictability and profitability in almost all sectors, unexpected financial ratio risks only explain predictability and profitability in some of the 12 sectors. From this, we conclude that one source of sectoral heterogeneity with respect to predictability and profitability is the unexpected financial ratio risk.

Our paper connects with and contributes to multiple strands of the literature. First, our study relates to the relatively small group of studies that examines stock return predictability for developing countries (see, Dicle et al., 2010; Harvey, 1995; Hjalmarsson, 2010; Gupta and Modise, 2012; Narayan and Bannigidadmath, 2015; Narayan et al., 2015b; Westerlund et al., 2015). The differences between the present study and that of Narayan and Bannigidadmath (2015) are multiple. First, we study time-varying predictability. Hence, with our model and results we have a dynamic predictive regression model while Narayan and Bannigidadmath (2015) have a static model. In other words, from our study one can observe predictability over time, allowing one to infer phases over which predictability exists and vice versa. By comparison, from Narayan and Bannigidadmath (2015) study one only learns whether predictability exists or not on average. The second main difference is that Narayan and Bannigidadmath (2015) do not explain the determinants of predictability. We propose time-series models of the determinants of predictability. We further extend the analysis to study also the determinants of mean-variance investor profits. We are able to propose a time-series predictability and profitability determinants model because we use daily data which gives us sufficient sample sizes to conduct empirical tests.

We believe that a daily data model is a better predictor of returns than a monthly data model for two reasons. First, recent studies question hypotheses test based on the use of a single data frequency; see, for instance, Narayan and Sharma (2015a) and Narayan et al. (2015a). From this literature it is clear that hypotheses test can be data frequency dependent. Hence, the use of at least the commonly used data frequencies should be considered in order to ascertain the robustness of the outcomes regarding a particular hypothesis test. Narayan and Bannigidadmath (2015) study is based on monthly data only. Therefore, the question that arises, motivated by the data-frequency debate alluded to earlier, is whether their results on predictability will hold when subjected to a daily data set, which contains richer information than monthly data.

Second, our goal in this paper is to propose a time-varying predictive regression model. Given that time-series data for India is available only from 1990, a time-varying predictive regression model based on monthly data will not be parsimonious, neither from a statistical point of view nor from an economic significance point of view. Since the theme of the paper revolves around a new statistical approach (time-varying predictive regression model) and economic implications of such time-varying predictability (time-varying profits and investor utility), we need a sample size that is not only rich (like daily data are) but one which gives us a sufficient number of observations (as daily data do) to conduct the statistical hypothesis test that we propose. Using daily data offer us a solution without costs.