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The predictive power of the yield spread in timing the stock market

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ABSTRACT

This study examines the relationship between yield spread and stock market returns. It also explores a dynamic trading strategy of timing the Indian stock market using the yield spread as an indicator variable. The study concludes with the important result that the yield spread is successful in identifying points of entry and exit for the Indian stock market, thereby delivering superior returns compared to a conventional buy and hold strategy.

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1. Introduction

Designing an optimal investment strategy is one of the major concerns in financial management. While the conventional wisdom often tends to support a “buy and hold strategy”, where the funds are invested in certain assets for a given time horizon, the dynamic strategy has emerged as a superior alternative in providing better returns. The dynamic strategy would typically involve changing the weight of the optimal portfolio through time. The first argument follows from the view that optimal portfolio choice involves a mean–variance optimization over a set of expected asset returns, where variances and covariances are often captured through a time invariant sample averages based on data. Therefore the strategy only involves a rebalancing of the portfolio in each period to achieve fixed weights. Most important implication of this strategy is that the portfolio choice remains unaffected by economic conditions. In contrast, the alternative, as proposed in Hansen and Richard (1987), would be to add dynamic strategies to the menu of assets, and rebalance the portfolio based on available information in each period. Though the idea of incorporating dynamic strategies into portfolio choice originates in Hansen and Richard (1987), it is further developed by Bansal et al. (1993), Bansal and Harvey (1996), Ferson and Siegel (2001), Cochrane (2001), and Brandt and Santa-Clara (2004). The basic argument hinges on the possibility that asset returns can be

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predictable under certain economic conditions which creates an opportunity to construct dynamic trading strategies that might offer superior risk and expected return trade-offs relative to “buy and hold” strategies. The aim of the paper is to evaluate the conventional strategy with that of a dynamic trading strategy based on variables that predict returns and compare the performances of these two competing strategies. More precisely, the paper attempts to develop a dynamic strategy based on yield spread as a determinant of stock returns and contrast the performance with the traditional buy and hold strategy.

Considerable research has taken place on examining the relationship between yield spread or the term structure of interest rates and future economic activity¹. [Stock and Watson \(1989\)](#) found that yield spreads were important to be included in their newly constructed index of leading economic indicators. Since then various authors have investigated the link between yield spreads and future economic activity, such as, [Bernanke \(1990\)](#), [Friedman and Kuttner \(1993\)](#), [Estrella and Hardouvelis \(1991\)](#), [Estrella and Mishkin \(1997\)](#). On the other hand, there is a large body of literature that examines the impact of economic cycles on share prices. According to [Campbell \(1987\)](#), the price of a share is the discounted value of expected cash flows. The strength of the economy determines the magnitude of these cash flows. The price of equity thus reflects expectations of real activity, and changes in the value of equity partially reflect revisions in these expectations. For example, [Gerlach \(2005\)](#) using data from 1988 to 2002, found that the economic volatility, can explain variation in S&P 500-stock index quarterly volatility².

However, the literature to ascertain whether the predictive power of the yield spread can be used to time the stock market is scarce and nascent. In earlier work, [Resnick and Shoemith \(2002\)](#) developed a probit technique to test whether it was possible to time the stock market using the yield spread. They conducted their analysis for the US markets and found that yield spread can be successfully used to time the US equity markets, resulting in better returns than a simple buy and hold strategy. In a second paper, [Liu and Shoemith \(2004\)](#) further extended their study to cover other developed countries with similar encouraging results.

The objective of this paper is two fold: first, to evaluate the predictive power of the yield spread in timing the Indian stock market. There has been some literature which explores the link between yield spread and economic activity in India. [Kanagasabapathy and Goyal \(2002\)](#) have established that Indian yield spread post 1996 is successful in predicting future economic activity, as reflected in the index of industrial production (IIP). Therefore the paper extends this literature by examining the relationship between yield and stock market returns. Second, the paper explores the possibility of constructing dynamic trading strategies based on the ability of yield spread to predict returns and contrast the expected return trade-offs relative to “buy and hold” strategies.

The paper has been structured into following sections: [Section 2](#) describes the data. The methodology used in the paper is described in [Section 3](#). In [Section 4](#), the results of the analysis are discussed, and we conclude in the final section.

2. Data

The paper uses the monthly data for yield spread and monthly series of a proxy index which captures returns from investing in the capital market in India, for the time period May 1996 to May 2008. For yield spread, we use the spread between the short term and long term yields to maturity (YTM) on Government of India (GOI) securities, defined as the difference between 90 days GOI YTM and 10 year GOI YTM. The monthly averages of Bombay Stock Exchange's Sensitive Index (Sensex 30) from May 1991 to March 2009 are used to

¹ Different explanations have been put forward to explain the link between economic growth and the yield spread. Firstly, the interest rate on long term bonds contains information about the future short term rates as expected by the market. Since such expectations are assumed to be systematically correct, a low long term interest rate is also an indication of lower short term rates. Short term interest rates are low in a recessionary economy, as an economy in downturn is characterized by low inflation. Also the monetary authority of a recessionary economy will hold down the interest rates as part of a counter cyclical monetary policy. Thus, a lower yield spread or a flat yield curve is a harbinger of future economic downturn. By the same logic, a high yield spread can be interpreted as an indication of higher economic activity. [Mishkin \(1991\)](#) explains the relationship between yield spread and economic activity in terms of productivity of capital. Yield spread can be interpreted as the difference between short term and long term marginal capital productivities. At the peak of a business cycle, capacity utilization is almost 100% and short run capital productivity outstrips long run capital productivity, resulting in a flat yield curve. In the longer run, since capacity utilization is expected to fall, the real economic activity falls. On the other hand, when capacity utilization is at a very low level, it is expected to increase in the future, resulting in the short term capital productivity being lower than the long run capital productivity, and hence a higher long term interest rate than short term rates, widening the yield spread.

² Defined as squared deviations of the quarterly gross domestic product (GDP) growth rate from its long run trend.

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