Abstract of Doctoral Dissertation

AN EMPIRICAL STUDY OF ASSET PRICING ANOMALIES

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1. Background of the Study

Schwert (2003) defines anomalies as empirical results which are incompatible with maintained theories of asset pricing behaviour. The presence of anomalies doubts the concept of an efficient market and provides an avenue to investors to earn extra normal returns on various characteristic sorted portfolios. Stock market anomalies that have gained attention in the literature over the past few years are size, value, prior return patterns (momentum/contrarian), liquidity, accruals, profitability and net stock issues.

Extensive literature exists confirming the presence of the above prominent stock market anomalies and the feasibility of exploiting them to earn abnormal returns for mature markets. Similar evidence for emerging markets including India is limited and more recent in origin. The relationship between various company characteristics and stock returns should be examined for emerging markets in the context of multi-factor asset pricing framework which will help in supporting investment decisions for the domestic investor and decisions regarding international portfolio diversification for the global investor.

This study is significant as it aims to fill gaps in the asset pricing and behavioral finance literature by testing unexplored anomalies (liquidity, profitability and stock repurchases), conducting an in-depth analysis of accruals and profitability anomalies, testing additional risk factor(s) to augment Fama French (FF) model for the Indian market and a comparative analysis of prominent anomalies across select emerging markets for the global investor.

2. Objectives of the Study

The study attempts to achieve the following objectives:

- To evaluate the relationship between the following company attributes viz. size, value(price to book), liquidity, accruals, profitability, stock issues, stock repurchases and stock returns and short term prior return patterns and stock returns for the Indian stock market;
- To investigate if the cross-section of average stock returns on the above mentioned

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characteristic sorted portfolios can be explained by risk models i.e. Capital Asset Pricing Model (CAPM), three factor Fama French model and augmented Fama French models.

- To understand investor's behaviour in Indian market with respect to information contained in accruals and the subsequent effect of this on relationship between accruals and stock returns.
- To investigate if the relationship between profitability and stock returns in India reflects firm or investor perspective.
- To examine the relationship between the following company attributes viz. size, value, liquidity, accruals, profitability, stock issues and stock repurchases and stock returns and short term prior return patterns and stock returns for select emerging markets from a global investor's perspective. The emerging markets studied are Brazil, India, Indonesia, China, South Korea and South Africa.
- To investigate if the cross section of average stock returns on the above mentioned characteristic sorted portfolios for sample emerging markets can be explained by risk models i.e. CAPM, Fama French model and liquidity augmented FF model.

3. Empirical Results and Observations

This study is divided into four phases. In the *first phase* prominent asset pricing anomalies viz. size, value, momentum, liquidity, accruals, profitability, stock issues and stock repurchases have been tested for the Indian stock market. Using data on 493 companies on the BSE from January 1996-December 2010, empirical results confirm the presence of asset pricing anomalies in the Indian context. A negative relation between size and returns and between price to book and returns is obtained. Strong momentum profits are observed on both 6/6 and 12/12 strategies. Relation between liquidity and returns is negative and that between repurchases and returns is positive. Positive relationship is reported between accruals and returns, stock issues and returns and a negative relation between profitability and returns. It is observed that on an unadjusted returns basis the size effect is the strongest followed by momentum. The CAPM is able to explain the cross-section of returns on stock issues and stock repurchases sorted portfolios. Returns on value, accruals and profitability sorted portfolios are captured by FF model. However size, momentum and liquidity anomaly defy Fama French model. The four factor Liquidity Augmented FF seems to be a better descriptor of asset pricing compared to one factor CAPM and three factor Fama French model in India. Size and momentum persist as asset pricing anomalies.

The *second phase* of the study is on accruals anomaly and cash flows anomaly in the Indian stock market. Accruals are positively associated with average returns. The accruals

anomaly which is not captured by one factor CAPM is fully explained by three factor FF model due to risk premiums on size factor. The returns are found to be negatively related to level of cash flows. The cash flows anomaly which is again missed by CAPM is explained by FF model.

A study of the profitability anomaly in India is conducted in *third phase* of the research. Results show a negative relationship between profitability and returns. A profitability anomaly exists within the CAPM framework. Market beta for less profitable stocks is higher than for more profitable stocks. Negative relation between beta and dividend payouts is empirically confirmed. Size and value factors of the Fama French model absorb the profitability anomaly unexplained by CAPM. Less profitable firms are found to be relatively distressed and smaller in size. Size and value factors of the Fama French model however do not bear significant relationship with payout ratios.

Lastly, a test of prominent equity market anomalies for select emerging markets has been carried out in *fourth phase* of the research for the time period January 1996:December 2011.Using the three factor Fama French model as performance benchmark, results show presence of the size anomaly in India, South Korea and Brazil; value anomaly in South Korea and South Africa; momentum anomaly in India and South Africa, mild reversals in Brazil; liquidity anomaly in India and South Africa; profitability anomaly in Brazil and South Africa; accruals anomaly in South Africa and stock repurchases anomaly in India and South Africa. The liquidity augmented FF is a better descriptor of asset pricing compared to one factor CAPM and three factor FF only in the Indian context and does not seem to play any significant role for explaining anomalies in other countries. The three factor Fama French model could be used as performance benchmark for all other markets as compared to the one factor CAPM. South Africa would serve as the most exciting destination for portfolio managers followed by Brazil, South Korea and India. China and Indonesia are the two countries not displaying any anomalous returns and hence would not be of interest to global portfolio managers.

4. Relevance of the Study

The present study is important as it is a comprehensive work testing prominent asset pricing anomalies for select emerging markets, with emphasis on India. The findings of this study are of significant use to investors, equity analysts, mutual fund managers, policy makers, researchers and academicians. The study contributes to asset pricing and behavioural finance literature especially for emerging markets.