

FINANCIAL MARKET ANOMALIES AND ASSET PRICING MODELS:
A STUDY OF THE INDIAN STOCK MARKETS



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A Doctoral Dissertation Submitted in Partial Fulfilment of the Requirements for
the Fellow Programme in Management (Industry)

Indian Institute of Management Indore

By

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December 2017

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ABSTRACT

Stock market returns have intrigued and allured investors and traders alike for a long period of time. This leads to a search for variables which can explain and predict stock market returns. This research study seeks to establish whether existing and new variables have explanatory power in the context of Indian stock markets.

Fama & French developed a three factors model, and later in 2015, they developed a five-factor model. This study examines these variables or factors in the context of the Indian stock market for a period of 13 years starting from April 2002 to March 2015. The analysis was split into pre-sub-prime crisis period and post sub-prime crisis period. Regression was also run for the sub-prime crisis period. A credit soundness indicator as given by Altman's Z- score was also considered as a variable. Oil was also considered in the analysis and so was Dividend Yield.

A sector-wise split was done, where the results were reported for the leading six sectors of the Indian economy, that included, Heavy Machinery, Chemicals, Fertilizers and Pesticides, Pharmaceuticals, FMCG, Vehicles & Ancillaries and Software. These leading six sectors together, account for more than fifty per cent of the leading 217 companies of the National Stock Exchange of India. This sector-wise split was further analyzed and reported both for the pre-sub-prime crisis period, the sub-prime crisis period and post sub-prime crisis period.

In this study, the variables from literature that are expected to explain stock market returns are tested. These include SMB (Small minus Big based on market capitalization), HML (High minus Low based on book to market ratio), WML (Winners minus Losers based on past one year's returns i.e. momentum), LLMHL (Low liquidity minus High liquidity based on turnover ratio), RMW (Robust minus Weak Profitability), CMA (Conservative minus Aggressive

investments), HRMLR (High Risk minus Low Risk based on Altman's Z score), size, book to market ratio, turnover ratio, returns two to three months prior to portfolio formation, returns four to six months prior to portfolio formation, and returns seven to twelve months prior to portfolio formation were considered as distinct independent variables. Nifty excess returns, dividend yield and Oil were also considered as independent variables. The dependent variable is related to individual stock returns.

Two-step regression procedure was adopted. First, the two-step regressions were run for the total period of 13 years. Next, the two-step regressions were run for the pre-sub-prime crisis period starting from April 2002 to July 2007. Regressions were also run for the sub-prime crisis period, starting from August 2007 to June 2009. Then the two-step regressions were run for a fourth time for the post sub-prime crisis period starting from July 2009 to March 2015.

Regressions were run for the total sample of 217 companies, for 189 manufacturing companies, for 28 trading and services companies and for the leading six sectors of the National Stock Exchange. Variables like size, book to market ratio and prior return were found to have explanatory power as found by Basu (1977), Jegadeesh (1990) and Fama and French (1992).

Jegadeesh and Titman (1993) and Fama and French (1996) report the trend of buying past winners and selling past losers and reversal in long-term trend. Evidence of long-term trend reversal has been found in this study.

Dividend Yield was an important explanatory variable in this study, and it corroborates and reinforces similar results reported by other researchers. Liew and Vassalou (2003) report that SMB, HML and excess market returns predict future economic growth. All these three variables were found to be explaining returns in this study.

Fama and French (1992) and Gomes, Kogan and Zhang (2003) report a strong size effect and find significant results for the variable book-to-market ratio. This study corroborates the same.

Variables like size had explanatory power as reported by Sehgal, Subramaniam and Morandiere (2012), Sehgal and Tripathi (2005), and Kumar and Sehgal (2004).

Aloui, Nguyen and Njeh (2012) quote Hamilton (2003), Killian (2008) and Lardic and Mignon (2008) and say that there is enough evidence to show that increase in oil prices negatively affects production costs, inflation and consequently investor confidence. This study corroborates this in the context of the Indian stock markets.

Fama and French (2015) report that, small firms with less profitability, invest aggressively. This study adds further credence to this finding in the context of the Indian stock market.

An attempt has been made in this study, to examine the impact of two new variables viz. Oil and a credit indicator based on Altman's Z score. This study attempts to seek further evidence both for existing variables and for emerging variables.

Keywords:

Fama & French factors, Altman's Z- score, returns on oil, dividend yield, Nifty excess returns, stock market returns, wealth creation, firm characteristics and market anomalies viz. market capitalization, book-to-market ratio, turnover ratio, prior months' returns.

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