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"PORTFOLIO PREFERENCES OF FOREIGN INSTITUTIONAL INVESTORS"

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ABSTRACT:

The Economic Development of any country depends upon the existence of well-organized financial markets. It is the financial system, which supplies the necessary financial inputs for the production of goods and services, which in turn promote the well being and standard of living of the people of a country. Capital Market are of crucial significance to capital formation as the main function of these markets is the mobilization of savings and their distribution for the industrial investment, thereby stimulating the capital formation and to that extent, accelerating the process of economic growth.

The opening up of the capital markets in emerging market countries have been perceived beneficial by some researchers while others are concerned about possible adverse consequences such as contagion. Clark and Berko (1997) emphasize the beneficial aspects of allowing foreigners to trade in stock market and outline the "Base-broadening" hypothesis. The perceived advantages of the base-broadening arise from an increase in the investor's base and the consequent reduction in risk premium due to risk sharing. The theory behind the base-broadening hypothesis suggests that the expansion of investor's base include foreign investments that lead to increase diversification followed by reduction in risk and consequently lowering the required risk premium.

This study is descriptive and experimental in nature as the effect of certain events or actions have been observed in it objectively and by distinguishing the effect of extraneous variables.

In September 1992 India opened its stock market to foreign institutional investors (FIIs). Since then the net portfolio investments from the foreigners in equities have been positive in every year except 1998-99. Initially, mutual funds, pension funds, asset management companies' investment trusts and incorporated institutional portfolio managers were permitted to invest in Indian stock markets. In 1996-97, the group was expanded to include registered university funds, endowment, foundations and charitable trusts. The Government of India gave preferential treatment to FIIs in 1999-2000 by subjecting their long-term capital gains to lower tax. The Indo-Mauritius Double Tax Convention 2000 (DTAC) exempts Mauritius based entities from paying capital gain tax in India. This encouraged the foreign investors to invest in Indian market by taking the Mauritius route. FIIs cumulative investment in India rose to Rs. 224940 crore during 2006-07 from just its half (i.e. Rs. 110092 crore) in 2003-04. Gross purchases by the FIIs have swallowed to Rs. 362438 crore from Rs. 144858 crore in the corresponding period. Further, FIIs registered with Security and Exchange Board of India which was only 156 in 1994-95 stands now at 1282 (at the end of January 2008).The opening up of domestic market in India has also helped in improving

the informational environment of the market. Undoubtedly, the portfolio investment has become a dominant path of foreign investment in Indian economy. The sources of these FIIs flows are varied. The FIIs registered with SEBI come from as many as 28 countries (including money management companies operating in India on behalf of foreign investors). US based institutions accounted for slightly over 42 percent; those from the UK constitute 20 percent with other Western European Countries hosting another 17 percent of FIIs.

Foreign institutional investors have always remained the hot issue of the debate and discussion world over. India is not exception to this controversy and the issue has become more important among the economist, regulators, researchers and academicians due to the beginning of sub-prime crisis in US. The questions which are generally raised about the FIIs investments include: I) How do the foreign portfolio investments effect the stock market and economy of the host country? II) What determines the quantum of capital flows from FIIs?

Methodology for Measuring the Impact of FIIs on Stock Market Instability

The other main objective of this study was to investigate whether the entry of foreign institutional investors has influence instability of Indian stock market. The study undertakes a comparative analysis of stock return volatility before and after stock market liberalization in India. In order to achieve aforementioned objective, the stock return has been calculated on basis of daily data of closing index

For analyzing the instability various instability measures can be used. Many econometrics models assume that the variance as a measure of uncertainty is constant. Financial time series such as stock returns or exchange rates exhibits volatility clustering. This means that large changes in time series tend to be followed by large changes and small changes by small changes. The technical term given to the behavior is called autoregressive conditional heteroscedasticity (ARCH). It was Engle (1982) who first introduced the time varying conditional variance model with ARCH process that uses past disturbances to model the variances of the series and allows the variances of error term to vary overtime. Bollerslev (1986) generalized the ARCH process by allowing the conditional variance to be a function of past observations as well as of recent news named as GARCH model. Following the introduction of ARCH and GARCH, there have been numerous refinements of the approach to model volatility to better capture the stylize characteristics of the data. All these possible approaches to measures can be segregated into three parts:

- **Traditional Instability Estimators:** These estimators assume that true instability is unconditional and constant. The estimation is based on either squared returns or standard deviation of return over a period of time.
- **Tremendous Value Instability Estimators:** These estimators are similar to traditional estimators except that these also incorporate high and low prices observed unlike traditional estimators, which are based on opening and closing price of asset.

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- **Conditional instability Model:** These models (ARCH/GARCH Class of Model) take into account the time varying nature of volatility. There have been a quite few extensions of the basic conditional volatility models to incorporate observed or known characteristics of the return.

Out of these three models, first two models assume that the instability is unconditional and constant and this assumption does not follow in time series data. The conditional volatility model uses only low frequency daily data explicitly recognized time varying instability of returns and hence can be used to measure the volatility in the proposed study. The forecast by these conditional instability models are based on the parameters of the model itself as well as they are on the return characteristics during the relevant period.

Methodology for Measuring the Impact of FIIs on Trading Volume and Market Capitalization

The monthly data for a time period of 15 years from January 1993 to August 2007 were used to measure the impact of FIIs on trading volume and market capitalization. The data of the Trading Volume and market capitalization have been taken from the website of the Reserve Bank of India. The impact of foreign institutional investor's purchases and sales of the securities at BSE Ltd. on the market capitalization and trading volume has also examined. For this purposewe have taken the monthly data of the purchase and sale of the securities for the same time period. India witnessed multi-billion rupee stock market scam in March 2001, which led to a freeze on the flagship scheme of Indian largest mutual fund (Unit Trust of India) in June 2001. Resultantly, the market witnessed a considerable decline in trading volume at stock market. This abnormality could prompt any researcher to remove outlier and then measure the impact of FII investments on trading volume of Indian stock market. So we have ignored the time period from March 2001 to June 2001 in the calculation of the impact of foreign institutional investor investments on the Indian stock market trading volume and market capitalization. However, it is not denied that stock market scams are results of system failure and hence these may recur. Therefore, any robust volatility model should be able to capture this phenomenon and hence we have not removed these extreme observations from our sample while analyzing the stock market volatility.

The development of stock market is a complex and multi-faced concept. There are various indicators of judging stock market development. One common used measure is the ValueTraded Ratio (VR), which is total value of shares traded on a country's stock exchanges as a percent of GDP. The second measure is the value share traded as a percent of market capitalization. This turnover ratio (TR) measures the trading relative to the size of the stock market. The third indicator, the market capitalization (MR), which is market capitalization of listed shares in a stock exchange as a percent of GDP, measures the size and expansion of the market. The value traded and turnover ratios are considered as the indicators of liquidity.

Demirgue-Kunt and Levine (1996) in their study showed that to measure the stock market development as aggregate index called SINDEX was constructed. Later, in another study Samal (1997) followed this technique for the period from 1991-92 to 1995-96. Joydeep Biswas (2005) also applied the similar technique for the period 1991-92 to 2003-04. Similarly, in the present study a SINDEX has also been constructed for the period 1991-92 to 2007-08. The average of market capitalization ratio (MR), value traded ratio (VR) and turnover ratio (TR). [i.e.MR+TR+VR/3] has been taken as the SINDEX in the study.

Determinants of FIIs in Indian Stock Market

(a) Variables selected to Identify the Determinants of FIIs

The present study consider six dependent variables namely: FIIs sale (FIIS), purchases (FIIP), net investment (FIIN) and 7 days moving averages of all three denoted as FIIS_MA, FIIP_MA and FIIN_MA respectively. The logic of taking these variables is as follows: Rationally, global investors would continuously adjust investment portfolio round the clock using available market information and thereby tracking the returns on all possible markets. The trading behaviour of these investors can be classified into two categories: (I) Momentum or Positive Feedback Trading and (II) Herding strategy. In the case of the Momentum Trading or Feedback Trading, the investors have a tendency to buy and sell stocks based on their observed return records i.e. to buy recent winners and sell recent losers. In case of Herding strategy all investors behave in a similar manner and take decision by observing the behaviour of other investors. To capture these behavioural patterns the investor's action may be aggregated and summarized into two basic measures: (I) Sale and (II) Purchase. Hence, we have chosen to examine the nature of FIIs flows to India in terms of three variables: FIIs sales, FII purchases and FIIs net investment. Further, as the time series data have been taken on the daily basis so to remove the effect of day to day variation 7 days moving average of the above mentioned variables have also been taken as dependent variables. Thus, in total there are 6 dependent variables are taken.

Stock Return in the Host and Investing Countries:

Some research studies (e.g. Narayan and Smith, 2005; Panda, Chkradhara, 2005; Bartam and Dufey, 2001; Morley and Pentecost, 2000; Mohanty, 1998; Aggarwal, 1997 etc. conclude that the stock return in the host country is the significant determinants of foreign portfolio inflows. Accordingly, return offered by the Indian stock market is taken as an independent variable.

The relationship between the FIIs flows and market returns has been found using both, the return of the Bombay Stock Exchange and National Stock Exchange. The returns for Market i for day t would be given by equation.

$$R_{it} = \log P_{it} - \log P_{it-1} \text{ ---------- (3.14)}$$

Where

R_{it} = Market return for t time period

$\log P_{it}$ = Log of price for current time period t

log P_{it-1}= Log of price for the preceding period.

Foreign portfolio investment to a stock market may also be affected by the return offeredby the home country market to which FIIs belong. It means the stock market behavior of such countries should be considered for examining the determinants of the FII flows to a stock market. As around 42 percent of the total FII flows to Indian stock market comes from US (Source: www.sebi.gov.in), its stock market is assumed to have an impact on foreign funds flowing to other countries. So to represent the US market S & P 500 Index was taken. For representing the emerging market Morgan Stanley Capital International World Index (MSCI) has been taken as the explanatory variable for FII flows.

Macroeconomic Factors:

Review of the existing studies [for instance Gorden and Gupta (2003), Mukherjee and Coondoo (2002)] shows that numerous macroeconomic factors influence FII flows. These variables include interest rate in foreign countries, exchange rate between investing country and host country currencies, growth potential of the host country, risk of investing and host country markets and differential return of host and investing country markets etc. Accordingly, we have examined the influence of the following variables on FII flows: (a) Federal Bank Interest Rate (3 Months Treasury Bills) as a representative of International Interest Rate; (b) Exchange rate of Indian rupee v/s US $; (c) Index of Industrial Production as an indicator of growth potential of the Indian economy; (d) risk at the both domestic and foreign markets (e) Deferential return of BSE and MSCI and (f) Deferential return of BSE and S&P.

Moving Averages, Risk and Return with Lag:

Moving average of each of the indices under reference and return with one day lag have been taken as independent factors so as to eliminate the effect of day to day variations and to capture the effect of the previous day return on FIIs. Lastly, to determine the impact of the volatility in the various markets standard deviation of last 15 days return was taken.

(b) Statistics Analysis

The time series analysis begins with the checking of the basic characteristics of the various time series so that it can be found whether they are fit for the further analysis or some corrections are required. So first of all we verified the times series data properties. That is, the stationarity problem of the both dependent and independent variables was examined. For this, *Augmented Dickey-Fuller Test (ADF)* was used for checking the unit root of the major variables. The following form of ADF regression equation was used for the purpose:

$$Y_t = \beta_1 + \beta_{2t} + \delta Y_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Y_{t-i} + \varepsilon_t \text{----------} (3.15)$$

Where ε_t is a pure white noise error term and Y_{t-1} additional lagged term, included with an idea of ensuring that the errors are uncorrelated. $\beta_1, \beta_2, \delta, \alpha$ are the coefficients where δ is the first

difference operator taken to test the null hypothesis that $\delta = 0$. If δ is equal to zero it mean there is a Unit Root, which implies non-stationarity in the series under consideration. If a series is stationary at level then is also integrated of zero order and a series stationary at Ist difference is integrated of 1st order and so on.

As the use of differenced variable instead of original variable may sometimes result in the serious loss of long run information, it is essential to keep the long run information on the variables and to avoid the problem of spurious regression. These two problems have to be avoided simultaneously. For this possible, co-integration between the variables need to be checked and to find out the co-integration between variables *Augmented Engle-Granger Test (AEG)* test may be conducted. Accordingly, in this study firstly we estimated co-integration regression using the variables having the same order integration. The co-integration equation by the OLS method is given as:

$$Y_t = a_0 + a_1X_1 + a_2X_2 + a_nX_n + Z_t \text{ ----------(3.16)}$$

Where a_0 ,a_1, a_2, a_n are the regression coefficient and X_1,X_2,X_n are the independent variable considered for the study (i.e. BSE, NSE, MSCI, S&P, US_EX, IIP etc.). Z_t is the residual term

Next, residuals (Z_t) from the co-integration regression are subject to the test stationary by applying Augmented Dickey Fuller unit root test based on the following equation:

$$(ADF)\ \Delta Z_t = \beta_1 + \beta_{2t} + \delta Z_{t-1} + \alpha_i \sum_{i=1}^{m} \Delta Z_{t-i} + \varepsilon_t \text{ ---------- (3.17)}$$

If the Z is proved stationary, it means that calculated co-integration regression is not spurious.

Then we specified the proper regression equation because if the regression equations is under or overstated then the results may not be correct. To specify the proper regression equations data mining technique is used. According to this technique, firstly we used the bi-varaiate form of the OLS and find out the respected regression coefficients, R-square values and Durbin-Watson values of each of the independent variable with each dependent variable. Only those variables were taken for the final multiple regression analysis, which turned significantly associated with the particular dependent variable. Then we estimated the relationship between the various dependent variables with explanatory variables. Multiple regressions method was applied to determine the investment functions. In this way six specification of the model (i.e. with six dependent variables: FIIS, FIIP, FIIN and their moving averages with various independent variables) were made by forming OLS equation. The model net investment is as under:

FIIN = f(Constant, NSE, MSCI, R_NSE, R_MSCI, L_NSE, L_MSCI, NSE_MA, MSCI_MA, L_FIIN, US_EX, FBIR, IIP, BETA_MSCI, D_RET, Error term)---- (3.18)

The rest of the equations for relevant explanatory variables were also taken as per data mining technique with FIIS, FIIP, FIIN_MA, FIIS_MA and FIIP_MA as dependent variables.

After this in order to determine causal relationship a pair wise Granger Causality Test was used by taking all the dependent variables with the explanatory variables, which turned significant in multiple regression. Granger Causality Test is a bi-variate analysis and involves estimates X(Y→X) and Y(X→Y) by using following pair of regressions:

$$Y_t = \beta_0 + {}^n\sum_{i=1} \alpha_i X_{t-i} + {}^n\sum_{i=1}\beta_i Y_{t-i} + \varepsilon_{1t} \text{ ----------(3.19)}$$

$$X_t = \lambda_0 + {}^n\sum_{i=1} \delta_i Y_{t-i} + {}^n\sum_{i=1} \lambda_i X_{t-i} + \varepsilon_{2t} \text{----------(3.20)}$$

In above mentioned equations Y_t, X_t are the variables to be tested and α_i, β_i, λ_i δ_i are coefficients explaining the relation of dependent variable with the lag terms of independent variable and lag terms of dependent variable in itself. ε_{1t}, ε_{2t} are mutually uncorrelated white noise errors. t is the time period and i is the number of lags. The null hypothesis is $\alpha_i = \delta_I = 0$. If the α_i is statistically significant but δ_I is not, it mean X causes Y. in the reverse case Y causes X. but if both are significant then causality run both ways. We have taken the 2 lags as it is prescribed that 2 lags are sufficient to explain causality.

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