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Pricing Risky Assets in Indian Market under Unconditional Value Weighted Method

Management

KEYWORDS : CAPM – Beta - Multicollinearity and Heteroskedasticity

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ABSTRACT

This article investigates the relationship between excess returns and different risk measures including beta which is a popular risk measurement variable in the Capital Asset Pricing Model (CAPM). Adopting an improved version of the Fama and MacBeth (1973) model, the present study made a new attempt to test, in relation to the Indian market, the validity and reliability of the model with residual, skewness, variance and standardised kutosis as independent variables. The return-risk relationship is analysed using the Newey and West (1987) process which addresses both multicollinearity and heteroskesticity issues in OLS. The study makes use of the weekly returns of 432 NSE listed Indian companies from January 1997 to December 2008. The results suggest that the beta alone does not measure the security returns. The other risk measures like residual, skewness, variance and kurtosis also have a significant role in explaining excess returns.

I. Introduction

Investment in the securities market requires a study of the relationship between risks and returns. Portfolio theory of Markowitz (1952) is a description of how rational investors should build efficient portfolios and the capital market theory tells us how assets should be priced in the efficient capital market. In security analysis we are concerned only with those assets whose prices can be estimated. The usual notion in economics is that the price of an asset is determined based on the demand for and supply of the asset. The same notion is contained in a theory that explains how assets are priced in the securities market.[1]

This paper is concerned with assessing the adequacy of the Capital Asset Pricing Model (CAPM) in terms of the ability of beta to explain the risk-return relationship in an investment portfolio, along with other statistical parameters. In particular, our aim is to evaluate the risk return relationship using a modified version of standard CAPM. While early empirical tests had concluded in favour of the CAPM [Fama and MacBeth (1973)], subsequent studies have provided evidence that is less than conclusive. Recent examples using US data are Fama and French (1992). Davis (1994) had found that there was no statistically significant linear relationship between realised returns and beta'.[2]

II. Literature Review

Diwani (2010) found that CAPM is not quite applicable to the Indian market.[3]Lazar (2009) investigated the validity of CAPM in the Indian market. The analysis gave mixed results and conclusive evidence in support of CAPM could not be found in the Indian market.[4] Vaidyanathan (1994 a) analysed Sensex, ET index and Natex to find variations among the indices. The result of the study indicated that the performance of Reliance explained more than half of the variations in the indices during 1989 and 1990 while Hindustan Lever also figured up to a point. Now the two scrips together explain around 70% of the variations in Sensex and Natex[5] .Gali (1994 b) tested the "weak form efficiency" of the stock market by using three tests - run, serial correlation and filter – for ten scrips at four different points during the period from 1980 to 1990. The evidence from all the three tests demonstrate a weak form of efficiency.[6] Jagannathan (1996) tested stocks listed in NYSE and AMEX during the period 1962-1990. Following Fama and French approach, 100 portfolios were put together after ranking the stocks on the basis of beta size. The research findings strongly supported conditional CAPM when betas and expected returns were allowed to vary over time by assuming that CAPM holds in each and every period.[7] Pettengill *et al.* (1995) studied conditional and unconditional relationship in the US market for the period from 1936 to 1990. The results of the traditional tests showed a significant relationship between beta and returns for the whole sample period, but not for the sub-periods. The results of conditional tests, on the other hand, showed a significant positive relationship between beta and risk premiums for periods with positive market risk premiums and an inverse relationship for periods with negative market risk premiums.[8]Fama and French (1992) studied the monthly returns of NYSE stocks and found an insignificant relationship between beta and average returns. They concluded that CAPM cannot describe the last 50 years of average stock returns and only market capitalization and the ratio of book value to market value have significant explanatory power for portfolio returns. Fama and French (1996b) also found that beta is not sufficient to explain returns and the average return anomalies of CAPM, concluding that the model is not a useful approximation.[9] Fama and MacBeth (1973) studied the relationship between beta and returns for two different periods. They included all common stocks traded in NYSE from 1926 to 1968 in their analysis. The total study period was divided into three sub periods such as a four-year portfolio formation period, a five year beta estimation period and a 5-year testing period. Constructing 20 portfolios on the basis of ranked betas of individual securities during the first sub-period, they used a three-step approach. The test results showed a positive relationship between period t-1 betas and period t returns on average. Black, F., M. Jensen, and M. Scholes (1972) and Fama and MacBeth (1973) studies were later called traditional studies.[10]

III Objectives

The following are the objectives of the present study:

1. To test the adequacy of the standard Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1965) in the Indian capital market.
3. To test the empirical applicability of CAPM in the Indian capital market
4. To ascertain the predictive ability of capital asset pricing models.
5. To empirically investigate the risk and return relationship of individual stocks included in the National Stock Exchange (NSE) sample mentioned earlier.

IV Need for the Study

The validity of the Capital Asset Pricing Model cannot be determined by using only the earlier studies, because the model is designed to measure the volatility of the market in different scenarios. It is important to test the returns variability periodically because of the fluctuations occurring in the different time scenarios due to various reasons. It was with this in view that the study was initiated to test the validity of the model in the chosen time period and with reference to the sample of the stocks used. For another, the government policy on financial markets and recommendations of the Narasimham committee had brought about a radical reform of the Indian capital market. The companies now have to operate in a more dynamic and contemporary setting. Beta cannot probably be assumed to remain stable over a long period in the present situation, hence the need for conducting a more general test of CAPM in the Indian capital market on the lines followed by of Fama and Macbeth (1973).

V Statement of Problem

In the earlier studies in India and abroad, the risk return rela-

tionship had been tested using several variables and empirical models as stated in the literature review. Even though a few studies, incorporating statistical measures, have been conducted in the international market, no such study has been undertaken in the Indian market itself. So, in the present study the improved version of CAPM has been applied using statistical parameters addressing OLS limitations, along with adoption of the Newey and West HAC method.

VI Data description

The study used weekly stock returns and market returns from the Indian stock market. The data was collected from the Centre for Monitoring Indian Economy (CMIE). The sample includes 432 stocks from the NSE which have been quoted and traded at least 90% of the working days. In terms of the time frame, the first 36 months were for construction of portfolios and the second 36 months were required for estimation of portfolios' parameters. S&P Nifty and US Treasury bill rate were used as market proxy and risk free returns respectively.

VII Testing procedure

The 12-year period was divided into three consecutive non-overlapping sub-periods: the portfolio construction period (1997 to 2000), the parameter estimation period (2001 to 2003) and the model test period (1997 to 2008). In the construction period, individual stocks' betas were estimated and 12, 18 and 24 value weighted portfolios were formed on the basis of the estimated betas that were ranked in a descending order. In the estimation period, betas and other statistical measures of each portfolios formed in the construction period were estimated. In the final stage, the relationship between different risk measures and excess returns was tested.

VIII Testable hypotheses

The equilibrium relation of CAPM is stated in terms of the expected returns. In order to test the model with historical data, we adopted the stochastic process for generation of the portfolios' returns as proposed by Fama and MacBeth (1973):

Based on Fama Macbeth approach the following models were developed to test the hypotheses.

$$\hat{R}\hat{R}_{jt} = \hat{\gamma}\hat{\gamma}_{0t} + \hat{\gamma}\hat{\gamma}_{1t}\beta_j + \hat{\mu}\hat{\mu}_{jt}$$

$$\hat{R}\hat{R}_{jt} = \hat{\gamma}\hat{\gamma}_{0t} + \hat{\gamma}\hat{\gamma}_{1t}\beta_j + \hat{\gamma}\hat{\gamma}_{4t}S_j + \hat{\mu}\hat{\mu}_{jt}$$

$$\hat{R}\hat{R}_{jt} = \hat{\gamma}\hat{\gamma}_{0t} + \hat{\gamma}\hat{\gamma}_{1t}\beta_j + \hat{\gamma}\hat{\gamma}_{7t}SKW_j + \hat{\mu}\hat{\mu}_{jt}$$

$$\hat{R}\hat{R}_{jt} = \hat{\gamma}\hat{\gamma}_{0t} + \hat{\gamma}\hat{\gamma}_{1t}\beta_j + \hat{\gamma}\hat{\gamma}_{10t}\sigma^2_j + \hat{\mu}\hat{\mu}_{jt}$$

$$\hat{R}\hat{R}_{jt} = \hat{\gamma}\hat{\gamma}_{0t} + \hat{\gamma}\hat{\gamma}_{1t}\beta_j + \hat{\gamma}\hat{\gamma}_{13t}KUR_j + \hat{\mu}\hat{\mu}_{jt}$$

$\mathbf{H_{oa}}$: The predicting equation 1 is not significantly able to forecast the portfolio excess return.

$\mathbf{H_{1a}}$: The predicting equation 1 is significantly able to forecast the portfolio excess return

$\mathbf{H_{ob}}$: The predicting equation 2 is not significantly able to forecast the portfolio excess return.

$\mathbf{H_{1b}}$: The predicting equation 2 is significantly able to forecast the portfolio excess return

$\mathbf{H_{oc}}$: The predicting equation 3 is not significantly able to forecast the portfolio excess return.

$\mathbf{H_{1c}}$: The predicting equation 3 is significantly able to forecast the portfolio excess return

$\mathbf{H_{od}}$: The predicting equation 4 is not significantly able to forecast the portfolio excess return.

$\mathbf{H_{1d}}$: The predicting equation 4 is significantly able to forecast the portfolio excess return

$\mathbf{H_{oe}}$: The predicting equation 5 is not significantly able to forecast the portfolio excess return.

$\mathbf{H_{1e}}$: The predicting equation 5 is significantly able to forecast the portfolio excess return

Using simple and multiple regressions the following unconditional predicting equations models were developed in this study:

IX. Empirical Results

Most of the earlier studies conducted in the Indian market had not considered the multicollinearity issues which affect the model validity and reliability to a great extent. In the present study that issue has been resolved by forming a correlation matrix. The results of the correlation matrix show that the multicollinearity is not found between the independent variables except for beta and variance (0.9535175) as shown in appendix.1. Though there is a higher correlation, the variable was not dropped from the model until the interpretation phase. The results of Newey –West HAC indicated that the adjusted coefficient of determination of all the models has less than 20% explanatory power except for skewness. The calculated F score and ANOVA p-values are significant at 0.05 level which proves that the models are valid and having predictive ability as regards excess returns on securities in the Indian market. In the entire test period the intercept is not significantly different from zero. The p-values of beta coefficients are not significant at 0.05 levels except with skewness and variance. And the significance of beta with variance is ignored because of the existence of multicollinearity.

X Limitations of the study:

1. The study period was restricted to twelve years from 1997 to 2008 due to non- availability of data till 2010.
2. Only 432 stocks were identified as qualified for the analysis and hence the researcher has worked on a restricted amount of data.
3. The proxy index used is S&P CNX Nifty, whereas other indices like the BSE30 could also have been used.
4. Due to want of stocks based on the parameter of data sufficiency, only 12 portfolios could be formed. More portfolios could be constructed, varying the number of securities in each, but there was a time constraint.

The researcher had to wait for the prices to evolve till December 2008. So the time available to complete the given task was limited, which constituted a major constraint for the study.

XI. Conclusions

Now the findings of the study indicate that the standard Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1965) does not adequately explain the excess returns on a sample stock of the Indian market during the test period. Hence, it is proved that the beta alone does not influence the stock returns. The other statistical measures, residual, variance and kurtosis, also make a great impact on the returns. The modified version of the model used in the study predicts the market returns but not adequately. It is to be supposed that the investors do not hold diversified portfolios in the Indian market since beta is not related to the returns on the stocks and it is not possible to eliminate firm specific risks. Besides, the skewness and kurtosis play a vital role in the returns.

In sum, the study provides a broad guidance to the investors that in the Indian market the investment should not be done only on the basis of systematic risk. Rather, diversified risk and variance are factors to be considered while formulating investment strategies.

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Table:1 Parameter Estimation for 12 Portfolios - Value Weighted Method

Sheet	Beta	Residual	Skewness	Variance	Kurtosis
Port1-12	1.4903919	0.0009248	-0.2042372	0.0031273	-2.3270349
Port2-12	1.2126515	0.0010435	-0.2879024	0.0025016	-2.4553789
Port3-12	0.9194452	0.0007078	-0.2577474	0.0015460	-2.6795511
Port4-12	0.9003977	0.0009825	-0.1818939	0.0017863	-2.6514006
Port5-12	0.8774841	0.0006774	-0.1145988	0.0014409	-2.1431536
Port6-12	0.7820302	0.0008967	-0.1845968	0.0015031	-1.9941995
Port7-12	0.7348739	0.0006696	0.0539154	0.0012051	-2.9719989
Port8-12	0.7694997	0.0007792	0.1400152	0.0013663	-2.4838264
Port9-12	0.6898935	0.0009359	0.1828384	0.0014079	-2.3342850
Port10-12	0.7220474	0.0010235	0.3148161	0.0015404	-2.2001540
Port11-12	0.5882905	0.0010515	0.4223489	0.0013946	-2.3163652
Port12-12	0.6420609	0.0023935	-0.2774324	0.0028022	-2.5064282

Table: 2 Portfolio Parameter Correlation Matrix (Value Weighted)

	Beta	Residual	Skewness	Variance	Kurtosis
Beta of the Portfolio	1				
Residual	-0.228644766	1			
Skewness	-0.557392107	-0.223230901	1		
Variance	0.662366782	0.571788651	-0.58079591	1	
Kurtosis	0.018200008	0.014413051	0.143422926	0.042334892	1

Table: 3 Newey-West Test Result of Unconditional Beta with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.002682	0.000491	5.464686	0
Beta	-0.000542	0.00055	-0.986282	0.3243
R-squared	0.007595	F-statistic		6.045932
Adjusted R-squared	0.006339	Prob (F-statistic)		0.014152

Table: 4 Newey-West Test Results of Unconditional Beta and Unsystematic Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.00326	0.000548	5.950528	0
Beta	-0.000841	0.000554	-1.519475	0.129
Unsystematic Risk	-0.29272	0.101688	-2.878617	0.0041
R-squared	0.047267	F-statistic		19.57211
Adjusted R-squared	0.044852	Prob (F-statistic)		0

Table: 5 Newey-West Test Result of Unconditional Beta and Skewnesss Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.00504	0.000375	13.45161	0
Beta	-0.004423	0.000464	-9.524037	0
Skewnesss	-0.003326	0.000321	-10.36722	0
R-squared	0.346764	F-statistic		209.4162
Adjusted R-squared	0.345108	Prob (F-statistic)		0

Table: 6 Newey-West Test Result of Unconditional Beta and Variance Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.003072	0.000491	6.250936	0
Beta	-0.000176	0.000539	-0.326364	0.7442
Variance	-0.360521	0.099001	-3.641589	0.0003
R-squared	0.074843	F-statistic		31.91431
Adjusted R-squared	0.072498	Prob (F-statistic)		0

Table: 7 Newey-West Test Result of Unconditional Beta and Kurtosis Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.002766	0.00054	5.120614	0
Beta	-0.00056	0.000561	-0.99872	0.3182
Standardized Kurtosis	4.36E-05	7.93E-05	0.550218	0.5823
R-squared	0.008894	F-statistic		3.540165
Adjusted R-squared	0.006382	Prob (F-statistic)		0.02947

Table: 8 Parameter Estimation for 18 Portfolios - Value Weighted Method

Portfolios	Beta	Residual	Skewness	Variance	Kurtosis
Port1-18	1.630052654	0.001168366	-0.175834837	0.003802987	-1.580782186
Port2-18	1.230943685	0.001177732	-0.234792392	0.002680151	-2.373817117
Port3-18	1.270880983	0.001348525	-0.082492808	0.002950017	-2.722907396
Port4-18	0.925960884	0.00075583	-0.204695944	0.001605988	-2.851343588
Port5-18	1.035042331	0.001051834	-0.387292739	0.002114094	-2.116130515
Port6-18	0.834830322	0.001195426	-0.048096427	0.001886479	-2.793706142
Port7-18	0.8799628	0.000673526	-0.160796649	0.001441318	-1.969123343
Port8-18	0.846801771	0.00094627	-0.165944753	0.001657284	-2.103066442

Port9-18	0.745399657	0.000870708	0.098087199	0.001421634	-2.232878012
Port10-18	0.758246908	0.000726251	0.077929779	0.001296331	-2.845245428
Port11-18	0.723272855	0.000940328	0.313763773	0.001459032	-2.79035686
Port12-18	0.765762412	0.000871851	-0.021190192	0.001453288	-2.148337257
Port13-18	0.75891523	0.001257151	0.224724636	0.001828237	-2.140440185
Port14-18	0.704927752	0.000884364	0.17769733	0.001377089	-2.290171288
Port15-18	0.594452889	0.001140195	0.426408206	0.001490583	-2.429402862
Port16-18	0.571163448	0.001346828	0.417502591	0.001670299	-1.868089857
Port17-18	0.604808421	0.000696392	0.238460215	0.001059094	-2.751458983
Port18-18	0.723451739	0.00921222	-0.364028079	0.00973118	-1.810890507

Table: 9 Portfolio Parameter Correlation Matrix (Value Weighted)

	Beta	Residual	Skewness	Variance	Kurtosis
Beta of the Portfolio	1				
Residual	-0.095815763	1			
Skewness	-0.594730871	-0.352998906	1		
Variance	0.194203529	0.956868381	-0.496008663	1	
Kurtosis	0.223524754	0.348110501	-0.240383956	0.422218297	1

Table : 10 Newey-West Test Result of Unconditional Beta with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.002556	0.000432	5.910663	0
Beta	-0.000384	0.000493	-0.779374	0.4359
R-squared	0.003517	F-statistic		4.185305
Adjusted R-squared	0.002676	Prob(F-statistic)		0.040996

Table : 11 Newey-West Test Result of Unconditional Beta and Unsystematic Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.002886	0.000439	6.570745	0
Beta	-0.00057	0.000491	-1.161125	0.2458
Unsystematic Risk	-0.10031	0.019992	-5.01752	0
R-squared	0.061741	F-statistic		38.98842
Adjusted R-squared	0.060157	Prob(F-statistic)		0

Table : 12 Newey-West Test Result of Unconditional Beta and Skewness Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.004469	0.000364	12.28046	0
Beta	-0.00348	0.000453	-7.690999	0
Skewnesss	-0.003232	0.000313	-10.31025	0
R-squared	0.287108	F-statistic		238.6219
Adjusted R-squared	0.285905	Prob(F-statistic)		0

Table : 13 Newey-West Test Result of Unconditional Beta and Variance Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	0.002808	0.000432	6.505127	0
Beta	-0.00036	0.000484	-0.743738	0.4572
Variance	-0.106862	0.020204	-5.289125	0
R-squared	0.070297	F-statistic		44.80025
Adjusted R-squared	0.068728	Prob(F-statistic)		0

Table : 14 Newey-West Test Result of Unconditional Beta and Kurtosos with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	0.002416	0.000444	5.438719	0
Beta	-0.000388	0.000489	-0.792571	0.4282
Standardized Kurtosis	-9.18E-05	6.75E-05	-1.358268	0.1746
R-squared	0.009876	F-statistic		5.910027
Adjusted R-squared	0.008205	Prob(F-statistic)		0.002793

Table 15 Parameter Estimation for 24 Portfolios - Value Weighted Method

No	Beta	Residual	Skewness	Variance	Kurtosis
Port1-24	1.663555355	0.001492424	-0.149491445	0.004236458	-1.948064862
Port2-24	1.287696757	0.000921071	-0.189668771	0.002565224	-2.414986098
Port3-24	1.274819353	0.001118542	-0.537554828	0.002729975	-1.677159554
Port4-24	1.075058024	0.00128043	0.01940826	0.002426415	-2.978063262
Port5-24	0.889770303	0.000711731	-0.091222041	0.001496733	-3.085179157
Port6-24	0.953411081	0.001110877	-0.335103191	0.00201219	-1.989723435
Port7-24	1.001818102	0.001011912	-0.22062738	0.002007072	-2.120356491

Port8-24	0.776531091	0.001376971	0.061381347	0.001974876	-2.984479742
Port9-24	0.926674546	0.000864342	-0.109005015	0.001715812	-1.988615375
Port10-24	0.812160663	0.000642627	-0.128321615	0.001296659	-2.386849163
Port11-24	0.84683875	0.001123773	-0.136214364	0.001834849	-1.710864991
Port12-24	0.707078048	0.001006326	0.184308898	0.001502061	-2.114687802
Port13-24	0.694989417	0.000633165	0.043004324	0.001112094	-3.164539952
Port14-24	0.763680419	0.001033618	0.19783665	0.001611898	-2.754446412
Port15-24	0.719195987	0.001020494	0.449645967	0.001533366	-2.42417798
Port16-24	0.824364275	0.001003581	-0.121454909	0.001677416	-2.088204874
Port17-24	0.83522621	0.001782707	0.316596402	0.002474416	-2.162555754
Port18-24	0.520364136	0.000589351	0.169723749	0.000857842	-2.615950419
Port19-24	0.822147806	0.001179532	-0.029250508	0.001849747	-1.973423459
Port20-24	0.569864548	0.001459136	0.561560651	0.001781138	-2.071251623
Port21-24	0.543460632	0.001343012	0.456373232	0.001635866	-2.16778958
Port22-24	0.63546351	0.001073218	0.334270721	0.00147362	-2.682298996
Port23-24	0.567543669	0.000689431	0.258941828	0.001008815	-2.307946247
Port24-24	0.924947219	0.03489916	-0.305261319	0.035747458	-1.302557376

Table 16 Portfolio Parameter Correlation Matrix (Value Weighted

	Beta	Residual	Skewness	Variance	Kurtosis
Beta	1				
Residual	0.065741758	1			
Skewness	-0.653141455	-0.236057078	1		
Variance	0.14308873	0.996874622	-0.27949553	1	
Kurtosis	0.273305996	0.469253506	-0.296791287	0.487839481	1

Table: 17 Newey-West Test Result of Unconditional Beta with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.002956	0.000423	6.996323	0
Beta	-0.000934	0.000483	-1.934852	0.0532
R-squared	0.01747	F-statistic		28.12909
Adjusted R-squared	0.016849	Prob		0

Table :18 Newey-West Test Result of Unconditional Beta and Unsystematic Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.002938	0.000418	7.034328	0
Beta	-0.000762	0.00048	-1.58756	0.1126
Unsystematic Risk	-0.040557	0.005163	-7.855999	0
R-squared	0.123979	F-statistic		111.8755
Adjusted R-squared	0.122871	Prob		0

Table :19 Newey-West Test Result of Unconditional Beta and Skewness Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.004801	0.00038	12.63026	0
Beta	-0.00388	0.000493	-7.85595	0
Skewness	-0.00303	0.000332	-9.13887	0
R-squared	0.260408	F-statistic		278.3318
Adjusted R-squared	0.259472	Prob(F-statistic)		0

Table : 20 Newey-West Test Result of Unconditional Beta and Variances Risk with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.002901	0.000418	6.94753	0
Beta	-0.000676	0.000481	-1.403863	0.1606
Variance	-0.041068	0.005205	-7.89055	0
R-squared	0.12688	F-statistic		114.8734
Adjusted R-squared	0.125775	Prob(F-statistic)		0

Table : 21 Newey-West Test Result of Unconditional Beta and Kurtosis with Constant

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.002405	0.000467	5.148851	0
Beta	-0.000646	0.000494	-1.307934	0.1911
Kurtosis	-0.000205	6.90E-05	-2.974915	0.003
R-squared	0.053803	F-statistic		44.94956
Adjusted R-squared	0.052606	Prob		0

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