TESTING CAPM ON KSE 100 INDEX

STUDENT PROJECT

Candidate Name: Waleed Jawaid
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INTRODUCTION

Background:

Investment is defined as a commitment of funds. For investment purposes many of the investors struggle to determine the expected returns for their investments and this gave rise to many valuation models, the most common being, the Capital Asset Pricing Model.

Capital Asset Pricing Model (CAPM) is a model which tries to explain the relationship between expected return and risk. It is very used in the pricing of securities especially which come associated with certain risks. CAPM is based on the fact that investors have to be compensated for two things when they choose to invest in a security, the first being time value of money and the other one being risk. The CAPM model further suggests that high returns are associated with higher levels of risk. To use the CAPM model to determine the returns, several variables are requires such as the risk free rate of a country, the beta of the security etc.

Many of the securities are have different risks and returns associated with them even if they are in the same economy due the difference in the relationship of each sector with the economy. This implies that all the different securities have different risks estimates. Since the CAPM gives us a precise relationship based on many assumptions, there are many times when it over estimates or underestimates the returns. This is because many times different investors have different views of the

markets and the assumptions about market movements; risk etc may differ from investor to investor.

Statement of the problem:

Idea behind this project is to determine the fact that if CAPM model can be used to predict the rate of returns for the overall market on the basis of a selected sample of companies. Since, KSE has been completely unpredictable as far as its performance is concerned, we would like to gauge the market performance through the Capital asset pricing model.

Objective:

The objective of this report is to study the KSE-100 Index through the application of the CAPM model on it.

Methodology:

FIRST STAGE---TIME SERIES REGRESSION: (calculating beta)

The first step was to estimate a beta coefficient for each stock using monthly returns. The beta was estimated by regressing each stock's weekly return against the market index according to the following equation:

$$Rit = \hat{\alpha}i + \hat{\beta}i\, Rmt + eit$$

Where,
Rit is the return of the ith security
Rmt is the market return
βi is the beta coefficient of the ith security
eit are the residuals

SECOND STAGE---CROSS SECTIONAL REGRESSION:

The next step is to run a regression over the N securities using the equation:

$$Ri = \hat{}\gamma 1 + \hat{}\gamma 2\hat{} \beta i + ui$$

Where,
Ri is average rate of return for securities from first stage regression
Bi is the beta coefficient from first stage regression

Comparing this regression with the CAPM Eq., written as
ER*i* = *rf* + *βi*(ER*m* − *rf*)
Where,
Rf is the risk free rate of return
*γ*1 is the estimate of rf
*γ*2 is the estimate of *βi*(ER*m* − *rf*)

ALTERNATIVE MODEL:

The third step is to consider an alternative model
Ri = ˆ*γ*1 + ˆ*γ*2ˆ *βi* + ˆ*γ*3 *s*^2ei+ *ui*
Where,
where *s*^2*ei* is the residual variance of the *i*th security from the first-stage regression

LITERATURE REVIEW

1. The relationship between stock returns and macroeconomic variables has been a source of interest to many economists and financial analysts for a long period of time. Over the past few years it has been constantly studied and debated about. Miller and Modgliani (1961) in their article "Capital Structure and Dividend Model" tried to illustrate this relationship using the dividend discount model and reached the conclusion that the current price of the stock is equivalent to the combined future cash flows of the stock, and this conclusion is used on a popular basis to value the stocks. To test the pricing of assets the two main theories that are used is the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT). The capital assets pricing model (CAPM) was proposed as a model of risk and return by Sharpe (1964), Lintner (1965) and Mossin (1966), amongst others. It has become the most important model of the relationship between risk and return in asset pricing. (Miller, 1961)

2. Another article 'The Case of Emerging Greek securities Market' tests Capital Asset Pricing Model (CAPM) for the Greek stock market using weekly stock returns from some selected companies listed on the Athens stock exchange. The purpose of this article is to examine thoroughly if the CAPM truly holds some value in the capital market of Greece.

   This model will allow firms to find out their actual returns of the securities based on the beta estimates which were grouped into portfolios.
   It was concluded that the findings of this article do not support that basic theory of High risk (beta) associated with high return. While the model results obtained lend support to the linear structure of the CAPM equation being a good explanation of security returns. The high value of the estimated correlation coefficient between the intercept and the slope indicates that the model used, explains excess returns. The findings by

testing CAPM model provides better statistical results for some years but still did not support the CAPM basic hypothesis. (Greene, 2006)

3. Another famous study on this subject was carried out by Chen, Roll and Ross (1986) who considered some significant economic variables to have systematic influence on asset returns. These are: the spread between long and short term interest rates, expected and unexpected inflation, industrial production, and the spread between high- and low-grade bonds. There is a great number of papers that employ Factor Analysis methods. For example, Roll and Ross (1980) found that 3 or 4 systematic risk factors are statistically adequate to explain the asset returns in the period of 1962-1972, while on the other hand Chen (1983) found 5 factors in the NYSE and AMEX between 1963-1978. (Chen, 1986)

4. Kuwarnu et al (2011) investigated the effects of macroeconomic variables on the stock returns in Ghana in a paper titles "Analyzing the effect of macroeconomic variables on stock market returns: Evidence from Ghana". The paper used the multivariate APT model with the dependent variable as GSE all share returns. A macroeconomic factor model was employed and ordinary least square regression within the Box and Jenkins time series was used to establish the relationship between stock returns and variables. It was found out that only the consumer price index (cpi) has a significant effect on the returns and this was a positive relationship. (all, 2011)

5. Nishat and Shaheen (2004) employed a vector error correction model to explore the relationships between a group of macroeconomic variables and the KSE index and found a causal relationship between the economy and the stock market. Sohail and Hussain (2012) in their paper titled "Macroeconomic policies and stock returns in Pakistan" studied the response of stock prices to macroeconomic variables i.e. industrial production index, consumer price index, money supply, real effective, three months treasury bills rate, and exchange rate on three stock indices i.e. ISE10 index, LSE25 index, and KSE100. To explore the long run relationships Johansen co-integration technique was applied. The results showed that industrial production has long run positive impact on stock prices in all three markets. (Nishat, 2004)

Works Cited

all, K. e. (2011). Analyzing the effect of macroeconomic variables on stock market returns.

Chen, R. (1986).

Greene, F. (2006). The case of emerging Greek securities market.

Miller, M. (1961). Capital structure and dividend Model.

Nishat, s. (2004). Macroeconomic policies and stock returns in Pakistan.

SAMPLE SELECTION AND DATA

For the purpose of the study, KSE 30 index companies were selected. Each security consists of 59 observations of the monthly opening and closing prices. These opening and closing prices were used to calculate returns on monthly basis.

Following are the KSE 30 index companies:

1. Oil and Gas Development Company Limited
2. Pakistan Petroleum Limited
3. Pakistan Oilfields Limited
4. Pakistan State Oil limited
5. Attock Refinery Limited
6. National Refinery Limited
7. Attock Petroleum Limited
8. National Bank of Pakistan
9. Bank Al-falah Limited
10. United Bank Limited
11. Habib Bank Limited
12. Bank Al-Habib Limited
13. MCB Bank Limited
14. Hub Power Company Limited
15. Kot Addu Power Company Limited
16. Jehangir SIddiqui Company Limited
17. Engro Foods Limited
18. Uniliver Pakistan Limited
19. DG Khan Cement Company Limited
20. Lucky Cement Limited
21. Nishat Mills
22. Adamjee Insurance Company Limited
23. MIlat Tractors Limited
24. Pakistan Telecommunication Company Limited
25. Fatima Fertilizer Company Limited
26. Fauji Fertilizer Company Limited
27. Fauji Fertilizer Bin Qasim Limited
28. Engro Corporation Limited
29. Dawood Hercules Corporation Limired
30. Arif Habib Corporation Limited

ANALYSIS

FIRST STAGE---TIME SERIES REGRESSION: (calculating beta)

$$Rit = \hat{\alpha}i + \hat{\beta}i\ Rmt + eit$$

As an example Beta calculation of Lucky cement is shown as follows

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/10/12 Time: 07:58				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.013538	0.015460	0.875640	0.3849
MKTRETURNS	0.270533	0.164610	1.643474	0.1058
R-squared	0.045242	Mean dependent var		0.013416
Adjusted R-squared	0.028492	S.D. dependent var		0.120480
S.E. of regression	0.118751	Akaike info criterion		-1.390265
Sum squared resid	0.803803	Schwarz criterion		-1.319840
Log likelihood	43.01281	F-statistic		2.701007
Durbin-Watson stat	1.443905	Prob(F-statistic)		0.105790

Regression result implies that, β=0.270

SECOND STAGE---CROSS SECTIONAL REGRESSION:

$$Ri = \hat{}\gamma 1 + \hat{}\gamma 2\hat{} \beta i + ui$$

Dependent Variable: STOCKRETURNS				
Method: Least Squares				
Date: 12/10/12 Time: 07:46				
Sample: 1 30				
Included observations: 30				
White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011813	0.003202	3.689786	0.0010
BETA	-0.012475	0.005013	-2.488697	0.0190
R-squared	0.146108	Mean dependent var		0.005535
Adjusted R-squared	0.115612	S.D. dependent var		0.011554
S.E. of regression	0.010866	Akaike info criterion		-6.142060
Sum squared resid	0.003306	Schwarz criterion		-6.048647
Log likelihood	94.13091	F-statistic		4.791032
Durbin-Watson stat	1.761757	Prob(F-statistic)		0.037109

This depicts the fact that increase in riskiness of the security causes returns to decrease.

Beta despite of the fact that it is very significant fails to agree with basic assumption of CAPM regarding greater return given greater risk.

ALTERNATIVE MODEL:

$$Ri = \hat{\gamma}1 + \hat{\gamma}2\hat{}\ \beta i + \hat{\gamma}3\ s\text{^}2ei + ui$$

Dependent Variable: STOCKRETURNS				
Method: Least Squares				
Date: 12/10/12 Time: 08:09				
Sample: 1 30				
Included observations: 30				
White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017905	0.003854	4.645298	0.0001
BETA	-0.015645	0.005219	-2.997441	0.0058
RESDVAR	-0.328809	0.139924	-2.349903	0.0263
R-squared	0.267827	Mean dependent var		0.005535
Adjusted R-squared	0.213592	S.D. dependent var		0.011554
S.E. of regression	0.010246	Akaike info criterion		-6.229182
Sum squared resid	0.002835	Schwarz criterion		-6.089063
Log likelihood	96.43773	F-statistic		4.938277
Durbin-Watson stat	1.660249	Prob(F-statistic)		0.014869

Since coefficient on residual variance is not equal to zero, therefore, we conclude that CAPM is not applicable to KSE 100 index companies on the basis of our selected sample. Negative sign on beta coefficient also negates CAPM.

Auto correlation test:

All of the estimated regression outputs were tested for autocorrelation.

In fist stage regression (time series regression), almost all of the companies had Durbin Watson test statistic of above 2, that negates presence of any significant autocorrelation between error terms.

In second stage regression (cross sectional), we again had Durbin Watson test statistic of around 1.7, that is good enough to deny presence of any significant autocorrelation between error terms.

In the alternative model, Durbin Watson test statistic was 1.6, which again is good enough to deny presence of any significant autocorrelation between error terms.

Therefore we conclude that we did not encounter any autoregressive impact.

CONCLUSION & REFERENCES:

The study tested the validity of the CAPM for the Karachi Stock Market. The study used monthly stock returns from 30 companies of KSE 100 index listed on the Karachi stock exchange from January 2008 to November 2012.
The findings of the study are not supportive of the theory's basic hypothesis that higher risk (beta) is associated with a higher level of return.
The results obtained provide no strong evidence of CAPM equation being a good explanation of security returns.

The data was collected from www.kse.com.pk and following websites were used in extraction of knowledge;

www.scstrade.com

www.investomedia.com

APPENDIX:

Beta Calculations

Adamjee Insurance

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:28				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005287	0.016324	-0.323865	0.7472
MKTRETURNS	0.988470	0.173811	5.687037	0.0000
R-squared	0.362005	Mean dependent var		-0.005732
Adjusted R-squared	0.350812	S.D. dependent var		0.155623
S.E. of regression	0.125389	Akaike info criterion		-1.281488
Sum squared resid	0.896171	Schwarz criterion		-1.211063
Log likelihood	39.80390	F-statistic		32.34239
Durbin-Watson stat	2.418208	Prob(F-statistic)		0.000000

Arif Habib Corp

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:24				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.023102	0.019673	-1.174307	0.2452
MKTRETURNS	0.701493	0.209466	3.348957	0.0014
R-squared	0.164413	Mean dependent var		-0.023418
Adjusted R-squared	0.149754	S.D. dependent var		0.163878
S.E. of regression	0.151110	Akaike info criterion		-0.908303
Sum squared resid	1.301557	Schwarz criterion		-0.837878
Log likelihood	28.79494	F-statistic		11.21551
Durbin-Watson stat	2.509806	Prob(F-statistic)		0.001443

Attock Petroleum

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:30				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003527	0.011721	0.300889	0.7646
MKTRETURNS	0.476614	0.124799	3.819060	0.0003
R-squared	0.203746	Mean dependent var		0.003312
Adjusted R-squared	0.189777	S.D. dependent var		0.100020
S.E. of regression	0.090031	Akaike info criterion		-1.944019
Sum squared resid	0.462016	Schwarz criterion		-1.873594
Log likelihood	59.34857	F-statistic		14.58522
Durbin-Watson stat	2.431853	Prob(F-statistic)		0.000333

Attock Refinery

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:29				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.010960	0.018603	0.589144	0.5581
MKTRETURNS	1.013959	0.198072	5.119144	0.0000
R-squared	0.314950	Mean dependent var		0.010503
Adjusted R-squared	0.302932	S.D. dependent var		0.171146
S.E. of regression	0.142891	Akaike info criterion		-1.020165
Sum squared resid	1.163810	Schwarz criterion		-0.949740
Log likelihood	32.09487	F-statistic		26.20564
Durbin-Watson stat	2.308409	Prob(F-statistic)		0.000004

Bank Al Habib

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:13				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000824	0.011325	0.072794	0.9422
MKTRETURN	0.304923	0.120583	2.528740	0.0142
R-squared	0.100869	Mean dependent var		0.000687
Adjusted R-squared	0.085094	S.D. dependent var		0.090945
S.E. of regression	0.086989	Akaike info criterion		-2.012748
Sum squared resid	0.431329	Schwarz criterion		-1.942323
Log likelihood	61.37608	F-statistic		6.394525
Durbin-Watson stat	2.293989	Prob(F-statistic)		0.014240

Bank Al falah

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:11				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.007133	0.012530	-0.569258	0.5714
MKTRETURN	0.642421	0.133407	4.815482	0.0000
R-squared	0.289178	Mean dependent var		-0.007422
Adjusted R-squared	0.276708	S.D. dependent var		0.113163
S.E. of regression	0.096241	Akaike info criterion		-1.810610
Sum squared resid	0.527954	Schwarz criterion		-1.740185
Log likelihood	55.41298	F-statistic		23.18886
Durbin-Watson stat	2.015846	Prob(F-statistic)		0.000011

Dawood Hercules

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:11				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.017345	0.022669	-0.765112	0.4474
MKTRETURNS	0.354580	0.241367	1.469049	0.1473
R-squared	0.036480	Mean dependent var		-0.017504
Adjusted R-squared	0.019576	S.D. dependent var		0.175854
S.E. of regression	0.174124	Akaike info criterion		-0.624788
Sum squared resid	1.728192	Schwarz criterion		-0.554363
Log likelihood	20.43124	F-statistic		2.158104
Durbin-Watson stat	2.315503	Prob(F-statistic)		0.147317

DG Khan

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:12				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.005989	0.014763	0.405657	0.6865
MKTRETURNS	0.886476	0.157183	5.639761	0.0000
R-squared	0.358158	Mean dependent var		0.005589
Adjusted R-squared	0.346898	S.D. dependent var		0.140313
S.E. of regression	0.113393	Akaike info criterion		-1.482600
Sum squared resid	0.732907	Schwarz criterion		-1.412175
Log likelihood	45.73671	F-statistic		31.80691
Durbin-Watson stat	2.061996	Prob(F-statistic)		0.000001

Engro Corp

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:23				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003105	0.016115	0.192665	0.8479
MKTRETURNS	0.591550	0.171583	3.447604	0.0011
R-squared	0.172546	Mean dependent var		0.002838
Adjusted R-squared	0.158029	S.D. dependent var		0.134898
S.E. of regression	0.123781	Akaike info criterion		-1.307294
Sum squared resid	0.873341	Schwarz criterion		-1.236869
Log likelihood	40.56516	F-statistic		11.88597
Durbin-Watson stat	2.493629	Prob(F-statistic)		0.001070

Engro Foods

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:28				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.025392	0.019929	1.274129	0.2078
MKTRETURNS	-0.323337	0.212186	-1.523837	0.1331
R-squared	0.039144	Mean dependent var		0.025537
Adjusted R-squared	0.022286	S.D. dependent var		0.154807
S.E. of regression	0.153072	Akaike info criterion		-0.882501
Sum squared resid	1.335576	Schwarz criterion		-0.812076
Log likelihood	28.03379	F-statistic		2.322080
Durbin-Watson stat	1.645663	Prob(F-statistic)		0.133079

Fatima Fertilizer

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:21				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017616	0.015880	1.109330	0.2719
MKTRETURNS	-0.127980	0.169079	-0.756922	0.4522
R-squared	0.009951	Mean dependent var		0.017674
Adjusted R-squared	-0.007418	S.D. dependent var		0.121525
S.E. of regression	0.121975	Akaike info criterion		-1.336691
Sum squared resid	0.848041	Schwarz criterion		-1.266266
Log likelihood	41.43237	F-statistic		0.572931
Durbin-Watson stat	2.198324	Prob(F-statistic)		0.452214

Fauji Bin Qasim

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:21				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017616	0.015880	1.109330	0.2719
MKTRETURNS	-0.127980	0.169079	-0.756922	0.4522
R-squared	0.009951	Mean dependent var		0.017674
Adjusted R-squared	-0.007418	S.D. dependent var		0.121525
S.E. of regression	0.121975	Akaike info criterion		-1.336691
Sum squared resid	0.848041	Schwarz criterion		-1.266266
Log likelihood	41.43237	F-statistic		0.572931
Durbin-Watson stat	2.198324	Prob(F-statistic)		0.452214

Fauji Fertilizer

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:21				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017616	0.015880	1.109330	0.2719
MKTRETURNS	-0.127980	0.169079	-0.756922	0.4522
R-squared	0.009951	Mean dependent var		0.017674
Adjusted R-squared	-0.007418	S.D. dependent var		0.121525
S.E. of regression	0.121975	Akaike info criterion		-1.336691
Sum squared resid	0.848041	Schwarz criterion		-1.266266
Log likelihood	41.43237	F-statistic		0.572931
Durbin-Watson stat	2.198324	Prob(F-statistic)		0.452214

Habib Bank

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:26				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003476	0.012775	0.272135	0.7865
MKTRETURN	1.053141	0.136015	7.742805	0.0000
R-squared	0.512616	Mean dependent var		0.003002
Adjusted R-squared	0.504066	S.D. dependent var		0.139334
S.E. of regression	0.098123	Akaike info criterion		-1.771890
Sum squared resid	0.548798	Schwarz criterion		-1.701465
Log likelihood	54.27074	F-statistic		59.95102
Durbin-Watson stat	2.096062	Prob(F-statistic)		0.000000

Hub Power

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:14				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.012594	0.009401	1.339669	0.1857
MKTRETURNS	-0.083099	0.100091	-0.830231	0.4099
R-squared	0.011948	Mean dependent var		0.012631
Adjusted R-squared	-0.005386	S.D. dependent var		0.072013
S.E. of regression	0.072206	Akaike info criterion		-2.385267
Sum squared resid	0.297184	Schwarz criterion		-2.314842
Log likelihood	72.36537	F-statistic		0.689284
Durbin-Watson stat	1.742814	Prob(F-statistic)		0.409872

Jehangir Siddiqui

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:22				
Sample(adjusted): 2008:01 2012:10				
Included observations: 58 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.000530	0.035882	-0.014764	0.9883
MKTRETURNS	-0.026638	0.378814	-0.070319	0.9442
R-squared	0.000088	Mean dependent var		-0.000514
Adjusted R-squared	-0.017767	S.D. dependent var		0.270865
S.E. of regression	0.273261	Akaike info criterion		0.277093
Sum squared resid	4.181599	Schwarz criterion		0.348143
Log likelihood	-6.035706	F-statistic		0.004945
Durbin-Watson stat	1.673495	Prob(F-statistic)		0.944191

Kot Addu

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:16				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003457	0.007597	0.455076	0.6508
MKTRETURNS	0.192531	0.080891	2.380125	0.0207
R-squared	0.090401	Mean dependent var		0.003371
Adjusted R-squared	0.074443	S.D. dependent var		0.060657
S.E. of regression	0.058355	Akaike info criterion		-2.811219
Sum squared resid	0.194105	Schwarz criterion		-2.740794
Log likelihood	84.93096	F-statistic		5.664994
Durbin-Watson stat	2.358022	Prob(F-statistic)		0.020674

Lucky Cement

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:17				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.013538	0.015460	0.875640	0.3849
MKTRETURNS	0.270533	0.164610	1.643474	0.1058
R-squared	0.045242	Mean dependent var		0.013416
Adjusted R-squared	0.028492	S.D. dependent var		0.120480
S.E. of regression	0.118751	Akaike info criterion		-1.390265
Sum squared resid	0.803803	Schwarz criterion		-1.319840
Log likelihood	43.01281	F-statistic		2.701007
Durbin-Watson stat	1.443905	Prob(F-statistic)		0.105790

MCB

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:21				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002984	0.014405	0.207181	0.8366
MKTRETURN	0.726686	0.153372	4.738055	0.0000
R-squared	0.282560	Mean dependent var		0.002657
Adjusted R-squared	0.269973	S.D. dependent var		0.129496
S.E. of regression	0.110644	Akaike info criterion		-1.531691
Sum squared resid	0.697797	Schwarz criterion		-1.461266
Log likelihood	47.18490	F-statistic		22.44917
Durbin-Watson stat	2.326039	Prob(F-statistic)		0.000015

MIllat Tractors

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:27				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020751	0.012349	1.680296	0.0984
MKTRETURNS	0.178463	0.131488	1.357255	0.1801
R-squared	0.031306	Mean dependent var		0.020670
Adjusted R-squared	0.014312	S.D. dependent var		0.095543
S.E. of regression	0.094857	Akaike info criterion		-1.839592
Sum squared resid	0.512873	Schwarz criterion		-1.769167
Log likelihood	56.26796	F-statistic		1.842141
Durbin-Watson stat	2.155124	Prob(F-statistic)		0.180050

National Bank

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:10				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001825	0.014371	-0.127027	0.8994
MKTRETURN	0.721866	0.153010	4.717764	0.0000
R-squared	0.280823	Mean dependent var		-0.002151
Adjusted R-squared	0.268206	S.D. dependent var		0.129035
S.E. of regression	0.110383	Akaike info criterion		-1.536416
Sum squared resid	0.694507	Schwarz criterion		-1.465991
Log likelihood	47.32428	F-statistic		22.25729
Durbin-Watson stat	2.394427	Prob(F-statistic)		0.000016

National Refinery

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:10				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.001825	0.014371	-0.127027	0.8994
MKTRETURN	0.721866	0.153010	4.717764	0.0000
R-squared	0.280823	Mean dependent var		-0.002151
Adjusted R-squared	0.268206	S.D. dependent var		0.129035
S.E. of regression	0.110383	Akaike info criterion		-1.536416
Sum squared resid	0.694507	Schwarz criterion		-1.465991
Log likelihood	47.32428	F-statistic		22.25729
Durbin-Watson stat	2.394427	Prob(F-statistic)		0.000016

Nishat Mills

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:17				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007308	0.013452	0.543265	0.5891
MKTRETURNS	0.506898	0.143227	3.539120	0.0008
R-squared	0.180155	Mean dependent var		0.007080
Adjusted R-squared	0.165772	S.D. dependent var		0.113126
S.E. of regression	0.103325	Akaike info criterion		-1.668564
Sum squared resid	0.608535	Schwarz criterion		-1.598139
Log likelihood	51.22264	F-statistic		12.52537
Durbin-Watson stat	2.322908	Prob(F-statistic)		0.000807

OGDC

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:19				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016805	0.009436	1.780996	0.0802
MKTRETURNS	0.719713	0.100464	7.163856	0.0000
R-squared	0.473785	Mean dependent var		0.016481
Adjusted R-squared	0.464554	S.D. dependent var		0.099046
S.E. of regression	0.072476	Akaike info criterion		-2.377819
Sum squared resid	0.299406	Schwarz criterion		-2.307394
Log likelihood	72.14565	F-statistic		51.32083
Durbin-Watson stat	2.138940	Prob(F-statistic)		0.000000

Pak Oil Fields

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:15				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020600	0.010236	2.012536	0.0489
MKTRETURNS	0.840691	0.108982	7.714008	0.0000
R-squared	0.510754	Mean dependent var		0.020221
Adjusted R-squared	0.502171	S.D. dependent var		0.111429
S.E. of regression	0.078621	Akaike info criterion		-2.215053
Sum squared resid	0.352329	Schwarz criterion		-2.144628
Log likelihood	67.34405	F-statistic		59.50591
Durbin-Watson stat	2.439821	Prob(F-statistic)		0.000000

PPL

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:14				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011172	0.013172	0.848154	0.3999
MKTRETURNS	0.543273	0.140250	3.873605	0.0003
R-squared	0.208386	Mean dependent var		0.010928
Adjusted R-squared	0.194498	S.D. dependent var		0.112733
S.E. of regression	0.101177	Akaike info criterion		-1.710571
Sum squared resid	0.583502	Schwarz criterion		-1.640146
Log likelihood	52.46185	F-statistic		15.00481
Durbin-Watson stat	2.714737	Prob(F-statistic)		0.000279

PSO

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:18				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005283	0.010206	-0.517630	0.6067
MKTRETURNS	0.753021	0.108666	6.929688	0.0000
R-squared	0.457249	Mean dependent var		-0.005622
Adjusted R-squared	0.447727	S.D. dependent var		0.105487
S.E. of regression	0.078392	Akaike info criterion		-2.220870
Sum squared resid	0.350286	Schwarz criterion		-2.150445
Log likelihood	67.51565	F-statistic		48.02058
Durbin-Watson stat	2.310011	Prob(F-statistic)		0.000000

PTCL

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:20				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.006748	0.011689	-0.577286	0.5660
MKTRETURNS	0.521250	0.124453	4.188328	0.0001
R-squared	0.235331	Mean dependent var		-0.006982
Adjusted R-squared	0.221916	S.D. dependent var		0.101782
S.E. of regression	0.089781	Akaike info criterion		-1.949570
Sum squared resid	0.459459	Schwarz criterion		-1.879145
Log likelihood	59.51232	F-statistic		17.54209
Durbin-Watson stat	2.259016	Prob(F-statistic)		0.000099

Uniliver Pakistan

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:20				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.006748	0.011689	-0.577286	0.5660
MKTRETURNS	0.521250	0.124453	4.188328	0.0001
R-squared	0.235331	Mean dependent var		-0.006982
Adjusted R-squared	0.221916	S.D. dependent var		0.101782
S.E. of regression	0.089781	Akaike info criterion		-1.949570
Sum squared resid	0.459459	Schwarz criterion		-1.879145
Log likelihood	59.51232	F-statistic		17.54209
Durbin-Watson stat	2.259016	Prob(F-statistic)		0.000099

United Bank

Dependent Variable: RETURNS				
Method: Least Squares				
Date: 12/08/12 Time: 19:25				
Sample(adjusted): 2008:01 2012:11				
Included observations: 59 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003863	0.012486	0.309399	0.7581
MKTRETURN	0.760335	0.132943	5.719238	0.0000
R-squared	0.364617	Mean dependent var		0.003521
Adjusted R-squared	0.353470	S.D. dependent var		0.119276
S.E. of regression	0.095906	Akaike info criterion		-1.817578
Sum squared resid	0.524288	Schwarz criterion		-1.747153
Log likelihood	55.61854	F-statistic		32.70968
Durbin-Watson stat	2.010639	Prob(F-statistic)		0.000000