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CAPM and Idiosyncratic Risk using Two-Pass Model: Evidence from the Karachi Stock Market

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Abstract

Since its presentation, CAPM face so many criticisms by scholars in finance, still it is most widely used asset pricing model in financial research. We use monthly prices data for the period of January 2001 to September 2013 of KSE 100 index listed companies to test the validity of CAPM in Pakistani market. First we form three sized portfolios to test the zero intercept hypothesis of CAPM. Further we use two pass models to analyze the importance of idiosyncratic risk in explaining security return. We find that CAPM is still applicable in Pakistani market and explain the variability in returns. The results of two pass models also confirm the absence of idiosyncratic risk in explaining security return in Pakistani market.

Key words: CAPM, Idiosyncratic Risk, Market Model, Two Pass model, Diversification.

Introduction

Investor of the stock or financial markets is keen to know about the compensation that he would be offered if he invests in (financial) assets. Sharpe (1964) first endeavored to come up with the model that could price the assets based upon the risk return relationship of assets. According to Sharpe (1964), assets are priced based upon their risk which cannot be diversified. Since the premier work of Sharpe (1964) regarding asset pricing, a number of studies have attempted to come up with the improved asset pricing model to accurately depict the risk and return relationship for an asset.

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The traditional CAPM presented by Sharpe (1964), Lintner (1965) and Black (1972) has been widely used in capital market research and financial analysis. The model gave birth to asset pricing and in a result Sharpe received Nobel Prize in 1990. Since then CAPM gets support of many empirical studies, like Fama and Macbeth (1973) and Fletcher (1997). On the contrary, some studies find weak or even no support for the traditional CAPM. Although these studies have challenged the validity of CAPM, but it cannot be inferred from the results of these studies that work of Sharpe (1964) regarding asset pricing was futile and CAPM is a useless model. CAPM is still considered to be one of the best asset pricing models (Smith and Walsh, 2013) and empirical results are not enough to reject CAPM.

CAPM has always been criticized regarding its assumptions as Blume and Friend (1973) contradict with the assumption of CAPM that risk and return shows a linear relationship. They find out that there is no linearity between risk and return relationship. Similarly, Roll (1977) criticized CAPM regarding the proxy for market portfolio, claiming that market portfolio (that portrays the actual market) cannot be constituted unless all the securities are included which is an unrealistic task. Even though CAPM has been challenged regarding its assumptions but still it holds a paramount importance for the financial managers. Moreover, it cannot be assumed that CAPM is invalid across the whole world as the markets vary in their behavior and structure. Emerging markets vary in their behavior and structure with the developed markets and hence provide opportunity for the researchers to test the finance concepts and models.

Therefore, in light of conflicting evidence regarding CAPM and its assumptions there is a room to explore the validity of CAPM in emerging market like Pakistan. Thus, the first objective of this study is to test the validity of CAPM in Pakistan and to test whether CAPM holds true in emerging market like Pakistan or not.

Another aspect of CAPM that this study explore is the risk factor for which an investor is compensated. According to CAPM investors are compensated for systematic risk (beta) they bear as the other component of risk which is idiosyncratic risk can be diversified by constituting a portfolio. In short, the assets are priced accordingly to the systematic risk involved in them. Hence betas of every security or asset can explain the returns. This assumption of CAPM has widely been criticized specially in last two decades. Fama and French (1992) find betas cannot explain the security returns completely thus they introduce three-factor model opposed to basic CAPM. Morelli (2003) finds that risk premium is insignificant in the cross-section

regression model over the total testing period and the CAPM is only valid in particular years.

The empirical studies have shown that security returns cannot be explained by a single risk factor beta and the assumption that investors are only compensated for systematic risk (because the idiosyncratic or firm specific risk can be avoided by effective diversification) does not hold true. Furthermore, there is a conflict on the number of securities to be included in a well-diversified portfolio to abate or neutralize the unsystematic risk. Statman (1987) shows that a well-diversified portfolio must include at least 30 securities while Domian et al. (2007) argue that even 100 securities may not be enough for diversification.

This suggests that there could be a great degree of idiosyncratic risk in an investor's portfolio and beta or systematic risk may not be enough to price the asset and explain the returns of a security. Merton (1987) suggests that expected returns are associated with both market risk and firm-specific risk called as idiosyncratic risk. Bollen et al., (2009) also find that idiosyncratic risk is a factor of asset pricing along with systematic beta. Thus, the second objective of this study is to determine that whether the idiosyncratic risk holds importance in explaining the returns of assets or not.

Karachi Stock Exchange (KSE) which is an emerging market, smaller in size, volatile and opaque. Another important fact about KSE is that due to political instability and a decade long war against terrorism made it very much unpredictable. It was declared the best performing stock market of the world in 2002 and among the best performing emerging markets in 2008. In the presence of these facts it is important to study the implication of present study for the market, the investors and possible contribution to the literature.

The remainder of this paper is arranged in following manner. Section 2 presents a brief review of literature, section 3 shows data and methodology, section 4 discusses the results and finally section 5 concludes the study.

Litrature Review:

The standard or traditional version of CAPM developed by Sharpe (1964) estimates a security's beta to explain the sensitivity of the security return relative to the fluctuation in the market portfolio. CAPM is supported by many empirical studies, for example, Fama and Macbeth (1973), in their study of New York Stock Exchange (NYSE) find positive linear relationship between expected return and risks which are measured from portfolios. Although they find some nonlinear relations in sub sample periods but the net effect remains linear. The results imply that security

prices show some deviations from traditional CAPM but in the longer run the CAPM holds good. Similarly, Black (1972) in his study of CAPM by simplifying the assumption of riskless asset, risk free borrowing and lending validate the hypothesis of CAPM and find out that expected returns and beta of security has a linear relationship.

However, critique on CAPM in studies is far higher than its supporting studies and results show that traditional CAPM is not able to price the assets. Lintner (1965) and Douglas (1969) are considered to be the premier researchers that first tested CAPM. However, the famous critique on CAPM came in 1977 by Roll (1977) famously known as Roll's critique of CAPM. Roll (1977) is of the view that that CAPM has never been tested in reality. He claims that CAPM cannot be tested until or unless the exact composition and structure of the market is known. Consequently, to test the theory of CAPM all the individual assets or securities are to be included in the market portfolio. He asserts that the linearity between expected return and beta cannot be independently tested rather it is related to market portfolio's mean variance efficiency. Moreover, in testing the CAPM one has to be cautioned about use of proxy for market portfolio as it is difficult to include all the assets or securities. The use of proxy poses two problems in testing CAPM: a) the proxy (for market portfolio) would be efficient whereas actually the market portfolio might not be efficient and b) proxy may not be efficient when actually the market portfolio is efficient.

Review of critiques on CAPM shows that beta is not the only variable to explain the risk premium and variations in returns. There are certain other variables that play their part in variation of returns. Banz (1981) in his study of US market (New York Stock Exchange) shows that CAPM is miss-specified and linear relationship of expected return and beta does not hold true in US market. He exclusively focused on the size effect (large versus small firm return) in his study. Banz (1981) finds out that small firms have considerably higher risk adjusted returns than the large firms in his study of forty years. Further analysis shows that model is miss-specified as it ignores the size effect and underestimates the true returns for portfolio. Banz (1981) therefore concludes that all the studies which are based on CAPM ignore the size effect and hence the results are ambiguous.

Although there are conflicting evidences regarding the CAPM but still CAPM is considered to be the base or lays theoretical foundations for asset pricing. Besides lacking empirical evidence, CAPM has wide range of applications in financial markets. Portfolio managers use it for estimating cost of capital for firms and evaluating the performance of portfolios (Fama and French 2004). Though CAPM lacks empirical evidence but one cannot simply reject the CAPM model. The

review of literature shows that empirical findings are not themselves sufficient to reject the model and hence CAPM cannot be fully rejected. As Smith and Walsh (2013) in a recent study of Australian market concludes that CAPM is still the best asset pricing model and reigning champion of asset pricing models. He further adds that a model cannot be rejected on the basis that it does not work 100 % of time. Hence in light of conflicting evidences, there is a room for CAPM to be tested specially in the emerging markets.

In spite of the fact CAPM has been explored and tested empirically in many studies but there is a scant literature available on testing the CAPM in emerging countries like Pakistan. Few studies have endeavored to test the validity of CAPM in Pakistan. Rehman, Gul, & Razzaq, (2013) find support for CAPM and show risk premium is only factor explaining stock returns. Conversaly, Iqbal & Brooks (2007) find out that there is a non-linear relationship between risk and return. They reject the CAPM hypothesis that beta is the only variable related to risk that explain the variations in expected returns. Hence, the standard version of CAPM does not hold true in case of Pakistan. The results are augmented by the findings of Yasmeen et al. (2012) and study shows that critical conditions of CAPM i.e. positive relationship between risk and return and beta as market risk premium are rejected. Conducting an analysis of KSE top 20 companies, Yasmeen et al. (2012) find out that beta is not the sole explanatory variable for determining the stock's risk premium. Although there are few studies that addressed Pakistani market but still there is a room for improvement. This study adds to literature by enhancing the data than the previous studies carried out in Pakistan and analyzing the CAPM in terms of systematic and idiosyncratic risk.

In addition to the critique on CAPM's validity, the risk component of CAPM has been widely debated over the last decade. CAPM suggests that assets are priced according to the non-diversifiable risk (systematic risk); while a number of studies have shown that idiosyncratic risk or asset specific risk (diversifiable risk) plays a large part in pricing of asset than the market or systematic risk and hence idiosyncratic risk matters (Campbell et al., 2001). Incomplete diversification has also been questioned in literature as number of assets needed to diversify or form a portfolio has increased which indicates that high level of idiosyncratic risk is present in the portfolio (Hwang et al., 2012).

Aaker & Jacobson (1987) investigate risk and return relationship by deviding risk into two basic components as suggested by CAPM. Systematic risk as measured by beta explains the larger variation in returns for different startegic business units in US market. The non market or unsystematic risk also explains siginificant variations

in return. Unsystematic risk is being measured by satnadrd error of residuals. They suggest investors should give equal consideration to both types of risk even while managing portfolios. Hwang, Gao, & Owen (2012) find CAPM not fully expalin the security returns in UK market. They strongly reject the tradiotional CAPM and find the incomplete diversification is caused by high level of idiosyncratic risk. G. Bali, Cakici, Yan, & Zhang (2005) find that equal weighted idosyncratic risk significantly positvie related to short term market return while in the longer run this relation disappears. Recently Smith and Walsh (2013) say that the CAPM is 'half right', and all its competitors are all wrong. Emerging markets have also been explored regarding idiosyncratic risk and an interesting study by Angelidis (2010) shows that in emerging countries total risk or volatility comprises less portion of idiosyncratic risk than in case of developed counties (which have high portion of idiosyncratic risk).

The discussion presented above implies that the excess returns on portfolio depends on market risk premium and sometimes on idiosyncratic risk. Thus portfolio based on considering market risk only may have high risk so idiosyncratic risk should be included in risk calculations. As a result, we findout the influence of beta along with idiosyncrtaic risk on asset pricing and further combine them in standard CAPM to test the risk return relationship.

The objective of this paper is to empirically test the traditional CAPM validity in Pakistani equity market. The earlier literature in Pakistani market shows contradicting evidence on CAPM validity in KSE. Some studies (Iqbal & Brooks, 2007; Yasmeen et al.2012) find CAPM does not hold in Karachi Stock Exchange (KSE) while other present strong support for CAPM. We provide extended evidence that CAPM still holds in Pakistani market. Further, we take into account the diversifiable or idiosyncratic risk factor that continuously ignored in previous studies. The findings of this research will help the portfolio managers to form efficient portfolios. The additional element of idiosyncratic risk enables them to calculate investment risk more precisely as traditional CAPM ignored this dimension.

Data and Methodology:

This study uses monthly prices data obtained from Karachi Stock Exchange (KSE) to form equally weighted portfolios. The data for all the listed companies included in KSE 100 index for the period of 2001 to July 2013 is used. The companies which are listed after January 2001 are excluded from the final sample. Finally, we have 63 actively trading companies that are part of KSE 100 index. Three equally weighted portfolios (21 each) based on the size of market capitalization are

formed to proxy for market portfolio. Portfolio one contains the largest 21 stocks in KSE 100 index, Portfolio 2 includes middle capitalization stocks and finally Portfolio 3 contains 21 stocks having smallest market capitalization.

First we estimate the $\boldsymbol{\beta}$ of each sized portfolio by using following version of market model.

$$\boldsymbol{R}_{it} = \boldsymbol{\alpha}_i - \boldsymbol{\beta i}\, \boldsymbol{R}_{mt} + \mathbf{e}_{it} \qquad \text{..... (1)}$$

Where $\boldsymbol{R}_{it}$ t is the estimated excess return on portfolio i at time t; $\boldsymbol{\alpha}_i$ is the intercept on portfolio i; $\boldsymbol{\beta i}$ is the estimated beta of the regression for portfolio i; $\boldsymbol{R}_{mt}$ is the estimated excess return on the market portfolio; $\mathbf{e}_{it}$ is a random error term.

To test the validity of CAPM in KSE, we test whether the intercept parameter $\boldsymbol{\alpha}_i$ of the null hypothesis is equal to zero. Let H_0 be the null hypothesis and H_1 be the alternative:

$$\mathbf{H_0 : \alpha_i = 0} \text{ versus } \mathbf{H_1 : \alpha_i \neq 0}$$

If the intercept term under above mentioned hypothesis is zero we accept the fact that systematic risk explains the return variation across each sized portfolio.

We use the beta estimated from equation 1 and market return variance to calculate idiosyncratic risk. We know that total risk as shown in equation (2) is sum of systematic risk and idiosyncratic risk, we directly calculate the total risk $\boldsymbol{\sigma_{it}^2}$, from beta risk $\boldsymbol{\beta_i^2}$ multiplied by market risk $\boldsymbol{\sigma_{mt}^2}$ and variance of residuals for each portfolio $\boldsymbol{\sigma_{et}^2}$as proxy of idiosyncratic risk:

$$\boldsymbol{\sigma_{it}^2 = \beta_i^2 \sigma_{mt}^2 + \sigma_{et}^2} \qquad \text{..... (2)}$$

Further we use two pass regressions to estimate idiosyncratic risk for each security. First in equation (3), we calculate the beta of a security by regression excess return of each security on the excess return market (KSE 100) for all period in this study.

$$\boldsymbol{R}_{jt} = \boldsymbol{\alpha}_j - \boldsymbol{\beta_j R}_{mt} + r_{it} \qquad \text{..... (3)}$$

Where j is number of securities in total sample and t is total number of months.

We use same methodology as Fama and Macbeth (1973) in equation (4), the second stage of this model is as follows:

$$\boldsymbol{R_j = \gamma_0 + \gamma_1 \beta_j + \gamma_2 \beta_j^2 + \gamma_3 \sigma_{\varepsilon j}^2} \qquad \text{..... (4)}$$

In the CAPM, the $\boldsymbol{\gamma}$ coefficients are $\boldsymbol{\gamma_0}$=0, $\boldsymbol{\gamma_1}$ = $\boldsymbol{R}_{mt}$, the estimated excess return on the market portfolio,$\boldsymbol{\gamma_2}$ = 0, and $\boldsymbol{\gamma_3}$ = 0. $\boldsymbol{\gamma_2}$ Shows the nonlinear relationship between beta and excess return and $\boldsymbol{\gamma_3}$ represents the importance of idiosyncratic risk in explaining the excess return.

Results and Discussion:

Table 1 below shows the average size of each portfolio measured by market capitalization. We used monthly average market capitalization and form three portfolio having 21 companies each. Portfolio 1 has the largest stocks having mean market capitalization of almost Rs. 378900 million followed by portfolio 2 of middle capitalized stocks having mean Rs. 103100 million and lastly portfolio 3 having mean capitalization of Rs. 3458 million.

Table 1: Size of Portfolios (in million Rupees)

	Portfolio 1	**Portfolio 2**	**Portfolio 3**
Mean	378900	103100	3458
Min	14290	642500	381
Max	115400	140200	6369
SD	299000	248000	1860
Total capitalization	795800	216400	72630

Notes: Table presents the descriptive of each portfolio size measured by average monthly market capitalization.

Following table 2 presents descriptive statistics of all portfolio excess returns and market excess returns. We used three-month treasury bills as proxy for risk free rate of return. The excess return is obtained by taking the difference of security return and risk free return. Similarly, market excess return also calculated in similar manner. We use KSE 100 index as a proxy of market return. This index shows the largest buying and selling and taken as true representative of market. The table shows that portfolio 3 has greater return as compared to other portfolios. This show the smaller firms generate greater returns than large firms. Portfolio 1 has low return but at the same time less risky than other portfolios which confirm the risk return trade off i.e. high risk high return. Portfolio 2 has moderate return as moderate risk as well. The market index shows lesser return compared to all other portfolios.

Table 2: Descriptive Statistics

	KSE 100	**Portfolio 1**	**Portfolio 2**	**Portfolio 3**
Mean	.0002	.0013	.0013	.0048
Min	-.206	-.207	.041	-.1915
Max	.0994	.224	.22	.1718
SD	.0363	.036	.053	.0622

Notes: The table presents the descriptive statistics of returns for all portfolios and market return.

Following table 3 presents the results of simple test for CAPM. Equally weighted excess return of each portfolio is regressed on market excess return to obtain the value of α and β parameters. Earlier we formulate the hypothesis that there is linear relationship between risk of a security measured by β and security return. We hypothesize that if the intercept term is zero then we reject the linear relationship of beta and security return. From the table we see that we failed to reject the null hypothesis hence we can say that CAPM holds in Pakistani market. The intercept for portfolio 3 is significant only at 10% which rejects the validity of CAPM but other results support the linear relationship of beta and security return. The betas for all portfolios are significant at 1% again confirming the strong risk return relationship. Portfolio 1 shows highest beta value of 1.89 that shows the high relationship of this portfolio return to systematic shocks. The beta means that 1 percent change in market return causes 1.89 percent change in portfolio 1 returns. Similarly, portfolio 2 has significant beta of 1.78 and portfolio 3 showing 1.25 significant betas. According to betas portfolio 3 seems to be least risky for systematic shocks.

Table 3: Regression Results

	Portfolio 1	**Portfolio 2**	**Portfolio 3**
A	.0009	.001	.004*
P Value α	.65	.805	.091
β	1.89**	1.78**	1.25**
P Value β	.000	.000	.000

* Significant at 10%, ** significant at 1%

Following table 4 break down the risk of a portfolio into two basic parts, i.e. Systematic risk which is unavoidable and unsystematic or idiosyncratic risk which can be diversified away by diversification. Thus investors only demand premium for systematic risk because it cannot be controlled by simple diversification. Form the results we see for portfolio 1 the linear relationship of systematic risk or beta and return is quite strong and idiosyncratic risk is only 12.96% of total risk. For Portfolio 2 and 3 the picture is quite different from other. For portfolio 2 about 42 % risk diversifiable and for portfolio 3 which is small size portfolio about 46% risk constitutes idiosyncratic risk.

Table 4: Systematic and Idiosyncratic Risk

	Total Risk	Systematic Risk	Idiosyncratic Risk	IRTR %
Portfolio 1	.0054	.0047	.0007	12.96
Portfolio 2	.0071	.0042	.0030	42.25
Portfolio 3	.0039	.0021	.0018	46.15

Notes: This table presents the distribution of risk into its basic components, i.e. Systematic and idiosyncratic risk. We measured total risk by equation, $\boldsymbol{\sigma_{it}^2 = \beta_i^2 \sigma_{mt}^2 + \sigma_{et}^2}$.

Two Pass Model:

The above analysis presented only address the testing of CAPM based on portfolio. Table 5 presents the results of two pass model. It individually focuses on all the securities included in this study. This analysis is done in two stages. First we obtain the beta for each of the 63 securities included in this study using cross sectional regression analysis from equation 3. This cross sectional analysis resulted in 63 betas for each individual security and their residuals. These calculated parameters then used in equation 4 to test the significance of idiosyncratic risk. The results in the table show the coefficient of σ^2 is statistically insignificant which rule out the presence of idiosyncratic risk in explaining the security return. The beta coefficient is significant at almost 10% that again confirms the linear relation between security return and beta.

Table 5: Two Pass Regression

Variable	Coefficient	t-Statistic	Prob.
Constant	0.009837	2.268100	0.0271
B	0.015214	2.382013	0.0891
$\boldsymbol{\beta^2}$	0.005631	0.810460	0.4210
$\boldsymbol{\sigma^2}$	0.015343	0.116313	0.9078

Notes: Table presents the results for two pass regression analysis using equation, $\boldsymbol{R_j = \gamma_0 + \gamma_1 \beta_j + \gamma_2 \beta_j^2 + \gamma_3 \sigma_{\varepsilon j}^2}$.

Conclusion

The traditional CAPM presented by Sharpe (1964), Black (1972) has been widely used in capital market research and financial analysis. The model gave birth to asset pricing and in a result Sharpe received Nobel Prize in 1990. Since then CAPM gets support of many empirical researches, like Fama and Macbeth (1973) and Fletcher (1997). On the contrary, some studies find weak or even no support for the traditional CAPM. Although these studies have challenged the validity of CAPM, but

it cannot be inferred from the results of these studies that work of Sharpe (1964) regarding asset pricing was futile and CAPM is a useless model. CAPM is still considered to be one of the best asset pricing models (Smith and Walsh, 2013) and empirical results are not enough to reject CAPM.

Present study focuses on two dimensions of testing the validity of CAPM. We use monthly prices data for the period January 2001to September 2013. We use 3-month T-bills proxy for risk free rate of return. First we formed 3 sized portfolios of all companies based on their average monthly market capitalization. We failed to reject the validity of CAPM in Pakistani market. The systematic risk measured by beta explains variation in security return.

Further decomposition of total risk into systematic and idiosyncratic risk shows that total risk is combination of these two risks. In this study, CAPM beta captures the major portion of risk. Further we extend our analysis to individual securities. Two pass model results shows that beta is the major factor explaining security return. Idiosyncratic risk does not play major role in explain security return. Our findings suggest that CAPM still holds in Pakistani market. Investors only demand premium for systematic risk. Our study shows that investor can diversify away the idiosyncratic risk by adopting portfolio practices.

Conclusion

One important issue related to advertisements is controversial advertising. It is observed that when the advertisements are perceived controversial by people, such advertisements create negative effects not only on product or brand, but also affect the organizational reputation. Controversial advertisements and advertisements of controversial products are great challenge for marketers and advertisers because of high level of risk involved in this practice. Some advertisers use controversial advertisements intentionally because it's an easy way to get attention of people. It is evident that there is a relationship between advertisements and consumer behavior, but there is still an extreme lack of research articulating relationship between controversial advertisements and behavior. Scholars also suggested that there is a need to consider and investigate what are the nature of consumers in controversial & offensive ads and how do they respond to controversial ads differently.

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Annexure 1. List of Companies

	List of Companies				
1	Atlas Honda	22	Grays of Cambridge Pak	43	Packages Ltd
2	Abbot Laboratries	23	Habib Metropolitan Bank	44	Pak Suzuki Motors Co Ltd

3	Adam Jee Insurance	24	Hub Power Co.	45	Pakistan Cables
4	Alghazi tractors	25	Ibrahim Fibres	46	Pakistan International Airlines Corp (A)
5	Askari Comm Bank	26	ICI Pakistan Ltd	47	Pakistan Oilfields
6	Attock Refinery Ltd.	27	IGI Insurance Limited	48	Pakistan Services Ltd
7	Bank Al Habib	28	Indus Dying and Manufacuring co	49	Pakistan Services Ltd
8	Bata Pakistan Ltd	29	Indus Motor co	50	Pakistan State Oil Ltd
9	Clariant Pakistan	30	Jahangir Siddiqui & Co. Ltd	51	Pakistan Tobacco Ltd
10	Colgate Palmolive Ltd	31	JDW Sugar Mills Ltd	52	Philip Morris (Pakistan) Limited
11	Dawood Hercules Corporation Ltd	32	Jubilee General Insurance Co Ltd	53	Rafhan Maize Products
12	DG Khan cement	33	Karachi Electric Supply Company Ltd	54	Security papers Ltd
13	Dreamworld Ltd	34	Lucky Cement Ltd	55	Shell Pakistan
14	East West Insurance Co Ltd	35	Mari Gas Co Ltd	56	Shifa hospital
15	EFU General Insurance Co Ltd	36	MCB Bank Ltd	57	Siemens Pak Engineering
16	Engro Corporation Limited	37	Millat Tractors	58	Soneri Bank Ltd
17	Fauji Cement	38	Murree Beverages Ltd	59	Sui Northern Gas Pipelines
18	Fauji Fertilizers Co. Ltd	39	National Refinery	60	Sui Sothern Gass
19	Feroze 1881 Mills	40	Nestle Pakistan Ltd	61	Tandlianwala Sugar Mills Ltd
20	Fysal Bank ltd	41	Nishat Mills Ltd	62	Thal Limited
21	Ghani Glass Ltd	42	P.T.C.L.A	63	Unilever Pakistan Limited