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**Impact of Change in Oil Prices on the
Shares of Oil Marketing Companies
Traded on the KSE-100 Index**

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Marketing Companies Traded On The KSE-100-Index**

By
Mubashar Ali

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INTRODUCTION

After the significant downturn in late 2001 precipitated by the events of 9/11 and subsequent developments, the world economy was showing signs of recovery. Pakistan is likely to benefit from a modest recovery in the global economy. A broad based economic recovery, further strengthening of macroeconomic stability and a near elimination of external account vulnerability have been the major success, in spite of all these positive impact of economy does not benefit the common people in greater detail due to sharp rise in inflation (which is 13% in first quarter of 2005), one of the key reason is the sharp increase in oil prices which have a direct impact over inflation.

The oil, which is considered to be a black gold and the most precious commodity in the earth, have direct impact in the determination of oil marketing companies share worth.

The oil marketing companies share are heavily traded in Karachi Stock Exchange, that is these share play a major role in the determination of KSE- 100 Index.

According to the Pakistan & Gulf Economist it is due to the heavily traded of petroleum linked securities which bring the upward trend in KSE-100 Index.

In Pakistan oil companies advisory committee are responsible for the changes in the oil prices which is decided on the meeting held twice a month. this committee is heavily influenced by the oil marketing companies and ever since they are quite succeed in their purpose which is to increase the oil prices on a continue basis.

So after analyzing this arena I have decided to write a research report which signifies the relation in between the change in oil prices and petroleum linked securities traded in the KSE-100 Index, so after studying this report investor will be able to determine the trend that if there is a movement in oil prices it will have a relation over petroleum linked securities and by analyzing one can easily predict the index movement because petroleum linked securities are the major scrip in KSE-100 Index .

STATEMENT OF THE PROBLEM

The statement of the problem is to determine the relation in between the changes in oil prices and oil marketing companies share traded in Karachi Stock Exchange (KSE-100 Index).

- To determine either petroleum companies are the driving force of KSE-100 Index, that is to find out the weight age of these companies in the calculation of KSE-100 Index.
- To determine or compute the benefits transferred by petroleum companies to their shareholders/stakeholder.

SIGNIFICANCE OF STUDY

This research report will help the investor of the petroleum linked securities in such a way that,

- By identifying the change in oil prices investor can determine the expected change in petroleum-linked securities.
- Research report will also benefit the financial consultancy/Brokerage firm by indicating the expected change in securities after analyzing the Wight age of the securities in index.
- It will help the general public in identifying the trend of oil prices.

SCOPE

The research study will be restricted to Karachi Stock Exchange (KSE-100 Index) as well as the data will be collected and analyzed with the period starting from June 1st (1-6-2003) to May 31 (31-5-2005).

DELIMITATION

The study is done in a natural environment and not in a controlled one because of the nature of the issue being analyzed so the extent of the researcher influence is minimal.

- Oil prices should not change

- Petroleum companies are evaluating on the basis of going concern.

DEFINITIONS

Secondary Market	A market where already issued securities are traded such as Karachi Stock Exchange
Going Concern	Assumption that in future company will its operations
Regression Analysis	The dependency of one variable over the other variable is termed as regression.
Correlation	It measures the degree of relationship between the two variables.
Probable error	It is used to check the reliability or (significance) of coefficient of correlation.

CHAPTER TWO

RESEARCH METHODOLOGY & PROCEDURE

- **Research Design**
- **Respondent Of The Study**
- **Research Instruments**
- **Treatment Of Data**
- **Presentation Analysis**

RESEARCH DESIGN

This research is designed to illuminate the relation in between changes in oil prices and petroleum linked securities traded in KSE-100 Index, it will also cover all the important aspects related to the weight age of petroleum linked securities in index calculation as well as the benefits transferred to the stakeholder by the petroleum companies.

However descriptive as well as analytical research will be performed, while designing the research of this study it is considered that it should serve the purpose practically and should be in line with the objective of the study.

Due to the fact that Karachi Stock Exchange is the biggest Stock Exchange of the country so it is assumed that what ever be the finding or concluding result of the research will be true for other two Stock Exchanges (Lahore Stock Exchange & Islamabad Stock Exchange).

However to obtain the best available result further projective techniques (such as Time series & Regression Analysis) may be used to project the finding of KSE-100 index to other two stock exchanges if time permits.

RESPONDENT OF THE STUDY

In order to cover the aspects of project effectively the respondent of the study have been divided in to the two major categories.

- Brokerage firm/ Investment Bank

- Oil producing/ marketing companies

Since the nature of the study is to find out the relation in between two variables so the data collection phase will be completed with the help of Brokerage firms and co-relate with the help of Oil producing/ marketing companies.

RESEARCH INSTRUMENT

Research Instrument is comprised with the combination of Primary & Secondary data sources.

Primary data is basically collected by arranging structured interviews, survey, research/questionnaire, and projective techniques.

Secondary data will be collected through research report of researchers, newspaper, Government publication, Library of State Bank, Library of Karachi Stock Exchange, magazine& Internet etc.

TREATMENT OF DATA

The research has selected the following measuring mathematical techniques for the tabulation, interpretation and the analysis of the data for the research study.

Regression Analysis

Regression analysis will be used in order to determine the dependence of one variable over other variable (variables are oil prices & share prices of petroleum linked securities)

Regression Equation $Y = a + b X$ will be used.

Where as

The constant “a” is called the regression constant

The constant “b” is called the regression coefficient, which represent the change with relative to other variable.

Formula of calculating the regression coefficient is

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2}$$

$$a = \bar{Y} - b \bar{X} \quad \text{Where } \bar{Y} = \frac{\sum Y}{n} \quad \text{and} \quad \bar{X} = \frac{\sum X}{n}$$

Karl Pearson's Correlation Method

Variables are correlated if two sets of variable vary in such a way that the changes of one set are related by changes in the other. Simply it measures the degree of relationship between the two variables.

Formula

$$r = \frac{\sum (X-X)(Y-Y)}{\sum (X-X) \sum (Y-Y)}$$

Calculation Of Probable Error

This formula will be used to check the reliability or (significance) of coefficient of correlation.

Formula

$$P.E = 0.6745 \frac{(1-r^2)}{\text{Radical } n}$$

Criteria / Remarks

- a. If r is less than P.E, then there is no evidence of correlation (i.e. the correlation is not significant)
- b. If r is greater than 6x P.E., then there is certain correlation (i.e. coefficient of correlation is significant)
- c. The coefficient of correlation always varies from $-1 \leq r \leq 1$.

Determining Strength Of Coefficient Of Correlation

Coefficient of Correlation	Degree Of Association
0.8 TO ± 1	Strong
± 0.5 To ± 0.8	Moderate
± 0.2 To ± 0.5	Weak
± 0 To ± 0.2	Negligible

PRESENTATION ANALYSIS

Collected data and their respective conclusion will be presented through

- Tables

- Graphical representation (pie diagram & multiple bar chart) etc

CHAPTER THREE

REVIEW OF LITERATURE & STUDIES

- **Local literature**
- **Extract From Literature**
- **Gaps To Be Bridged By This Study**
- **Research Instruments**
- **Areas For Further Studies**

LOCAL LITERATURE

Risks in oil price hike

By Syed Fawad Ali Rizvi
22 February 2005
DAWN

One of the key developments during the preceding year was the escalating oil price in international markets that touched a new peak on October, 29, 2004, when WTI touched \$56.36/bbl.

Contrary to general market principle where the prices are determined by the market forces of demand and supply, it was the uncertainty that proved to be the main reason behind the hike in the oil prices. The speculators got the chance to drive the margins high.

Uncertainty ranged from exuberant demand for oil from growing China and developing India to issues of disrupted oil supply, continuity of Iraq war and post war unrest, terrorist attacks to oil facilities, geo-political problems in oil producing countries, Yuko's scandal, hurricanes in the American gulf, seasonal factors of colder winter and last but not the least the attitude of OPEC on the developing oil market situations. The oil prices were further pushed up by speculators on the reports of falling inventories in US and OECD.

The bottom line was that the year closed with 33.4 per cent increase in the oil prices in international. The oil prices remained subdued during the last two months mainly due to increased supply of oil from OPEC countries that helped OECD countries and US to build

The plummeted oil prices made many analysts to reckon that the prices are now going back to the normal levels until OPEC asks its members to control their production to the

allowed quota and cut the excess supply. The members acted promptly and cut their production.

The question is how oil market has impacted across the world. From the producers' perspective, this was an excellent year and the Gulf countries experienced an oil boom that helped them adjusting their fiscal accounts, in addition to fostering development process.

The key benefit that OPEC realized was that it regained the driving seat to lead the global market course and to acquire a position where its words matter in the market.

From consumer perspective, the impact on the oil prices varies from county to country. This is due to the level of oil dependence of the country, the level of oil efficiency in production process and the extent of currency appreciation against US dollar.

Europe, Japan and other countries that saw their currencies appreciate against dollar were saved from the heat of increasing oil prices to some extent. However, the economies of countries like Pakistan that are not as oil efficient as their western counterparts and supported falling dollar to keep their exports competitive in US markets.

During preceding year, Pakistan's economy, to some extent, was saved from the heat of oil

For some time, the government endured the losses on its exchequer, as it cut the surcharge margin on oil. Although it was often stated that the government will continue to protect the economy from the increasing oil prices, it has started shifting the burden to the consumer and at a time when the oil prices were not increasing in international markets.

The government raised the oil prices by Rs2/liter, the electricity prices were also raised by Rs0.10 to Rs0.15 per unit for small domestic consumers. Gas prices have been

increased. The increase in energy prices were on the verge of decline following OPEC. In the backdrop of these developments in national economy, it is desirable to foresee the likely development in the international oil markets and its likely impact on the economy.

OPEC holds that oil price in a range of \$40/bbl to \$50/bbl for WTI do not hurt the world economy. In addition, OPEC has indicated to the market that they have to live with the pricey oil by asking its members to limit oversupply from allocated quota, as soon as the price for OPEC reference basket falls below \$35/bbl, much higher than the price band of OPEC president Sheikh Ahmad Fahad Al-Ahmad Al-Sabah, Minister of Energy, Kuwait said that OPEC would be happy with a price range of \$32/bbl to \$35/bbl for OPEC basket.

Given the market signals by OPEC, the upside potential for the growth in the oil demand and downside risks to the supply of oil, pundits are forecasting another year of pricey oil and the average oil prices are forecasted to remain at higher than the average price of 2004.

If the oil market remains expensive and if the government continues to fill its coffers by collecting an easy tax on oil, what impact would it have on the economy. We are targeting a growth rate of over seven per cent when inflation is moving at the same pace.

We are incorporating this risk into our growth targets, which was not there during past few years owing to Saudi oil facility. As per the input-output models developed by the leading research agencies, oil contributes from five to 35 per cent in the production cost.

If the producer is able to shift his cost to the domestic consumers through increased prices, then there is a great likelihood that the economy will suffer from the imported inflation, and the central bank has to take measure to curb inflation, which is already slipping out of its hands. The increase in interest rate will adversely affect the growth.

Process.

Our producers are not oil- efficient compared to other international producers and cost shifting through increased prices is not as easy in export markets. Therefore, higher input cost will put pressure on the profit margins of export-oriented producers and they may lose their market on cost-inefficient basis. Lending by the banks to industrial sector

Common man is always neglected by governments and more so by the present government as indicated by poverty figures. The visiting World Bank President James D. Wolfensohn On external front, the current account, which is already in deficit, will worsen. With these challenges at hand, let us see if the planners have something good to unfold.

Share index surging to new heights

By Muhammad Aslam

22 February 2005

DAWN

The KSE 100-share index last week crossed the third consecutive barrier of 7,500 points to close at 7,734. Investors continued to build long positions on selected counters under the lead of banks and energy shares, wherein the former had announced handsome dividend.

All previous records, both in terms of index level and market capital were surpassed and analysts failed in giving any specific reason behind the sustained run-up and the expected dividend and bonus shares declared by some leading banks such as the MCB, the Soneri Bank, the Union Bank, the Picic Bank, the Picic Growth Fund and several others.

Technical correction, long overdue in a highly overbought market, was nowhere in sight as bulls and punters were out to push the index to their next target of 8,000 points and then to take a technical breather or a pause on how to behave beyond this level.

"The market could have shed about 200 to 300 points but it appeared pretty difficult to pull it down from its current level", some brokers predicted adding, "signing of a number of deals with the visiting delegation and talk of a free-trade agreement with Malaysia was billed as another morale booster in addition to higher corporate payouts".

Apart from the new index level, the single-session volume figure also soared to a billion-share-mark for third time during its trading history, close to the highest and second highest figures so far at 1.122 billion and 1.029 billion at 1.128 billion, as both the billion figure share mark reflects that the market had pulled out from the state of uncertainty on the strength of an all-round buying, leaving behind the lean period when the single session volume had dropped to an all-time low of 15.141 million shares on

September 3, 2001. But a leading stock analyst predicted that it could be the end of current buying euphoria as the market could pass through a technical correction of about

The index finally finished to close at 7,600 as compared to 7,239 points last week reflecting the strength of leading bank shares, notably the PTCL, the OGDC, the PSO and

It has now left behind the Mumbai industrial index by more than 800 points, which some month's back was trailing behind it. This reflected the market conditions. It was being The gap between the two Subcontinent indices was expected to widen further as the KSE was virtually galloping to its newly set target of 8,000 points due to massive money flows,

"There was the talk of an overbought market, and the fears of a big technical shakeout any day", some analysts said "but the market continued to defy all predictions despite Essentially, the current sustained run-up was not only dividend-driven it was aided by some other positive factors, including massive buying by the financial institutions which Two leading companies, the Muslim Commercial Bank and the Pakistan Oilfields announced their working results which were in line with the predictions. But the omission of interim dividend by both disappointed the investors.

However, on the other hand, the Askari Bank gave a pleasant surprise to its shareholders as it enhanced the bonus shares to 20 per cent from 10 per cent and came out with a Energy and cement shares led the market advance followed by leading stocks on other counters, notably the bank and textiles as working results of most of them were due

Among top gainers were the Treet Corporation, the PPL, the Grays of Cambridge, the Pakistan Oilfields, the Allawasaya Textiles, the Millat Tractors, the PNSC, the MCB, the Bank of Punjab, Losers were led by the Valika Art Fabrics, the Pakistan Refinery, the Rafhan Maize, the Best foods, the Wyeth Pakistan, the Aventis, the Lakson Tobacco, the Thal, the AKD Securities, the Gatron Industries, the Shafiq Textiles and many others.

OGDC determines KSE index rises or fall

By Dilawar Hussain

March, 13 2005

DAWN

KARACHI, March 12: The KSE index is flawed. Of the 100 shares in the index, as few as can be counted on finger tips of one hand can turn the tide one way or the other. Among them, share in Oil & Gas Development Company Limited (OGDC) stands out as the Here is a sample: On Tuesday the eighth, KSE-100 index recorded historical highest single day rise of 355.20 points; the index galvanizing from 8863 to 9218.

Everyone cheered by the dizzy heights at which the Pakistani capital market had scaled. But was that so? That day shares in 386 companies came up for trading of which values in 59 remained unchanged. One would presume that all the remaining rose; that, though was not the case. If 165 shares gained value, almost an equal number (162) of scrip ended on the losing side. Looking at it another way: Investors in 165 shares made money out of their stocks that day while those in about an equal number went home, relieved of some of Yet, the Index on March 8, posted the highest ever single day gain of 355 points. OGDC was not at its best that day and its value increased by Rs9.90. That meant its contribution of no less than 185 points to the index rise. How that figure has been worked

If the index is flawed, the deafening silence of the government; the corporate regulators and bigger stakeholders should scarcely amaze one; it suits them all. The great anomaly in the composition of index that shows the market soaring, when it is not, makes the government comfortable as the world watches mercury rising in the barometer (stock market) so as to prove the 8 per cent plus growth in the economy; it suits the Securities

and Exchange Commission of Pakistan (SECP) the chief regulator for what else can be a clearer proof of the effectiveness of its first and second generation reforms; it suits the Karachi Stock Exchange (KSE) for if the index has already jumped 45 per cent in only two months and a half this calendar year, compared to a rise of 39 per cent in all of 2004, the bourse has a valid reason to proclaim to be the “best performing stock market in the world”.

So the KSE-100 index is blatantly unrepresentative of the market. All the parties criticised above (if they do indeed read this piece) are likely to come charging forward defending the Index and its fairness and transparency. But no one doubts the transparency

Generally speaking, KSE-100 is a market capitalization based index designed back in 1991. All the world has changed since. For fairer display of market performance, it is essential to study global trends. In many markets around the world, one or two stocks are not allowed to rule the roost. By contrast, at our KSE, one stock determines the path of An illuminating report prepared by analysts at Jahangir Siddiqui Capital Markets Limited explains

The Report notes that the bull-run at the local bourses started at the beginning of 2002 when the benchmark KSE-100 Index was at 1,273 points. Over the period 2002-2004, the Index has yielded an average annual return of 72 per cent and the year 2005 is the fourth year in a row of this bullish trend. However, this 2005 rally is abnormal in the way that the Index has already gained 3,356 points since December 31, 2004 – a 54pc increase.

The important feature in this rally is that it is not broad-based and the Index remains biased to one high cap stock. “OGDCL contributed two-third to the Index increase”, say the JSCM analysts, adding that their calculations showed that OGDCL stood out as the major contributor accounting for increase of approximately 2,300 points (68pc) out of the overall 3,356 points jump since the beginning of the current calendar year. The share price of OGDCL in 2005 to date has surged by 117pc to Rs163. In comparison, KSE the analysts point out that based on current prices, the weightage of OGDCL in Index has gained

The share of OGDCL in the Index since its induction in April 2004 ranged between 22-23pc up until Dec. 2004. JSML analysts have also calculated impact of movement in OGDCL's price on the KSE index.

They explain this as follows: Presently in absolute term, keeping share prices of other 99 scrips as constant, a Re1 (0.6pc) change in OGDCL price causes Index to shuffle by 18-19 points (0.20pc). At the beginning of the year 2005 when OGDCL price was Rs75, a Re1 (1.3pc) change was causing the Index to change by 16 points (0.25pc). PTCL, PSO and NBP contributed approximately JSCML report maintains that the general perception among investors suggests that the top market capitalization companies including have evenly led the recent rally

However, a closer look shows that excluding OGDCL, the other three top capitalisation companies (PTCL, PSO and NBP having a cumulative share of 23pc in Index) have

State Oil announces Rs11/share dividend

By Our Staff Reporter
22 February 2005
DAWN

KARACHI, Feb 21: Pakistan State Oil (PSO) has earned Rs4.1 billion as profit before tax and Rs2.6 billion as profit after tax during July-December 2004, showing a rise of 23 % The PSO Board of Management, which met here on Monday to review the half-yearly accounts, announced an interim cash dividend of Rs11 per share, translating into a cash pay out of Rs1.9 billion to its shareholders, Rs4 per share more than the last year period. Board of Management Chairman Pervaiz Kausar presided over the meeting.

PSO sold around five million tons of POL products, translating into sales revenue of around Rs122 billion. The company also enhanced its overall sales volume by 27 per cent Sales volume of white oil surged by eight per cent, whereas that of black oil rose by 74 per cent. Sales of Mogas, HSD and JP-1 soared by 13, seven and 17 per cent, respectively. Fuel oil sales rose by 81 per cent to 1.9 million tons, capturing a market share

Extract From Literature

The first article Risks in oil price hike written by Syed Fawad Ali Rizvi has highlighted some important points regarding the risk involved in the escalation of oil prices, he discussed the over all phenomena like the speculation activities and the uncertainty related to the supply of prices as he said Contrary to general market principle where the prices are determined by the market forces of demand and supply, it was the uncertainty that proved to be the main reason behind the hike in the oil prices. The speculators got the chance to drive the margin high.

Uncertainty ranged from exuberant demand for oil from growing China and developing India to issues of disrupted oil supply, continuity of Iraq war and post war unrest, terrorist attacks to oil facilities, geo-political problems in oil producing countries, Yuko's scandal, hurricanes in the American gulf, seasonal factors of colder winter and last but not the least the attitude of OPEC on the developing oil market situations. Speculators further pushed up the oil prices on the reports of falling inventories in OECD and US

While talking about global phenomena he highlighted that, the question is how oil market has impacted across the world. From the producers' perspective, this was an excellent year and the Gulf countries experienced an oil boom that helped them adjusting their fiscal accounts, key benefit that OPEC realized was that it regained the driving seat to lead the global market course and to acquire a position where its words matter in the market.

From consumer perspective, the impact on the oil prices varies from county to country. This is due to the level of oil dependence of the country, the level of oil efficiency in production process and the extent of currency appreciation against US dollar.

Europe, Japan and other countries that saw their currencies appreciate against dollar were saved from the heat of increasing oil prices to some extent. However, the economies of countries like Pakistan that are not as oil efficient as their western counterparts and supported falling dollar to keep their exports competitive in US markets.

The second article Share index surging to new heights written by Muhammad Aslam has highlighted the key factors that brought a rise in the stock market, he said that Apart from the new index level, the single-session volume figure also soared to a billion-share-mark for third time during its trading history, close to the highest and second highest figures so far at 1.122 billion and 1.029 billion at 1.128 billion, as both the The billion figure share mark reflects that the market had pulled out from the state of uncertainty on the strength of an all-round buying, leaving behind the lean period when the single session volume had dropped to an all-time low of 15.141 million shares on September 3, 2001. But a leading stock analyst predicted that it could be the end of current buying euphoria as the market could pass through a technical correction of about

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The third article OGDC determines KSE index rise or fall written by Dilawar Hussain, he has highlighted the importance of OGDC which has more weight age in the determination of KSE-100 index, he said that The important feature in this rally is that it is not broad-based and the Index remains biased to one high cap stock. "OGDCL contributed two-third to the Index increase", say the JSCM analysts, adding that their calculations showed that OGDCL stood out as the major contributor accounting for increase of approximately 2,300 points (68pc) out of the overall 3,356 points jump since the beginning of the current calendar year. The share price of OGDCL in 2005 to date has surged by 117pc to Rs163. In comparison, KSE the analysts point out that based on current prices, the weight age of OGDCL in Index has gained

GAPS TO BE BRIDGED BY THIS STUDY

The research study is first in his type in Pakistan, this type of research study has never be done before so the study will help in different category listed below

- By identifying the change in oil prices investor can determine the expected change in petroleum-linked securities.
- Research report will also benefit the financial consultancy/Brokerage firm by indicating the expected change in securities after analyzing the Wight age of the securities in index.
- It will help the general public in identifying the trend of oil prices

AREAS FOR FURTHER STUDY

Certainly there are some areas where a lot of research is required, these areas are,

- Check the impact of change in oil prices on the oil exploration companies.
- KSE-100 Index should be calculated on the basis of shares traded in the market.
- Oil prices projection should be done by analyzing the demand and supply situation.

CHAPTER FOUR

PRESENTATION ANALYSIS

- **Criteria For Running The Regression Equation & Correlation Coefficient**
- **Data of Shell Pakistan Ltd Share price and Petroleum price**
- **Data of P.S.O Ltd Share price and Petroleum price**
- **Data of HAROON OILS Ltd Share price and Petroleum price**
- **Calculation To Run Regression Equation And Correlation Coefficient of
Shell Pakistan Ltd**
- **Calculation To Run Regression Equation And Correlation Coefficient of
PAKISTAN STATE OIL Ltd**
- **Calculation To Run Regression Equation And Correlation Coefficient of
HAROON OILS Ltd**

CRITERIA FOR RUNNING THE REGRESSION EQUATION AND CORRELATION COEFFICIENT

If two sets of variable vary in such a way that the changes of one set are related by changes in the other then these sets are said to be correlated .

In this research study the two variables are petroleum prices and particular oil marketing companies share price.

Three different oil marketing company share prices are collected and the statistical tools will be used to check the impact of change in oil prices on the share values

Data of Shell Pakistan Ltd Share price and Petroleum price

Table # 4.1

Time Duration	X Petroleum price	Y Scrip price
Monday, June 30, 2003	Rs. 30.83	409.32
Tuesday, July 01, 2003	Rs. 31.19	434.5
Wednesday, July 16, 2003	Rs. 31.52	432.85
Friday, August 01, 2003	Rs. 31.52	464.67
Saturday, August 16, 2003	Rs. 31.61	469.02
Monday, September 01, 2003	Rs. 31.81	463.79
Tuesday, September 16, 2003	Rs. 31.33	413.027
Wednesday, October 01, 2003	Rs. 30.73	390.94
Thursday, October 16, 2003	Rs. 32.03	372.529
Saturday, November 01, 2003	Rs. 32.59	370.98
Sunday, November 16, 2003	Rs. 32.9	401.15
Monday, December 01, 2003	Rs. 33.58	403.659
Tuesday, December 16, 2003	Rs. 33.78	404.072
Thursday, January 01, 2004	Rs. 33.78	417
Friday, January 16, 2004	Rs. 35.48	416.4
Sunday, February 01, 2004	Rs. 35.33	396.115
Monday, February 16, 2004	Rs. 34.47	389.15

Monday, March 01, 2004	Rs. 34.8	394.48
Tuesday, March 16, 2004	Rs. 34.75	389.518
Thursday, April 01, 2004	Rs. 34.57	361.209
Friday, April 16, 2004	Rs. 35.37	380.081
Saturday, May 01, 2004	Rs. 36.92	368.805
Sunday, May 16, 2004	Rs. 36.92	372.35
Tuesday, June 01, 2004	Rs. 36.92	358.4
Wednesday, June 16, 2004	Rs. 36.92	343.95
Thursday, July 01, 2004	Rs. 36.92	372.98
Friday, July 16, 2004	Rs. 36.92	386.63
Sunday, August 01, 2004	Rs. 36.92	372.45
Monday, August 16, 2004	Rs. 36.92	388.29
Wednesday, September 01, 2004	Rs. 36.92	380.85
Thursday, September 16, 2004	Rs. 36.92	370.94
Friday, October 01, 2004	Rs. 36.92	385.5
Saturday, October 16, 2004	Rs. 36.92	391.65
Monday, November 01, 2004	Rs. 36.92	399.26
Tuesday, November 16, 2004	Rs. 36.92	445
Wednesday, December 01, 2004	Rs. 36.92	456.922
Thursday, December 16, 2004	Rs. 39.5	474.25
Saturday, January 01, 2005	Rs. 40.39	561.72
Sunday, January 16, 2005	Rs. 40.39	557.64
Wednesday, February 02, 2005	Rs. 42.39	565.22
Wednesday, February 16, 2005	Rs. 42.39	565.44
Tuesday, March 01, 2005	Rs. 43.96	559.02
Wednesday, March 16, 2005	Rs. 45.53	502.3
Friday, April 01, 2005	Rs. 45.53	499.72
Sunday, April 17, 2005	Rs. 45.53	529.47
Sunday, May 01, 2005	Rs. 45.53	521.127
Tuesday, May 17, 2005	Rs. 45.53	510.7
	1576.75	20215.044

Data of P.S.O Ltd Share price and Petroleum price

Table # 4.2

Time Duration	X Petroleum price	Y Scrip price
Monday, June 30, 2003	Rs. 30.83	226.61
Tuesday, July 01, 2003	Rs. 31.19	236.48
Wednesday, July 16, 2003	Rs. 31.52	256.62
Friday, August 01, 2003	Rs .31.52	303.315
Saturday, August 16, 2003	Rs .31.61	291.21
Monday, September 01, 2003	Rs .31.81	297.25
Tuesday, September 16, 2003	Rs. 31.33	286.5
Wednesday, October 01, 2003	Rs 30.73.	287.9
Thursday, October 16, 2003	Rs. 32.03	254.57
Saturday, November 01, 2003	Rs. 32.59	250.93
Sunday, November 16, 2003	Rs. 32.9	267.26
Monday, December 01, 2003	Rs. 33.58	282.64
Tuesday, December 16, 2003	Rs. 33.78	281.94
Thursday, January 01, 2004	Rs. 33.78	283.15
Friday, January 16, 2004	Rs. 35.48	285.73
Sunday, February 01, 2004	Rs. 35.33	286.3
Monday, February 16, 2004	Rs. 34.47	288.64
Monday, March 01, 2004	Rs. 34.8	292.15
Tuesday, March 16, 2004	Rs. 34.75	286.24
Thursday, April 01, 2004	Rs. 34.57	284.05
Friday, April 16, 2004	Rs. 35.37	274
Saturday, May 01, 2004	Rs. 36.92	268
Sunday, May 16, 2004	Rs. 36.92	268.53
Tuesday, June 01, 2004	Rs. 36.92	256.45
Wednesday, June 16, 2004	Rs. 36.92	254.86
Thursday, July 01, 2004	Rs. 36.92	261.07
Friday, July 16, 2004	Rs. 36.92	267.55
Sunday, August 01, 2004	Rs. 36.92	256.57
Monday, August 16, 2004	Rs. 36.92	239.52

Wednesday, September 01, 2004	Rs. 36.92	228.65
Thursday, September 16, 2004	Rs. 36.92	244.72
Friday, October 01, 2004	Rs. 36.92	259.43
Saturday, October 16, 2004	Rs. 36.92	261.095
Monday, November 01, 2004	Rs. 36.92	228.475
Tuesday, November 16, 2004	Rs. 36.92	265.88
Wednesday, December 01, 2004	Rs. 36.92	270.32
Thursday, December 16, 2004	Rs. 39.5	280.15
Saturday, January 01, 2005	Rs. 40.39	308.785
Sunday, January 16, 2005	Rs. 40.39	318.45
Wednesday, February 02, 2005	Rs. 42.39	332.64
Wednesday, February 16, 2005	Rs. 42.39	390.94
Tuesday, March 01, 2005	Rs. 43.96	457.9
Wednesday, March 16, 2005	Rs. 45.53	416
Friday, April 01, 2005	Rs. 45.53	410.43
Sunday, April 17, 2005	Rs. 45.53	365.68
Sunday, May 01, 2005	Rs. 45.53	371.67
Tuesday, May 17, 2005	Rs. 45.53	377.9
	1576.75	13665.5

Data of HAROON OILS Ltd Share price and Petroleum price

Table # 4.3

Time Duration	X Petroleum price	Y Scrip price
Monday, June 30, 2003	Rs. 30.83	50.1
Tuesday, July 01, 2003	Rs. 31.19	56
Wednesday, July 16, 2003	Rs. 31.52	55
Friday, August 01, 2003	Rs. 31.52	55
Saturday, August 16, 2003	Rs. 31.61	58
Monday, September 01, 2003	Rs. 31.81	55
Tuesday, September 16, 2003	Rs. 31.33	59.1
Wednesday, October 01, 2003	Rs. 30.73	56.118
Thursday, October 16, 2003	Rs. 32.03	59.1
Saturday, November 01, 2003	Rs. 32.59	59.1
Sunday, November 16, 2003	Rs. 32.9	59.1
Monday, December 01, 2003	Rs. 33.58	59.1
Tuesday, December 16, 2003	Rs. 33.78	59.1
Thursday, January 01, 2004	Rs. 33.78	57.236
Friday, January 16, 2004	Rs. 35.48	56.918
Sunday, February 01, 2004	Rs. 35.33	55
Monday, February 16, 2004	Rs. 34.47	55
Monday, March 01, 2004	Rs. 34.8	55
Tuesday, March 16, 2004	Rs. 34.75	57.445
Thursday, April 01, 2004	Rs. 34.57	63.94
Friday, April 16, 2004	Rs. 35.37	62.05
Saturday, May 01, 2004	Rs. 36.92	62.05
Sunday, May 16, 2004	Rs. 36.92	64.227
Tuesday, June 01, 2004	Rs. 36.92	86.3
Wednesday, June 16, 2004	Rs. 36.92	105.22

Thursday, July 01, 2004	Rs. 36.92	115.168
Friday, July 16, 2004	Rs. 36.92	103.718
Sunday, August 01, 2004	Rs. 36.92	87
Monday, August 16, 2004	Rs. 36.92	66.05
Wednesday, September 01, 2004	Rs. 36.92	62.65
Thursday, September 16, 2004	Rs. 36.92	63.49
Friday, October 01, 2004	Rs. 36.92	64
Saturday, October 16, 2004	Rs. 36.92	61
Monday, November 01, 2004	Rs. 36.92	95
Tuesday, November 16, 2004	Rs. 36.92	95
Wednesday, December 01, 2004	Rs. 36.92	95
Thursday, December 16, 2004	Rs. 39.5	94.416
Saturday, January 01, 2005	Rs. 40.39	90.5
Sunday, January 16, 2005	Rs. 40.39	90
Wednesday, February 02, 2005	Rs. 42.39	90
Wednesday, February 16, 2005	Rs. 42.39	90
Tuesday, March 01, 2005	Rs. 43.96	90.39
Wednesday, March 16, 2005	Rs. 45.53	90.2
Friday, April 01, 2005	Rs. 45.53	90.16
Sunday, April 17, 2005	Rs. 45.53	85.67
Sunday, May 01, 2005	Rs. 45.53	80.5
Tuesday, May 17, 2005	Rs. 45.53	80.5
	1576.75	3400.616

**Calculation To Run Regression Equation And Correlation Coefficient of
Shell Pakistan Ltd**

Table # 4.4

Time Duration	X Petroleum prices	X2	Y Scrip price	Y2	XY
Monday, June 30, 2003	Rs. 30.83	950.488	409.32	167585.43	12620.938
Tuesday, July 01, 2003	Rs. 31.19	972.8161	434.5	188790.25	13552.055
Wednesday, July 16, 2003	Rs. 31.52	993.5104	432.85	187359.12	13643.432
Friday, August 01, 2003	Rs. 31.52	993.5104	464.67	215918.2	14646.398
Saturday, August 16, 2003	Rs. 31.61	999.192	469.02	219979.76	14825.722
Monday, September 01, 2003	Rs. 31.81	1011.8761	463.79	215101.16	14753.159
Tuesday, September 16, 2003	Rs. 31.33	981.5689	413.027	170591.302	12940.135
Wednesday, October 01, 2003	Rs. 30.73	944.3329	390.94	152834.08	12013.586
Thursday, October 16, 2003	Rs. 32.03	1025.92	372.529	138777.87	11932.103
Saturday, November 01, 2003	Rs. 32.59	1062.1081	370.98	137626.16	12090.238
Sunday, November 16, 2003	Rs. 32.9	1082.41	401.15	160921.322	13197.835
Monday, December 01, 2003	Rs. 33.58	1127.6164	403.659	162933.32	13554.869
Tuesday, December 16, 2003	Rs. 33.78	1141.0884	404.072	163274.18	13649.552
Thursday, January 01, 2004	Rs. 33.78	1141.0884	417	173889	14086.26
Friday, January 16, 2004	Rs. 35.48	1363.0864	416.4	173889	14773.872
Sunday, February 01, 2004	Rs. 35.33	1258.83	396.115	173388.96	14008.345
Monday, February 16, 2004	Rs. 34.47	1248.2089	389.15	157212.25	13412.794
Monday, March 01, 2004	Rs. 34.8	1188.1809	394.48	151710.25	13727.904
Tuesday, March 16, 2004	Rs. 34.75	1211.04	389.518	155614.47	13535.75
Thursday, April 01, 2004	Rs. 34.57	1207.56	361.209	151724.27	12486.995
Friday, April 16, 2004	Rs. 35.37	1195.084	380.081	130471.94	13443.464
Saturday, May 01, 2004	Rs. 36.92	1251.0369	368.805	144461.56	13616.28
Sunday, May 16, 2004	Rs. 36.92	1363.0864	372.35	136017.128	13747.162
Tuesday, June 01, 2004	Rs. 36.92	1363.0864	358.4	138644.522	13232.128
Wednesday, June 16, 2004	Rs. 36.92	1363.0864	343.95	128450.56	12698.634

Thursday, July 01, 2004	Rs. 36.92	1363.0864	372.98	118301.6	13747.162
Friday, July 16, 2004	Rs. 36.92	1363.0864	386.63	139114.08	14274.379
Sunday, August 01, 2004	Rs. 36.92	1363.0864	372.45	149482.756	13750.854
Monday, August 16, 2004	Rs. 36.92	1363.0864	388.29	150769.12	14335.666
Wednesday, September 01, 2004	Rs. 36.92	1363.0864	380.85	145046.722	14060.982
Thursday, September 16, 2004	Rs. 36.92	1363.0864	370.94	137596.48	13695.738
Friday, October 01, 2004	Rs. 36.92	1363.0864	385.5	148610.25	14219.738
Saturday, October 16, 2004	Rs. 36.92	1363.0864	391.65	153389.72	14459.718
Monday, November 01, 2004	Rs. 36.92	1363.0864	399.26	15940854	14740.679
Tuesday, November 16, 2004	Rs. 36.92	1363.0864	445	198025	16429.4
Wednesday, December 01, 2004	Rs. 36.92	1363.0864	456.922	208777.7	16869.56
Thursday, December 16, 2004	Rs. 39.5	1560.25	474.25	224913.06	18732.875
Saturday, January 01, 2005	Rs. 40.39	1631.35	561.72	315529.35	2268.87
Sunday, January 16, 2005	Rs. 40.39	1631.35	557.64	310962.36	22523.079
Wednesday, February 02, 2005	Rs. 42.39	1796.91	565.22	319473.64	22523.079
Wednesday, February 16, 2005	Rs. 42.39	1796.91	565.44	319722.39	23959.676
Tuesday, March 01, 2005	Rs. 43.96	1932.48	559.02	312503.36	24574.519
Wednesday, March 16, 2005	Rs. 45.53	2072.98	502.3	252305.29	22869.719
Friday, April 01, 2005	Rs. 45.53	2072.98	499.72	249720.078	2752.251
Sunday, April 17, 2005	Rs. 45.53	2072.98	529.47	274020.84	24106.769
Sunday, May 01, 2005	Rs. 45.53	2072.98	521.127	271573.35	23726.912
Tuesday, May 17, 2005	Rs. 45.53	2072.98	510.7	260814.49	23252.171
	1576.75	64147.92	20215.044	24698671.7	708063.406

Regression Equation $Y = a + b X$

Description

Where as

The constant “a” is called the regression constant

The constant “b” is called the regression coefficient, which represent the change with relative to other variable.

Formula of calculating the regression coefficient is

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2}$$

$$a = \bar{Y} - b \bar{X} \quad \text{Where } \bar{Y} = \frac{\sum Y}{n} \quad \text{and} \quad \bar{X} = \frac{\sum X}{n}$$

Values from the table are

$$n = 47$$

$$\sum xy = 708063.406$$

$$\sum x = 1576.75$$

$$\sum y = 20215.044$$

$$\sum x^2 = 64147.92$$

$$\sum (x)^2 = 2486140.56$$

Inserting values in the formula

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} \quad \text{Eq \# 1}$$

$$b = \frac{47(708063.406) - (1576.75)(20215.044)}{47(64147.92) - (2486140.56)}$$

$$\mathbf{b = 2.656}$$

Now

$$a = \bar{Y} - b \bar{X} \quad \text{Where } \bar{Y} = \frac{\sum Y}{n} \quad \text{and} \quad \bar{X} = \frac{\sum X}{n}$$

$$\bar{x} = \frac{1576.75}{47} = 33.547$$

$$\bar{y} = \frac{20215.044}{47} = 430.1073$$

putting values in equation $a = \bar{Y} - b \bar{X}$ Eq # 2

$$a = 430.1073 - (2.656)(33.547)$$

$$\mathbf{a = 341.006}$$

Inserting values of Eq # 1&2 in Regression Equation $Y = a + b X$
we get

$$Y = 341.006 + 2.656 X$$

Karl Pearson's Correlation Method

$$r = \frac{n \sum XY - (\sum X) (\sum Y)}{[\text{Radical}\{n \sum X^2 - (\sum X)^2\}] [\text{Radical}\{n \sum Y^2 - (\sum Y)^2\}]}$$

Inserting values in formula

$$r = \frac{47(708063.406) - (1576.75) (20215.044)}{[\text{Radical}\{47(64147.92) - (2486140.56)\}] [\text{Radical}\{47(24698671.7) - 408648003.9\}]}$$

$$r = 0.0704$$

Calculation Of Probable Error

Formula

$$P.E = 0.6745 \frac{(1-r^2)}{n}$$

Inserting values in formula

$$P.E = 0.06745 \frac{(1 - (0.0704)^2)}{\text{Radial (47)}}$$

$$P.E = 0.09789$$

**Calculation To Run Regression Equation And Correlation Coefficient of
PAKISTAN STATE OIL Ltd**

Table # 4.5

Time Duration	X Petroleum prices	X2	Y Scrip price	Y2	XY
Monday, June 30, 2003	Rs. 30.83	950.488	226.61	51352.092	6986.386
Tuesday, July 01, 2003	Rs. 31.19	972.8161	236.48	55922.79	7375.811
Wednesday, July 16, 2003	Rs. 31.52	993.5104	256.62	65853.824	8088.66
Friday, August 01, 2003	Rs. 31.52	993.5104	303.315	91999.98	9560.488
Saturday, August 16, 2003	Rs. 31.61	999.192	291.21	84826.56	9205.1481
Monday, September 01, 2003	Rs. 31.81	1011.8761	297.25	88357.562	9455.522
Tuesday, September 16, 2003	Rs. 31.33	981.5689	286.5	82082.25	8976.045
Wednesday, October 01, 2003	Rs. 30.73	944.3329	287.9	82886.41	8847.167
Thursday, October 16, 2003	Rs. 32.03	1025.92	254.57	64805.884	8153.871
Saturday, November 01, 2003	Rs. 32.59	1062.1081	250.93	62965.86	8177.808
Sunday, November 16, 2003	Rs. 32.9	1082.41	267.26	71427.9	8792.854
Monday, December 01, 2003	Rs. 33.58	1127.6164	282.64	79885.36	9491.0512
Tuesday, December 16, 2003	Rs. 33.78	1141.0884	281.94	79490.163	9523.9332
Thursday, January 01, 2004	Rs. 33.78	1141.0884	283.15	80173.922	9564.807
Friday, January 16, 2004	Rs. 35.48	1363.0864	285.73	81641.63	10137.7
Sunday, February 01, 2004	Rs. 35.33	1258.83	286.3	81967.69	10114.979
Monday, February 16, 2004	Rs. 34.47	1248.2089	288.64	83313.049	9949.42
Monday, March 01, 2004	Rs. 34.8	1188.1809	292.15	85351.62	10166.82
Tuesday, March 16, 2004	Rs. 34.75	1211.04	286.24	81933.33	9946.84
Thursday, April 01, 2004	Rs. 34.57	1207.56	284.05	80684.402	9819.608
Friday, April 16, 2004	Rs. 35.37	1195.084	274	75076	2691.38
Saturday, May 01, 2004	Rs. 36.92	1251.0369	268	71824	9894.56
Sunday, May 16, 2004	Rs. 36.92	1363.0864	268.53	82108.36	9914.127
Tuesday, June 01, 2004	Rs. 36.92	1363.0864	256.45	65766.6	9468.134
Wednesday, June 16, 2004	Rs. 36.92	1363.0864	254.86	64953.61	9409.431

Thursday, July 01, 2004	Rs. 36.92	1363.0864	261.07	68157.54	9638.7044
Friday, July 16, 2004	Rs. 36.92	1363.0864	267.55	71583.002	9877.946
Sunday, August 01, 2004	Rs. 36.92	1363.0864	256.57	65828.16	9472.564
Monday, August 16, 2004	Rs. 36.92	1363.0864	239.52	57369.83	8843.078
Wednesday, September 01, 2004	Rs. 36.92	1363.0864	228.65	52280.822	8441.758
Thursday, September 16, 2004	Rs. 36.92	1363.0864	244.72	59887.87	9035.062
Friday, October 01, 2004	Rs. 36.92	1363.0864	259.43	67303.924	9578.155
Saturday, October 16, 2004	Rs. 36.92	1363.0864	261.095	68170.599	9639.627
Monday, November 01, 2004	Rs. 36.92	1363.0864	228.475	52200.825	8435.297
Tuesday, November 16, 2004	Rs. 36.92	1363.0864	265.88	70692.174	9816.289
Wednesday, December 01, 2004	Rs. 36.92	1363.0864	270.32	73072.902	9980.214
Thursday, December 16, 2004	Rs. 39.5	1560.25	280.15	78484.02	11065.92
Saturday, January 01, 2005	Rs. 40.39	1631.35	308.785	95348.176	12471.826
Sunday, January 16, 2005	Rs. 40.39	1631.35	318.45	110649.36	12862.195
Wednesday, February 02, 2005	Rs. 42.39	1796.91	332.64	152834.08	14100.609
Wednesday, February 16, 2005	Rs. 42.39	1796.91	390.94	209672.41	16571.946
Tuesday, March 01, 2005	Rs. 43.96	1932.48	457.9	173056	20129.284
Wednesday, March 16, 2005	Rs. 45.53	2072.98	416	168452.78	18940.48
Friday, April 01, 2005	Rs. 45.53	2072.98	410.43	133721.86	18686.877
Sunday, April 17, 2005	Rs. 45.53	2072.98	365.68	138123.722	16649.41
Sunday, May 01, 2005	Rs. 45.53	2072.98	371.67	138138.58	16922.135
Tuesday, May 17, 2005	Rs. 45.53	2072.98	377.9	142808.41	17205.787
	1576.75	64147.92	13665.5	4144487.894	502077.7139

Regression Equation $Y = a + b X$

Description

Where as

The constant “a” is called the regression constant

The constant “b” is called the regression coefficient, which represent the change with relative to other variable.

Formula of calculating the regression coefficient is

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2}$$

$$a = \bar{Y} - b \bar{X} \quad \text{Where } \bar{Y} = \frac{\sum Y}{n} \quad \text{and} \quad \bar{X} = \frac{\sum X}{n}$$

Values from the table are

$$n = 47$$

$$\sum xy = 502077.713$$

$$\sum x = 11576.75$$

$$\sum y = 13665.5$$

$$\sum x^2 = 64147.92$$

$$\sum (x)^2 = 2486140.56$$

Inserting values in the formula

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} \quad \text{Eq \# 1}$$

$$b = \frac{47(502077.713) - (1576.75)(13665.5)}{47(64147.92) - (2486140.56)}$$

$$\mathbf{b = 3.877}$$

Now

$$a = \bar{Y} - b \bar{X} \quad \text{Where } \bar{Y} = \frac{\sum Y}{n} \quad \text{and} \quad \bar{X} = \frac{\sum X}{n}$$

$$\bar{x} = \frac{1576.75}{47} = 33.547$$

$$\bar{y} = \frac{13665.5}{47} = 290.755$$

putting values in equation $a = \bar{Y} - b \bar{X}$ Eq # 2

$$a = 290.755 - (3.877)(33.547)$$

$$\mathbf{a = 160.828}$$

Inserting values of Eq # 1&2 in Regression Equation $Y = a + b X$
we get

$$\mathbf{Y = 160.828 + 3.877 X}$$

Karl Pearson's Correlation Method

$$r = \frac{n \sum XY - (\sum X) (\sum Y)}{[\text{Radical}\{n \sum X^2 - (\sum X)^2\}] [\text{Radical}\{n \sum Y^2 - (\sum Y)^2\}]}$$

Inserting values in formula

$$r = \frac{47(502077.7139) - (1576.75) (13665.5)}{[\text{Radical}\{47(64147.92) - (2486140.56)\}] [\text{Radical}\{47(4144487.89) - 186745890.3\}]}$$

$$\mathbf{r = 0.99417}$$

Calculation Of Probable Error

Formula

$$P.E = 0.6745 \frac{(1-r^2)}{\text{Radial } n}$$

Inserting values in formula

$$P.E = 0.06745 \frac{(1 - (0.9941)^2)}{\text{Radial } (47)}$$

$$\mathbf{.E = 0.001157}$$

**Calculation To Run Regression Equation And Correlation Coefficient of
HAROON OILS Ltd**

Table #4.6

Time Duration	X Petroleum prices	X2	Y Scrip price	Y2	XY
Monday, June 30, 2003	Rs. 30.83	950.488	50.1	2510.01	1544.583
Tuesday, July 01, 2003	Rs. 31.19	972.8161	56	3136	1746.64
Wednesday, July 16, 2003	Rs. 31.52	993.5104	55	3025	1733.6
Friday, August 01, 2003	Rs. 31.52	993.5104	55	3025	1733.6
Saturday, August 16, 2003	Rs. 31.61	999.192	58	3364	1833.6
Monday, September 01, 2003	Rs. 31.81	1011.8761	55	3025	1749.55
Tuesday, September 16, 2003	Rs. 31.33	981.5689	59.1	3492.81	1851.603
Wednesday, October 01, 2003	Rs. 30.73	944.3329	56.118	3149.229	1724.506
Thursday, October 16, 2003	Rs. 32.03	1025.92	59.1	3492.81	1892.973
Saturday, November 01, 2003	Rs. 32.59	1062.1081	59.1	3492.81	1926.069
Sunday, November 16, 2003	Rs. 32.9	1082.41	59.1	3492.81	1944.39
Monday, December 01, 2003	Rs. 33.58	1127.6164	59.1	3492.81	1984.57
Tuesday, December 16, 2003	Rs. 33.78	1141.0884	59.1	3492.81	1996.398
Thursday, January 01, 2004	Rs. 33.78	1141.0884	57.236	3278.249	1933.432
Friday, January 16, 2004	Rs. 35.48	1363.0864	56.918	3239.65	2019.45
Sunday, February 01, 2004	Rs. 35.33	1258.83	55	3025	1943.15
Monday, February 16, 2004	Rs. 34.47	1248.2089	55	3025	1895.85
Monday, March 01, 2004	Rs. 34.8	1188.1809	55	3025	1914
Tuesday, March 16, 2004	Rs. 34.75	1211.04	57.445	3299.92	1996.213
Thursday, April 01, 2004	Rs. 34.57	1207.56	63.94	4088.32	2210.405
Friday, April 16, 2004	Rs. 35.37	1195.084	62.05	3850.2	2194.708
Saturday, May 01, 2004	Rs. 36.92	1251.0369	62.05	3850	2290.88
Sunday, May 16, 2004	Rs. 36.92	1363.0864	64.227	4125.107	2371.26
Tuesday, June 01, 2004	Rs. 36.92	1363.0864	86.3	7447.69	3186.196

Wednesday, June 16, 2004	Rs. 36.92	1363.0864	105.22	11071.24	4252.002
Thursday, July 01, 2004	Rs. 36.92	1363.0864	115.168	13263.66	3829.268
Friday, July 16, 2004	Rs. 36.92	1363.0864	103.718	10770.288	3212.04
Sunday, August 01, 2004	Rs. 36.92	1363.0864	87	7569	2438.566
Monday, August 16, 2004	Rs. 36.92	1363.0864	66.05	4362.6	2313.038
Wednesday, September 01, 2004	Rs. 36.92	1363.0864	62.65	3925.022	2444.05
Thursday, September 16, 2004	Rs. 36.92	1363.0864	63.49	4030.98	2344.05
Friday, October 01, 2004	Rs. 36.92	1363.0864	64	4096	2362.88
Saturday, October 16, 2004	Rs. 36.92	1363.0864	61	3721	2252.12
Monday, November 01, 2004	Rs. 36.92	1363.0864	95	9025	3507.4
Tuesday, November 16, 2004	Rs. 36.92	1363.0864	95	9025	3507.4
Wednesday, December 01, 2004	Rs. 36.92	1363.0864	95	9025	3507.4
Thursday, December 16, 2004	Rs. 39.5	1560.25	94.416	8914.38	3485.83
Saturday, January 01, 2005	Rs. 40.39	1631.35	90.5	8190.25	3655.295
Sunday, January 16, 2005	Rs. 40.39	1631.35	90	8100	3635.1
Wednesday, February 02, 2005	Rs. 42.39	1796.91	90	8100	3815.1
Wednesday, February 16, 2005	Rs. 42.39	1796.91	90	8100	3815.1
Tuesday, March 01, 2005	Rs. 43.96	1932.48	90.39	8170.352	3973.544
Wednesday, March 16, 2005	Rs. 45.53	2072.98	90.2	81360.04	4106.806
Friday, April 01, 2005	Rs. 45.53	2072.98	90.16	8128.82	4104.98
Sunday, April 17, 2005	Rs. 45.53	2072.98	85.67	7339.34	3900.55
Sunday, May 01, 2005	Rs. 45.53	2072.98	80.5	6480.25	3665.165
Tuesday, May 17, 2005	Rs. 45.53	2072.98	80.5	6480.25	3665.165
	1576.75	64147.92	3400.616	333693.707	125410.5

Regression Equation $Y = a + b X$

Description

Where as

The constant “a” is called the regression constant

The constant “b” is called the regression coefficient, which represent the change with relative to other variable.

Formula of calculating the regression coefficient is

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2}$$

$$a = \bar{Y} - b \bar{X} \quad \text{Where } \bar{Y} = \frac{\sum Y}{n} \quad \text{and} \quad \bar{X} = \frac{\sum X}{n}$$

Values from the table are

$$n = 47$$

$$\sum xy = 125410.5$$

$$\sum x = 1576.75$$

$$\sum y = 3400.616$$

$$\sum x^2 = 64147.92$$

$$\sum (x)^2 = 2486140.56$$

Inserting values in the formula

$$b = \frac{n \sum XY - (\sum X)(\sum Y)}{n \sum X^2 - (\sum X)^2} \quad \text{Eq \# 1}$$

$$b = \frac{47(125410.5) - (1576.75)(3400.616)}{47(64147.92) - (2486140.56)}$$

$$\mathbf{b = 1.0067}$$

Now

$$a = Y - b X \quad \text{Where } Y = \frac{\text{sum } Y}{n} \quad \text{and } X = \frac{\text{sum } X}{n}$$

$$\text{sum } x = \frac{1576.75}{47} = 33.547$$

$$\text{sum } y = \frac{3400.616}{47} = 72.35$$

putting values in equation $a = Y - b X$ Eq # 2

$$a = 72.35 - (1.0067)(33.547)$$

$$\mathbf{a = 38.578}$$

Inserting values of Eq # 1&2 in Regression Equation $Y = a + b X$

$$\mathbf{Y = 38.578 + 1.0067 X}$$

Karl Pearson's Correlation Method

$$r = \frac{n \sum XY - (\sum X)(\sum Y)}{[\text{Radical}\{n \sum X^2 - (\sum X)^2\}] [\text{Radical}\{n \sum Y^2 - (\sum Y)^2\}]}$$

Inserting values in formula

$$r = \frac{47(125410.5) - (1576.75)(3400.616)}{[\text{Radical}\{47(64147.92) - (2486140.56)\}] [\text{Radical}\{47(333693.707) - 11564189.18\}]}$$

$$\mathbf{r = 0.3607}$$

Calculation Of Probable Error

Formula

$$P.E = 0.6745 \frac{(1-r^2)}{n}$$

Inserting values in formula

$$P.E = 0.06745 \frac{(1 - (0.3607)^2)}{\text{Radial (47)}}$$

$$\mathbf{P.E = 0.0855}$$

Average Calculation Karl Pearson's Correlation Coefficient

Taking average of above three-mention companies (PSO, SHELL, HAROON OILS) correlation coefficient.

$$\text{Average "r"} = \frac{r(\text{Shell}) + r(\text{Pso}) + r(\text{Haroon})}{3}$$

$$\text{Average" r " = } \frac{0.07044 + 0.9941 + 0.3607}{3} = \mathbf{0.4750}$$

Average Calculation Of Probable Error

$$\text{Average P.E} = \frac{P.E(\text{shell}) + P.E(\text{pso}) + P.E(\text{Haroon})}{3}$$

$$\text{Average P.E} = \frac{0.09789 + 0.00115 + 0.0855}{3} = \mathbf{0.0615}$$

CHAPTER FIVE

FINDINGD, CONCLUSION & RECOMMENDATION

- Findings
- Conclusion
- Recommendation

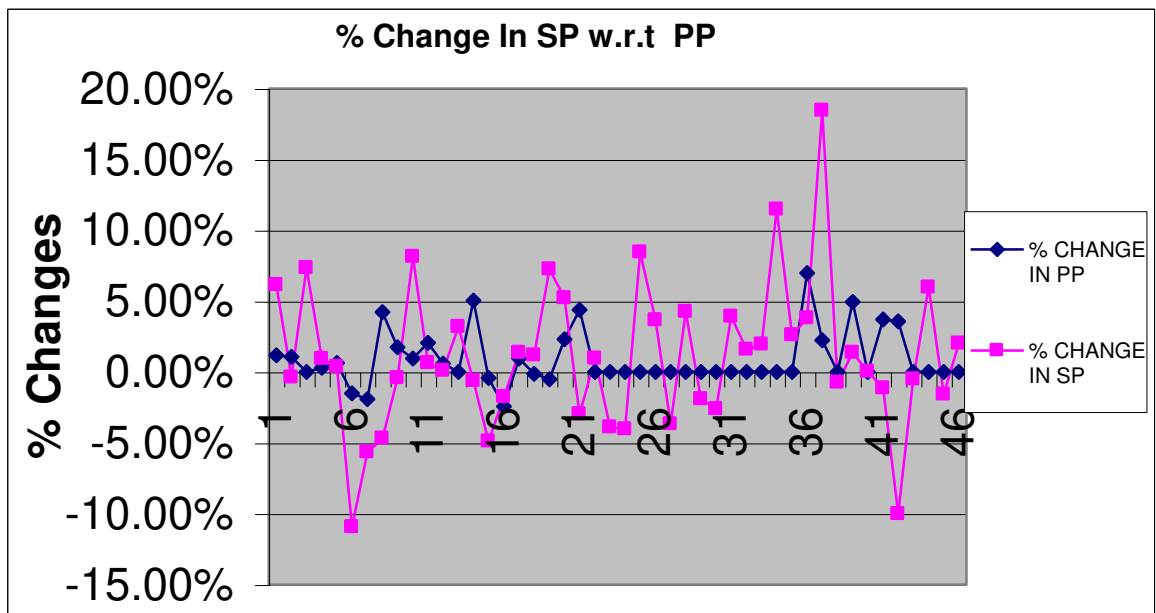
Changes In Scrip Prices (SP) With Respect To Petroleum Prices (PP) In Percentage & Rs. Terms

Data of Shell Pakistan Ltd Share price and Petroleum price

Time Duration	Change in PP in Rs.	% Change in PP	Change in SP in Rs.	% Change in SP
Monday, June 30, 2003
Tuesday, July 01, 2003	Rs.0.36	1.17%	Rs.25.18	6.15%
Wednesday, July 16, 2003	Rs.0.33	1.06%	Rs.-1.65	-0.38%
Friday, August 01, 2003	Rs.0	0%	Rs.31.82	7.35%
Saturday, August 16, 2003	Rs.0.09	0.29%	Rs.4.35	0.94%
Monday, September 01, 2003	Rs.0.2	0.63%	Rs.1.7	0.36%
Tuesday, September 16, 2003	Rs.-0.48	-1.51%	Rs.-50.763	-10.93%
Wednesday, October 01, 2003	Rs.-0.6	-1.92%	Rs.-22.087	-5.65%
Thursday, October 16, 2003	Rs.1.3	4.23%	Rs.-18.35	-4.69%
Saturday, November 01, 2003	Rs.0.56	1.75%	Rs.-1.5489	-0.42%
Sunday, November 16, 2003	Rs.0.31	0.95%	Rs.30.17	8.13%
Monday, December 01, 2003	Rs.0.68	2.07%	Rs.2.509	0.63%
Tuesday, December 16, 2003	Rs.0.2	0.60%	Rs.0.413	0.10%
Thursday, January 01, 2004	Rs.0	0.00%	Rs.12.92	3.19%
Friday, January 16, 2004	Rs.1.7	5.03%	Rs.-2.6	-0.62%
Sunday, February 01, 2004	Rs.-0.15	-0.42%	Rs.-20.285	-4.88%
Monday, February 16, 2004	Rs.-0.86	-2.43%	Rs.-6.965	-1.76%
Monday, March 01, 2004	Rs.0.33	0.96%	Rs.5.33	1.36%
Tuesday, March 16, 2004	Rs.-0.05	-0.14%	Rs.4.962	1.19%
Thursday, April 01, 2004	Rs.-0.18	-0.52%	Rs.28.309	7.26%
Friday, April 16, 2004	Rs.0.8	2.31%	Rs.18.872	5.22%
Saturday, May 01, 2004	Rs.1.55	4.38%	Rs.-11.276	-2.97%
Sunday, May 16, 2004	Rs.0	0.00%	Rs.3.545	0.96%
Tuesday, June 01, 2004	Rs.0	0.00%	Rs.-13.95	-3.89%
Wednesday, June 16, 2004	Rs.0	0.00%	Rs.-14.45	-4.03%
Thursday, July 01, 2004	Rs.0	0.00%	Rs.29.03	8.44%
Friday, July 16, 2004	Rs.0	0.00%	Rs.13.65	3.66%
Sunday, August 01, 2004	Rs.0	0.00%	Rs.-14.18	-3.67%
Monday, August 16, 2004	Rs.0	0.00%	Rs.15.84	4.25%
Wednesday, September 01, 2004	Rs.0	0.00%	Rs.-7.44	-1.92%
Thursday, September 16, 2004	Rs.0	0.00%	Rs.-9.91	-2.60%
Friday, October 01, 2004	Rs.0	0.00%	Rs.14.56	3.92%

Saturday, October 16, 2004	Rs.0	0.00%	Rs.6.15	1.59%
Monday, November 01, 2004	Rs.0	0.00%	Rs.7.61	1.94%
Tuesday, November 16, 2004	Rs.0	0.00%	Rs.45.74	11.46%
Wednesday, December 01, 2004	Rs.0	0.00%	Rs.11.922	2.61%
Thursday, December 16, 2004	Rs.2.58	6.99%	Rs.17.328	3.79%
Saturday, January 01, 2005	Rs.0.89	2.25%	Rs.87.47	18.44%
Sunday, January 16, 2005	Rs.0	0.00%	Rs.-4.08	-0.73%
Wednesday, February 02, 2005	Rs.2	4.95%	Rs.7.58	1.36%
Wednesday, February 16, 2005	Rs.0	0.00%	Rs.0.22	0.04%
Tuesday, March 01, 2005	Rs.1.57	3.70%	Rs.-6.42	-1.14%
Wednesday, March 16, 2005	Rs.1.57	3.57%	Rs.-56.72	-10.02%
Friday, April 01, 2005	Rs.0	0.00%	Rs.-2.58	-0.51%
Sunday, April 17, 2005	Rs.0	0.00%	Rs.29.75	5.96%
Sunday, May 01, 2005	Rs.0	0.00%	Rs.-8.343	-1.58%
Tuesday, May 17, 2005	Rs.0	0.00%	Rs.-10.427	2.01%

Graphical Representation

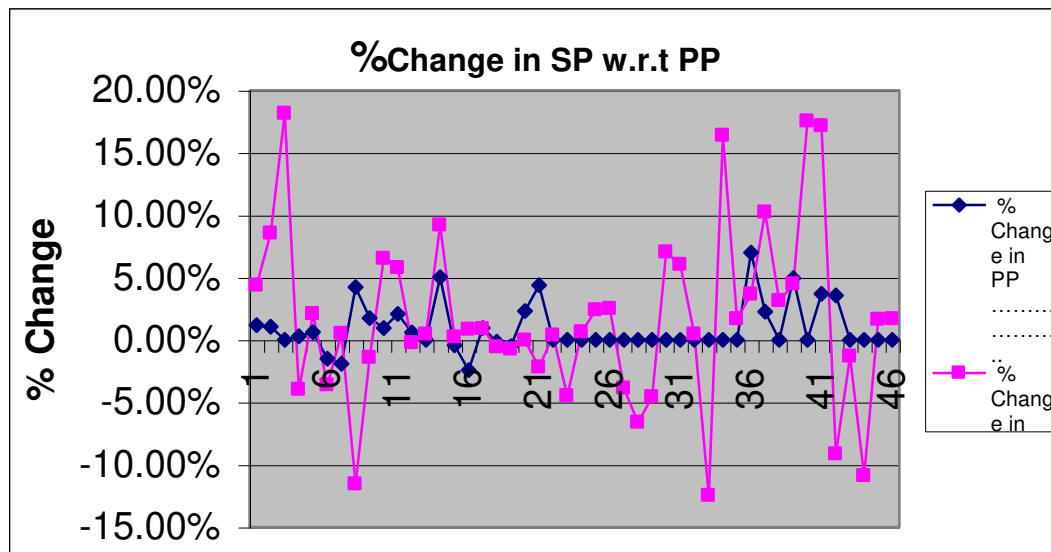


Data of P.S.O Ltd Share price and Petroleum price

Time Duration	Change in PP in Rs.	% Change in PP	Change in SP in Rs.	% Change in SP
Monday, June 30, 2003				
Tuesday, July 01, 2003	Rs.0.36	1.17%	9.87	4.35%
Wednesday, July 16, 2003	Rs.0.33	1.06%	20.14	8.52%
Friday, August 01, 2003	Rs.0	0%	46.53	18.13%
Saturday, August 16, 2003	Rs.0.09	0.29%	-12.105	-3.99%
Monday, September 01, 2003	Rs.0.2	0.63%	6.04	2.07%
Tuesday, September 16, 2003	Rs.-0.48	-1.51%	-10.75	-3.62%
Wednesday, October 01, 2003	Rs.-0.6	-1.92%	1.4	0.49%
Thursday, October 16, 2003	Rs.1.3	4.23%	-33.33	-11.58%
Saturday, November 01, 2003	Rs.0.56	1.75%	-3.64	-1.43%
Sunday, November 16, 2003	Rs.0.31	0.95%	16.33	6.51%
Monday, December 01, 2003	Rs.0.68	2.07%	15.41	5.76%
Tuesday, December 16, 2003	Rs.0.2	0.60%	-0.7	-0.25%
Thursday, January 01, 2004	Rs.0	0.00%	1.21	0.43%
Friday, January 16, 2004	Rs.1.7	5.03%	2.58	9.17%
Sunday, February 01, 2004	Rs.-0.15	-0.42%	0.57	0.20%
Monday, February 16, 2004	Rs.-0.86	-2.43%	2.34	0.82%
Monday, March 01, 2004	Rs.0.33	0.96%	2.51	0.87%
Tuesday, March 16, 2004	Rs.-0.05	-0.14%	-1.72	-0.59%
Thursday, April 01, 2004	Rs.-0.18	-0.52%	-2.19	-0.77%
Friday, April 16, 2004	Rs.0.8	2.31%	-10.05	-0.04%
Saturday, May 01, 2004	Rs.1.55	4.38%	-6	-2.19%
Sunday, May 16, 2004	Rs.0	0.00%	1.002	0.37%
Tuesday, June 01, 2004	Rs.0	0.00%	-12.08	-4.49%
Wednesday, June 16, 2004	Rs.0	0.00%	-1.59	0.62%
Thursday, July 01, 2004	Rs.0	0.00%	6.21	2.38%
Friday, July 16, 2004	Rs.0	0.00%	6.48	2.48%
Sunday, August 01, 2004	Rs.0	0.00%	-10.43	-3.89%
Monday, August 16, 2004	Rs.0	0.00%	-17.05	-6.64%
Wednesday, September 01, 2004	Rs.0	0.00%	-11	-4.59%
Thursday, September 16, 2004	Rs.0	0.00%	16.06	7.02%
Friday, October 01, 2004	Rs.0	0.00%	14.71	6.01%

Saturday, October 16, 2004	Rs.0	0.00%	1.16	0.45%
Monday, November 01, 2004	Rs.0	0.00%	-32.62	-12.49%
Tuesday, November 16, 2004	Rs.0	0.00%	37.41	16.37%
Wednesday, December 01, 2004	Rs.0	0.00%	4.44	1.67%
Thursday, December 16, 2004	Rs.2.58	6.99%	9.83	3.63%
Saturday, January 01, 2005	Rs.0.89	2.25%	28.635	10.22%
Sunday, January 16, 2005	Rs.0	0.00%	9.665	3.13%
Wednesday, February 02, 2005	Rs.2	4.95%	14.19	4.45%
Wednesday, February 16, 2005	Rs.0	0.00%	58.3	17.52%
Tuesday, March 01, 2005	Rs.1.57	3.70%	66.96	17.12%
Wednesday, March 16, 2005	Rs.1.57	3.57%	-41.9	-9.15%
Friday, April 01, 2005	Rs.0	0.00%	-5.57	-1.33%
Sunday, April 17, 2005	Rs.0	0.00%	-44.75	-10.90%
Sunday, May 01, 2005	Rs.0	0.00%	5.99	1.61%
Tuesday, May 17, 2005	Rs.0	0.00%	6.23	1.67%

Graphical Representation

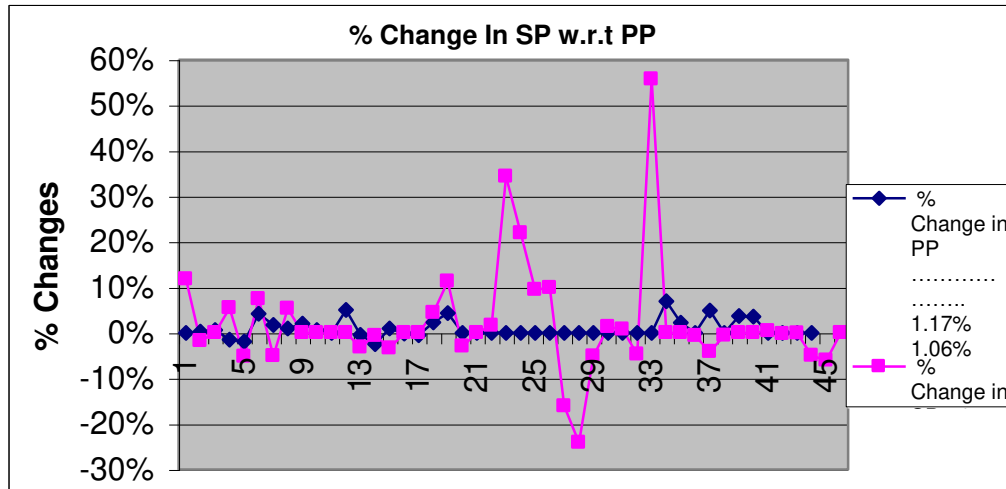


Data of HAROON OILS Ltd Share price and Petroleum price

Time Duration	Change in PP in Rs.	% Change in PP	Change in SP in Rs.	% Change in SP
Monday, June 30, 2003		
Tuesday, July 01, 2003	Rs.0.36	1.17%	
Wednesday, July 16, 2003	Rs.0.33	1.06%	5.9	11.80%
Friday, August 01, 2003	Rs.0	0%	-1	-1.79%
Saturday, August 16, 2003	Rs.0.09	0.29%	0	0%
Monday, September 01, 2003	Rs.0.2	0.63%	3	5.45%
Tuesday, September 16, 2003	Rs.-0.48	-1.51%	-3	-5.17%
Wednesday, October 01, 2003	Rs.-0.6	-1.92%	4.1	7.45%
Thursday, October 16, 2003	Rs.1.3	4.23%	-2.98	-5.05%
Saturday, November 01, 2003	Rs.0.56	1.75%	2.982	5.31%
Sunday, November 16, 2003	Rs.0.31	0.95%	0	0.00%
Monday, December 01, 2003	Rs.0.68	2.07%	0	0.00%
Tuesday, December 16, 2003	Rs.0.2	0.60%	0	0.00%
Thursday, January 01, 2004	Rs.0	0.00%	0	0.00%
Friday, January 16, 2004	Rs.1.7	5.03%	-1.864	-3.15%
Sunday, February 01, 2004	Rs.-0.15	-0.42%	-0.342	-0.60%
Monday, February 16, 2004	Rs.-0.86	-2.43%	-1.918	-3.37%
Monday, March 01, 2004	Rs.0.33	0.96%	0	0.00%
Tuesday, March 16, 2004	Rs.-0.05	-0.14%	0	0.00%
Thursday, April 01, 2004	Rs.-0.18	-0.52%	2.445	4.45%
Friday, April 16, 2004	Rs.0.8	2.31%	6.49	11.31%
Saturday, May 01, 2004	Rs.1.55	4.38%	-1.89	-2.96%
Sunday, May 16, 2004	Rs.0	0.00%	0	0.00%
Tuesday, June 01, 2004	Rs.0	0.00%	1.002	1.62%
Wednesday, June 16, 2004	Rs.0	0.00%	22.073	34.36%
Thursday, July 01, 2004	Rs.0	0.00%	18.92	21.92%
Friday, July 16, 2004	Rs.0	0.00%	9.948	9.45%
Sunday, August 01, 2004	Rs.0	0.00%	-11.45	9.90%
Monday, August 16, 2004	Rs.0	0.00%	-16.718	-16.12%
Wednesday, September 01, 2004	Rs.0	0.00%	-20.95	-24.08%
Thursday, September 16, 2004	Rs.0	0.00%	-3.4	-5.15%
Friday, October 01, 2004	Rs.0	0.00%	0.84	1.34%
Saturday, October 16, 2004	Rs.0	0.00%	0.51	0.80%

Monday, November 01, 2004	Rs.0	0.00%	-3	-4.69%
Tuesday, November 16, 2004	Rs.0	0.00%	34	55.73%
Wednesday, December 01, 2004	Rs.0	0.00%	0	0.00%
Thursday, December 16, 2004	Rs.2.58	6.99%	0	0.00%
Saturday, January 01, 2005	Rs.0.89	2.25%	-0.584	-0.61%
Sunday, January 16, 2005	Rs.0	0.00%	-3.91	-4.15%
Wednesday, February 02, 2005	Rs.2	4.95%	-0.5	-0.55%
Wednesday, February 16, 2005	Rs.0	0.00%	0	0.00%
Tuesday, March 01, 2005	Rs.1.57	3.70%	0	0.00%
Wednesday, March 16, 2005	Rs.1.57	3.57%	0.39	0.43%
Friday, April 01, 2005	Rs.0	0.00%	-0.19	-0.21%
Sunday, April 17, 2005	Rs.0	0.00%	-0.04	-0.04%
Sunday, May 01, 2005	Rs.0	0.00%	-4.49	-4.98%
Tuesday, May 17, 2005	Rs.0	0.00%	-5.17	-6.03%
			0	0.00%

Graphical Representation



SUMMARY OF FINDINGS

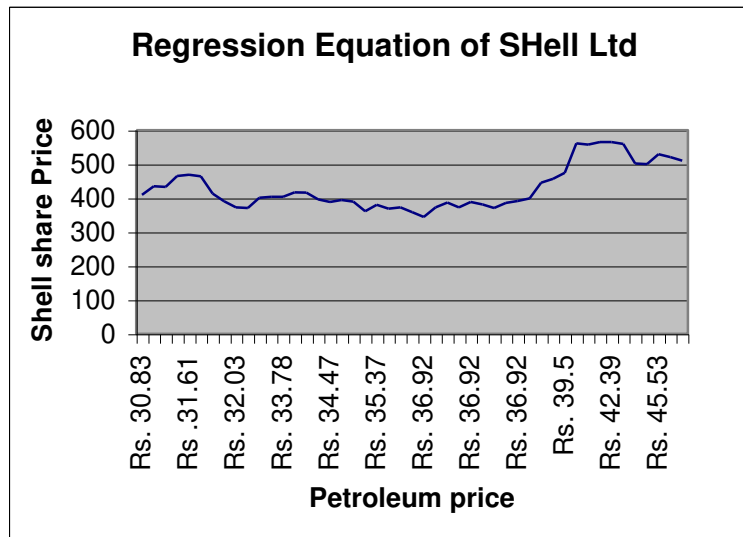
Finding # 1 “SHELL PAKISTAN LTD”

Content	Result
Regression Equation	$Y = 341.006 + 2.656$
Correlation Coefficient	$r = 0.0704$
Probable Error	$P.E = 0.09789$

In the Case of Shell Pakistan Ltd, correlation coefficient is less than probable error, and according to statistics rule if $P.E > r$, than then there is no evidence of correlation (i.e. the correlation is not significant)

The correlation coefficient is 0.0704 that is with in the range of 0 To 0.2 which indicate that the degree of association is negligible in this case.

Graphical Representation



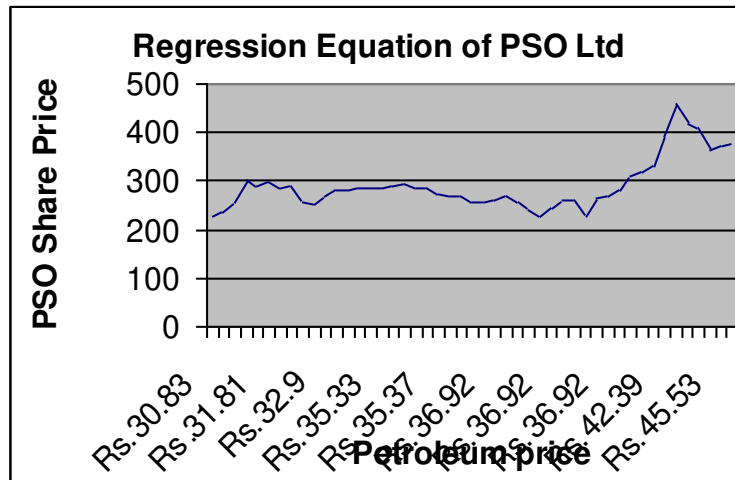
Finding # 2
“PAKISTAN STATE OIL LTD”

Content	Result
Regression Equation	$Y = 160.828 + 3.877 X$
Correlation Coefficient	$r = 0.99417$
Probable Error	$P.E = 0.001157$

In the Case of P.S.O Ltd, correlation coefficient is greater than probable error, and according to statistics rule if $r > P.E$, then there is certain correlation (i.e. coefficient of correlation is significant

The correlation coefficient is 0.99417 that it is with in the range of 0.8 To 1 which indicate that the degree of association is quite Strong in this case.

Graphical Representation



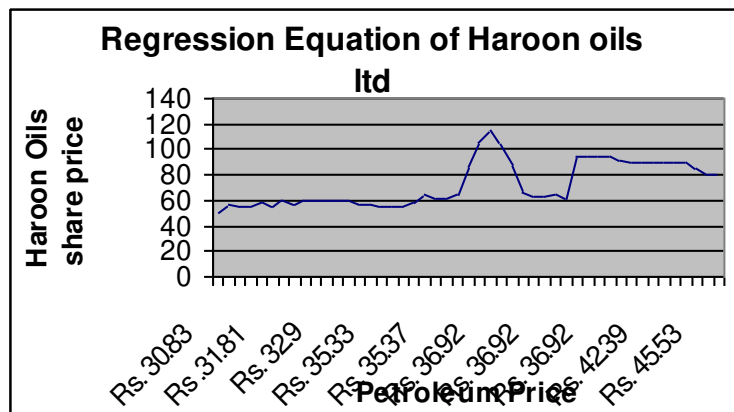
Finding # 3
“HAROON OILS LTD”

Content	Result
Regression Equation	$Y = 38.578 + 1.0067 X$
Correlation Coefficient	$r = 0.3607$
Probable Error	$P.E = 0.0855$

In the Case of Haroon Oils Ltd, correlation coefficient is greater than probable error, and according to statistics rule if $r > P.E$, then there is certain correlation (i.e. coefficient of correlation is significant)

The correlation coefficient is 0.3607 that it is with in the range of 0.2 To 0.5 which indicate that the degree of association is Weak in this case.

Graphical Representation



Finding # 4

“Average Of Three (Shell, Pso, Haroon) Companies”

Content	Result
Regression Equation	$Y = 180.137 + 2.513 X$
Correlation Coefficient	$r = 0.4750$
Probable Error	$P.E = 0.0615$

On an average, correlation coefficient is greater than probable error, and according to statistics rule if $r > P.E$, then there is certain correlation (i.e. coefficient of correlation is significant)

The correlation coefficient is 0.4750 that it is with in the range of 0.2 To 0.5 which indicate that the degree of association is Weak in this case

CONCLUSION

One of the key developments during the preceding year was the escalating oil price in international markets that touched a new peak on October, 29, 2004, when WTI touched \$56.36/bbl. There were number of unusual factors that brought about this.

Contrary to general market principle where the prices are determined by the market forces of demand and supply, it was the uncertainty that proved to be the main reason behind the hike in the oil prices. The speculators got the chance to drive the margins high.

Uncertainty ranged from exuberant demand for oil from growing China and developing India to issues of disrupted oil supply, continuity of Iraq war and post war unrest, terrorist attacks to oil facilities, geo-political problems in oil producing countries, Yuko's scandal, hurricanes in the American gulf, seasonal factors of colder winter and last but not the least the attitude of OPEC on the developing oil market situations. The oil prices were further pushed up by speculators on the reports of falling inventories in US and OECD.

Similarly among other countries Pakistan is the one who got affected from this change, by having negative Balance of payment which is due to high import of oil as well as high double digit inflation pushed economy little bit back

In spite of this pressure on economy oil marketing companies done well in the period of 2003-2004, they reported a significant profit in the accounting year of 2003-2004, although their scrip's performance on an average done well.

According to the research study "The Impact Of Change In Oil Prices On The Oil Marketing Companies Share/ Scrip Traded In The KSE-100 Index, it is find out that On an average ,oil marketing companies correlation coefficient is greater than probable error, and according to statistics rule if $r > P.E$, then there is certain correlation (i.e. coefficient of correlation is significant)

The average correlation coefficient is 0.4750 that it is within the range of 0.2 To 0.5 which indicate that the degree of association is Weak in this case.

According to the interview taken by the researcher from the Equity Analyst of oil sector in Khadim Ali Shah Bukhari Investment Bank. Analyst Mr. Yahya Hussain said that since we donot have a efficient capital market (referring towards stock exchange) so it is very difficult to apply any statistic tool, and often the result is not up to mark. Giving the answer to my question which is about the impact of oil prices on the oil marketing companies share prices, he added that in all over the world efficient stock market do respond to the change in oil prices and their oil marketing companies share price also fluctuate with the change in oil prices, and it has a perfectly positive correlation in between these two variables, he also gave an example of New Delhi Stock Exchange, New York Stock Exchange as well as Tokyo Stock Exchange where these two variables have a perfectly positive correlation that is increase in the oil prices will increase the share prices of oil marketing company.

RECOMMENDATIONS

- Investor should analyze the changes in oil prices so he keeps eye on the oil marketing companies share prices and can make profit/capital gain.
- In order to make stock market efficient the index should determine on the basis of those share which are actively traded in KES-100 Index.
- Govt. role should be minimum in determining the oil prices by doing this an efficient structure will be created who respond the changes quickly.

