MACRO FACTORS AFFECTING ISTANBUL STOCK EXCHANGE

Thesis Submitted to the

Institute of Social Sciences

in partial satisfaction of the requirements for the degree of

Master of Arts

in

Business Administration

by

ESRA ÖZDİNÇER

Boğaziçi University

1996

ACKNOWLEDGMENT

First of all I would like to express my sincere gratitude to my thesis supervisor , Prof.Dr. Özer Ertuna for his valuable guidance, recommendations, comments, encouragement, support and suggestions to improve my research during all stages of my thesis.

I want to thank to my uncle, Prof. Dr. Mehmet Şükrü Tekbaş, old Chairman Capital Market Board , for his comments, and sincere trust in the success of my thesis.

I also want to thank to Ergin Erkut, Training Director of İstanbul Stock Exchange, and Melis Sunay, General Manager of Intermedia for their valuable contribution in the stage of data collection.

Finally I wish to thank to my family for their undertaking and support throughout my education life and continuous moral support during this thesis which gave me courage.

ABSTRACT

Macro Factors Affecting Istanbul Stock Exchange

by

Esra Özdinçer

Common stock prices fluctuate because of many reasons in Turkey, in this study the effects of macroeconomic factors and alternative investment tools on the İstanbul Stock Exchange was analyzed. As macroeconomic factors, inflation rate, money supply, capacity utilization rate and production index were used. Gold prices, foreign exchange rates and treasury bill rates were used as alternative investment tools to common stocks.

The relationship between the each individual variable with the ISE Index was investigated. According to these results ; among macroeconomic factors the relationship between the inflation rate and the Index is the highest also , among the alternative investment tools the relationship between the gold prices and Index is the highest.

When all the variables were taken into account it could be seen that changes in the macroeconomic factors, in inflation, capacity utilization rate and production index explain the mostly observed variability in the ISE Index.

Effects of political events was also analyzed. It was found that important political events affect the ISE Index. While a positive change for Turkey in the political environment has a positive effect on the ISE Index, a negative change or uncertainty has a reverse effect .

Lagged values were used to determine the future ISE Index. Wholesale price index was found the most important variable to determine the future ISE Index among the other inflation measures , production index and capacity utilization rate.

Factor analysis was done in order to examine the interrelations among the variables. Since all these variables are correlated to each other, according to the results of factor analysis we can explain all these variables in two factors. One is environmental factor the other is company factor. According to the results environmental factors explain the variance in the ISE Index better than the company factors . Although both company and environmental features are important for the determination of the ISE Index, environmental features are much more important.

ÖZET

Türkiye'de hisse senetleri fiyatları birçok nedenlerden dolayı dalgalanmalar göstermektedir. Bu çalışmada makroekonomik faktörlerin ve alternatif yatırım araçlarının borsa endeksi üzerine etkileri araştırılmıştır. Makroekonomik faktörler olarak, enflasyon oranı, para arzı, kapasite kullanı oranı ve üretim endeksi kullanılmıştır. Altın fiyatları, yabancı para kurları ve hazinenin iç borçlanma faiz oranları da alternatif yatırım araçları olarak kullanılmıştır.

Her bir değişkenin IMKB Endeksiyle olan ilişkisi incelenmiştir. Regresyon analizlerine göre , eğer her bir değişken tek başına dikkate alınırsa; makroekonomik faktörler içinde borsa endeksiyle en büyük korelasyonu olan enflasyon oranı iken; alternatif yatırım araçları içinde altın fiyatlarıyla IMKB endeksi arasındaki korelasyonun diğerlerinden daha büyük olduğu saptanmıştır.

Bütün değişkenler dikkate alınınca makroekonomik faktörlerdeki değişimin, enflasyon, kapasite kullanım oranı ve üretim endeksindeki , IMKB 'daki değişimin büyük bir kısmını açıkladığı görülmektedir.

Politki olayların da etkisi araştırılmıştır. Önemli politik olayların endeksi etkilediği görülmektedir. Türkiye için politik çevredeki olumlu bir olay borsayı olumlu yönde etkilerken negatif bir değişim olumsuz veya belirsizlik yönde etkilemektedir.

Lag'lı değerler gelecekteki endeksi belirlemek açısından kullanılmıştır. Sonuçlara göre toptan eşya fiyat endeksinin gelecekteki endeksi belirlemede diğer enflasyon ölçüleri, kapasite kullanım oranı ve üretim endeksi arasında en önemli etken olduğu görülmüştür

Değişkenler arasındaki ilişkilerin analiz edilmesi açısından faktör analizi yapılmiştır. Bütün değişkenler kendi aralarında birbirleriyle ilişkili olduklarından faktör analizine göre bütün değişkenleri iki faktör altında toplayabiliriz. Birisi çevre faktörü olurken diğeri şirkete özgü faktör olmaktadır. Sonuçlara göre çevre faktörü IMKB' deki değişimi firma faktöründen daha iyi açıklamaktadır. Hem çevre hem de firma faktörü endeksi belirlemede etkili olduğu halde çevre faktörünün çok daha etkili olduğu görülmüştür.

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E	ISE INDEX
I	WHOLESALE PRICE INDEX
M	MONEY SUPPLY
C	CAPACITY UTILIZATION RATE
P	PRODUCTION INDEX
G	GOLD PRICES
FE	FOREIGN EXCHANGE RATE
TB	TREASURY BILL RATE
R	CORRELATION COEFFICIENT
R^2	COEFFICIENT OF DETERMINATION
Δ	MONTHLY PERCENTAGE CHANGE
L1(G)	ONE MONTH LAGGED VALUE OF GOLD PRICE
L2 (G)	TWO MONTH LAGGED VALUE OF GOLD PRICE
L3 (G)	THREE MONTH LAGGED VALUE OF GOLD PRICE

1. INTRODUCTION

Many recent studies conclude that stock returns can be predicted by means of publicly available information, such as time series data on financial and macroeconomic variables with an important business cycle component. Variables identified by Pesaran, Timmermann (1995) to have been statistically important for predicting stock returns include interest rates, monetary growth rates, changes in industrial production, inflation rates, earnings-price ratios, and dividend yields. However, the economic interpretation of these results is controversial and far from evident. First, it is possible that the predictable components in stock returns reflect time-varying expected returns, in which case predictability of stock returns is consistent with an efficient stock market. A second interpretation takes expected returns as roughly constant and regards predictability of stock returns as evidence of stock market inefficiency. It is, however, clear that predictability of excess returns on its own does not imply stock market inefficiency. Investors' portfolio decisions are based exclusively on historically available information. However, it does not provide much information on which specific factors have been responsible for predicting stock returns, nor does it guarantee that the information used by portfolio managers has been publicly available.

Stock prices fluctuate because of company factors , economical factors or industry factors. In Turkey , changes in economic, political and

sociological environment affect Istanbul Stock Exchange. The possibility that stock returns may fluctuate as a result of changes in the overall market is called the systematic risk. Changes in the economic, political and sociological environment which affect securities markets as a whole are sources of systematic risk. Systematic or market risk is peculiar to the stock market as a whole. Systematic variability of return is found nearly all securities in varying degrees because most securities move together loosely in a systematic manner. While some firms affect more than the others from systematic variation, some of them may not be affected. Since ISE index will be used, instead of taking account of each individual company overall security market will be analyzed.

This study will be done in Istanbul Stock Exchange. In this study the effects of macroeconomic variables on stock prices will be analyzed. In addition to these quantitative variables qualitative variables, political or sociological events , will be used, to show how these events affected stock prices.

2. ECONOMIC VARIABLES AND THE STOCK MARKET

Many recent studies conclude that stock returns can be predicted by means of publicly available information, such as time series data on financial and macroeconomic variables with an important business cycle component. Variables identified by Pesaran, Timmermann (1995) to have been statistically important for predicting stock returns include interest rates, monetary growth rates, changes in industrial production, inflation rates, earnings-price ratios, and dividend yields. (40). Dowrie and Fuller (1950) , Rose (1960) and Morgan and Thomas (1962) found that short and long term interest rates, dividend yields, industrial production, company earnings , liquidity measures and the inflation rate systematically linked with stock market returns. According to Angas (1936) the major determinant of price movements on the stock exchange is the business cycle. Pesaran and Timmermann (1995) found that predictability of stock returns of a magnitude that is economically exploitable seems to depend not just on the evolution of the business cycle, but also on the magnitude of the shocks. There is considerable evidence that state variables such as aggregate production growth, yield spreads between low grade and high grade bonds, yield spreads between long and short term government bond, short term interest rates and dividend yields are important in explaining the asset pricing equilibrium and useful in forecasting returns of stocks (14). Chen (1991) confirmed that the default spread, the term spread, the one month

Treasury bill rate , the lagged industrial production growth rate, and the dividend price ratio are important determinants of future stock market returns.(13). Prime (1946), Dowrie and Fuller (1950), Rose (1960) and Morgan and Thomas (1962) suggested that stock returns systematically linked with short and long interest rates, dividend yields, industrial production, company earnings, liquidity measures and inflation rate.

2.1 INFLATION

There is a well documented but puzzling empirical relation between stock returns and inflation. Expected inflation, unexpected inflation and changes in expected inflation are all negatively related to stock returns. The empirical results merit attention because, they appear to be in conflict with both economic theory and common sense, according to which stock returns should be positively related to both expected and unexpected inflation. Nelson and Fama (1981) both argued that the money demand theory implies a negative relation between the actual inflation rate and growth rate of real activity. Since stock returns predict real activity, a negative but spurious correlation is induced between stock returns and inflation (19).

According to Geske and Roll (1983) stock market returns signal changes in the inflationary process because of the following chain of macroeconomic events. First, the government's principal revenues are

personal and corporate taxes. When stock prices increase or decrease in response to anticipated changes in economic conditions, personal and corporate incomes move in the same direction, inducing a similar change in government revenue. Thus, fluctuations in government revenue are closely related to stock market movements. Second , if government expenditures do not accommodate themselves to changes in revenue, fluctuations in revenue will be reflected in deficit. Recent government deficits have paralleled a rapid rise in the fixed portion of government expenditures. Third, when deficit occurs, the Treasury is obliged to borrow. It could repay the debt during later surplus periods provided that direct tax revenues increased or expenditures decreased enough to generate such a surplus. Instead, the typical in recent years has been to decrease the debt by printing money or expanding bank reserves. This effectively generates the required surplus by indirect taxation through the inflation caused by an increased rate of monetary growth (23).

Higher inflation will not always depress stock values. If investors and business managers correctly anticipate variations in the inflation rate over the life span of capital investments at the time these projects are undertaken, real equity values may neither rise nor fall in response to the inflation rate. For example, if management correctly anticipates higher inflation rates ten years hence, it also will foresee that the income from long - lived investment projects undertaken today will be taxed at

higher rates a decade from now. Unlike fully anticipated inflation, unexpected changes in the inflation rate or revisions of price forecasts, like any new information, must always disturb real equity values, because previous capital purchases were justified by now - obsolete information.

Also, inflation reduces the real value of the firm's debt, and reduces the net real return on bonds.

2.2 MONEY SUPPLY

Many academic and professional observers hypothesize a close relationship between stock prices and various monetary variables. The best known of these monetary variables is the money supply.

Investors tend to have strong preferences about the amount of cash they wish to hold relative to other assets. When the money supply increases unexpectedly, the cost arising from holding additional amounts of money exceeds the benefits. Individuals then attempt to reduce their money balances by acquiring goods and financial assets, including common stocks. Consequently, an expansionary monetary policy, represented by an increase in the rate of growth of money supply, should lead to a rise in stock prices, whereas a contradictionary monetary policy should have a dampening effect on stock prices.

Consequently, investors must conclude that although money supply is related to stock prices, consistent gains in the stock market

can not be realized simply by predicting the future direction of monetary policy.

Research by Brunner, Friedman and Schwartz , Tobin and others established that a relationship exists between changes in the supply of money and changes in the prices of other assets held in an investor's portfolio. It is generally agreed that an unexpected increase or decrease in the growth rate of money results in a change in the equilibrium position of money with respect to other assets in the portfolio of investors. Investors try to adjust the proportion of their asset portfolios represented by money balances. Although investors can adjust, the system can not since all money balances must be held. As a result, equilibrium is reestablished by changes in the price levels of the various asset categories. According to Robert Mundell and James Tobin there are negative relations between expected real stock returns and either expected inflation rates or money growth rates. They hypothesize that the higher expected inflation rates caused by higher growth rates of money cause shifts from non - interestbearing money to financial assets like common stocks, which lower the expected real returns on such assets.

An important component in the asset portfolio of investors is the value of financial assets, including common stocks. It can be expected that adjustments in portfolios caused by changes in the monetary component will occur in this account as well as those accounts

representing real goods and services. Non - economic tests of monetary model have been performed by Sprinkel (1964) and Palmer (1970) . These studies concluded that changes in stock prices resulted from changes in monetary variables. (47).The conclusion which must follow this finding is that if one can forecast changes in money supply, one can determine at least in part future prices and returns of stocks. Such a conclusion contradicts a body of knowledge developed which demonstrates that the stock market is efficient with regard to information. That is, all available information is fully reflected in current stock prices.

Changes in money supply cause contemporaneous changes in stock returns but likewise current changes in stock returns lead changes in money supply. According to Rogalski and Vinso (1977) money supply is important in determining market rates of return but that changes in return may actually lead money changes. (43). The stock market is efficient with respect to monetary information as the efficient market theory would suggest. Specifically, causality does not appear to go from money supply to stock prices but rather from stock prices to money supply. Result is a bi-directional theory of causality between money supply and stock returns.

While monetary policy should not be guided by the impact on the stock market, such influences should not be ignored due to the influence of the stock market on economic activity.

The money supply possibility is strongly suggested by Fama's own empirical results. In his annual results, a one percent increase in the base growth rate is associated with nearly a two percent decline in real stock returns, after taking into account the future level of real activity.

2.3 ECONOMIC GROWTH

Empirically , there is considerable evidence that state variables such as aggregate production growth, yield spreads between low grade and high grade bonds, yield spreads between long and short - term government bonds, short-term interest rates, and dividend yields are important in explaining the asset pricing equilibrium and useful in forecasting returns of stocks and bonds.

The expected market premium is negatively related to the recent growth in of economic activity and positively related to the expected future growth of economic activity and its conditional variance. Chen (1991) found that the current market dividend yield and a measure of the default premium are indicators of the current health of the economy as measured by the recent growth rate of GNP. The market premium is negatively related to the recent growth rate and positively related to the expected future growth rate (13).

The statistical relationship between stock prices and real variables such as GNP and industrial production is well established.

Still, some researchers conclude that a large fraction of significant market moves are difficult to explain. For example Cutler, Poterba, and Summers (1989) argue that " news important enough to account for large swings in the demand for corporate equities would almost surely leave traces in either official economic statistics or media reports about market movements" (48).Fama (1990) found that a combination of real and financial variables explains 58 percent of the variation in annual returns but concedes that a substantial residual variation remains, leaving open the question whether observed fluctuations are rational. What else moves stock prices (18).

2.4 EXCHANGE RATE

In general , short - term foreign monetary assets are fully exposed to exchange risk, whereas domestic monetary assets are not. Real assets, however, will be affected in value by exchange rate movements, whatever their location. Thus, purely domestic firms may be affected by exchange rate movements through effects on aggregate demand, on the cost of traded inputs, or on competing imported goods. But, the degree of association between endogenous variables such as stock prices and exchange rates depend on nature of the shocks affecting the economy. Thus, exposure may just reveal the simultaneous impact of monetary factors on exchange rates and stock prices. A monetary contraction may increase short term nominal (and real)

interest rates, which will differentially affect companies, while leading to an appreciation of the domestic currency. Thus, if both stock returns and exchange rates are generated by the same original factors, then stock returns may not exhibit a sensitivity to exchange rate innovations.

According to Jorion (1991) , the exchange rate variable is positively correlated with the stock market. Exchange rate is negatively correlated with changes in expected inflation. Exchange rate risk appears to be diversifiable. As a result, active hedging policies by financial managers cannot affect the cost of capital, and reasons other than pricing arguments must explain why firms actively manage foreign exchange risk (28).

2.5 INTEREST RATE

One of the most widely heralded investment axioms maintains that variations in stock prices can be largely explained by changes in the cash flows of corporations and changes in the discount rate that prices these cash flows. Conventional stock market wisdom holds that, in the long run, stock prices vary directly with changes in corporate cash flows and inversely with changes in interest rates. Investors carefully monitor movements in corporate profits and interest rates because of the potential impact these variables may have on stock prices. Stock market returns are negatively associated with nominal interest rates. According to Geske and Roll (1983) the difference between a stock return and the

beginning of period short term interest rates causes a negative contemporaneous change in Treasury Bill rates, the beginning interest rate level as well as the change in rates cause changes in stock prices (23).

Recent research by Eugene Fama substantiates these presumed relationships by showing that approximately 58 % of the variance of annual stock market returns from 1953 to 1987 was explained by changes in a combination of industrial production and interest rate factors (17). But, Wigmore's findings contradict the traditional belief that corporate profits and interest rates affect stock prices.

Security analysts typically observe the performance of a company's earnings to evaluate the future prospects of the firm. The underlying assumption is that earnings tend to reflect the cash flows of the company. A more direct way to gauge corporate cash flows is to observe cash dividends. The combined effect of the actual changes in cash dividends and interest rates on stock prices during the 1980s provides some interesting and possibly reassuring findings (Peavy 1992). The implication is obvious : Changes in cash dividends and interest rates do not have a linear effect on stock prices. Instead, the interactive effect of these variables has a multiplicative effect on the stock market (38).

Stock returns negatively correlated with changes in the Treasury bill rate. Investors stay in the stock market unless their predictions

indicate that there is at least 90 percent probability that bonds will pay a higher return than stocks. This is a relatively conservative trading rule in the sense that the investor stays in the stock market unless he is fairly confident that it will be better to stay in bonds.

3. RISK AND RETURN

The return achieved by a security is closely related to the degree of risk undertaken. Investors increase their required rates of return as perceived risk (uncertainty) increase. The line that reflects the combination of risk and return available on alternative investments is typically called the security market line (SML), since it is meant to reflect the risk - return combinations available for all securities in the capital market at a given time. Given the security market line prevailing at a point in time, investors would select investments that are consistent with their risk preferences. Some would consider only low risk investments, while others would welcome high risk investments.

Beginning with an initial security market line, three changes can occur. First, individual investments can change positions on the line because of changes in their perceived risk. Second, the slope of the SML can change because of changes in the attitudes of investors toward risk, that is , investors can change the returns they require per unit of risk. Third, the SML can experience a parallel shift due to a

change in one of the variables that affect all investments such as the RFR or the expected rate of inflation.

3.1 RETURN

The goal of an investment is a future return. The rate of return on a security is a major factor associated with evaluating and selecting an investment.

$$r_{it} = \frac{p_{t+1} - p_t + d_t}{p_t}$$

d_t = cash dividend in period t from stock i

p_t = market price at beginning of period for ith stock

p_{t+1} = end of period price for period t or, equivalently, the beginning price for period t+1

During a selection process of a security we try to find a security that provide a rate of return that compensates for :

- the time value of money during the period of investment.
- the expected rate of inflation during the period
- the risk involved

The summation of these three components is called the required rate of return. This is the minimum rate of return that should be expected from an investment to compensate for deferring consumption.

3.2. RISK

The total risk of any asset can be assessed by measuring its variability of returns. Total variability of returns is measured using either the variance or the standard deviation of the one period rates of return. The standard deviation is the square root of the variance (42).

Standard deviation of expected returns = $\sqrt{}$ variance (r) = σ

$$\sigma = \frac{1}{n-1} \sum_{n=1}^{n} [r - E(r)]^2$$

When investing in a stock, an investor assumes the risk of realizing less than the expected return. This risk has two important components : the risk that the variability in return would be caused by factors that affect the prices of all stocks - market or systematic risk - and factors that are unique to a firm or industry - nonmarket or unsystematic risk.

Total Risk = Systematic Risk + Unsystematic Risk

$\sigma^2_s = \beta^2_s\sigma^2_m+\sigma^2_{\varepsilon s}$

The possibility that individual stock returns may fluctuate solely as a result of changes in the overall market is called the systematic risk. Systematic or market risk is peculiar to the stock market as a whole. It refers to that portion of the total variability of a stock's return caused by factors which simultaneously affect the average return of all marketable

securities. Systematic risk is more difficult to diversify because it is common to all assets in the market to some extent. Thus, systematic risk is synonymously called undiversifiable risk. Changes in the economic, political and sociological environment which affect securities markets are sources of systematic risk. Systematic variability of return is found in nearly all securities in varying degrees because most securities move together loosely in a systematic manner (41).

Asset prices are commonly believed to react sensitively to economic news. Individual asset prices are influenced by a wide variety of unanticipated events and that some events have a more pervasive effect on asset prices than do others (39). Consistent with the ability of investors to diversify, modern financial theory has focused on pervasive, or " systematic " influences as the likely source of investment risk. Stock prices are usually considered as responding to external forces. It is apparent that all economic variables are endogenous in some ultimate sense. Only natural forces, such as supernovas, earthquakes, and the like, are truly exogenous to the world economy, but to base an asset - pricing model on these systematic physical factors is well beyond the current abilities. By the diversification, only general economic state variables will influence the pricing of large stock aggregates. Any systematic variables that affect the economy's pricing operator or that influence dividends would also influence stock market returns.

In contrast to the systematic risk , the unsystematic risk refers to that portion of the variability of a stock's return which is the result of unexpected events or developments within the company or the related industry. Since unsystematic security price movements are statistically independent from one another, they may be reduced by diversification. Thus, unsystematic risk is synonymously called diversifiable risk. Changes such as labor strikes, management errors, inventions, advertising campaigns, shifts in consumer taste cause unsystematic variability of returns in a firm.

The direct sources of risk associated with common stock are inflation risk, interest rate risk, exchange rate risk, liquidity risk, tangible and intangible risk, country risk, industry risk, business (financial leverage, operating leverage) risk.

4. FUNDAMENTAL ANALYSIS

The present value of a company's common stock depends on the company's ability to generate earnings - its earning power. Also the present value of a common stock is a function of the future dividend stream, the holding period price of the stock and the investor's appropriate discount rate. The first two variables are directly related to the future earnings growth of a company. Future earnings growth depends not only on the performance of the company, but on the future

success of the industry of which it is a part (10). The future prospects of an industry , in turn, are closely tied to the general economic conditions prevailing in the country. Earning power, in turn, depends on such factors as the company's production and operating efficiency, profitability and capital structure. Although earning power is influenced by national economic and industry conditions, it is also determined to a great degree by company itself. The value of a security is determined by its quality and profit potential. The economic environment and the performance of the firm's industry influence the security value and rate of return (42).

4.1. ECONOMIC INFLUENCES

Monetary and fiscal policies influence all industries and all companies. Fiscal policy initiatives such as tax credits or tax cuts can encourage spending, whereas additional taxes can discourage spending. Increases or decreases in government spending on defense, unemployment insurance, retaining programs, or highways also influence the general economy. All such policies influence the business environment for firms that rely directly on those expenditures for earnings. In addition, government spending has a multiplier effect. For example, increases in road building increase the demand for equipment and materials, and the workers in industries that supply those products

have more to spend on consumer goods, which raises the demand for consumer goods, which affects another set of suppliers.

Monetary policy produces similar economic changes. A restrictive monetary policy that reduces the growth rate of the money supply reduces the supply of funds for working capital and expansion for all businesses. This raises market interest rates, and therefore firms' costs, making goods and services more expensive for individuals. Monetary policy therefore affects all segments of an economy, and that economy's relationship with other economies.

Inflation causes differences between real and nominal interest rates and changes the spending and savings behavior of consumers and corporations. In addition, unexpected changes in the rate of inflation make it difficult for firms to plan, which inhibits growth and innovation. Beyond the impact on the domestic economy, differential inflation and interest rates influence trade balances between countries and exchange rates for currencies.

In addition to government monetary and fiscal policy actions, events such as war, political upheavals, and international monetary devaluations produce changes in the business environment that add to the uncertainty of sales and earnings expectations, and therefore risk premium required by investors.

It is difficult to conceive of any industry or company that can escape the influence of macroeconomic developments. Because

aggregate economic events have a profound effect on all industries and all companies within these industries., these macroeconomic factors must be considered before industries can be analyzed.

4.2. INDUSTRY ANALYSIS

The next step in the valuation process is to identify industries that will prosper or suffer in the projected aggregate economic environment. Alternative industries react to economic change at different points in the business cycle. For example, construction activity typically lags the business cycle because firms increase capital expenditures when they are operating at full capacity, which happens at the peak of the economic cycle. In addition, alternative industries respond differently to the business cycle. Cyclical industries such as steel or autos typically do much better than the aggregate economy during expansions but they suffer more during contractions.

Most industries have important individual characteristics that affect the values of their securities. Some of the more important industry characteristics are historical performance, economic structure, capital investment, government regulations and labor conditions.

4.2.1. Historical Performance

There are two ways of analyzing historical performance. One way is to examine the position of an industry within the industrial life cycle , the other is to analyze its performance during business cycles.

• Industrial Life Cycle

The industrial life cycle goes through three distinct stages of growth : The pioneering stage, the investment maturity stage and the stabilization stage. During the pioneering stage, all industries are tested for their viability. Although the mortality rate is highest during this stage, industries with a high potential for survival experience rapid growth in sales and an impressive growth in earnings. The competition is usually not severe at this stage, and most successful industries are able to develop production techniques, marketing channels and product differentiation. After an industry has successfully completed the pioneering stage, it enters the investment maturity stage. Well managed and financially mature companies usually consolidate their market positions and begin to encroach on their competitors' market shares. After a period of time, the high rate of growth begins to slow down as these industries enter the stabilization stage. The industrial life cycle portrays the lifetime profile of an industry and all the companies associated with it.

• Performance During a Business Cycle

Performance during a business cycle is another important aspect of historical performance. The performance of cyclical industries fluctuates with changes in the business cycle, whereas the performance of defensive industries remain relatively stable during economic downturns.

4.2.2. Economic Structure

Another important industry fundamental is the degree of competition which prevails within the industry. Some industries are highly competitive others lack effective competition.

4.2.3. Capital Investment

Industries can be generally classified as more or less capital intensive. Highly capital intensive industries usually make effective long term plans for capital investment and are generally technologically more advanced than less capital intensive industries.

4.2.4. Government Regulations

The regulation of business by government agencies is an important consideration for investors forecasting the future performance of an industry. Some industries are subject to continual government intervention and should be analyzed with care.

4.2.5. Labor Conditions

An analysis of industry labor conditions, which includes consideration of labor costs and the possibility of a strike, is an important element in any industry forecast. The history of labor negotiations and the impact of previous strikes can be of some help in determining the risks associated with these industries.

4.2.6. Miscellaneous Factors

In addition to industry factors, several other factors may influence investors' evaluation of the industry. These include the price and income elasticities of demand for products, changes in consumer tastes, foreign competition and the availability and cost of raw materials.

4.3. COMPANY ANALYSIS

The present value of a company's common stock depends on the company's ability to generate earnings - its earning power. Earning power, in turn, depends on such factors as the company's production and operating efficiency, profitability, and capital structure. Although earning power is influenced by national economic and industry conditions, it is also determined to a great degree by the company itself. After determining that an industry's outlook is good, an investor can analyze and compare individual firms' performance within entire industry. Analysis of a company can be divided into five stages (37). First, the determinants of earnings of a company can be analyzed. Second, factors affecting earnings growth can be identified. Third, techniques for forecasting future earnings can be presented. Fourth, the techniques for estimating the future dividend stream and the holding period price can be established.

5. DATA AND METHODOLOGY

The effects of inflation, money supply, capacity utilization rate, monthly production index, gold prices, treasury bill rates and foreign exchange rates will be analyzed by using regression and factor analyses techniques, using the monthly data from 1991 to 1996.

Sources of Variables

Stock Exchange Index : Istanbul Stock Exchange Market

Inflation : State Institute of Statistics

Money Supply (M2) : Central Bank

Capacity Utilization Rate : State Institute of Statistics

Production Index : State Institute of Statistics

Gold Prices : Central Bank

Interest Rate : Central Bank and Treasury

Foreign Exchange Rate : Central Bank

All these variables were the monthly closing values.

INFLATION

For inflation, regression analysis is made between ISE index and different kinds of inflation indices: Wholesale price index, consumer price index and production industry wholesale price index

	Multiple R	Adj. R^2
Wholesale Price Index	0.96009	0.92042
Consumer Price Index	0.95430	0.90915
Production Industry Wholesale	0.95956	0.91939

Since, these three inflation indices are highly correlated among themselves, wholesale price index will be used during this study because, its correlation coefficient (R=0.9600) and coefficient of determination (R^2 = 0.92042) is the highest with the ISE index.

CAPACITY UTILIZATION RATE

GNP and Capacity Utilization Rates are highly correlated and monthly data will be used for this study and for GNP monthly data is not possible so, capacity utilization rate will be used .

FOREIGN EXCHANGE RATE

For foreign exchange rates, regression analyses between ISE index and US Dollar, Deutche Mark are:

	Multiple R	R^2
US Dollar	0.93605	0.87405
Deutche Mark	0.94848	0.89789

Since these two foreign exchange rates are highly correlated, a basket which is composed of 50% USD Dollar and 50% Deutche Mark will be used.

GOLD PRICES

For gold prices, regression analyses made with both between ISE index and Cumhuriyet Gold price, Ingot Gold price.

	Multiple R	R^2
Cumhuriyet Gold Price	0.94409	0.88943
Ingot Gold Price	0.94228	0.88595

Cumhuriyet Gold Price will be used because its correlation coefficient (R = 0.94409) and coefficient of determination (R^2 = 0.88943) is higher than the other.

INTEREST RATE

Treasury bill rates will be used. Since in Turkey saving deposit interest rates are determined by this rate so, there is a high correlation between saving deposit interest rates and treasury bill rates . In fact saving deposit interest rates are lower than treasury bill rates.

The relationship between each individual variable and the index in addition to this, when the all variables are taken into account will be analyzed. Also, for monthly percentage changes and monthly differences same analyses will be made.

In order to measure the relationship between future index and inflation rates, capacity utilization rate, production index; one, two, three month lags will be used.

METHODOLOGY

Regression and factor analyses will be used to understand the affects of inflation, money supply, capacity utilization rate, production index, foreign exchange rate, gold price and interest rate on Istanbul Stock Exchange. These analyses will be done in SPSS by using Stepwise Multiple Regression Model.

6. MODEL

Variables

Independent Variables

Inflation (I)

Money Supply (M)

Capacity Utilization Rate (C)

Production Index (P)

Gold Prices (G)

Foreign Exchange Rate (FE)

Treasury Bill Rate (TB)

Dependent Variable

ISE Index (E)

ISE Index = f (Inflation , Money Supply, Capacity Utilization Rate , Production Index , Gold Prices , Foreign Exchange Rate, Treasury Bill Rate)

7. FINDINGS

7.1. REGRESSION ANALYSES WHEN EACH VARIABLE IS TAKEN INTO ACCOUNT ALONE

7.1.1. MONEY SUPPLY AND ISE INDEX

When only money supply was put into regression analysis with ISE Index it can be seen that there is a significantly positive (95 % confidence level) and strong correlation between them. 91 % variability in the ISE Index can be explained by the change in money supply.

$E_t = 343.424715 + 0.042228\ M_t$

Multiple R = 0.95610 Adjusted R Square = 0.91265

7.1.2. WHOLESALE PRICE INDEX AND ISE INDEX

There is a significantly positive and strong (r = 0.96) between wholesale price index and ISE index . Also , 92 % of variability in ISE index can be explained by the wholesale price index.

$E_t = -457.417355 + 5.905972\ I_t$

Multiple R = 0.96009 Adjusted R Square = 0.92042

7.1.3. CAPACITY UTILIZATION RATE AND ISE INDEX

There is a significantly positive but not very strong relationship between capacity utilization rate and ISE Index. Only nearly 7% of

variation in ISE Index can be explained by this variable, this is not a high amount.

$E_t = -74221.72189 + 1169.83370\ C_t$

Multiple R = 0.28910 Adjusted R Square = 0.06778

7.1.4. PRODUCTION INDEX AND ISE INDEX

It can be seen that there is a significantly positive but not very strong relationship between production index and ISE Index. Nearly 9 % of variation in ISE index can be explained by production index. There is a stronger relationship between production index and ISE Index than capacity utilization rate and ISE Index.

$E_t = -29369.59300 + 452.673508\ P_t$

Multiple R = 0.32008 Adjusted R Square = 0.08698

7.1.5.TREASURY BILL RATE AND ISE INDEX

There is a significant , positive but not very strong correlation between these two variables. Nearly 21% variation in ISE Index can be explained by treasury bill rate.

$E_t = -8647.981353 + 271.662290\ TB_t$

Multiple R = 0.47487 Adjusted R Square = 0.21214

7.1.6. FOREIGN EXCHANGE RATE AND ISE INDEX

It can be seen that there is a significantly, positive and strong (R=0.942) relationship between foreign exchange rate and ISE Index. In addition to this nearly 89% of variation in ISE Index can be explained by foreign exchange rate.

$E_t = 31.305970+.991428\ FE_t$

Multiple R = 0.94195 Adjusted R Square = 0.88533

7.1.7.GOLD PRICES AND ISE INDEX

When gold price was put in to regression analysis alone with the ISE index it can be seen that there is a significantly positive correlation between gold price and ISE index and the correlation between gold price and index is strong. Nearly 89% of the observed variability in ISE index can be explained by gold price changes. Gold price seems to be a good predictor of index. Among the alternative investments (foreign exchange rate, treasury bill and gold prices) this variable has the strongest correlation coefficient with the index and the explanation rate is the highest.

$E_t = 183.350597 + .009963\ G_t$

Multiple R = 0.94409 Adjusted R Square = 0.88943

7.1.8. MULTIPLE REGRESSION ANALYSES BETWEEN ALL MACROECONOMIC VARIABLES AND ALTERNATIVE INVESTMENT TOOLS

When all the variables both macroeconomic and alternative investment tools were put into the regression analysis , from the correlation coefficient matrix correlations it could be seen the correlation coefficients among all variables. It can be understood that, there is a strong relationship between gold price and money supply (R=0.971), gold price and inflation (R=0.991) ,gold price and foreign exchange rate (R=0.999), inflation and money supply (R=0.989), inflation and foreign exchange rate (R=0.992), capacity utilization rate and production index (R=0.733), gold price and treasury bill rate (R=0.611), treasury bill rate and foreign exchange rate (R=0.606).

For determining the ISE, when each variable is used to determine the index alone, wholesale price index is the most important variable since, its correlation coefficient with the index is the highest (R=0.96).

	E	G	M	I	C	P	TB	FE
E	1.000	.944	.956	.960	.289	.320	.475	.942
G	.944	1.000	.971	.991	.114	.262	.611	.999
M	.956	.971	1.000	.989	.263	.345	.469	.971
I	.960	.991	.989	1.000	.179	.294	.547	.992
C	.289	.114	.263	.179	1.000	.733	-.286	.109
P	.320	.262	.345	.294	.733	1.000	-.125	.259
TB	.475	.611	.469	.547	-.286	-.125	1.000	.606
FE	.942	.999	.971	.992	.109	.259	.606	1.000

E_t= -46194.13675+ 5.878369 I_t + 780.318151 C_t - 144.602247 P_t

When all the variables are taken into account only wholesale price index, capacity utilization rate and production index are entered into the equation. Wholesale price index is much more important variable (Beta=0.9556) in determining index than the others.

Multiple R = 0 .96979 Adjusted R Square = 0 .93729

When all these three variables are taken into the regression analysis R is 0.97 and 94 % variance in ISE index can be explained by wholesale price index, production index and capacity utilization rate.

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	I	C	P
1	3.65928	1.000	.00014	.02094	.00008	.00034
2	.33477	3.306	.00044	.91368	.00022	.00076
3	.00528	26.317	.13189	.06277	.00513	.54595
4	.00067	73.996	.86752	.00261	.99458	.45294

Collinearity refers to the situation in which there is a high multiple correlation when one of the independent variables is regressed on the others, that is there is a high correlation between independent variables.

Here there is not a collinearity among variables inflation, capacity utilization rate and production index.

Durbin-Watson Test = 0 .60357

If the value of a time series, the data consist of observations pertaining to various periods of time, at time "t " is correlated with its value "h" periods before, the time series exhibits serial correlation. The Durbin Watson statistics is a test for serial correlation of adjacent terms. If the residuals are not correlated to each other the value of d is close to 2. Values less than 2 means that adjacent residuals are positively correlated.

7.1.9. MULTIPLE REGRESSION ANALYSIS BETWEEN ALL ALTERNATIVE INVESTMENT TOOLS AND ISE INDEX

When only alternative investments were put into the regression analysis with ISE Index it could be seen that for determining the ISE Index among the alternative investments, correlation coefficient between gold prices and the index is the highest. Also, the correlation between foreign exchange rate and gold prices is very high.

	E	G	TB	FE
E	1.000	.944	.475	.942
G	.944	1.000	.611	.999
TB	.475	.611	1.000	.606
FE	.942	.999	.606	1.000

$$E_t = 7060.121595 + 0.011014\ G_t - 93.222539\ TB_t$$

While gold prices affect ISE Index in a positive way, treasury bill rates affect in a negative way when all the alternative investment tools are taken into account. Also, gold prices is a much more important (Beta=1.04) variable than the T- Bill rate.

Multiple R = 0.95286 Adjusted R Square = 0.90471

Between the alternative investment tools and ISE Index the correlation is high (R=0.95) and 90% of variance in index can be explained by the ISE index.

Only gold prices and treasury bill rates were entered into the regression analysis when all the alternative investment tools were put into the regression analysis with the ISE Index.

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	G	TB
1	2.70385	1.000	.00830	.03031	.00617
2	.26851	3.173	.06828	.66996	.00998
3	.02764	9.890	.92342	.29973	.98386

7.1.10. MULTIPLE REGRESSION ANALYSIS BETWEEN ALL MACROECONOMIC VARIABLES AND ISE INDEX

When only the economic variables were taken into account it can be seen in determining index the most important variable is wholesale price index (R=0.96) among the macroeconomic factors. Also the correlation between money supply and ISE Index is high (R=0.956). There is a strong relationship between money supply and wholesale price index (R=0.989) .

	E	M	I	C	P
E	1.000	.956	.960	.289	.320
M	.956	1.000	.989	.263	.345
I	.960	.989	1.000	.179	.294
C	.289	.263	.179	1.000	.733
P	.320	.345	.294	.733	1.000

$E_t = -46194.13675 + 5.878369\ I_t + 780.318151\ C_t - 144.602247\ P_t$

In determining the index wholesale price index is much more important (Beta=0.9556) than capacity utilization rate and production index. While inflation and capacity utilization rates affect ISE Index in a positive way, production index affect in a negative way when all the macroeconomic factor are taken into account.

Multiple R = 0.96979 Adjusted R Square = 0 .93729

The correlation between the economic variables and index is high (R=0.97), also 94% variation in index can be explained by the economic

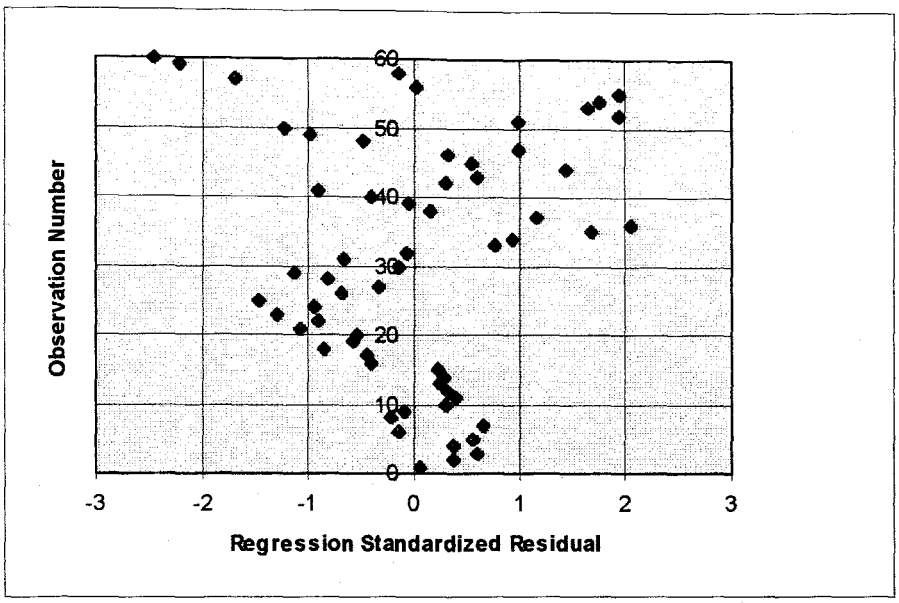
variables. These results are better than that of alternative investment tools.

Collinearity Diagnostics

Number	Eigenval	Cond	Variance Proportions		
			I	C	P
1	3.65928	1.000	.00014	.02094	.00008	.00034
2	.33477	3.306	.00044	.91368	.00022	.00076
3	.00528	26.317	.13189	.06277	.00513	.54595
4	.00067	73.996	.86752	.00261	.99458	.45294

Durbin-Watson Test = .60357

7.2. POLITICAL FACTOR AND ISE INDEX



This standardized residual plot indicates the presence of points different from others. These observations are called outliers. Since for the regression equation economic factors and alternative investment tools were taken into account, for the causes of these outliers (values greater than 1 and -1) political factor was searched to understand if these outliers were the result of the changes in the political environment. It was found that these outliers were the result of changes in the political environment.

Regression Standardized Residuals and Political Environment

Negative Outliers

September 1992

- The World Economic Forum listed Turkey fifth in terms of the prevalence of insider trading. The Turkish Capital Market Board issued warnings to six stockbroking companies for trading and bookkeeping irregularities.
- Relations between President Özal and ANAP Chairman Mesut Yılmaz reached a new low as Mr. Özal canceled their regular monthly meeting.
- ANAP Chairman Mesut Yılmaz declared that he had burned his bridges with President Özal.

November 1992

- The fundamentalist RP emerged triumphant in the local elections, winning 24.5% of the total votes, followed by ANAP (22.9%), the SHP (9.2%) and the DYP (16.7%). The RP was particularly successful in İstanbul where it captured four of six possible mayoralties. The results were embarrassing for both the government and ANAP Chairman Mesut Yılmaz, who had predicted a white wash in İstanbul.
- President Özal accused ANAP Chairman Mesut Yılmaz of being responsible for the party's poor showing in the local elections.

• The IMF warned that alarm bells were ringing for the Turkish economy with excessive wage rises fueling inflation.

January 1993

• The Turkish Armed forces were put on red alert following Allied air strikes on Iraq. The government denied that any of the planes involved took off from İncirlik Airbase and insisted that the air base cannot be used for such operations without prior Turkish approval.

• US planes from İncirlik down an Iraqi MIG-23 during a reprisal raid after three British planes from the same base were fired upon during a routine patrol. Foreign Minister Çetin acknowledged that Turkey was not asked for permission but insisted that the Allies had the right of self defense.

• Iraq declared a unilateral cease-fire, to relief to the Turkish government, which had been coming under increasing domestic pressure over Allied use of İncirlik as a base for air strikes against Iraqi positions.

• Investigative journalist Uğur Mumcu was killed by a car bomb. The Islamic Liberation Organization claimed responsibility.

• Ankara came to a standstill as hundreds of thousands turn out for Uğur Mumcu's funeral, chanting anti-Islamic slogans in what Reuters news agency described as the greatest demonstration ever against radical Islam in the Near East.

May 1993

- Standard and Poor's reduce Turkey's credit rating from BBB to BBB (minus) , the lowest ranking possible before a country rates as a credit risk. A failure to control public sector deficit was cited as the major destablishing factor.
- Süleyman Demirel emerged as the clear leader in the first ballot for president with 234 votes. The second round of voting for the presidency produced an almost identical result to the first. Süleyman Demirel was elected as Turkey's 9th president, gaining 244 votes in the third ballot.
- It would be at least 10 years before Turkey could hope to become a full member of the EC, declared German Chancellor Helmut Kohl on an official visit to Turkey.

May 1994

- Privatization Law was sent to Çankaya for President Demirel's signature while SHP deputy Prof. Mümtaz Soysal announced he was collecting signatures to have the new law turned down.
- SHP's Karayalçın, deputy PM, and PM Çiller made conflicting statements on the usual mid year salary hike for civil servants. PM asked Council of Ministers to find a way to get workers' union to agree to a wage freeze, which was rejected by the leading unions who threaten a general strike.

• Chairman of the IMF delegation announced that the stand by agreement accompanied by a support program would come into effect in July.

February 1995

• ISE Chairman Tuncay Artun warned against falling into the trap of hot money, indicating that as confidence in the Turkish economy rose abroad, the arrival of foreign credits, creating temporary prosperity, would lead the country back into a crisis.

September 1995

• The coalition of the DYP and CHP broke up. DYP leader PM Tansu Çiller and CHP leader Deniz Baykal failed to agree on the continuation of the coalition government and decided to end it. Prime Minister Çiller handed in her resignation as PM to President Demirel.

• Coalition negotiations between ANAP leader Mesut Yılmaz and Tansu Çiller end in disagreement.

November 1995

• Financial scandals broke out at Çukurova Electric, as the government took over the control of the company.

• The fear of a possible devaluation in the election aftermath drives the dollar exchange rate surging to 54.550 TL and that of the mark to

38.400TL in the free market. The Central Bank's efforts to intervene are only partially successful. The governor of the Cevat Ertan stated that the RP syndrome was also partially responsible for the rise in foreign exchange rates.

December 1995

- Fear about the results of elections.

Positive Outliers

September 1993

- Morgan Stanley Capital International named the ISE as the most attractive market in the world in August.
- Ankara Mayor Murat Karayalçın was elected SHP Chairman.
- The PTT privatization decree was officially published in the Official Gazette.

November 1993

- PM Çiller emerges stronger from DYP's national Convention, receiving 1045 out of 1145 delegates' votes to be elected chairperson for the second time. In her keynote speech, PM Çiller promised full scope for cultural self expression by Turkey's rich ethnic diversity while absolutely opposing the political institutionalization of such differences.

• The Public Participation Administration (KOI) sold the state share of Animalfeed Industry, which comprised 13 factories and 2 cooperatives. This was the KOI's first success at transferring one of its troubled assets to the private sector.

December 1993

• ISE took another step towards full integration with international markets, following the introduction of the ELIT computerized sales/purchase system.

• The first stage of PM Çiller's tax reform package was passed by Parliament.

August 1994

• The US based credit rating agency Standard and Poor's has taken Turkey off its probability list of unstable countries, leaving its long term credit rating of Turkey unchanged at B plus.

• The government published a new set of export incentives, including exemptions from a number of transaction taxes for loans and financial services used to support companies that earn foreign exchange, exemptions and reductions in custom duties and fund contributions, cheap energy and exemptions from contributions to the housing fund.

• EU sources based in Ankara warned that the proposed customs union with the EU cannot be postponed unilaterally and would require the passing of a new legislation by the Turkish National Assembly.

• PM Çiller told reporters that the government targeted an inflation rate of 20% for the second half of the year.

November 1994

• Economics Minister Aykon Doğan stated that the privatization model for Turkey would be 100% Turkish rather than a copy of one from another country, adding that privatization had to pick up speed in order to break the chronic inflation in the country.

• PM Çiller ended the debate over which sectors should receive protection in the transition to the Customs Union by abolishing the concept of sensitive sectors announcing that all sectors going into the custom union would receive equal treatment.

• Prof. Aydın Ayaydın was elected the new President of the Banks' Association, in a vote wholy made up by members in electing their new president for the first time.

• The Parliamentary General Assembly ratified the privatization bill.

April 1995

• The ISE was number one in the world for gains among all international exchanges with a three fold higher rate of return of 23.9% in dollar terms

compared to the New York and Hong Kong exchanges, which gained 8.3% and 7.8% respectively.

- PM Çiller and Azerbaijan President Aliyev signed a pact in Baku, concerning the transport of Azerbaijan petroleum to the West via Turkey.
- The PTT was officially splitted in two for privatization purposes : Turkish Telecommunications Corporations and Turkish Republic Postal Operations General Directorate were established as separate entities.
- Halkbank General Manager Ufuk Söylemez was assigned as the Chairman of the Privatization Administration (ÖİB).

May 1995

- The new İstinye building of the İstanbul Stock Exchange went into operation as the Exchange relocated from Karaköy.
- ISE Chairman Tuncay Artun announced that trading volume in April totaled $10 billion. Artun stated this total for the ISE, amounting to a daily volume of $500 million, surpassed by ten times that of other exchanges in the region such as Athens, Karachi and Tel Aviv stock markets.

June 1995

- US investment fund managers Scudder, Stevens and Clark Inc. set up a new investment trust to take up portfolios in Turkey. Schudder Turkish

opportunities fund was geared toward long term investment in Turkey's capital markets, and would buy into privatization shares.

July 1995

- Parliament finalized amendments of the Constitution, passing changes to 15 articles under debate in one week end. The constitutional amendments, designed to facilitate Turkey's adaptation to the Custom's Union were ratified by a majority of 360 votes, a record in Turkish parliamentary history.
- The Official Gazette announced the passage of legislation concerning the establishment of the International Securities Free Trade Zone, to be created within the building of the ISE.
- The İstanbul Gold Exchange is inaugurated. Opening day sales amount to 835 kilogrammes at a price of $386.05 per ounce.

7.3. MULTIPLE REGRESSION ANALYSIS BETWEEN THE MONTHLY PERCENTAGE CHANGES OF ALL VARIABLES AND ISE INDEX

When the regression analyses were made for monthly percentage changes the results are :

The highest correlation coefficient, when each variable was put into the regression analysis alone, is between the percentage change of ISE Index and the monthly percentage change of the capacity utilization rate. The correlation coefficient is (R=0.28383) and nearly 8% of the observed variability in monthly percentage of ISE Index can be explained by monthly percentage change of capacity utilization rate.

Also, among the alternative investment tools correlation between the monthly gold price percentage change and monthly ISE Index percentage change is the highest and correlation is negative.

When all the variables are put into the regression analysis

	ΔE	ΔG	ΔM	ΔC	ΔP	ΔFE	ΔTB	ΔI
ΔE	1.000	-.209	.059	.284	.001	-.047	-.186	-.08
ΔG	-.209	1.000	-.180	-.263	-.027	.727	.095	.56
ΔM	.059	-.180	1.000	.077	-.137	-.110	.145	.12
ΔC	.284	-.263	.077	1.000	.529	-.254	-.227	-.34
ΔP	.001	-.027	-.137	.529	1.000	-.116	-.208	-.16
ΔFE	-.047	.727	-.110	-.254	-.116	1.000	-.083	.79
ΔTB	-.186	.095	.145	-.227	-.208	-.083	1.000	.17
ΔI	-.086	.569	.125	-.345	-.168	.791	.175	1.00

$$\Delta E_t = 5.38466 + 1.375496 \Delta C_t$$

Multiple R = 0.28383 Adjusted R Square = 0.06443

When all the variables are put into the regression analysis only monthly percentage change in capacity utilization rate entered into to the regression equation. Both correlation coefficient (R) and coefficient of determination R^2 are not high.

Durbin-Watson Test = 2.01421

Serial correlation is nearly 2 which means that residuals are not correlated to each other.

7.4. REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF ALL VARIABLES AND ISE INDEX

When the regression analyses were made for monthly differences between the ISE Index and the all variables:

The highest correlation coefficient, when each variable was put into regression analysis alone, is between the monthly capacity utilization rate difference and monthly ISE Index difference. The correlation coefficient is (R = 0.279) and nearly 6 % of variation in monthly difference in ISE Index can be explained by the monthly difference in capacity utilization rate.

As it can be seen in the appendix when all the variables are taken into account only monthly difference in capacity utilization rate is entered into the regression equation.

	$E_t - E_{t-1}$	$G_t - G_{t-1}$	$M_t - M_{t-1}$	$I_t - I_{t-1}$	$C_t - C_{t-1}$	$P_t - P_{t-1}$	$FE_t - FE_{t-1}$	$TB_t - TB_{t-1}$
$E_t - E_{t-1}$	1.000	-.139	.127	.027	.279	.064	-.075	-.181
$G_t - G_{t-1}$	-.139	1.000	.262	.700	-.226	-.049	.825	.090
$M_t - M_{t-1}$	.127	.262	1.000	.383	.195	.000	.154	-.065
$I_t - I_{t-1}$	.027	.700	.383	1.000	-.242	-.108	.764	.158
$C_t - C_{t-1}$	.279	-.226	.195	-.242	1.000	.530	-.231	-.215
$P_t - P_{t-1}$	.064	-.049	.000	-.108	.530	1.000	-.058	-.202
$FE_t - FE_{t-1}$	-.075	.825	.154	.764	-.231	-.058	1.000	-.094
$TB_t - TB_{t-1}$	-.181	.090	-.065	.158	-.215	-.202	-.094	1.000

Multiple R = 0.27900 Adjusted R Square = 0.06166

$$E_t - E_{t-1} = 578.712136 + 304.766718\ C_t - C_{t-1}$$

When all the variables were taken into account only monthly difference in capacity utilization rate entered into the regression equation. The correlation coefficient between monthly difference in ISE Index and monthly difference in capacity utilization rate is not high (R=0.279) and coefficient of determination ($R^2 = 0.0616$) is not high.

Durbin-Watson Test = 1.91587

Serial correlation is nearly 2 which means that residuals are not correlated to each other.

7.5. REGRESSION ANALYSES WITH THE ONE MONTH LAGGED VALUES

Regression analysis was done in order to understand the effects of inflation (wholesale price index, consumer price index and production industry wholesale index), capacity utilization rate and production index for the month t -1 on the ISE Index in period t.

	Reg.Coef.b	Corr.Coeffi.	Adjusted R^2	t Sign.	DW
I (Whole.)	6.196721	0.96418	0.92841	0.000	0.49836
I (Prod.)	6.159345	0.96260	0.92531	0.000	0.50343
I (Consu.)	5.121001	0.95676	0.91391	0.000	0.44511
P		0.24200		0.032	
C		0.21700		0.049	

$E_t = -479.052594 + 6.196721\ I(W)_{t-1}$

$E_t = -450.566272 + 6.159345\ I(P)_{t-1}$

$E_t = -262.256394 + 5.121001\ I(C)_{t-1}$

The correlation coefficients for inflation rates , capacity utilization rate and production index in the period t -1 are positive and statistically significant with the stock returns in the period t .

Stock market returns are found to be significantly positive and strongly correlated with the rates of inflation in period t -1. Among the

inflation rates wholesale price index in t -1 is the best correlated with the stock return (R =0.96418). Nearly 91% of variability in the stock return can be explained by the change in wholesale price index in t -1. Stock market returns are found to be significantly but not strongly correlated with capacity utilization rate and production index in period t -1 .

7.6. REGRESSION ANALYSES WITH THE TWO MONTH LAGGED VALUES

Regression analysis was done in order to understand the effects of inflation (wholesale price index, consumer price index and production industry wholesale index), capacity utilization rate and production index for the month t -2 on the ISE Index in the period t .

	Reg.Coef.b	Corr.Coeffi.	Adjusted R^2	t Sign.	DW
I (Whole.)	6.506941	0.96779	0.93549	0.000	0.48327
I (Prod.)	6.440543	0.96571	0.93139	0.000	0.45652
I (Consu.)	5.447758	0.96092	0.92200	0.000	0.45896
P		0.15200		0.127	
C		0.13700		0.153	

$E_t = -520.079621 + 6.506941\ I(W)_{t-2}$

$E_t = -440.532773 + 6.440543\ I(P)_{t-2}$

$E_t = -452.563225 + 5.447758\ I(C)_{t-2}$

The correlation coefficients for inflation rates in the period t -2 are positive and statistically significant with the stock returns in the period t.

Stock market returns are found to be significantly positive and strongly correlated with the rates of inflation in period t -2. Among the inflation rates wholesale price index in t -2 is the best correlated with

the stock return (R =0.9680). Nearly 94% of variability in the stock return can be explained by the change in wholesale price index in t -2. The correlation coefficients for the capacity utilization rate and production index in the period t -2 are not statistically significant with the stock returns in the period t.

7.7.REGRESSION ANALYSES WITH THE THREE MONTH LAGGED VALUES

Regression analysis was done in order to understand the effects of inflation (wholesale price index, consumer price index and production industry wholesale index), capacity utilization rate and production index for the month t -3 on the ISE Index in the period t .

	Reg.Coef.b	Corr.Coeffi.	Adjusted R^2	t Sign.	DW
I (Whole.)	6.803917	0.96766	0.93521	0.000	0.49304
I (Prod.)	6.712237	0.96511	0.93020	0.000	0.47164
I (Consu.)	5.783730	0.96364	0.92731	0.000	0.48218
P		0.10300		0.223	
C		0.07400		0.292	

$E_t = -469.632808 + 6.803917\ I(W)_{t-3}$

$E_t = -347.182481 + 6.712237\ I(P)_{t-3}$

$E_t = -602.225007 + 5.783730\ I(C)_{t-3}$

The correlation coefficients for inflation rates in the period t -3 are positive and statistically significant with the stock returns in the period t.

Stock market returns are found to be significantly positive and strongly correlated with the rates of inflation in period t -3. Among the inflation rates wholesale price index in t -3 is the best correlated with

the stock return (R =0.96766). Nearly 94% of variability in the stock return can be explained by the change in wholesale price index in t -3. The correlation coefficients for the capacity utilization rate and production index in the period t -3 are not statistically significant with the stock returns in the period t.

To determine the stock returns in period "t" , inflation (wholesale price index, consumer price index and production industry wholesale index) for the period t -1, t -2 and t - 3 is important. Among the different measures of inflation indices the highest correlation coefficient is between the wholesale price index for the periods t -1, t -2, t -3 and stock returns in the period t. Also to determine the stock return in the period t , wholesale price index in the period t -2 is the most important variable.

For wholesale price index and production industry wholesale index the correlation coefficients are highest in the two month lagged values. But for the consumer price index the correlation coefficient is the highest in the three month lagged value.

Capacity utilization rates and production indices in the periods t - 1, t -2, t -3 are not important to determine the stock returns in the period t. Only in the period t -1 there is a statistically and positive but not very strong relationship between the capacity utilization rate and stock return. In the periods t-2, t-3 the correlation is not statistically significant.

7.8. FACTOR ANALYSIS

Factor analysis was done in order to examine the interrelations among inflation, money supply, production index, capacity utilization rate, gold price, foreign exchange rate, treasury bill rate. Factor analysis is concerned with the homogeneity of items. This means that some of the items in the correlation matrix should be large, indicating that they go together. Since there is a homogeneity in the variables used factor analysis can be applied to this data.

Correlation Matrix:

	G	M	I	C	P	TB	FE
G	1.00000						
M	.97085	1.00000					
I	.99139	.98889	1.00000				
C	.11392	.26333	.17917	1.00000			
P	.26248	.34477	.29403	.73303	1.00000		
TB	.61113	.46926	.54674	-.28600	-.12495	1.00000	
FE	.99904	.97118	.99240	.10894	.25902	.60571	1.00000

From the correlation matrix, it can be seen that there is a correlation between

*Gold Price and Money Supply, Inflation , Treasury Bill Rate, Foreign Exchange Rate

*Capacity Utilization Rate and Production Index

So, these seven variables can be reduced to two factors.

Factor	Eigenvalue	Pct of Var	Cum Pct
1	4.44275	63.5	63.5
2	1.83794	26.3	89.7
3	.45143	6.4	96.2
4	.24984	3.6	99.7
5	.01398	.2	99.9
6	.00327	.0	100.0
7	.00080	.0	100.0

Two factors have Eigenvalues greater than 1. So, these seven variables can be summarized with two factors.

First factor explain 63.5% of variance

Second factor explain 26.3% of variance

Variance explained by the two factors equal two 89.7%.

	Factor 1	Factor 2	Achieved Communality
G	.99062	-.09416	.99020*
M	.97816	.06329	.96081
I	.98998	-.02711	.98079
C	.21565	.90456	.86474
P	.35628	.83100	.81750
TB	.60966	-.55336	.67790
FE	.98966	-.09655	.98875
Eigenvalue	4.44275	1.83794	

* $0.99020 = [(0.99062)^2 + (-0.9416)^2]$

Cum. Pct = (4.44275 + 1.83794) / 7 = 89.7 %

The best communality Gold Price

The worst communality Treasury Bill Rate

From the Rotated Matrix factors can be determined:

Factor 1 = Gold Price, Inflation , Money Supply, Treasury Bill Rate , Foreign Exchange Rate

Factor 2 = Production Index and Capacity Utilization Rate

Factor 1 can be named as Environment

Factor 2 can be named as Company Features

From the two factor scores regression analyses were made.

7.9. REGRESSION ANALYSIS BETWEEN THE ENVIRONMENTAL FEATURES AND ISE INDEX

To understand the relationship between the environmental features and stock returns regression analysis was done. There is a statistically positive and strong correlation (R = 0.91873) between environmental features and stock return. 84% of the observed variability in the ISE Index can be explained changes in the environmental features.

Multiple R = 0.91873 Adjusted R Square = 0 .84137

E = 16366.274833 + 13826.165882 FAC1_1

Durbin-Watson Test = .44491

Durbin Watson shows that the residuals are positively correlated.

7.10. MULTIPLE REGRESSION ANALYSIS BETWEEN THE BOTH ENVIRONMENTAL FEATURES COMPANY FEATURES AND ISE INDEX

In addition to environmental features company features were added to the regression analyses.

When company features added to the analysis correlation coefficient increased from 0.91873 to 0.95186. Also coefficient of determination increased to 0.90604. 90 % of the observed variability in the ISE Index can be explained by the change in the environmental and company features, while only environmental features can explain 84% of the variability in the ISE Index.

Multiple R = 0 .95186 Adjusted R Square = 0 .90275

E = 16366.274833 + 13826.165882 FAC1_1 + 3746.762301 FAC2_1

From the betas it can be understood that environmental features is more important than company features in determining ISE Index.

For FAC1_1 Beta = 0.918727

For FAC2_1 Beta = 0.248967

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	FAC1_1	FAC2_1
1	1.00000	1.000	.49997	.50003	.00000
2	1.00000	1.000	.00000	.00000	1.00000
3	1.00000	1.000	.50003	.49997	.00000

As it can be seen from the collinearity Diagnostic Matrix environmental features and company features are not correlated.

Durbin-Watson Test = .55517

8. RESULTS

Various regression analyses were made to understand the effect of both macroeconomic factors and alternative investments on stock returns in Istanbul Stock Exchange.

When macroeconomic factors; money supply, wholesale price index, capacity utilization rate and production index were taken alone it is found that they are statistically significant and positively correlated with the ISE Index. Wholesale price index has the highest correlation coefficient with the ISE Index among the macroeconomic factors and 92 % of the observed variability in ISE Index can be explained by the wholesale price index changes when this variable was taken alone in to the regression analysis with the ISE Index . Also, money supply has a very important effect on the Index. The correlation coefficient with the ISE is very high and 91 % of the observed variability in ISE Index can be explained by the money supply changes when money supply was taken into the regression analysis alone with the ISE Index. Capacity utilization rate and production index are significantly and positively correlated with the ISE Index. But both the correlation coefficients and coefficient of determinations are not high as in that of the correlation inflation rate and money supply.

	Multiple R	Adj R^2
Inflation	0.96009	0.92042
Money Supply	0.95610	0.91413
Production Index	0.32008	0.08698
Capacity Utilization Rate	0.28910	0.06778

Also, all these macroeconomic variables are correlated to each other.

	E	M	I	C	P
E	1.000	.956	.960	.289	.320
M	.956	1.000	.989	.263	.345
I	.960	.989	1.000	.179	.294
C	.289	.263	.179	1.000	.733
P	.320	.345	.294	.733	1.000

When each alternative investment tool; treasury bill rate, foreign exchange rate and gold prices was taken into account alone, it is found that they are statistically significant and positively correlated with the ISE Index. Gold price has the highest correlation coefficient with the ISE Index among the other alternative investment tools. 89% of the observed variability in ISE Index can be explained by the gold price changes when gold prices was taken into account alone with the ISE Index. Also , 88.5% of the observed variability in the ISE can be explained by the foreign exchange rate changes again, when only foreign exchange rate was taken into account. In addition to these there is a significantly positive correlation between the treasury bill rate and ISE , but the correlation coefficient is not very high.

	Multiple R	Adj R^2
Gold Prices	0.94409	0.88943
Foreign Exchange Rate	0.94195	0.88533
Treasury Bill Rate	0.47487	0.21214

Also, all these alternative investment tools are correlated to each other.

	E	G	TB	FE
E	1.000	.944	.475	.942
G	.944	1.000	.611	.999
TB	.475	.611	1.000	.606
FE	.942	.999	.606	1.000

When all the alternative investment tools were taken into account treasury bill rate and gold prices are entered into the regression equation. In this equation while there is a positive correlation between gold price and ISE Index, there is a negative correlation between treasury bill rate and ISE Index. To determine the ISE Index, gold price is more important. The correlation coefficient between these alternative investment tools and ISE Index is 0.95. Also, 90% of the observed variability in the ISE Index can be explained by the changes in the gold prices and treasury bill rates.

Although real estate is a popular investment alternative in Turkey, the relationship between real estate and index is not tested. Investment on real estate requires high capital so, it can be considered as a viable tool for only a limited number of investors. In addition, real estate is a

long term investment alternative, whereas the date used in this study is reliable for the short run.

When all macroeconomic factors were taken into account inflation, capacity utilization rate and production index are entered into the regression equation. While the correlations between inflation and ISE Index , Capacity Utilization rate and ISE Index are positive, the correlation between ISE Index and production index is negative. Among these variables inflation is the most important variable in determining the ISE Index. The correlation coefficient between these macroeconomic factors and the ISE Index is 0.97. Also, 94 % of the observed variability in the ISE Index can be explained by the changes in the inflation, capacity utilization rate and production index. Macroeconomic factors explain the observed variability in the ISE Index better than the alternative investment tools.

When both macroeconomic factors and alternative investments are taken into account, inflation, capacity utilization rate and production index entered into the regression equation. Alternative investment tools did not entered into the regression equation.

Capacity utilization rate is the best variable among inflation , production rate, money supply, gold price, foreign exchange rate, treasury bill rate to explain the variability in the ISE Index when monthly differences and monthly percentage changes were used.

Regression analyses were made for consumer price index , wholesale price index, production industry index , capacity utilization rate and production rate in the periods t - 1, t - 2, t - 3 to understand the effect of ISE Index in the period t. Among these two month lagged wholesale price index is the most important variable to determine the future ISE Index. While two month lags for wholesale and production industry indices are very important to explain the variability in the future ISE Index three month lag is more important for the consumer price index to determine the future ISE Index.

Factor analysis was done in order to examine the interrelations. among inflation, money supply, production index, capacity utilization rate, gold price, foreign exchange rate, treasury bill rate. These variables are homogenous and correlated to each other. From the correlation matrix it can be seen that macroeconomic factors and alternative investment tools are correlated each other. The achieved results show that these variables can be explained in two factors. First factor is named as environmental features ; inflation, money supply, gold price, treasury bill, foreign exchange rate and the second factor is named as company features; capacity utilization rate and production index. Although environmental features explain the variance in the stock market in Turkey company features are also important .

Regression analyses were made with these two factor scores. While only environmental features explain 84% of the variance in the

ISE Index both environmental and company features explain 90% of the variance in the ISE Index. This shows that not only environmental features affect the ISE Index but also company features affect the ISE Index. But, from the correlation matrix it can be understood that correlation coefficient between the environmental features and ISE Index is higher than company feature and ISE Index. Although , both company and environmental feature are important for determination of ISE Index , environmental factors have much more affect on the ISE Index.

Also the effects of political events, while both macroeconomic variables and alternative investment tools were taken into account, were analyzed. From the outliers it is found that important political events and changes affect the ISE Index. While a positive change for Turkey in the political environment has a positive effect on the ISE Index, a negative change or uncertainty have reverse effects .

Stock prices fluctuate because of company factors, economical factors or industry factors. The possibility that individual stock returns may fluctuate as a result of changes in the overall market is called systematic risk. Systematic risk is peculiar to the market as a whole and it can not be diversified. Since in Turkey systematic risk, undiversifiable risk , is very important this results are not surprising. In Turkey, changes in political and economic environment affect İstanbul Stock Exchange.

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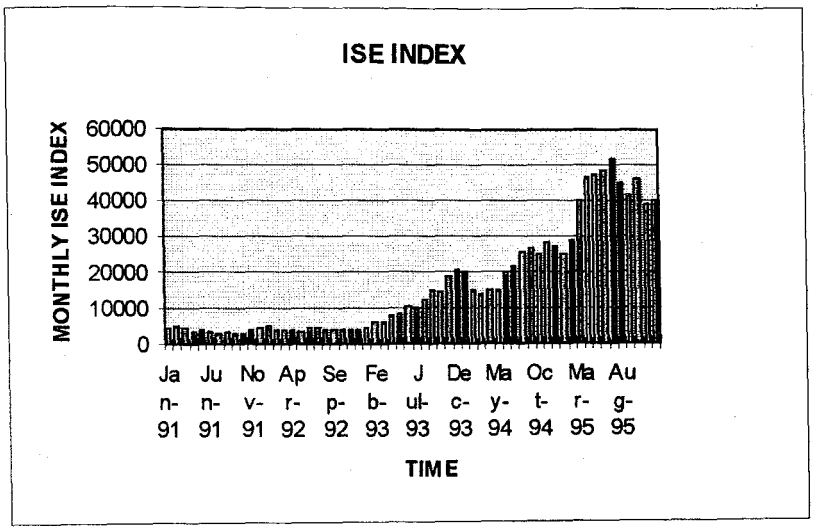
10. APPENDICES

TABLE 1 MONTHLY DATA

	E	I	M	C	P	G	FE	TB
Jan-91	4,213.48	528.8	71,062	75.00	79.00	254,750	2,536.75	60.08
Feb-91	5,102.57	556.6	72,975	76.10	88.00	272,000	2,757.79	65.44
Mar-91	4,519.95	583.6	75,123	76.50	100.90	281,000	2,941.27	69.71
Apr-91	3,554.25	615.0	76,940	72.90	83.70	299,333	3,090.77	72.89
May-91	3,626.36	632.9	80,433	75.70	104.10	311,500	3,209.56	75.05
Jun-91	3,587.36	641.5	86,116	74.80	81.60	309,750	3,360.06	60.99
Jul-91	3,041.44	655.9	87,584	72.50	94.10	355,333	3,459.49	61.00
Aug-91	3,301.29	686.9	93,594	76.30	91.50	353,333	3,620.33	66.84
Sep-91	2,937.64	717.0	99,879	77.20	103.40	356,000	3,757.77	70.66
Oct-91	2,746.84	742.2	104,338	76.80	113.60	378,000	3,924.97	75.15
Nov-91	4,058.47	770.8	107,224	77.20	110.30	390,250	4,086.84	76.99
Dec-91	4,369.15	805.0	113,566	75.40	98.20	396,750	4,207.32	72.99
Jan-92	4,926.19	893.8	117,633	75.40	96.00	412,200	4,460.07	71.94
Feb-92	3,664.36	940.7	123,283	72.60	92.10	440,000	4,725.70	71.51
Mar-92	4,076.62	981.0	128,146	74.30	98.80	463,750	5,014.63	71.48
Apr-92	3,686.37	1,002.5	133,115	75.00	90.00	476,000	5,289.58	72.50
May-92	3,297.36	1,009.5	137,977	76.80	101.80	495,600	5,260.92	74.41
Jun-92	4,407.23	1,012.0	143,372	78.10	90.70	511,666	5,690.59	77.39
Jul-92	4,264.13	1,030.6	150,168	77.90	98.80	531,100	5,902.15	78.17
Aug-92	4,157.23	1,080.4	157,171	76.20	93.00	531,666	6,032.86	77.63
Sep-92	3,976.40	1,148.1	161,949	81.00	109.30	558,666	6,218.73	77.24
Oct-92	3,642.70	1,211.8	169,428	80.50	115.60	566,500	6,474.84	77.51
Nov-92	3,786.24	1,254.1	174,715	81.00	109.20	594,000	6,701.38	77.64
Dec-92	4,004.18	1,299.3	182,988	78.40	104.70	614,600	6,929.26	77.83
Jan-93	4,383.01	1,364.8	192,903	79.80	99.00	635,250	7,145.40	78.09
Feb-93	5,923.61	1,436.0	204,460	77.00	96.20	659,000	7,390.90	79.99
Mar-93	5,864.17	1,504.3	217,615	74.70	95.80	683,000	7,626.41	82.27
Apr-93	7,807.64	1,543.6	215,141	80.80	104.40	718,000	7,886.27	83.87
May-93	8,375.75	1,588.0	226,985	82.90	105.90	821,500	8,236.43	85.25
Jun-93	10,778.67	1,625.2	224,476	79.70	98.50	876,666	8,635.62	85.89
Jul-93	10,077.62	1,702.3	234,805	82.50	108.40	996,666	9,077.81	86.51
Aug-93	12,357.02	1,766.2	241,575	79.80	95.70	1,003,750	9,396.47	87.38

Sep-93	15,079.87	1,837.1	245,410	82.50	115.60	964,500	9,787.19	87.97
Oct-93	14,500.69	1,902.6	257,464	81.30	120.00	1,022,000	10,348.49	86.69
Nov-93	18,977.16	2,023.5	258,207	81.70	114.90	1,126,670	10,862.54	87.91
Dec-93	20,682.89	2,082.2	266,461	83.00	122.30	1,197,500	11,402.68	89.23
Jan-94	20,104.84	2,192.3	276,063	83.00	108.00	1,366,250	13,576.75	94.00
Feb-94	15,003.59	2,412.7	288,541	76.50	91.30	1,543,750	14,453.32	125.00
Mar-94	14,087.16	2,617.5	284,905	75.50	95.50	1,930,000	17,655.42	129.99
Apr-94	15,096.68	3,477.3	315,695	71.00	90.20	2,476,000	27,283.28	126.58
May-94	14,749.10	3,789.6	390,962	69.50	84.30	2,552,500	25,505.02	222.54
Jun-94	19,766.44	3,861.1	469,332	70.00	86.10	2,555,000	25,437.18	143.60
Jul-94	21,752.21	3,894.8	539,754	71.00	86.80	2,551,000	25,228.52	127.40
Aug-94	25,825.43	4,001.1	550,549	72.90	94.20	2,610,000	26,916.22	122.18
Sep-94	26,825.53	4,217.4	568,668	78.70	104.80	2,870,000	28,006.74	105.60
Oct-94	24,889.50	4,507.4	558,539	76.10	110.20	2,982,500	29,757.50	95.97
Nov-94	28,181.04	4,795.9	584,142	74.90	109.90	3,030,000	29,777.50	92.92
Dec-94	27,257.14	5,196.3	642,490	76.80	105.20	3,064,000	31,612.00	106.90
Jan-95	25,228.78	5,630.3	629,570	71.70	96.70	3,325,000	33,539.00	114.23
Feb-95	29,122.91	6,026.3	720,712	73.20	88.00	3,385,000	34,778.00	119.23
Mar-95	39,837.33	6,395.4	768,629	74.70	93.00	3,514,000	35,953.50	123.34
Apr-95	46,615.19	6,647.6	847,395	79.00	103.70	3,625,000	36,434.00	97.99
May-95	47,370.92	6,759.0	899,080	79.40	97.80	3,652,500	36,648.00	115.82
Jun-95	48,233.01	6,845.4	971,662	81.50	109.40	3,680,000	37,732.00	84.24
Jul-95	51,943.75	7,009.1	1,041,158	83.40	105.70	3,806,250	38,710.00	105.70
Aug-95	45,139.57	7,214.9	1,105,458	82.60	107.90	4,082,500	40,245.50	99.83
Sep-95	41,707.61	7,558.8	1,126,714	84.30	111.40	4,100,000	41,632.00	92.70
Oct-95	46,324.64	7,890.2	1,102,473	80.70	112.80	4,275,000	43,560.50	108.72
Nov-95	39,133.64	8,232.1	1,179,266	80.40	122.30	4,525,000	46,168.00	103.41
Dec-95	40,024.57	8,567.1	1,270,423	80.10	121.80	5,100,000	50,512.50	112.73

FIGURE 1 ISE INDEX CHART



REGRESSION ANALYSIS BETWEEN WHOLESALE PRICE INDEX AND ISE INDEX

```
          Mean  Std Devia  Label
E       16366.275  15049.261
I(W)     2848.590   2446.440

N of Cases =     60
Correlation, 1-tailed Sig:

                E          I(W)

E           1.000          .960
             .             .000

I(W)         .960         1.000
             .000           .

Equation Number 1    Dependent Variable..  E

Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .100 I(W)

Step MultR     Rsq    F(Eqn)  SigF       Variable  BetaIn
 1   .9601   .9218   683.382  .000  In:  I(W)       .9601

Variable(s) Entered on Step Number
   1..    I(W)

Multiple R            .96009
R Square              .92177
Adjusted R Square     .92042
Standard Error    4245.41397

Analysis of Variance
                 DF      Sum of Squares      Mean Square
Regression        1   12316969549.54852 12316969549.5485
Residual         58    1045365304.99018   18023539.74121

F =      683.38238       Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation

            I(W)
I(W)       .05104
```

```
---------------------- Variables in the Equation --------
Variable  B        SE B     95% Confdnce Intrvl B      Beta
I(W)      5.905972    .225922    5.453739 6.35820   .960087
(Cons)-457.417355 845.318005 -2149.505198 1234.670488


----------- Variables in the Equation -----------
Variable    Tolerance        VIF         T  Sig T
I(W)         1.000000      1.000    26.142  .0000
(Constant)                           -.541  .5905

Equation Number 1    Dependent Variable..  E

Collinearity Diagnostics

Number  Eigenval     Cond  Variance Proportions
                    Index  Constant     E
    1    1.76132    1.000    .11934   .11934
    2     .23868    2.717    .88066   .88066

End Block Number   1   POUT =     .100 Limits reached.

Residuals Statistics:
                 Min         Max        Mean    Std Dev   N

*PRED       2665.6606 50139.6328 16366.2748 14448.6053  60
*RESID   -10115.0635 11005.6201      .0000  4209.2821  60
*ZPRED        -.9482     2.3375      .0000     1.0000  60
*ZRESID      -2.3826     2.5924      .0000      .9915  60
Durbin-Watson Test =    .47508
```

REGRESSION ANALYSIS BETWEEN MONEY SUPPLY AND ISE INDEX

```
           Mean  Std Deviat  Label
E      16366.275   15049.261
M      379441.017  340741.210

N of Cases =    60

Correlation,1-tailedSig:
           E          M

E       1.000       .956
         .          .000

M       .956       1.000
        .000         .

Equation Number 1    Dependent Variable..  E
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000    M
```

```
Step MultR      Rsq     F(Eqn)  SigF        Variable  BetaIn
   1   .9561    .9141   617.473  .000  In:     M      .9561

Variable(s) Entered on Step Number
   1..    M

Multiple R              .95610
R Square                .91413
Adjusted R Square       .91265
Standard Error       4447.71752

Analysis of Variance
               DF       Sum of Squares       Mean Square
Regression      1   12214967768.77969 12214967768.7797
Residual       58    1147367085.75901   19782191.13378

F =      617.47294        Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
       M
M     2.888E-06

---------------------- Variables in the Equation --------
Variable  B     SE B      95% Confdnce  Intrvl B      Beta
M .042228      .001699       .038826       .045629   .956104
(Con)343.424715  863.412580 -1384.883357  2071.732786


----------- Variables in the Equation -----------
Variable    Tolerance        VIF         T  Sig T
M            1.000000      1.000    24.849  .0000
(Constant)                               .398  .6923

Equation  Number  1         Dependent  Variable..        E
Collinearity Diagnostics

Number  Eigenval     Cond  Variance Proportions
                    Index  Constant     M
    1    1.74681    1.000    .12659   .12659
    2     .25319    2.627    .87341   .87341

End Block Number    1    POUT =       .100 Limits reached.
Residuals                                      Statistics:
           Min         Max        Mean    Std Dev   N
*PRED      3344.1963 53990.2266 16366.2748 14388.6536  60
*RESID   -13965.6572 10488.3828      .0000  4409.8639  60
*ZPRED        -.9050     2.6148      .0000     1.0000  60
*ZRESID      -3.1400     2.3581      .0000      .9915  60
Durbin-Watson Test =     .43004
```

REGRESSION ANALYSIS BETWEEN CAPACITY UTILIZATION RATE AND ISE INDEX

```
      Mean   Std Devia     Label
E   16366.275  15049.261
C      77.437      3.719

N of Cases =     60
Correlation, 1-tailed Sig:

                E          C

E             1.000       .289
                .         .013

C              .289      1.000
               .013        .

Equation Number 1     Dependent Variable..    E

Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000 C

Step MultR     Rsq    F(Eqn)  SigF       Variable  BetaIn
 1   .2891   .0836     5.290  .025  In:  C         .2891

Variable(s) Entered on Step Number
   1..    C

Multiple R            .28910
R Square              .08358
Adjusted R Square     .06778
Standard Error  14530.28624

Analysis of Variance
             DF       Sum of Squares      Mean Square
Regression    1    1116840191.33745 1116840191.33745
Residual     58   12245494663.20125  211129218.33106

F =        5.28984       Signif F =  .0251

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation

       C
C  258705.294

---------------------- Variables in the Equation --------
Variable  B     SE B      95% Confdnce Intrvl B       Beta
C 1169.833370  508.630804   151.69819 2187.968550 .289104
(ConS)-74221.72189 39431.31889 -153152.0829  4708.639132
```

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
C	1.000000	1.000	2.300	.0251
(Constant)			-1.882	.0648

Equation Number 1 Dependent Variable.. E

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	C
1	1.99887	1.000	.00057	.00057
2	.00113	42.017	.99943	.99943

End Block Number 1 POUT = .100 Limits reached.

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	7081.6973	24395.2305	16366.2748	4350.8039	60
*RESID	-16748.5410	28707.8730	.0000	14406.6220	60
*ZPRED	-2.1340	1.8454	.0000	1.0000	60
*ZRESID	-1.1527	1.9757	.0000	.9915	60

Total Cases = 61

Durbin-Watson Test = .05844

REGRESSION ANALYSIS BETWEEN PRODUCTION INDEX AND ISE INDEX

	Mean	Std Devia	Label
E	16366.275	15049.261	
P	101.035	10.641	

N of Cases = 60

Correlation, 1-tailed Sig:

	E	P
E	1.000	.320
	.	.006
P	.320	1.000
	.006	.

Equation Number 1 Dependent Variable.. E

Block Number 1. Method: Stepwise

Criteria PIN .0500 POUT .1000 P

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.3201	.1025	6.621	.013	In:	P	.3201

```
Variable(s) Entered on Step Number
   1..    P

Multiple R              .32008
R Square                .10245
Adjusted R Square       .08698
Standard Error      14379.88639

Analysis of Variance
                     DF        Sum of Squares        Mean
Square
Regression            1    1369029167.83219 1369029167.83219
Residual             58   11993305686.70651  206781132.52942

F =         6.62067       Signif F =  .0127

Var-Covar Matrix of Regression Coefficients (B)
Below  Diagonal:    Covariance        Above:    Correlation
           P
P     30950.5496

---------------------- Variables in the Equation --------
Variable  B    SE B      95% Confdnce     Intrvl B      Beta
P 452.673508  175.927683  100.515986    804.831029 .320085
(Cons)-29369.59300 17871.53510 -65143.35755 6404.171551


----------- Variables in the Equation -----------
Variable    Tolerance         VIF          T  Sig T
P            1.000000       1.000      2.573  .0127
(Constant)                             -1.643  .1057

Equation Number 1    Dependent Variable..  E
Collinearity Diagnostics
Number  Eigenval      Cond  Variance Proportions
                     Index  Constant      P
    1    1.99459     1.000     .00270    .00270
    2     .00541    19.202     .99730    .99730
End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
Min         Max        Mean     Std Dev    N
*PRED       6391.6143 25992.3770 16366.2748  4817.0410  60
*RESID   -19316.7637 33465.7539      .0000 14257.5022  60
*ZPRED       -2.0707     1.9983      .0000     1.0000  60
*ZRESID      -1.3433     2.3273      .0000      .9915  60

Durbin-Watson Test =     .11895
```

REGRESSION ANALYSIS BETWEEN GOLD PRICE AND ISE INDEX

	Mean	StdDeviati
E	16366.275	15049.261
G	1624324.983	1426082.575

N of Cases = 60
Correlation, 1-tailed Sig:

	E	G
E	1.000	.944
	.	.000
G	.944	1.000
	.000	.

Equation Number 1 Dependent Variable.. E

Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 G

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.9441	.8913	475.611	.000	In:	G	.9441

Variable(s) Entered on Step Number
1.. G

Multiple R	.94409
R Square	.89131
Adjusted R Square	.88943
Standard Error	5004.13028

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	11909938300.70253	11909938300.7025
Residual	58	1452396553.83617	25041319.89373

F = 475.61144 Signif F = .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	G
G	2.087E-07

---------- Variables in the Equation --------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
G	.009963	4.5683E-04	.009048	.010877	.944090
(Con)	183.350597	983.863639	-1786.066466	2152.767660	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
G	1.000000	1.000	21.809	.0000
(Constant)			.186	.8528

Equation Number 1 Dependent Variable.. E

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	G
1	1.75422	1.000	.12289	.12289
2	.24578	2.672	.87711	.87711

End Block Number 1 POUT = .100 Limits reached.

ResidualStatistics:

	Min	Max	Mean	Std Dev	N
*PRED	2721.3894	50993.9414	16366.2748	14207.8626	60
*RESID	-10969.3721	13839.2588	.0000	4961.5412	60
*ZPRED	-.9604	2.4372	.0000	1.0000	60
*ZRESID	-2.1921	2.7656	.0000	.9915	60

Durbin-Watson Test = .41186

REGRESSION ANALYSIS BETWEEN FOREIGN EXCHANGE RATE AND ISE INDEX

	Mean	Std Devia	Label
E	16366.275	15049.261	
FE	16476.203	14298.285	

N of Cases = 60

Correlation, 1-tailed Sig:

	E	FE
E	1.000	.942
	.	.000
FE	.942	1.000
	.000	.

Equation Number 1 Dependent Variable.. E

Block Number 1. Method: Stepwise Criteria PIN .0500 POUT .1000 FE

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.9420	.8873	456.542	.000	In:	FE	.9420

Variable(s) Entered on Step Number
1.. FE

Multiple R	.94195
R Square	.88728
Adjusted R Square	.88533
Standard Error	5096.01620

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	11856110752.35707	11856110752.3571
Residual	58	1506224102.18163	25969381.07210

F = 456.54191 Signif F = .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	FE
FE	.00215

---------- Variables in the Equation --------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
FE	.991428	.046400	.898548	1.084308	.941955
(Cons)	31.305970	1008.605277	-1987.636863	2050.248804	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
FE	1.000000	1.000	21.367	.0000
(Constant)			.031	.9753

Equation Number 1 Dependent Variable.. E

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	FE
1	1.75798	1.000	.12101	.12101
2	.24202	2.695	.87899	.87899

End Block Number 1 POUT = .100 Limits reached.

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	2546.3059	50110.8125	16366.2748	14175.7197	60
*RESID	-11984.0342	13534.2656	.0000	5052.6451	60
*ZPRED	-.9749	2.3804	.0000	1.0000	60
*ZRESID	-2.3516	2.6559	.0000	.9915	60

Durbin-WatsonTest=.41000

REGRESSION ANALYSIS BETWEEN TREASURY BILL RATE AND ISE INDEX

	Mean	Std Devia	Label
E	16366.275	15049.261	
TB	92.078	26.306	

N of Cases = 60

Correlation, 1-tailed Sig:

	E	TB
E	1.000	.475
	.	.000
TB	.475	1.000
	.000	.

```
Equation Number 1     Dependent Variable..    E
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500    POUT  .1000      TB

Step MultR      Rsq     F(Eqn)  SigF        Variable  BetaIn
1    .4749    .2255    16.887  .000  In:     TB        .4749

Variable(s) Entered on Step Number
   1..     TB

Multiple R            .47487
R Square              .22550
Adjusted R Square     .21214
Standard Error  13357.90718

Analysis of Variance
              DF       Sum of Squares       Mean Square
Regression     1    3013181174.76570 3013181174.76570
Residual      58   10349153679.77300  178433684.13402
F =       16.88684        Signif F =  .0001

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance     Above:  Correlation
           TB
TB   4370.29056

---------------------- Variables in the Equation --------
Variable B    SE B      95% Confdnce Intrvl B        Beta
TB 271.662290 66.108173   139.332403   403.992177 .474866
(Cons)-8647.981353 6326.704154 -21312.25577  4016.293063

----------- Variables in the Equation -----------
Variable     Tolerance         VIF          T  Sig T
TB           1.000000       1.000      4.109  .0001
(Constant)                             -1.367  .1769

Equation Number 1     Dependent Variable..    E
Collinearity Diagnostics
Number  Eigenval      Cond  Variance Proportions
                     Index  Constant      E
    1    1.96213     1.000     .01893    .01893
    2     .03787     7.199     .98107    .98107
End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
           Min          Max         Mean     Std Dev    N
*PRED      7673.4893 51807.7461 16366.2748  7146.3884   60
*RESID   -37058.6445 33996.1602       .0000 13244.2208   60
*ZPRED       -1.2164     4.9594       .0000     1.0000   60
*ZRESID      -2.7743     2.5450       .0000      .9915   60
Durbin-WatsonTest=.22074
```

MULTIPLE REGRESSION ANALYSIS BETWEEN THE ALL MACROECONOMIC VARIABLES, ALTERNATIVE INVESTMENT TOOLS AND ISE INDEX

	Mean	Std Devia	Label
E	16366.275	15049.261	
G	1624324.983	1426082.575	
M	379441.017	340741.210	
I	2848.590	2446.440	
C	77.437	3.719	
P	101.035	10.641	
TB	92.078	26.306	
FE	16476.203	14298.285	

N of Cases = 60
Correlation, 1-tailed Sig:

	E	G	M	I	C	P	TB	FE
E	1.000	.944	.956	.960	.289	.320	.475	.942
	.	.000	.000	.000	.013	.006	.000	.000
G	.944	1.000	.971	.991	.114	.262	.611	.999
	.000	.	.000	.000	.193	.021	.000	.000
M	.956	.971	1.000	.989	.263	.345	.469	.971
	.000	.000	.	.000	.021	.003	.000	.000
I	.960	.991	.989	1.000	.179	.294	.547	.992
	.000	.000	.000	.	.085	.011	.000	.000
C	.289	.114	.263	.179	1.000	.733	-.286	.109
	.013	.193	.021	.085	.	.000	.013	.204
P	.320	.262	.345	.294	.733	1.000	-.125	.259
	.006	.021	.003	.011	.000	.	.171	.023
TB	.475	.611	.469	.547	-.286	-.125	1.000	.606
	.000	.000	.000	.000	.013	.171	.	.000
FE	.942	.999	.971	.992	.109	.259	.606	1.000
	.000	.000	.000	.000	.204	.023	.000	.

Equation Number 1 Dependent Variable.. E
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 G M I C P TB FE

Step	MultR	Rsq	F(Eqn)	SigF			BetaIn
1	.9601	.9218	683.382	.000	In:	I	.9601
2	.9674	.9359	416.339	.000	In:	C	.1210
3	.9698	.9405	294.970	.000	In:	P	-.1022

```
Variable(s) Entered on Step Number
   3..      P

Multiple R                .96979
R Square                  .94048
Adjusted R Square         .93729
Standard Error          3768.48937
Analysis of Variance
                DF        Sum of Squares        Mean Square
Regression       3     12567050176.05676  4189016725.35225
Residual        56       795284678.48194    14201512.11575

F =      294.96977          Signif F =  .0000
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance     Above:  Correlation

           I           C           P
I       .04416      .05593     -.24312
C      2.28313 37729.4717     -.72352
P     -3.57012 -9820.4354 4882.92875
Equation Number 1     Dependent Variable..    E
---------------------- Variables in the Equation --------
Variable B      SE B      95% Confdnce Intrvl B        Beta
I 5.878369     .210146      5.457395     6.299343    .955600
C 780.318151  194.240757  391.207154  1169.429147 .192842
P-144.602247 69.877956  -284.584615  -4.619879    -.102248
(Cons)-46194.13675 11043.93307 -68317.79335 -24070.48016

------------ Variables in the Equation -----------
Variable     Tolerance       VIF         T     Sig T
I            .910689        1.098     27.973   .0000
C            .461223        2.168      4.017   .0002
P            .435323        2.297     -2.069   .0431
(Constant)                             -4.183   .0001

------------------------ Variables not in the Equation --
Var Beta In Partial Tolerance VIF    Min Toler   T     SigT
G  .128384 .058582 .012392  80.696    .012296  .435   .6651
M -.308028 -.151110 .014323 69.816    .014323 1.134  .2618
TB-.009517  -.028885 .548197 1.824    .413321 .214   .8311
FE-.093531 -.037733 .009687 103.235   .009602 .280   .7805

Collinearity Diagnostics
Number  Eigenval      Cond  Variance Proportions
                    Index  Constant     I          C          P
1    3.65928     1.000     .00014    .02094    .00008    .00034
2     .33477  3.306     .00044    .91368     .00022    .00076
3     .00528   26.317     .13189    .06277    .00513   .54595
4     .00067   73.996     .86752    .00261    .99458   .45294

End Block Number   1   PIN =      .050 Limits reached.
Equation Number 1     Dependent Variable..    E
```

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	627.4799	49057.3672	16366.2748	14594.5487	60
*RESID	-9032.7988	7555.5352	.0000	3671.4304	60
*ZPRED	-1.0784	2.2400	.0000	1.0000	60
*ZRESID	-2.3969	2.0049	.0000	.9742	60

Durbin-Watson Test = .60357

MULTIPLE REGRESSION ANALYSIS BETWEEN THE ALL MACROECONOMIC VARIABLES AND ISE INDEX

	Mean	Std Deviat	Label
E	16366.275	15049.261	
M	379441.017	340741.210	
I	2848.590	2446.440	
C	77.437	3.719	
P	101.035	10.641	

N of Cases = 60

Correlation, 1-tailed Sig:

	E	M	I	C	P
E	1.000	.956	.960	.289	.320
	.	.000	.000	.013	.006
M	.956	1.000	.989	.263	.345
	.000	.	.000	.021	.003
I	.960	.989	1.000	.179	.294
	.000	.000	.	.085	.011
C	.289	.263	.179	1.000	.733
	.013	.021	.085	.	.000
P	.320	.345	.294	.733	1.000
	.006	.003	.011	.000	.

Equation Number 1 Dependent Variable.. E

Block Number 1. Method: Stepwise

Criteria PIN .0500 POUT .1000 M I C P

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.9601	.9218	683.382	.000	In:	I	.9601
2	.9674	.9359	416.339	.000	In:	C	.1210
3	.9698	.9405	294.970	.000	In:	P	-.1022

Variable(s) Entered on Step Number
3.. P

Multiple R .96979
R Square .94048
Adjusted R Square .93729
Standard Error 3768.48937

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	3	12567050176.05676	4189016725.35225
Residual	56	795284678.48194	14201512.11575

F = 294.96977 Signif F = .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	I	C	P
I	.04416	.05593	-.24312
C	2.28313	37729.4717	-.72352
P	-3.57012	-9820.4354	4882.92875

Equation Number 1 Dependent Variable.. E

Variables in the Equation

Var	B	SE B	95% Confdnce Intrvl B		Beta
E	5.878369	.210146	5.457395	6.299343	.955600
C	780.318151	194.240757	391.207154	1169.429147	.192842
P	-144.602247	69.877956	-284.584615	-4.619879	-.102248
(Cons)	-46194.13675	11043.93307	-68317.79335	-24070.48016	

Variables in the Equation

Variable	Tolerance	VIF	T	Sig T
I	.910689	1.098	27.973	.0000
C	.461223	2.168	4.017	.0002
P	.435323	2.297	-2.069	.0431
(Constant)			-4.183	.0001

Variables not in the Equation

Var	Beta In	Partial	Tolerance	VIF	Min Toler	T	SigT
M	-.308028	-.151110	.014323	69.816	.014323	1.134	.2618

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	I	C	P
1	3.65928	1.000	.00014	.02094	.00008	.00034
2	.33477	3.306	.00044	.91368	.00022	.00076
3	.00528	26.317	.13189	.06277	.00513	.54595
4	.00067	73.996	.86752	.00261	.99458	.45294

End Block Number 1 PIN = .050 Limits reached.
Equation Number 1 Dependent Variable.. E
Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	627.4799	49057.3672	16366.2748	14594.5487	60
*RESID	-9032.7988	7555.5352	.0000	3671.4304	60
*ZPRED	-1.0784	2.2400	.0000	1.0000	60
*ZRESID	-2.3969	2.0049	.0000	.9742	60

Durbin-Watson Test = .60357

REGRESSION ANALYSIS BETWEEN THE ALL ALTERNATIVE INVESTMENT TOOLS AND ISE INDEX

	Mean	Std Deviati	Label
E	16366.275	15049.261	
G	1624324.983	1426082.575	
TB	92.078	26.306	
FE	16476.203	14298.285	

```
N of Cases =     60
Correlation, 1-tailed Sig:
          E          G          TB          FE
E       1.000       .944       .475       .942
          .          .000       .000       .000
G        .944      1.000       .611       .999
         .000          .       .000       .000
TB       .475       .611      1.000       .606
         .000       .000          .       .000
FE       .942       .999       .606      1.000
         .000       .000       .000          .
Equation Number 1    Dependent Variable..    E
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000  G TB FE
Step MultR     Rsq    F(Eqn)  SigF       Variable  BetaIn
   1   .9441   .8913   475.611  .000  In:  G         .9441
   2   .9529   .9079   281.091  .000  In:  TB       -.1630

Variable(s) Entered on Step Number
   2..      TB

Multiple R            .95286
R Square              .90794
Adjusted R Square     .90471
Standard Error    4645.49159
Analysis of Variance
                DF       Sum of Squares       Mean Square
Regression       2   12132241106.65618 6066120553.32809
Residual        57    1230093747.88252   21580592.06811
F =      281.09148        Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           G          TB
G      2.871E-07    -.61113
TB      -.00951   843.64603

Equation Number 1    Dependent Variable..    VAR00016

---------------------- Variables in the Equation --------
Variable B        SE B      95% Confdnce  IntrvlB    Beta
G  .011014  5.3579E-04    .009941       .012087    1.043676
TB-93.222539   29.045585  -151.385321 -35.059757 -.162953
(Con)7060.121595 2329.163421  2396.052262 11724.190929

------------ Variables in the Equation -----------
Variable    Tolerance        VIF       T  Sig T
G           .626522        1.596    20.556  .0000
TB          .626522        1.596    -3.210  .0022
(Constant)                           3.031  .0037
```

---------- Variables not in the Equation --

Var.	Beta In	Partial	Tolerance	VIF	Min Toler	TSig T
FE	-1.065512	-.152638	.001889	529.339	.001869	1.156.2527

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	G	TB
1	2.70385	1.000	.00830	.03031	.00617
2	.26851	3.173	.06828	.66996	.00998
3	.02764	9.890	.92342	.29973	.98386

End Block Number 1 PIN = .050 Limits reached.
Equation Number 1 Dependent Variable.. E

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	3494.5601	52721.3828	16366.2748	14339.8468	60
*RESID	-12696.8115	12816.0820	.0000	4566.0756	60
*ZPRED	-.8976	2.5353	.0000	1.0000	60
*ZRESID	-2.7331	2.7588	.0000	.9829	60

Durbin-Watson Test = .54820

REGRESSION ANALYSIS BETWEEN MONTHLY PERCENTAGE CHANGES OF INFLATION RATE AND ISE INDEX

	Mean	Std Dev	Label
ΔE	6.018	16.244	
ΔI	4.905	4.301	

N of Cases = 60

Correlation, 1-tailed Sig:

	ΔE	ΔI
ΔE	1.000	-.086
	.	.256
ΔI	-.086	1.000
	.256	.

Equation Number 1 Dependent Variable.. ΔE

Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔI
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE MONTHLY PERCENTAGE CHANGES OF MONEY SUPPLY AND ISE INDEX

	Mean	Std Dev	Label
ΔE	6.018	16.244	
ΔM	5.010	4.711	

N of Cases = 60
Correlation, 1-tailed Sig:

	ΔE	ΔM
ΔE	1.000	.027
	.	.420
ΔM	.027	1.000
	.420	.

Equation Number 1 Dependent Variable.. ΔE
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔM
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN MONTHLY PERCENTAGE CHANGES OF CAPACITY UTILIZATION RATE AND ISE INDEX

	Mean	Std Dev	Label
ΔE	5.622	16.089	
ΔC	.173	3.320	

N of Cases = 59
Correlation, 1-tailed Sig:

	ΔE	ΔC
ΔE	1.000	.284
	.	.015
ΔC	.284	1.000
	.015	.

Equation Number 1 Dependent Variable.. ΔE
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔC

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.2838	.0806	4.994	.029	In:	ΔC	.2838

Variable(s) Entered on Step Number
1.. ΔC

Multiple R	.28383
R Square	.08056
Adjusted R Square	.06443
Standard Error	15.56172

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	1209.40270	1209.40270
Residual	57	13803.51865	242.16699

F = 4.99409 Signif F = .0294

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	ΔC
ΔC	.37885

---------- Variables in the Equation --------

Variable	B	SE B	95% Confdnce	IntrvlB	Beta
ΔC	1.375496	.615505	.142969	2.608023	.283826
(Const)	5.384660	2.028745	1.322168	9.447153	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
ΔC	1.000000	1.000	2.235	.0294
(Constant)			2.654	.0103

Equation Number 1 Dependent Variable.. ΔE
Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	ΔC
1	1.05236	1.000	.47382	.47382
2	.94764	1.054	.52618	.52618

End Block Number 1 POUT = .100 Limits reached.
Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-5.3873	16.6170	5.6220	4.5664	59
*RESID	-25.8767	41.6989	.0000	15.4270	59
*ZPRED	-2.4110	2.4078	.0000	1.0000	59
*ZRESID	-1.6628	2.6796	.0000	.9913	59

Durbin-Watson Test = 2.01421

REGRESSION ANALYSIS BETWEEN MONTHLY PERCENTAGE CHANGES OF PRODUCTION INDEX AND ISE INDEX

	Mean	Std Dev	Label
ΔE	6.018	16.244	
ΔP	.900	9.842	

N of Cases = 60

Correlation, 1-tailed Sig:

	ΔE	PΔ
ΔE	1.000	-.042
	.	.375
ΔP	-.042	1.000
	.375	.

Equation Number 1 Dependent Variable.. ΔE
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔP
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE MONTHLY PERCENTAGE CHANGES OF GOLD PRICE AND ISE INDEX

	Mean	Std Dev	Label
ΔE	6.018	16.244	
ΔG	5.394	5.688	

N of Cases = 60
Correlation, 1-tailed Sig:

	ΔE	ΔG
ΔE	1.000	-.195
	.	.068
ΔG	-.195	1.000
	.068	.

Equation Number 1 Dependent Variable.. ΔE
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔG
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN MONTHLY PERCENTAGES CHANGE OF FOREIGN EXCHANGE RATE AND ISE INDEX

	Mean	Std Dev	Label
ΔE	6.018	16.244	
ΔFE	5.401	7.528	

N of Cases = 60
Correlation, 1-tailed Sig:

	ΔE	ΔFE
ΔE	1.000	-.050
	.	.352
ΔFE	-.050	1.000
	.352	.

Equation Number 1 Dependent Variable.. ΔE
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔFE
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN MONTHLY PERCENTAGE CHANGES OF TREASURY BILL RATE AND ISE INDEX

	Mean	Std Devia	Label
ΔE	6.018	16.244	
ΔTB	1.977	14.280	

N of Cases = 60
Correlation, 1-tailed Sig:

	ΔE	ΔTB
ΔE	1.000	-.183
	.	.081
ΔTB	-.183	1.000
	.081	.

Equation Number 1 Dependent Variable.. ΔE
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔTB
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

MULTIPLE REGRESSION ANALYSIS BETWEEN THE PERCENTAGES CHANGES OF ALL ECONOMIC VARIABLES, ALTERNATIVE INVESTMENT TOOLS AND ISE INDEX

	Mean	Std Dev	Label
ΔE	5.622	16.089	
ΔI	4.910	4.337	
ΔG	5.354	5.729	
ΔM	5.107	4.691	
ΔC	.173	3.320	
ΔP	1.192	9.661	
ΔFE	5.423	7.591	
ΔTB	1.976	14.402	

N of Cases = 59

Correlation, 1-tailed Sig:

	ΔE	ΔI	ΔG	ΔM	ΔC	ΔP	ΔFE	ΔTB
ΔE	1.000	-.086	-.209	.059	.284	.001	.047	-.186
	.	.258	.056	.330	.015	.496	.363	.079
ΔI	-.086	1.000	.569	.125	-.345	-.168	.791	.175
	.258	.	.000	.173	.004	.101	.000	.092
ΔG	-.209	.569	1.000	-.180	-.263	-.027	.727	.095
	.056	.000	.	.086	.022	.421	.000	.236
ΔM	.059	.125	-.180	1.000	.077	-.137	-.110	.145
	.330	.173	.086	.	.282	.150	.204	.137
ΔC	.284	-.345	-.263	.077	1.000	.529	-.254	-.227
	.015	.004	.022	.282	.	.000	.026	.042
ΔP	.001	-.168	-.027	.137	.529	1.000	-.116	-.208
	.496	.101	.421	.150	.000	.	.191	.057
ΔFE	-.047	.791	.727	-.110	-.254	-.116	1.000	-.083
	.363	.000	.000	.204	.026	.191	.	.265
ΔTB	-.186	.175	.095	.145	-.227	-.208	-.083	1.000
	.079	.092	.236	.137	.042	.057	.265	.

Equation Number 1 Dependent Variable.. ΔE
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔG ΔM ΔC ΔP ΔFE ΔTB ΔI

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.2838	.0806	4.994	.029	In:	ΔC	.2838

Variable(s) Entered on Step Number
1.. ΔC

Multiple R	.28383
R Square	.08056
Adjusted R Square	.06443
Standard Error	15.56172

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	1209.40270	1209.40270
Residual	57	13803.51865	242.16699

F = 4.99409 Signif F = .0294

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	ΔC
ΔC	.37885

Variables in the Equation

Variable	B	SE B	95% Confdnce Intrvl B		Beta
ΔC	1.375496	.615505	.142969	2.608023	.283826
(Cons)	5.384660	2.028745	1.322168	9.447153	

Variables in the Equation

Variable	Tolerance	VIF	T	Sig T
ΔC	1.000000	1.000	2.235	.0294
(Constant)			2.654	.0103

Equation Number 1 Dependent Variable.. ΔE

Variables not in the Equation

Var	Beta In	Partial	Tolerance	VIF	Min Toler	T	Sig T
ΔI	.013325	.013044	.881038	1.135	.881038	.098	.9226
ΔG	-.144201	-.145089	.930794	1.074	.930794	-1.097	.2772
ΔM	.037032	.038506	.994128	1.006	.994128	.288	.7741
ΔP	-.206654	-.182868	.719969	1.389	.719969	-1.392	.1694
ΔFE	.027109	.027344	.935468	1.069	.935468	.205	.8385
ΔTB	-.128175	-.130171	.948290	1.055	.948290	-.982	.3301

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	ΔC
1	1.05236	1.000	.47382	.47382
2	.94764	1.054	.52618	.52618

End Block Number 1 PIN = .050 Limits reached.
Equation Number 1 Dependent Variable.. ΔE
Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-5.3873	16.6170	5.6220	4.5664	59
*RESID	-25.8767	41.6989	.0000	15.4270	59
*ZPRED	-2.4110	2.4078	.0000	1.0000	59
*ZRESID	-1.6628	2.6796	.0000	.9913	59

Durbin-Watson Test = 2.01421

MULTIPLE REGRESSION ANALYSIS BETWEEN THE PERCENTAGE CHANGE OF ALL MACROEONOMIC VARIABLES AND ISE INDEX

	Mean	Std Dev	Label
ΔE	5.622	16.089	
ΔM	5.107	4.691	
ΔC	.173	3.320	
ΔP	1.192	9.661	
ΔI	4.910	4.337	

N of Cases = 59

Correlation, 1-tailed Sig:

	ΔE	ΔM	ΔC	ΔP	ΔI
ΔE	1.000	.059	.284	.001	-.086
	.	.330	.015	.496	.258
ΔM	.059	1.000	.077	-.137	.125
	.330	.	.282	.150	.173
ΔC	.284	.077	1.000	.529	-.345
	.015	.282	.	.000	.004
ΔP	.001	-.137	.529	1.000	-.168
	.496	.150	.000	.	.101
ΔI	-.086	.125	-.345	-.168	1.000
	.258	.173	.004	.101	.

Equation Number 1 Dependent Variable.. ΔE

Block Number 1. Method: Stepwise

Criteria PIN .0500 POUT .1000 ΔM ΔC ΔP ΔI

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.2838	.0806	4.994	.029	In:	ΔC	.2838

Variable(s) Entered on Step Number

1.. ΔC

Multiple R	.28383
R Square	.08056
Adjusted R Square	.06443
Standard Error	15.56172

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	1209.40270	1209.40270
Residual	57	13803.51865	242.16699

F = 4.99409 Signif F = .0294

Var-Covar Matrix of Regression Coefficients (B)

Below Diagonal: Covariance Above: Correlation

	ΔC
ΔC	.37885

---------- Variables in the Equation --------

Variable	B	SE B	95% Confdnce	Intrvl B	Beta
ΔC	1.375496	.615505	.142969	2.608023	.283826
(Constant)	5.384660	2.028745	1.322168	9.447153	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
ΔC	1.000000	1.000	2.235	.0294
(Constant)			2.654	.0103

Equation Number 1 Dependent Variable.. ΔE

---------- Variables not in the Equation

Var.	Beta In	Partial	Tolerance	VIF	Min Toler	T	Sig T
ΔM	.037032	.038506	.994128	1.006	.994128	.288	.7741
ΔP	-.206654	-.182868	.719969	1.389	.719969	-1.392	.1694
ΔI	.013325	.013044	.881038	1.135	.881038	.098	.9226

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	ΔC
1	1.05236	1.000	.47382	.47382
2	.94764	1.054	.52618	.52618

End Block Number 1 PIN = .050 Limits reached.

Equation Number 1 Dependent Variable.. ΔE

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-5.3873	16.6170	5.6220	4.5664	59
*RESID	-25.8767	41.6989	.0000	15.4270	59
*ZPRED	-2.4110	2.4078	.0000	1.0000	59
*ZRESID	-1.6628	2.6796	.0000	.9913	59

Durbin-Watson Test = 2.01421

MULTIPLE REGRESSION ANALYSIS BETWEEN THE PERCENTAGE CHANGE OF ALL ALTERNATIVE INVESTMENT TOOLS AND ISE INDEX

	Mean	Std Dev	Label
ΔE	6.018	16.244	
ΔG	5.394	5.688	
ΔFE	5.401	7.528	
ΔTB	1.977	14.280	

N of Cases = 60

Correlation, 1-tailed Sig:

	ΔE	ΔG	ΔFE	ΔTB
ΔE	1.000	-.195	-.050	-.183
	.	.068	.352	.081
ΔG	-.195	1.000	.725	.095
	.068	.	.000	.235
ΔFE	-.050	.725	1.000	-.083
	.352	.000	.	.264
ΔTB	-.183	.095	-.083	1.000
	.081	.235	.264	.

Equation Number 1 Dependent Variable.. ΔE
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 ΔG ΔFE ΔTB
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF INFLATION INDEX AND ISE INDEX

	Mean	Std Devi	Label
E_t-E_{t-1}	606.968	2794.062	
I_t-I_{t-1}	136.242	156.412	

N of Cases = 59
Correlation, 1-tailed Sig:

	E_t-E_{t-1}	I_t-I_{t-1}
E_t-E_{t-1}	1.000	.027
	.	.421
I_t-I_{t-1}	.027	1.000
	.421	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 I_t-I_{t-1}

End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF MONEY SUPPLY AND ISE INDEX

	Mean	Std Devia	Label
E_t-E_{t-1}	612.814	2770.652	
M_t-M_{t-1}	19980.863	28910.678	

N of Cases = 60
Correlation, 1-tailed Sig:

	E_t-E_{t-1}	M_t-M_{t-1}
E_t-E_{t-1}	1.000	.124
	.	.172
M_t-M_{t-1}	.124	1.000
	.172	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000
M_t-M_{t-1}
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF CAPACITY UTILIZATION RATE AND ISE INDEX

	Mean	Std Devi	Label
E_t-E_{t-1}	606.968	2794.062	
C_t-C_{t-1}	.093	2.558	

N of Cases = 59

Correlation, 1-tailed Sig:

	E_t-E_{t-1}	C_t-C_{t-1}
E_t-E_{t-1}	1.000	.279
	.	.016
C_t-C_{t-1}	.279	1.000
	.016	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}

Block Number 1. Method: Stepwise

Criteria PIN .0500 POUT .1000 C_t-C_{t-1}

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.2790	.0778	4.812	.032	In:	C_t-C_{t-1}	.2790

Variable(s) Entered on Step Number

1.. C_t-C_{t-1}

Multiple R	.27900
R Square	.07784
Adjusted R Square	.06166
Standard Error	2706.54409

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	35246567.93108	35246567.93108
Residual	57	417546713.01419	7325380.93007

F = 4.81157 Signif F = .0324

Var-Covar Matrix of Regression Coefficients (B)

Below Diagonal: Covariance Above: Correlation

	C_t-C_{t-1}
C_t-C_{t-1}	19304.0510

---------- Variables in the Equation --------

Variable	B	SE B	95% Confdnce Intrvl B		Beta
C_t-C_{t-1}	304.766718	138.939019	26.546130	582.987307	.279003
(ConS)	578.712136	352.597400	-127.351984	1284.776257	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
C_t-C_{t-1}	1.000000	1.000	2.194	.0324
(Constant)			1.641	.1062

Equation Number 1 Dependent Variable.. E_t-E_{t-1}

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	C_t-C_{t-1}
1	1.03653	1.000	.48173	.48173
2	.96347	1.037	.51827	.51827

End Block Number 1 POUT = .100 Limits reached.
Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-1402.2715	2437.7891	606.9676	779.5508	59
*RESID	-7678.2822	9678.5576	.0000	2683.1104	59
*ZPRED	-2.5774	2.3486	.0000	1.0000	59
*ZRESID	-2.8369	3.5760	.0000	.9913	59

Durbin-Watson Test = 1.91587

REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF PRODUCTION INDEX AND ISE INDEX

	Mean	Std Devi	Label
E_t-E_{t-1}	612.814	2770.652	
P_t-P_{t-1}	.464	9.584	

Correlation, 1-tailed Sig:

	E_t-E_{t-1}	P_t-P_{t-1}
E_t-E_{t-1}	1.000	.059
	.	.326
P_t-P_{t-1}	.059	1.000
	.326	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 P_t-P_{t-1}
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF GOLD PRICES AND ISE INDEX

	Mean	Std Deviat	Label
E_t-E_{t-1}	612.814	2770.652	
G_t-G_{t-1}	81058.333	122480.524	

N of Cases = 60
Correlation, 1-tailed Sig:

	E_t-E_{t-1}	G_t-G_{t-1}
E_t-E_{t-1}	1.000	-.140
	.	.143
G_t-G_{t-1}	-.140	1.000
	.143	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 G_t-G_{t-1}
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF FOREIGN EXCHANGE RATE AND ISE INDEX

	Mean	Std Devi	Label
E_t-E_{t-1}	612.814	2770.652	
FE_t-FE_{t-1}	801.253	1479.612	

N of Cases = 60

Correlation, 1-tailed Sig:

	E_t-E_{t-1}	FE_t-FE_{t-1}
E_t-E_{t-1}	1.000	-.076
	.	.282
FE_t-FE_{t-1}	-.076	1.000
	.282	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}

Block Number 1. Method: Stepwise

Criteria PIN .0500 POUT .1000 FE_t-FE_{t-1}

End Block Number 1 PIN = .050 Limits reached.

No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF TREASURY BILL RATE AND ISE INDEX

	Mean	Std Devi	Label
E_t-E_{t-1}	612.814	2770.652	
TB_t-TB_{t-1}	.897	18.699	

N of Cases = 60

Correlation, 1-tailed Sig:

	E_t-E_{t-1}	TB_t-TB_{t-1}
E_t-E_{t-1}	1.000	-.181
	.	.083
TB_t-TB_{t-1}	-.181	1.000
	.083	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}

Block Number 1. Method: Stepwise

Criteria PIN .0500 POUT .1000 TB_t-TB_{t-1}

End Block Number 1 PIN = .050 Limits reached.

No variables entered/removed for this block.

MULTIPLE REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF THE ALL MACROECONOMIC VARIABLES, ALTERNATIVE INVESTMENT TOOLS AND ISE INDEX

	Mean	Std Deviat	Label
E_t-E_{t-1}	606.968	2794.062	
G_t-G_{t-1}	82122.881	123251.600	

M_t-M_{t-1}	20328.153	29032.340
I_t-I_{t-1}	136.242	156.412
C_t-C_{t-1}	.093	2.558
P_t-P_{t-1}	.733	9.435
FE_t-FE_{t-1}	813.148	1489.417
TB_t-TB_{t-1}	.892	18.860

N of Cases = 59
Correlation, 1-tailed Sig:

	E_t-E_{t-1}	G_t-G_{t-1}	M_t-M_{t-1}	I_t-I_{t-1}	C_t-C_{t-1}	P_t-P_{t-1}	FE_t-FE_{t-1}	TB_t-TB_{t-1}
E_t-E_{t-1}	1.000	-.139	.127	.027	.279	.064	-.075	-.181
	.	.147	.170	.421	.016	.314	.286	.084
G_t-G_{t-1}	-.139	1.000	.262	.700	-.226	-.049	.825	.090
	.147	.	.022	.000	.042	.357	.000	.248
M_t-M_{t-1}	.127	.262	1.000	.383	.195	.000	.154	-.065
	.170	.022	.	.001	.069	.499	.123	.312
I_t-I_{t-1}	.027	.700	.383	1.000	-.242	-.108	.764	.158
	.421	.000	.001	.	.032	.207	.000	.115
C_t-C_{t-1}	.279	-.226	.195	-.242	1.000	.530	-.231	-.215
	.016	.042	.069	.032	.	.000	.039	.051
P_t-P_{t-1}	.064	-.049	.000	-.108	.530	1.000	-.058	.202
	.314	.357	.499	.207	.000	.	.330	.062
FE_t-FE_{t-1}	-.075	.825	.154	.764	-.231	-.058	1.000	.094
	.286	.000	.123	.000	.039	.330	.	.240
TB_t-TB_{t-1}	-.181	.090	-.065	.158	-.215	-.202	-.094	1.000
	.084	.248	.312	.115	.051	.062	.240	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000
G_t-G_{t-1} M_t-M_{t-1} I_t-I_{t-1} C_t-C_{t-1} P_t-P_{t-1} FE_t-FE_{t-1} TB_t-TB_{t-1}

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.2790	.0778	4.812	.032	In:	C_t-C_{t-1}	.2790

Variable(s) Entered on Step Number
1.. C_t-C_{t-1}

Multiple R	.27900
R Square	.07784
Adjusted R Square	.06166
Standard Error	2706.54409

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	35246567.93108	35246567.93108
Residual	57	417546713.01419	7325380.93007

F = 4.81157 Signif F = .0324
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	C_t-C_{t-1}
C_t-C_{t-1}	19304.0510

---------- Variables in the Equation --------

Variable	B	SE B	95% Confdnce	Intrvl B	Beta
C_t-C_{t-1}	304.766718	138.939019	26.546130	582.987307	.279003
(Con)	578.712136	352.597400	-127.351984	1284.776257	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
E_t-E_{t-1}	1.000000	1.000	2.194	.0324
(Constant)			1.641	.1062

Equation Number 1 Dependent Variable.. E_t-E_{t-1}

---------- Variables not in the Equation --

Varia.	Beta In	Partial	Tolerance	VIF	Min Toler	T	Sig T
G_t-G_{t-1}	-.079875	-.081017	.948729	1.054	.948729	-.608	.5455
M_t-M_{t-1}	.074871	.076464	.961810	1.040	.961810	.574	.5683
I_t-I_{t-1}	.099957	.100997	.941447	1.062	.941447	.760	.4506
P_t-P_{t-1}	-.116010	-.102454	.719233	1.390	.719233	-.771	.4441
FE_t-FE_{t-1}	-.011271	-.011419	.9466631	.056	.946663	-.085	.9322
TB_t-TB_{t-1}	-.127293	-.129446	.9536041	.049	-.953604	-.977	.3328

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	C_t-C_{t-1}
1	1.03653	1.000	.48173	.48173
2	.96347	1.037	.51827	.51827

End Block Number 1 PIN = .050 Limits reached.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}

Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-1402.2715	2437.7891	606.9676	779.5508	59
*RESID	-7678.2822	9678.5576	.0000	2683.1104	59
*ZPRED	-2.5774	2.3486	.0000	1.0000	59
*ZRESID	-2.8369	3.5760	.0000	.9913	59

Durbin-Watson Test = 1.91587

MULTIPLE REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF ALL ECONOMIC VARIABLES AND ISE INDEX

	Mean	Std Devia	Label
E_t-E_{t-1}	606.968	2794.062	
M_t-M_{t-1}	20328.153	29032.340	
I_t-I_{t-1}	136.242	156.412	
C_t-C_{t-1}	.093	2.558	
P_t-P_{t-1}	.733	9.435	

N of Cases = 59

Correlation, 1-tailed Sig:

	E_t-E_{t-1}	M_t-M_{t-1}	I_t-I_{t-1}	C_t-C_{t-1}	P_t-P_{t-1}
E_t-E_{t-1}	1.000	.127	.027	.279	.064
	.	.170	.421	.016	.314
M_t-M_{t-1}	.127	1.000	.383	.195	.000
	.170	.	.001	.069	.499
I_t-I_{t-1}	.027	.383	1.000	-.242	-.108
	.421	.001	.	.032	.207
C_t-C_{t-1}	.279	.195	-.242	1.000	.530
	.016	.069	.032	.	.000
P_t-P_{t-1}	.064	.000	-.108	.530	1.000
	.314	.499	.207	.000	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000
M_t-M_{t-1} I_t-I_{t-1} C_t-C_{t-1} P_t-P_{t-1}

Step	MultR	Rsq	F(Eqn)	SigF		Variable	BetaIn
1	.2790	.0778	4.812	.032	In:	C_t-C_{t-1}	.2790

Variable(s) Entered on Step Number
1.. C_t-C_{t-1}
Multiple R .27900
R Square .07784
Adjusted R Square .06166
Standard Error 2706.54409
Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	1	35246567.93108	35246567.93108
Residual	57	417546713.01419	7325380.93007

F = 4.81157 Signif F = .0324
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance Above: Correlation

	C_t-C_{t-1}
C_t-C_{t-1}	19304.0510

---------- Variables in the Equation --------

Variable	B	SE B	95% Confdnce	Intrvl B	Beta
C_t-C_{t-1}	304.766718	138.939019	26.546130	582.987307	.279003
(Con)	578.712136	352.597400	-127.351984	1284.776257	

---------- Variables in the Equation ----------

Variable	Tolerance	VIF	T	Sig T
C_t-C_{t-1}	1.000000	1.000	2.194	.0324
(Constant)			1.641	.1062

Equation Number 1 Dependent Variable.. E_t-E_{t-1}

---------- Variables not in the Equation --

Variable	Beta In	Partial	Tolerance	VIF	Min Toler	T	Sig
M_t-M_{t-1}	.074871	.076464	.961810	1.040	.961810	.574	.5683
I_t-I_{t-1}	.099957	.100997	.941447	1.062	.941447	.760	.4506
P_t-P_{t-1}	-.116010	-.102454	.719233	1.390	.719233	-.771	.4441

Collinearity Diagnostics

Number	Eigenval	Cond Index	Variance Proportions Constant	C_t-C_{t-1}
1	1.03653	1.000	.48173	.48173
2	.96347	1.037	.51827	.51827

End Block Number 1 PIN = .050 Limits reached.
Equation Number 1 Dependent Variable.. E_t-E_{t-1}
Residuals Statistics:

	Min	Max	Mean	Std Dev	N
*PRED	-1402.2715	2437.7891	606.9676	779.5508	59
*RESID	-7678.2822	9678.5576	.0000	2683.1104	59
*ZPRED	-2.5774	2.3486	.0000	1.0000	59
*ZRESID	-2.8369	3.5760	.0000	.9913	59

Durbin-Watson Test = 1.91587

MULTIPLE REGRESSION ANALYSIS BETWEEN THE MONTHLY DIFFERENCES OF ALL ALTERNATIVE INVESTMENT TOOLS AND ISE INDEX

	Mean	Std Deviat	Label
E_t-E_{t-1}	612.814	2770.652	
G_t-G_{t-1}	81058.333	122480.524	
FE_t-FE_{t-1}	801.253	1479.612	
TB_t-TB_{t-1}	.897	18.699	

N of Cases = 60
Correlation, 1-tailed Sig:

	E_t-E_{t-1}	G_t-G_{t-1}	FE_t-FE_{t-1}	TB_t-TB_{t-1}
E_t-E_{t-1}	1.000	-.140	-.076	-.181
	.	.143	.282	.083
G_t-G_{t-1}	-.140	1.000	.825	.090
	.143	.	.000	.247
FE_t-FE_{t-1}	-.076	.825	1.000	-.094
	.282	.000	.	.239
TB_t-TB_{t-1}	-.181	.090	-.094	1.000
	.083	.247	.239	.

Equation Number 1 Dependent Variable.. E_t-E_{t-1}
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000
G_t-G_{t-1} FE_t-FE_{t-1} TB_t-TB_{t-1}
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

REGRESSION ANALYSIS BETWEEN THE ONE MONTH LAGGED VALUE OF WHOLESALE PRICE INDEX AND ISE INDEX

```
            Mean  Std Devia  Label
L1(E)   16572.254  15092.897
L1(IW)   2751.666   2348.380
N of Cases =    59

Correlation, 1-tailed Sig:
                L1(E)      L1(IW)
L1(E)          1.000        .964
                .           .000
L1(IW)          .964       1.000
                .000         .
Equation Number 1    Dependent Variable.. L1(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000   L1(IW)
Step MultR     Rsq    F(Eqn)  SigF       Variable  BetaIn
 1   .9642   .9296   753.130  .000  In:  L1(IW)    .9642

Variable(s) Entered on Step Number
   1.. L1(IW)
Multiple R            .96418
R Square              .92964
Adjusted R Square     .92841
Standard Error    4038.39815
Analysis of Variance
               DF      Sum of Squares      Mean Square
Regression      1   12282547606.13172 12282547606.1317
Residual       57     929593598.64993   16308659.62544
F =     753.13042       Signif F =  .0000
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           L1(IW)
L1(IW)     .05099

---------------------- Variables in the Equation --------
Variable    B    SE B    95% Confdnce Intrvl B       Beta
L1(IW) 6.196721  .225802  5.744561    6.648881    .964179
(Con.)-479.052594 813.922223 -2108.903745 1150.798556

------------ Variables in the Equation -----------
Variable    Tolerance        VIF         T  Sig T
L1(IW)      1.000000       1.000      27.443 .0000
(Constant)                            -.589  .5585
Equation Number 1    Dependent Variable.. L1(E)

Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant  L1(IW)
    1    1.76338    1.000    .11831   .11831
    2     .23662    2.730    .88169   .88169
```

```
End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
            Min         Max        Mean     Std Dev   N
*PRED      2797.7734 50532.9727 16572.2544 14552.2528  59
*RESID   -10508.4043 10003.7686      .0000  4003.4330  59
*ZPRED        -.9466     2.3337      .0000     1.0000  59
*ZRESID      -2.6021     2.4772      .0000      .9913  59
Durbin-Watson Test =     .49836
```

REGRESSION ANALYSIS BETWEEN THE ONE MONTH LAGGED VALUE OF CONSUMER PRICE INDEX AND ISE INDEX

```
            Mean  Std Devia  Label
L1(E)   16572.254  15092.897
L1(IC)   3287.347   2819.827

N of Cases =    59
Correlation, 1-tailed Sig:

             L1(E) L1(IW)
L1(E)       1.000    .957
             .       .000
L1(IC)       .957   1.000
             .000    .
Equation Number 1    Dependent Variable.. L1(E)
Block Number  1.  Method:  Stepwise     .
Criteria   PIN  .0500   POUT  .1000      L1(IC)
Step MultR   Rsq    F(Eqn)  SigF       Variable  BetaIn
 1   .9568   .9154   616.735  .000  In:  VAR00054   .9568

Variable(s) Entered on Step Number
   1.. L1(IC)

Multiple R            .95676
R Square              .91540
Adjusted R Square     .91391
Standard Error    4428.35221

Analysis of Variance
               DF       Sum of Squares      Mean Square
Regression      1   12094353916.33989 12094353916.3399
Residual       57    1117787288.44177   19610303.30600
F =     616.73467       Signif F =  .0000
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation

            L1(IC)
L1(IC)      .04252

---------------------- Variables in the Equation --------
Variable B       SE B   95% Confdnce Intrvl B        Beta
L1(IC) 5.121001 .206208  4.708077     5.533926     .956764
```

```
(Con) -262.256394  889.885464 -2044.221312 1519.708524

---------- Variables in the Equation -----------
Variable Tolerance     VIF           T     SigT
L1(IC)    1.000000      1.000       24.834  .0000
(Constant)                          -.295  .7693

Equation Number 1    Dependent Variable.. L1(E)
Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant  L1(IC)
    1    1.76176    1.000    .11912   .11912
    2     .23824    2.719    .88088   .88088

End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
          Min         Max        Mean    Std Dev   N

*PRED      2740.6987 53979.3906 16572.2544 14440.3374  59
*RESID   -13954.8203 10880.0371      .0000  4390.0108  59
*ZPRED        -.9578     2.5905      .0000     1.0000  59
*ZRESID      -3.1512     2.4569      .0000      .9913  59

Durbin-Watson Test =     .44511
```

REGRESSION ANALYSIS BETWEEN THE ONE MONTH LAGGED VALUE OF PRODUCTION INDUSTRY WHOLESALE INDEX AND ISE INDEX

```
           Mean  Std Devia  Label
L1(E)  16572.254  15092.897
L1(IP)   2763.739   2358.756
N of Cases =    59
Correlation, 1-tailed Sig:
          L1(E)      L1(IP)
L1(E)      1.000       .963
             .          .000
L1(IP)      .963      1.000
            .000         .
Equation Number 1    Dependent Variable.. L1(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000      L1(IP)
Step MultR     Rsq    F(Eqn)  SigF       Variable  BetaIn
 1   .9626   .9266   719.510  .000  In:  L1(IP)    .9626
Variable(s)EnteredonStepNumber  1.. L1(IP)
Multiple R           .96260
R Square             .92659
Adjusted R Square    .92531
Standard Error   4124.89590
Analysis of Variance
             DF      Sum of Squares      Mean Square
Regression    1   12242299532.89267 12242299532.8927
Residual     57     969841671.88899   17014766.17349
F =     719.51030       Signif F =  .0000
```

```
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           L1(IP)
L1(IP)      .05273

---------------------- Variables in the Equation --------
Variable B     SE B   95% Confdnce    Intrvl B        Beta
L1(IP) 6.159345 .229623    5.699532   6.619157    .962598
(Con) -450.566272 831.340509 -2115.296938  1214.164395

----------- Variables in the Equation -----------
Variable    Tolerance      VIF         T  Sig T
L1(IP)     1.000000       1.000     26.824  .0000
(Constant)                            -.542  .5899

Equation Number 1    Dependent Variable.. L1(IP)
Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant   L1(IP)
    1    1.76337    1.000    .11832    .11832
    2     .23663    2.730    .88168    .88168
End Block Number   1   POUT =     .100 Limits reached.
Residuals Statistics:
           Min          Max        Mean    Std Dev   N
*PRED     2879.1753 49267.0469 16572.2544 14528.3905  59
*RESID   -9242.4775  9907.1572      .0000  4089.1818  59
*ZPRED       -.9425     2.2504      .0000     1.0000  59
*ZRESID     -2.2407     2.4018      .0000      .9913  59
Durbin-Watson Test =    .50343
```

REGRESSION ANALYSIS BETWEEN THE ONE MONTH LAGGED VALUE OF CAPACITY UTILIZATION RATE AND ISE INDEX

```
     Mean  Std Devia  Label
L1(E)  16572.254  15092.897
L1(C)     77.392      3.734
N of Cases =    59
Correlation, 1-tailed Sig:
           L1(E)      L1(C)
L1(E)       1.000       .217
             .          .049
L1(C)       .217       1.000
            .049         .
Equation Number 1    Dependent Variable.. L1(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000     L1(C)
End Block Number   1   PIN =     .050 Limits reached.
No variables entered/removed for this block.
```

REGRESSION ANALYSIS BETWEEN THE ONE MONTH LAGGED VALUE OF PRODUCTION INDEX AND ISE INDEX

```
           Mean  Std Devia  Label
L1(E)  16572.254  15092.897
L1(P)    100.680     10.377
N of Cases =    59

Correlation, 1-tailed Sig:
           L1(E)      L1(P)
L1(E)       1.000       .242
             .          .032
L1(P)        .242      1.000
             .032       .
Equation Number 1    Dependent Variable.. L1(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000     L1(P)
End Block Number   1   PIN =      .050 Limits reached.
No variables entered/removed for this block.
```

MULTIPLE REGRESSION ANALYSIS BETWEEN THE ONE MONTH LAGGED VALUE OF WHOLESALE PRICE INDEX,PRODUCTION INDEX,CAPACITY UTILIZATION RATE AND ISE INDEX

```
           Mean  Std Devia  Label
L1(E)  16572.254  15092.897
L1(IW)  2751.666   2348.380
L1(C)     77.392      3.734
L1(P)    100.680     10.377
N of Cases =    59

Correlation, 1-tailed Sig:
           L1(E)       L1(IW)      L1(C)      L1(P)
L1(E)       1.000       .964       .217       .242
             .          .000       .049       .032
L1(IW)       .964      1.000       .159       .233
             .000        .         .115       .038
L1(C)        .217       .159      1.000       .736
             .049       .115        .         .000
L1(P)        .242       .233       .736      1.000
             .032       .038       .000        .
Equation Number 1    Dependent Variable.. L1(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000    L1(IW) L1(C) L1(P)
Step MultR      Rsq     F(Eqn)  SigF       Variable  BetaIn
 1   .9642    .9296   753.130  .000  In:  L1(IW)    .9642
Variable(s) Entered on Step Number
   1.. L1(IW)
Multiple R            .96418
R Square              .92964
Adjusted R Square     .92841
Standard Error    4038.39815
Analysis of Variance
```

```
            DF        Sum of Squares      Mean Square
Regression   1    12282547606.13172 12282547606.1317
Residual    57      929593598.64993      16308659.62544
F =     753.13042       Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal: Covariance    Above: Correlation
             L1(IW)
 L1(IW)      .05099

---------------------- Variables in the Equation --------
Variable  B     SE B     95% Confdnce Intrvl B       Beta
L1(IW) 6.196721  .225802  5.744561    6.648881     .964179
(Cons)-479.052594  813.922223 -2108.903745  1150.798556

----------- Variables in the Equation -----------
Variable Tolerance   VIF       T        Sig T
L1(IW)     1.000000   1.000    27.443   .0000
(Constant)                      -.589   .5585

Equation Number 1    Dependent Variable.. L1(E)

------------------------ Variables not in the Equation
Variable Beta InPartial Tolerance VIF  Min Toler  T Sig T
L1(C) .065640  .244330 .974834  1.026 .974834 1.886 .0645
L1(P) .018177  .066635 .9455571 .058  .945557  .500 .6192
Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant  L1(IW)
    1    1.76338    1.000    .11831   .11831
    2     .23662    2.730    .88169   .88169
End Block Number   1   PIN =     .050 Limits reached.
Equation Number 1    Dependent Variable.. L1(E)
Residuals Statistics:
          Min         Max        Mean    Std Dev   N
*PRED      2797.7734 50532.9727 16572.2544 14552.2528  59
*RESID   -10508.4043 10003.7686      .0000  4003.4330  59
*ZPRED        -.9466     2.3337      .0000     1.0000  59
*ZRESID      -2.6021     2.4772      .0000      .9913  59
Durbin-Watson Test =    .49836
```

REGRESSION ANALYSIS BETWEEN THE TWO MONTH LAGGED VALUE OF WHOLESALE PRICE INDEX AND ISE INDEX

```
          Mean  Std Devia  Label
L2(E)   16770.008  15147.416
L2(IW)   2657.176   2252.914
N of Cases =    58
Correlation, 1-tailed Sig:
          L2(E)      L2(IW)
L2(E)       1.000       .968
             .          .000
```

```
L2(IW)          .968       1.000
                .000           .
Equation Number 1    Dependent Variable.. L2(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000      L2(IW)
Step MultR      Rsq    F(Eqn)  SigF        Variable  BetaIn
 1   .9678    .9366   827.634  .000  In:  L2(IW)     .9678
Variable(s) Entered on Step Number
   1.. L2(IW)

Multiple R            .96779
R Square              .93663
Adjusted R Square     .93549
Standard Error   3847.15591
Analysis of Variance
               DF       Sum of Squares       Mean Square
Regression      1    12249485296.41768 12249485296.4177
Residual       56     828834081.41438   14800608.59669
F =     827.63389        Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
            L2(IW)
 L2(IW)      .05116
---------------------- Variables in the Equation --------
Variable B         SE B      95% Confdnce Intrvl B      Beta
L2(IW)  6.506941 .226182  6.053845     6.960038    .967794
(Con)-520.079621 785.104999 -2092.833935  1052.674693

----------- Variables in the Equation -----------
Variable    Tolerance       VIF      T  Sig T
L2(IW)      1.000000       1.000    28.769  .0000
(Constant)                           -.662  .5104
Equation Number 1    Dependent Variable.. L2(E)
Collinearity Diagnostics
Number  Eigenval      Cond  Variance Proportions
                     Index  Constant  L2(IW)
    1    1.76551     1.000     .11725    .11725
    2     .23449     2.744     .88275    .88275
End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
           Min         Max        Mean     Std Dev   N
*PRED      2920.7910 50820.9883 16770.0076 14659.5788  58
*RESID   -10796.4180  8822.8633      .0000  3813.2596  58
*ZPRED        -.9447     2.3228      .0000     1.0000  58
*ZRESID      -2.8063     2.2933      .0000      .9912  58
Durbin-Watson Test =    .48327
```

REGRESSION ANALYSIS BETWEEN THE TWO MONTH LAGGED VALUE OF CONSUMER PRICE INDEX AND ISE INDEX

```
            Mean  Std Devia  Label
L2(E)  16770.008  15147.416
L2(IC)  3161.405   2671.831

N of Cases =     58
Correlation, 1-tailed Sig:
           L2(E) L2(IC)
L2(E)       1.000    .961
             .       .000
L2(IC)      0.961   1.000
             .000     .
Equation Number 1    Dependent Variable.. L2(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000     L2(IC)
Step MultR     Rsq    F(Eqn)  SigF       Variable  BetaIn
  1   .9609   .9234   674.797  .000  In:   L2(IC)   .9609

Variable(s) Entered on Step Number
   1.. L2(IC)
Multiple R            .96092
R Square              .92337
Adjusted R Square     .92200
Standard Error   4230.36378
Analysis of Variance
               DF      Sum of Squares      Mean Square
Regression      1   12076144624.27305 12076144624.2731
Residual       56    1002174753.55901   17895977.74213
F =     674.79658       Signif F =  .0000
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
          L2(IC)
L2(IC)    .04398


---------------------- Variables in the Equation --------
Variable  B  SE B     95% Confdnce   Intrvl B       Beta
L2(IC)  5.447758 .209716   5.027647     5.867870  .960922
(Cons)-452.563225 864.937176 -2185.240609  1280.114158


----------- Variables in the Equation -----------
Variable    Tolerance    VIF         T  Sig T
L2(IC)      1.000000     1.000    25.977  .0000
(Constant)                        -.523  .6029
Equation Number 1    Dependent Variable.. L2(E)
Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant   L2(E)
    1    1.76653    1.000    .11674   .11674
```

```
    2      .23347     2.751     .88326    .88326
End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
          Min          Max          Mean     Std Dev   N
*PRED      2742.0022 54221.6836 16770.0076 14555.4865  58
*RESID   -14197.1123  9379.6172      .0000  4193.0911  58
*ZPRED        -.9638     2.5730      .0000     1.0000  58
*ZRESID      -3.3560     2.2172      .0000      .9912  58
Durbin-Watson Test =     .45896
```

REGRESSION ANALYSIS BETWEEN THE TWO MONTH LAGGED VALUE OF PRODUCTION INDUSTRY WHOLESALE INDEX AND ISE INDEX

```
           Mean  Std Devia  Label
L2(E)  16770.008  15147.416
L2(IP)  2672.219   2271.231

N of Cases =    58
Correlation, 1-tailed Sig:
           L2(E)      L2(IP)
L2(E)       1.000       .966
             .          .000
L2(IP)       .966      1.000
             .000        .
Equation Number 1    Dependent Variable.. L2(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000     L2(IP)
Step MultR     Rsq    F(Eqn)  SigF       Variable  BetaIn
 1   .9657   .9326   774.729  .000  In:   L2(IP)    .9657

Variable(s) Entered on Step Number
   1..    L2(IP)

Multiple R            .96571
R Square              .93259
Adjusted R Square     .93139
Standard Error   3967.76784
Analysis of Variance
              DF      Sum of Squares      Mean Square
Regression     1   12196701205.49231 12196701205.4923
Residual      56     881618172.33976   15743181.64892
F =     774.72912       Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           L2(IP)
 L2(IP)    .05354

---------------------- Variables in the Equation --------
Variable  B         SE B      95% Confdnce Intrvl B      Beta
L2(IP)    6.440543  .231392   5.977010     6.904076   .965707
(Cons)-440.532773  808.557254 -2060.267600  1179.202053
```

```
---------- Variables in the Equation ----------
Variable    Tolerance   VIF         T  Sig T
L2(IP)   1.000000      1.000    27.834  .0000
(Constant)                      -.545  .5880
Equation Number 1    Dependent Variable.. L2(E)
Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant   L2(IP)
    1    1.76473    1.000    .11763   .11763
    2     .23527    2.739    .88237   .88237

End Block Number   1   POUT =     .100 Limits reached.
Residuals Statistics:
           Min         Max        Mean    Std Dev   N
*PRED     3041.2246 49829.8359 16770.0076 14627.9600  58
*RESID   -9805.2656  9241.0195      .0000  3932.8089  58
*ZPRED       -.9385     2.2600      .0000     1.0000  58
*ZRESID     -2.4712     2.3290      .0000      .9912  58

Durbin-Watson Test =    .45652
```

REGRESSION ANALYSIS BETWEEN THE TWO MONTH LAGGED VALUE OF CAPACITY UTILIZATION RATE AND ISE INDEX

```
           Mean  Std Devia  Label
L2(E) 16770.008  15147.416
L2(C)    77.340      3.746
N of Cases =    58

Correlation, 1-tailed Sig:
           L2(E)       L2(C)
L2(E)       1.000        .137
             .           .153
L2(C)        .137       1.000
             .153        .
Equation Number 1    Dependent Variable.. L2(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000     L2(C)
End Block Number   1   PIN =     .050 Limits reached.
No variables entered/removed for this block.
```

REGRESSION ANALYSIS BETWEEN THE TWO MONTH LAGGED VALUE OF PRODUCTION INDEX AND ISE INDEX

```
            Mean  Std Devia  Label
L2(E)  16770.008  15147.416
L2(P)    100.302     10.050
N of Cases =    58
```

```
Correlation, 1-tailed Sig:
           L2(E)       L2(P)
L2(E)       1.000        .152
             .           .127
L2(P)        .152       1.000
             .127        .
Equation Number 1    Dependent Variable.. L2(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000     L2(P)
End Block Number   1   PIN =     .050 Limits reached.
No variables entered/removed for this block.
```

MULTIPLE REGRESSION ANALYSIS BETWEEN THE TWO MONTH LAGGED VALUE OF WHOLESALE PRICE INDEX,PRODUCTION INDEX,CAPACITY UTILIZATION RATE AND ISE INDEX

```
             Mean  Std Devia  Label
L2(E)  16770.008  15147.416
L2(P)    100.302     10.050
L2(C)     77.340      3.746
L2(IW)  2657.176   2252.914
N of Cases =    58

Correlation, 1-tailed Sig:

             L2(E)      L2(P)      L2(C)    L2(IW)
L2(E)       1.000       .152       .137      .968
             .          .127       .153      .000
L2(P)        .152      1.000       .740      .161
             .127       .          .000      .114
L2(C)        .137       .740      1.000      .133
             .153       .000       .         .160
L2(IW)       .968       .161       .133     1.000
             .000       .114       .160      .

Equation Number 1    Dependent Variable.. L2(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000    L2(P) L2(C) L2(IW)
Step MultR      Rsq     F(Eqn)  SigF       Variable  BetaIn
   1  .9678    .9366   827.634  .000  In:  L2(IW)    .9678

Variable(s) Entered on Step Number
   1..   L2(IW)

Multiple R            .96779
R Square              .93663
Adjusted R Square     .93549
Standard Error    3847.15591
Analysis of Variance
                DF       Sum of Squares       Mean Square
Regression      1   12249485296.41768     12249485296.4177
```

```
Residual      56     828834081.41438         14800608.59669
F =     827.63389       Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
             L2(IW)
 L2(IW)      .05116

---------------------- Variables in the Equation --------
Variable  B     SE B      95% Confdnce Intrvl B       Beta
L2(IW) 6.506941 .226182    6.053845     6.960038   .967794
(Cons)-520.079621  785.104999 -2092.833935  1052.674693

----------- Variables in the Equation -----------
Variable    Tolerance    VIF         T  Sig T
L2(IW)     1.000000      1.000    28.769  .0000
(Constant)                          -.662  .5104

Equation Number 1    Dependent Variable.. L2(E)

------------------------ Variables not in the Equation --
Variable Beta In Partial Tolerance VIF Min Toler  T Sig T
L2(P)-.003431  -.013451 .974126 1.027 .974126 -.100 .9209
L2(C) .008153   .032099 .982339 1.018 .982339  .238 .8126

Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant   L2(IW)
    1    1.76551    1.000    .11725   .11725
    2     .23449    2.744    .88275   .88275

End Block Number   1   PIN =     .050 Limits reached.
Equation Number 1    Dependent Variable.. L2(E)
Residuals Statistics:
           Min          Max          Mean     Std Dev    N
*PRED      2920.7910 50820.9883 16770.0076 14659.5788   58
*RESID   -10796.4180  8822.8633      .0000  3813.2596   58
*ZPRED        -.9447     2.3228      .0000     1.0000   58
*ZRESID      -2.8063     2.2933      .0000      .9912   58
Durbin-Watson Test =    .48327
```

REGRESSION ANALYSIS BETWEEN THE THREE MONTH LAGGED VALUE OF WHOLESALE PRICE INDEX AND ISE INDEX

```
           Mean  Std Devia  Label
L3(E)     16984.921  15192.587
L3(IW)     2565.368   2160.710
N of Cases =    57

Correlation, 1-tailed Sig:
```

```
            L3(E)       L3(IW)
L3(E)       1.000        .968
                .           .000
L3(IW)       .968       1.000
             .000           .

Equation Number 1    Dependent Variable.. L3(E)
Block Number  1.  Method:  Stepwise
Criteria    PIN  .0500    POUT  .1000        L3(IW)
Step MultR      Rsq     F(Eqn)  SigF        Variable  BetaIn
 1    .9677    .9364    809.376  .000  In:  L3(IW)    .9677

Variable(s) Entered on Step Number
   1..   L3(IW)
Multiple R            .96766
R Square              .93637
Adjusted R Square     .93521
Standard Error    3867.00277

Analysis of Variance
                DF       Sum of Squares       Mean Square
Regression      1    12103168692.45269 12103168692.4527
Residual       55      822454074.32337   14953710.44224
F =      809.37562        Signif F =  .0000
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           L3(IW)
L3(IW)     .05720

---------------------- Variables in the Equation --------
Variable  B     SE B      95% Confdnce Intrvl B        Beta
L3(IW) 6.803917  .239157 6.324635     7.283199     .967662
(Con)-469.632808  799.225370 -2071.316253  1132.050637

----------- Variables in the Equation -----------
Variable    Tolerance        VIF          T  Sig T
L3(IW)     1.000000      1.000       28.450  .0000
(Constant)                            -.588  .5592
Equation Number 1    Dependent Variable.. L3(E)

Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant   L3(IW)
    1    1.76765    1.000    .11617    .11617
    2     .23235    2.758    .88383    .88383
End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
          Min         Max        Mean     Std Dev    N

*PRED      3128.2786 50959.8164 16984.9209 14701.2929  57
*RESID   -10935.2451  8776.7295      .0000  3832.3204  57
*ZPRED        -.9425     2.3110      .0000     1.0000  57
```

```
*ZRESID       -2.8278      2.2696       .0000       .9910  57
Durbin-Watson Test =     .49304
```

REGRESSION ANALYSIS BETWEEN THE THREE MONTH LAGGED VALUE OF CONSUMER PRICE INDEX AND ISE INDEX

```
            Mean  Std Devia  Label
L3(E)  16984.921  15192.587
L3(IC)   3040.796   2531.283

N of Cases =     57
Correlation, 1-tailed Sig:

               L3(E)      L3(IC)
L3(E)        1.000        .964
                .           .000
L3(IC)        .964       1.000
              .000          .
Equation Number 1    Dependent Variable.. L3(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000      L3(IC)

Step MultR      Rsq     F(Eqn)  SigF       Variable  BetaIn
 1   .9636    .9286   715.432  .000  In:   L3(IC)    .9636
Variable(s) Entered on Step Number
   1..     L3(IC)
Multiple R            .96364
R Square              .92861
Adjusted R Square     .92731
Standard Error    4095.98838
Analysis of Variance
                DF       Sum of Squares      Mean Square
Regression       1   12002881121.94917 12002881121.9492
Residual        55     922741644.82689   16777120.81503
F =     715.43152        Signif F =  .0000
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           L3(IC)
L3(IC)      .04676

---------------------- Variables in the Equation --------
Variable  B     SE B      95% Confdnce Intrvl B       Beta
L3(IC) 5.783730 .216234 5.350387     6.217073     .963645
(Con)-602.225007  852.450999 -2310.574998  1106.124984

----------- Variables in the Equation -----------
Variable    Tolerance      VIF          T      Sig T
L3(IC)    1.000000       1.000        26.748 .0000
(Constant)                            -.706  .4829
Equation Number 1    Dependent Variable.. L3(E)
Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
```

```
                    Index  Constant   L3(IC)
    1     1.77133    1.000     .11433   .11433
    2      .22867    2.783     .88567   .88567
End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
           Min          Max          Mean    Std Dev   N
*PRED      2789.3542 53252.3984 16984.9209 14640.2583  57
*RESID   -13227.8281  9379.6748      .0000  4059.2523  57
*ZPRED        -.9696     2.4772      .0000     1.0000  57
*ZRESID      -3.2295     2.2900      .0000      .9910  57
Durbin-Watson Test =     .48218
```

REGRESSION ANALYSIS BETWEEN THE THREE MONTH LAGGED VALUE OF PRODUCTION INDUSTRY WHOLOSALE INDEX AND ISE INDEX

```
               Mean  Std Devia  Label
L3(E)      16984.921  15192.587
L3(IP)      2582.165   2184.455

N of Cases =    57
Correlation, 1-tailed Sig:

           L3(E)     L3(IP)
L3(E)      1.000       .965
            .          .000
L3(IP)      .965      1.000
            .000        .

Equation Number 1    Dependent Variable.. L3(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000          L3(IP)
Step MultR     Rsq    F(Eqn)  SigF       Variable  BetaIn
  1   .9651   .9314   747.275  .000  In:   L3(IP)   .9651
Variable(s) Entered on Step Number
   1.. L3(IP)
Multiple R           .96511
R Square             .93144
Adjusted R Square    .93020
Standard Error   4013.87661

Analysis of Variance
              DF      Sum of Squares      Mean Square
Regression     1   12039506466.89008 12039506466.8901
Residual      55     886116299.88599   16111205.45247
F =     747.27534       Signif F =  .0000
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           L3(IP)
L3(IP)      .06029
```

```
---------------------- Variables in the Equation---------
Variable B     SE B      95% Confdnce Intrvl B        Beta
L3(IP) 6.712237 .245543   6.220159     7.204316     .965114
(Cons)-347.182481 827.435119 -2005.399527 1311.034564

----------- Variables in the Equation -----------
Variable    Tolerance         VIF          T  Sig T
L3(IP)     1.000000       1.000       27.336  .0000
(Constant)                             -.420  .6764
Equation Number 1    Dependent Variable.. L3(E)

Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant  L3(IP)
    1    1.76626    1.000     .11687    .11687
    2     .23374    2.749     .88313    .88313
End Block Number   1   POUT =      .100 Limits reached.
Residuals Statistics:
           Min         Max        Mean     Std Dev   N
*PRED      3281.4529 50501.3711 16984.9209 14662.5778  57
*RESID   -10476.8008  8746.0068      .0000  3977.8770  57
*ZPRED        -.9346     2.2858      .0000     1.0000  57
*ZRESID      -2.6101     2.1789      .0000      .9910  57

Durbin-Watson Test =     .47164
```

REGRESSION ANALYSIS BETWEEN THE THREE MONTH LAGGED VALUE OF CAPACITY UTILIZATION RATE ISE INDEX

```
           Mean  Std Devia  Label
L3(E)  16984.921  15192.587
L3(C)     77.281      3.752

N of Cases =    57
Correlation, 1-tailed Sig:

            L3(E) L3(C)
L3(E)      1.000      .074
            .          .292
L3(C)       .074     1.000
            .292       .

Equation Number 1    Dependent Variable.. L3(E)
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000     L3(C)
End Block Number   1   PIN =      .050 Limits reached.
No variables entered/removed for this block.
```

REGRESSION ANALYSIS BETWEEN THE THREE MONTH LAGGED VALUE OF PRODUCTION INDEX AND ISE INDEX

	Mean	Std Devia	Label
L3(E)	16984.921	15192.587	
L3(P)	100.091	10.010	

N of Cases = 57
Correlation, 1-tailed Sig:

	L3(E)	L3(P)
L3(E)	1.000	.103
	.	.223
L3(P)	.103	1.000
	.223	.

Equation Number 1 Dependent Variable.. L3(E)
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 L3(P)
End Block Number 1 PIN = .050 Limits reached.
No variables entered/removed for this block.

MULTIPLE REGRESSION ANALYSIS BETWEEN THE THREE MONTH LAGGED VALUE OF WHOLESALE PRICE INDEX,PRODUCTION INDEX,CAPACITY UTILIZATION RATE AND ISE INDEX

	Mean	Std Devia	Label
L3(E)	16984.921	15192.587	
L3(P)	100.091	10.010	
L3(IW)	2565.368	2160.710	
L3(C)	77.281	3.752	

N of Cases = 57
Correlation, 1-tailed Sig:

	L3(E)	L3(P)	L3(IW)	L3(C)
L3(E)	1.000	.103	.968	.074
L3(P)	.103	1.000	.119	.735
	.223	.	.190	.000
L3(IW)	.968	.119	1.000	.101
	.000	.190	.	.226
L3(C)	.074	.735	.101	1.000
	.292	.000	.226	.

Equation Number 1 Dependent Variable.. L3(E)
Block Number 1. Method: Stepwise
Criteria PIN .0500 POUT .1000 L3(P) L3(IW) L3(C)

Step	MultR	Rsq	F(Eqn)	SigF	Variable	BetaIn
1	.9677	.9364	809.376	.000	In: L3(IW)	5.9677

Variable(s)EnteredonStepNumber 1.. L3(IW)

```
Multiple R                .96766
R Square                  .93637
Adjusted R Square         .93521
Standard Error          3867.00277

Analysis of Variance
                DF        Sum of Squares        Mean Square
Regression       1     12103168692.45269  12103168692.4527
Residual        55       822454074.32337     14953710.44224
F =       809.37562          Signif F =  .0000
Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance     Above:  Correlation
             L3(IW)
 L3(IW)      .05720

---------------------- Variables in the Equation --------
Variable B    SE B      95% Confdnce    Intrvl B        Beta
L3(IW) 6.803917  .239157 6.324635   7.283199       .967662
(Con) -469.632808 799.225370 -2071.316253  1132.050637

------------ Variables in the Equation -----------
Variable     Tolerance         VIF          T  Sig T
L3(IW)      1.000000       1.000       28.450  .0000
(Constant)                              -.588  .5592

Equation Number 1     Dependent Variable.. L3(E)

------------- Variables not in the Equation ---------
Vari. Beta In  Partial  Tolerance VIF  Min Toler T  Sig T
L3(P) -.011860 -.046684 .985921 1.014 .985921 -.343 .7326
L3(C) -.024429 -.096346 .989719 1.010 .989719 -.711 .4800

Collinearity Diagnostics
Number  Eigenval      Cond  Variance Proportions
                     Index  Constant L3(IW)
    1    1.76765     1.000     .11617   .11617
    2     .23235     2.758     .88383   .88383

End Block Number   1   PIN =      .050 Limits reached.
Equation Number 1     Dependent Variable.. L3(E)

ResidualsStatistics:
            Min          Max         Mean     Std Dev   N
*PRED      3128.2786 50959.8164 16984.9209 14701.2929  57
*RESID   -10935.2451  8776.7295      .0000  3832.3204  57
*ZPRED        -.9425     2.3110      .0000     1.0000  57
*ZRESID      -2.8278     2.2696      .0000      .9910  57
Durbin-Watson Test =     .49304
```

F A C T O R A N A L Y S I S

	Mean	Std Dev	Label
G	1624324.983	1426082.575	
M	379441.0167	340741.2105	
I	2848.59000	2446.43995	
C	77.43667	3.71917	
P	101.03500	10.64131	
TB	92.07850	26.30615	
FE	16476.20283	14298.28458	

Number of Cases = 60

Correlation Matrix:

	G	M	I	C	P	TB	FE
G	1.00000						
M	.97085	1.00000					
I	.99139	.98889	1.00000				
C	.11392	.26333	.17917	1.00000			
P	.26248	.34477	.29403	.73303	1.00000		
TB	.61113	.46926	.54674	-.28600	-.12495	1.0000	
FE	.99904	.97118	.99240	.10894	.25902	.60571	1.00000

Determinant of Correlation Matrix = .0000000
Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .76759
Bartlett Test of Sphericity = 960.96950,
Significance = .00000

1-tailed Significance of Correlation Matrix:
' . ' is printed for diagonal elements.

	G	M	I	C	P
G	.				
M	.00000	.			
I	.00000	.00000	.		

	G	M	I	C	P
C	.19305	.02103	.08538	.	
P	.02138	.00349	.01130	.00000	.
TB	.00000	.00008	.00000	.01337	.17075
FE	.00000	.00000	.00000	.20367	.02284

	TB	FE

TB .
FE .00000 .

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality*	Factor	Eigenvalue	PctofVar	Cum Pct
G	1.00000 *	1	4.44275	63.5	63.5
M	1.00000 *	2	1.83794	26.3	89.7
I	1.00000 *	3	.45143	6.4	96.2
C	1.00000 *	4	.24984	3.6	99.7
P	1.00000 *	5	.01398	.2	99.9
TB	1.00000 *	6	.00327	.0	100.0
FE	1.00000 *	7	.00080	.0	100.0

PC extracted 2 factors.

Factor Matrix:

	Factor 1	Factor 2
G	.99062	-.09416
M	.97816	.06329
I	.98998	-.02711
C	.21565	.90456
P	.35628	.83100
FE	.60966	-.55336
TB	.98966	-.09655

Final Statistics:

Variable	Communality*	Factor	Eigenvalue	PctofVar	Cum Pct
G	.99020 *	1	4.44275	63.5	63.5
M	.96081 *	2	1.83794	26.3	89.7
I	.98079 *				
C	.86474 *				
P	.81750 *				
TB	.67790 *				
FE	.98875 *				

Reproduced Correlation Matrix:

	G	M	I	C	P
G	.99020*	.00781	.00814	-.01453	-.01221
M	.96303	.96081*	.02225	-.00486	-.05632
I	.98325	.96664	.98079*	-.00979	-.03615
C	.12845	.26819	.18896	.86474*	-.09550
P	.27469	.40109	.33018	.82853	.81750*
FE	.65605	.56133	.61856	-.36908	-.24264
TB	.98947	.96194	.98236	.12608	.27236

	FE	TB
G	-.04492	.00956
M	-.09207	.00924
I	-.07182	.01004
C	.08308	-.01714
P	.11769	-.01334
FE	.67790*	-.05108
TB	.65679	.98875*

The lower left triangle contains the reproduced correlation matrix; the diagonal, reproduced communalities; and the upper right triangle residuals between the observed correlations and the reproduced correlations.

There are 7 (33.0%) residuals (above diagonal) with absolute values > 0.05.

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 3 iterations.
Rotated Factor Matrix:

	Factor 1	Factor 2
G	.98996	.10091
M	.94702	.25291
I	.97624	.16655
C	.03503	.92925
P	.18731	.88454
FE	.70591	-.42379
TB	.98948	.09838

Factor Transformation Matrix:

	Factor 1	Factor 2
Factor 1	.98078	.19509
Factor 2	-.19509	.98078

Factor Score Coefficient Matrix:

	Factor 1	Factor 2
G	.22869	-.00675
M	.20922	.07673
I	.22143	.02900
C	-.04841	.49217
P	-.00956	.45910
FE	.19333	-.26852
TB	.22873	-.00806

```
Covariance Matrix for Estimated Regression Factor Scores:
                Factor  1     Factor  2

Factor  1       1.00000
Factor  2        .00000       1.00000


2   PC      EXACT      factor   scores   will   be   saved.
Following  factor  scores  will  be  added  to  the  working
file:

  Name        Label

FAC1_1       REGR factor score   1 for analysis    1
FAC2_1       REGR factor score   2 for analysis    1
```

REGRESSION ANALYSIS BETWEEN ENVIRONMENTAL FEATURES AND ISE INDEX

```
           Mean  Std Devia  Label
E         16366.275  15049.261
FAC1_1          .000       1.000
REGR factor score   1 for analysis    1

N of Cases =     60

Correlation, 1-tailed Sig:
                 E         FAC1_1
E              1.000         .919
                .            .000
FAC1_1          .919        1.000
                .000          .
Equation Number 1    Dependent Variable..    E
Block Number  1.  Method:  Stepwise
 Criteria   PIN  .0500   POUT  .1000 FAC1_1

Step MultR      Rsq     F(Eqn)  SigF       Variable  BetaIn
1   .9187    .8441   313.937  .000  In:  FAC1_1     .9187

Variable(s) Entered on Step Number
 1..     FAC1_1     REGR factor score   1 for analysis    1

Multiple R           .91873
R Square             .84406
Adjusted R Square    .84137
Standard Error    5993.85596
Analysis of Variance
```

```
                DF      Sum of Squares      Mean Square
Regression       1   11278608917.14711 11278608917.1471
Residual        58    2083725937.39159   35926309.26537
F =     313.93731        Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           FAC1_1
 FAC1_1    608920.496

---------------------- Variables in the Equation --------
Variable     B    SE B     95% Confdnce Intrvl B      Beta
FAC1_1 13826.165882 780.33 12264.158 15388.173 .918727
(Cons) 16366.274833 773.80 14817.338 17915.211

-----------  Variables  in  the  Equation  -----------
Variable    Tolerance        VIF         T  Sig T
FAC1_1       1.000000      1.000    17.718  .0000
(Constant)                          21.150  .0000

Equation Number 1    Dependent Variable.. E
Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant   FAC1_1
    1    1.00000    1.000    .50002   .49998
    2    1.00000    1.000    .49998   .50002

End Block Number   1   POUT =     .100 Limits reached.
Residuals Statistics:
           Min         Max        Mean    Std Dev   N
*PRED      2186.4392 47681.7695 16366.2748 13826.1659  60
*RESID   -21839.9277 14745.1748      .0000  5942.8435  60
*ZPRED       -1.0256     2.2649      .0000     1.0000  60
*ZRESID      -3.6437     2.4600      .0000      .9915  60
Durbin-Watson Test =    .44491
```

REGRESSION ANALYSIS BETWEEN COMPANY FEATURES AND ISE INDEX

```
                Mean    Std Devia  Label
E           16366.275  15049.261
FAC2_1           .000     1.000
REGR factor score   2 for analysis    1

N of Cases =     60
```

```
Correlation, 1-tailed Sig:
                E          FAC2_1
E           1.000            .249
                .            .028
FAC2_1       .249           1.000
                .028            .
```

```
Equation Number 1    Dependent Variable..    E
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000      FAC2_1
End Block Number   1   PIN =      .050 Limits reached.
No variables entered/removed for this block.
```

MULTIPLE REGRESSION ANALYSIS BETWEEN ENVIRONMENTAL, COMPANY FEATURES AND ISE INDEX

```
          Mean   Std Devia  Label
E  1  6366.275  15049.261
FAC2_1    .000     1.000REGR factor score 2 for analysis 1
FAC1_1    .000     1.000 REGR factor score 1 for analysis 1

N of Cases =     60
Correlation, 1-tailed Sig:

                E          FAC2_1      FAC1_1
E           1.000            .249        .919
                .            .028        .000
FAC2_1       .249           1.000        .000
                .028            .        .500
FAC1_1       .919            .000       1.000
                .000            .500         .

Equation Number 1    Dependent Variable..    E
Block Number  1.  Method:  Stepwise
Criteria   PIN  .0500   POUT  .1000  FAC2_1   FAC1_1

Step MultR      Rsq     F(Eqn)  SigF        Variable  BetaIn
 1   .9187    .8441    313.937  .000  In:   FAC1_1      .9187
 2   .9519    .9060    274.834  .000  In:   FAC2_1      .2490

Variable(s) Entered on Step Number
 2..     FAC2_1     REGR factor score   2 for analysis  1

Multiple R            .95186
R Square              .90604
Adjusted R Square     .90275
Standard Error    4693.16506
Analysis of Variance
                DF        Sum of Squares        Mean Square
Regression       2   12106864353.92223 6053432176.96111
```

```
Residual       57    1255470500.61647   22025798.25643
F =     274.83372       Signif F =  .0000

Var-Covar Matrix of Regression Coefficients (B)
Below Diagonal:  Covariance    Above:  Correlation
           FAC1_1         FAC2_1
FAC1_1     373318.615              .00000
FAC2_1          .00000    373318.615

Equation Number 1    Dependent Variable..   E
---------------------- Variables in the Equation --------
Variable  B     SE B      95% Confdnce Intrvl B        Beta
FAC1_1 13826.165  610.99804 12602.6633 15049.668      .918
FAC2_1  3746.762  610.998  2523.259  4970.264      .248967
(Cons) 16366.274 605.885  15153.012 17579.538

----------- Variables in the Equation -----------
Variable   Tolerance       VIF        T      Sig T
FAC1_1       1.000000      1.000    22.629  .0000
FAC2_1       1.000000      1.000     6.132  .0000
(Constant)                           27.012  .0000


Collinearity Diagnostics
Number  Eigenval     Cond  Variance Proportions
                    Index  Constant   FAC2_1    FAC1_1
    1    1.00000    1.000    .49998   .00000    .50002
    2    1.00000    1.000    .00000  1.00000    .00000
    3    1.00000    1.000    .50002   .00000    .49998

End Block Number   1   POUT =      .100 Limits reached.
Equation Number 1    Dependent Variable..   E
Residuals Statistics:

                  Min         Max        Mean    Std Dev   N
*PRED      -1669.2825 52441.2539 16366.2748 14324.8417  60
*RESID    -12416.6846 10920.1660      .0000  4612.9341  60
*ZPRED         -1.2590     2.5184      .0000     1.0000  60
*ZRESID        -2.6457     2.3268      .0000      .9829  60
Durbin-Watson Test =    .55517
```