A DYNAMIC RELATIONSHIP BETWEEN RUPIAH EXCHANGE RATE AND COMPOSITE STOCK PRICE INDEX (IHSG) AT JAKARTA STOCK EXCHANGE

THESIS

Presented as Partial Fulfillment of the Requirements to Obtain the Bachelor Degree in Accounting Departement

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Allah gives you all that you ask of him
If you would count up the favors of Allah,
Never would you be able to number them
14:33

Allah never changes a favor (condition)
Which Allah has conferred upon a people until
they change what is in their own selves
8:53

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ABSTRACT

Arismawati, Yenita (2002). **A Dynamic Relationship between Rupiah Exchange Rate and Composite Stock Price Index (IHSG) at Jakarta Stock Exchange.** Yogyakarta, Accounting Department. Economics Faculty. Universitas Islam Indonesia.

In Indonesia, decreasing of Rupiah Exchange Rate in monetary crisis had brought economy damage, particularly at the capital market. This study concern with dynamic relationship between the Composite Stock Price Index at Jakarta Stock Exchange and Rupiah Exchange Rate. Two hypotheses are employed to simultaneously estimate; Composite Stock Price Index influencing Rupiah Exchange Rate and Rupiah Exchange Rate influencing Composite Stock price Index negatively and significantly for long- run and short- run. Hypotheses testing will be applied by using stationarity, cointegration, causality, and error correction model.

The result of this study show that decreasing of Rupiah Exchange Rate does not influencing Composite Stock Price Index at Jakarta Stock Exchange and the other way around. It means, Rupiah Exchange Rate does not influencing Composite Stock Price Index and Composite Stock Price Index does not influencing Rupiah Exchange Rate negatively and significantly for long- run and short- run.

Keywords:Dynamic Relationship, Long- run, Short- run, Rupiah Exchange Rate, Composite Stock Price Index, and Error Correction Model.

ABSTRAK

Arismawati, Yenita (2002). **Hubungan Dinamis antara Nilai Tukar Rupiah dengan Indeks Harga Saham Gabungan (IHSG) di Bursa Efek Jakarta,** Jurusan Akuntansi. Fakultas Ekonomi. Universitas Islam Indonesia. Yogyakarta.

Di Indonesia, turunnya nilai tukar rupiah disaat krisis moneter telah membawa kekacauan ekonomi, terutama sekali pada pasar modal. Studi ini menitik beratkan pada hubungan dinamis antara Indeks Harga Saham Gabungan (IHSG) di Bursa Efek Jakarta dan nilai tukar Rupiah. Dua hipotesis diuji secara bersamaan; Indeks Harga Saham Gabungan (IHSG) mempengaruhi nilai tukar Rupiah dan nilai tukar Rupiah mempengaruhi Indeks Harga Saham Gabungan secara negatif dan signifikan pada jangka panjang (long- run) dan jangka pendek (short- run). Hipotesis yang akan diuji menggunakan stationaritas, cointegration, causality, dan error correction model.

Hasil dari studi ini menunjukkan bahwa penurunan nilai tukar Rupiah tidak mempengaruhi Indeks Harga Saham Gabungan di Bursa Efek Jakarta dan begitu juga sebaliknya. Hal ini berarti, nilai tukar Rupiah tidak mempengaruhi Indeks Harga Saham Gabungan dan Indeks Harga Saham Gabungan tidak mempengaruhi nilai tukar Rupiah secara negatif dan signifikan pada saat jangka panjang dan jangka pendek.

Kata Kunci: Hubungan Dinamis, Long- run, Short- run, Nilai Tukar Rupiah, IHSG dan Error Correction Model.

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Nowadays, the fluctuation of Thailand bath is still become one of the factors that has caused money crisis in almost every country in East of Asia and South of Asia, particularly Indonesia. Historically, the effect of money crisis in Indonesia began in May 1997 when it made market index at Jakarta Stock Exchange decrease sharply. To be specific, the US dollar exchange rate was recorded until Rp 3860/$ in the first week of October 1997. Since beginning of the year, Rupiah had been depreciated for approximately 42,1% as cited by Widigdo Sukarman (1997) in Suryono (1998).

Furthermore, Rupiah depreciation had made Indonesian Central Bank (BI) expand band intervention. To point out, since 1992 Indonesian Central Bank had tried to expand band intervention for eight times and the last expansion was on July 1997 from 8 % to 12%. On July 1997, Indonesian Central Bank determined exchange rate as Rp.2378/$1 for the lowest boundary and Rp.2682/$1 for the highest boundary. Generally, Rupiah exchange rate in market was always in hit position for the highest boundary on July 1997. Intervention by Indonesian Central Bank had been made Indonesian foreign exchange rate exhausted until 21 milliard US $ (Gatra November 22nd, 1997).

Band intervention under managed floating exchange rate system era had been made detriment. Indonesian Central Bank tried to completely eliminate band intervention by giving Rupiah exchange rate to market mechanism and do not intervention Rupiah exchange rate again. The reason to eliminate band intervention was, although band intervention had goal to stabilize the production good in Indonesia but Indonesia still depends on raw material and capital good import, it means Indonesia should have foreign exchange rate in sufficient. In fact, every year Rupiah exchange rate was never stronger than foreign exchange rates especially US dollar. After eliminating band intervention under managed floating exchange rate system era, Indonesian Central Bank used market mechanism and it turned out that Rupiah exchange rate was allowed to be more flexible since it gained market power, particularly demand and supply power under free floating exchange rate system era.

Based on the decision of Governor of Indonesia Central Bank, Rupiah exchange rate is changed from managed to free floating exchange rate system era since August 14th 1997 in accordance with the role of other country in ASIA. As a consequence, Rupiah exchange rate must find its balance towards foreign exchange rate despite its lower rate state (Gatra August 23rd 1997).

"Langkah pengahapusan ini merupakan langkah pemerintah untuk mengurangi dampak negatif serangan para spekulan. Apalagi mata uang di kawasan ASEAN sudah menggunakan kurs mengambang. Jadi apabila rupiah tetap menerapkan managed floating rate, bisa jadi akan digunakan sebagai ajang spekulasi.

... *sekarang rupiah sudah menjadi bagian integral dari pasar uang regional di kawasan ASEAN tersebut. Berbagai pengamat dan pengusaha memuji keputusan pemerintah. Demikian pula lembaga Dana Moneter Internasional* " as cited by Triyanto (1997) in Suryono (1998: 1).

The effects of free-floating exchange rate made economic calculation invalid. At that time, investors faced troubles in predicting Rupiah exchange rate that might happen in the future. As illustration, in the beginning of January 1997, Rupiah exchange rate to US dollar gained was Rp.2390 / US $, and on August 1997, Rupiah exchange rate to US dollar was undervalued for 17%.

Rupiah depreciation has made a huge effect to capital market in Indonesia. After Rupiah exchange rate was floated under free-floating exchange rate system on August 14th 1997, stock market at Jakarta Stock Exchange shattered until stock price was very low. Since money market was fluctuating, investors faced difficulties to purchase a big amount in capital market (Gatra, November 8th 1997). To point out, since the second week of July 1997, composite stock price index (IHSG) has pressed. Calculating from the upper of IHSG gained as Rp.742, 95 and in the August 15th 1997, the composite stock price index position is gained as Rp.617, 706. On August 18th 1997, the IHSG at Jakarta Stock Exchange decrease for about 3,9% (Suryono, 1998). Table 1.1 based on Astuti (2001), give explanation about capital market activity from 1996 to 1999.

It was possible to have the effect of decreasing Rupiah exchange rate, because the majorities of go public companies at Jakarta Stock Exchange had foreign liability

in form of foreign exchange rate. The go public companies at Jakarta Stock Exchange produced goods made of material with high import content. Decreasing of Rupiah exchange rate make amount of liability and productivity cost increase if valued by Rupiah exchange rate, and at least will cause decreasing in company's profitability.

An importer will pay their relationship with foreign country by using foreign exchange rate especially US dollar, automatically an importer should pay more expensive before Rupiah exchange rate decreased. For comparison, if on June 30th 1997 an importer only paid Rp.2431/ US $ for each of import product, on July 21 1997 they should pay Rp.2645 or 8.8% higher than before, the same effect with company's who had import of raw material. Depreciation of Rupiah exchange rate influences the company's profitability which imports raw material and who has liability in foreign exchange rate form. Based on that explanation, those cases would influence company's profit and influence distribution of dividend for stock ownership as cited by Soelaeman (1997).

The fact at Jakarta Stock Exchange showed that in the end of 1997, as amount as 210 companies from 279 public companies at Jakarta Stock Exchange had experience on decreasing net profit for about 97% compared with net profit on 1996 (Kompas May 12th 1998 in Setyorini and Supryadi, 2000).

Table 1.1 Capital Market Activity from 1996 to 1999

YEAR	Rp / $	Composite Stock Price Index (IHSG)
1996	2,382	637.432
1997	4,650	401.712
1998	8,025	398.038
1999	7,100	676.919
CHANGES		
1996-1997		36.98%
1997-1998		0.91%
1998-1999		70.06%

Table 1.1 shows the description of capital market index, and the monetary crisis (1997-1999). IHSG decreased from 36.98% (1996-1997) to 0.91% (1997-1998) and gained a high increase for the period from 1998 to 1999 as 70.06%.

Data and weekly analysis of capital market in Indonesia in 1998 described the situation from 1997 to 1998 (monetary crisis eras) about growing up in capital market, as shown in table 1.2.

Table 1.2 Indicator of Growing up in Capital Market

Indicator	1997	1998	%
The Highest of IHSG	740,83 (July)	554,10 (February)	-25,20%
The Lowest of IHSG	339,53 (December)	256,83 (September)	-24.36%

Table 1.2. Clearly shows the difference between the highest from 1997 to 1998 as (-25.2 %), and the lowest from 1997 to 1998 as (-24,36 %).

The Composite Price Index (IHSG) at Jakarta Stock Exchange has decreased immediately that was caused by big problem (Ing Y.L. 1998):

a. Investor did not see the aim of the government's policy. Investor is still confused with what step government would take.
b. Capital Market Index foundation is still weak, which is caused by domination of foreign investor and domestic investor is still limited.

This thesis is a replication of study written by Setyorini and Supriyadi (2000), where they used the data of composite stock price index and Rupiah exchange rate from July 1997 to December 1999. The excesses of the thesis are:

- This thesis took longer time to examine the composite stock price index and Rupiah exchange rate, beginning from January 1996 to January 2000.
- This thesis involves the period prior to free floating exchange rate system to examine. It is aimed to give empiric evidence whether under managed and free floating exchange rate system era, the relationship between the composite stock price index and Rupiah exchange rate have a stronger dynamic relationship.

1.2. Problem Statement

Until the end of July 1997 it could be said that there is no systematic relationship between Rupiah exchange rate depreciation and IHSG. Growing up in interest rate has possibly caused the IHSG development under managed floating exchange rate system era (Silalahi 1997:15 In Setyorini and Supryadi, 2000). Under free floating exchange rate system era, it is assumed that between IHSG and Rupiah exchange rate to US dollar has systematic relationship. Therefore, this study focuses on the relationship between IHSG and Rupiah exchange rate prior to and after the application of free floating exchange rate system era.

1.3. Problem Formulation

Based on the problem statement, this study is attempted to obtain possible answer and giving empiric evidence about dynamic relationship between the composite stock price index and Rupiah exchange rate to US dollar. Therefore, the writer set the problem formulations into the following questions:

a. How is the dynamic relationship between Rupiah exchange rate to US dollar and IHSG at Jakarta Stock Exchange under managed floating exchange rate system?
b. How is the dynamic relationship between Rupiah exchange rate to US dollar and IHSG at Jakarta Stock Exchange under free floating exchange rate system?

1.4. Limitation of Research Area

In order to provide a clear description and to be able to impart useful information, the limitations of the study are indicated below:

1. This study uses Composite Stock Price Index (IHSG), because this index is a measurement or indication for expressing price level in capital market. IHSG is accepted by public as economic indicator (Suryonno, 1998), for the considered period from January 1996 to January 2000.
2. This study is using Rupiah exchange rate to US dollar fluctuation, for the considered period from January 1996 to January 2000.
3. This study is aimed to know the relationship between IHSG and Rupiah exchange rate under managed and free floating exchange rate system. So, this study will compare between Rupiah exchange rate and the IHSG from January 1996 to January 2000.

1.5. Research Objective

This study are intended to:

1. Provide empirical evidence on the dynamic relationship between Rupiah exchange rate and Composite Stock Price Index (IHSG) under managed floating system.
2. Provide empirical evidence on the dynamic relationship between Rupiah exchange rate and Composite Stock Price Index (IHSG) under free floating exchange rate system.

1.6. Definition of Terms

The researcher gave the definition of term in order to make the reader understand about what they are going to read from the thesis title. The researcher will explain each term of the title as follows:

- Exchange rate: The price at which one country's currency exchanges for the currency of another country (Samuelson and Nordhaus, 1995).
- Rupiah: An amount of Rupiah that can be exchange with 1US $ or direct quote exchange rate (Beams, 1992).
- Composite Stock Price Index (IHSG): An indicator for stock price and preferred stock at Jakarta Stock Exchange (Setyorini and Supriyadi, 2000).
- Jakarta Stock exchange: A company in Indonesian that has principal services to operate security trade activity at secondary market (Husnan, 1994: 24).
- Free Floating Exchange Rate System: A domestic currency system to foreign currency, with its exchange rate is determined by market mechanism, it means a power between demand and supply for foreign exchange rate at foreign exchange rate market in the certain time (Atmaja, 2001).

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1. Monetary System

International monetary system could be said as the tool of the policy, roles and mechanism that can be applied to determine exchange rate value of a country to another country. International monetary system consist of four mechanisms that are used in determining exchange rate system of a country (Saphiro, 1996: 75 in Tulus, 1998) which are: free floating exchange rate system, managed floating exchange rate system, target zones arrangement system and fixed rate system.

Under free floating exchange rate system, an exchange rate is determined completely by market mechanism without the intervention of government. This system is called as clean floating, because monetary authorities do not try to apply or to manipulate the exchange rate.

Managed floating exchange rate system is a hybrid of fixed and floating rates in which governments sometimes intervene, sometimes have target zones, and sometimes allow exchange markets to influence the exchange rate (Samuelson and Nordhaus, 1995). Under managed floating system, monetary authorities have duty to stabilize exchange rate in certain time actively.

Under target zone system, some countries have deal to adapt with economic role in their country. The goal of target zone system is to keep exchange rate in restriction.

Fixed exchange rate system is one in which government has targets or parities that they defend through intervention and monetary policies or perhaps through gold standard (Samuelson and Nordhaus, 1995). By using fixed exchange rate system, exchange rate might fluctuate in narrow time.

2.2. Exchange Rate System in Indonesia

In term of exchange rate system, Indonesia's exchange rate can be divided into four eras (Buletin Ekonomi Moneter dan Perbankan, September 1998) which can be explained as follows:

1. Fixed Exchange Rate System Era (1970-1978)

Fixed exchange rate system in short term could be supported by exchange rate stability, but high inflation level was relatively happened in Indonesia, fixed exchange rate system had caused Rupiah exchange rate over valued.

2. Managed Floating Exchange Rate System Era (1978- July 1997)

Managed material was needed to eliminate Rupiah exchange rate fluctuation that was in high level, which then caused speculation and gave negative effect on economic activity.

3. Free Floating Exchange Rate System (Since August 14th 1997)

Applying free-floating exchange rate system has positive and negative consequence. The positive consequences are (Sloman and Sutcliffe, 1998 in Atmaja, 2001):

a. Foreign currency intact relatively, in other words, it cannot be used to intervene in foreign currency market for exchange rate stabilization.
b. Government has big authority to determine economic role in the country.

The negative consequences are (Krugman and Obstfeld, 2000 in Atmaja, 2001):

a. Destabilizing speculation raises and disturbances to money market. Destabilizing speculation make exchange rate fluctuation bigger in long term than it should be. Exchange rate fluctuation makes an unpredictable action in trading and investment like buying stock in capital market.
b. Free-floating exchange rate system makes reaction faster to increase money supply (this system does not really give strength to money supply level).

2.3.Capital Market

Referred to Husnan (1994:1), capital market is a market for various long-term financial instruments that can be traded, either in term of obligation or in term of capital, either published by the government, public authorities, or private companies. Based on Bambang Riyanto (In Kusuma, 1997), argued that capital market is a place for two groups which has relationship, and gives advantage both of investor and entrepreneur who needs long term interest for each of them. Wachowicz and Van Horne (1995:526), defined capital market as a market for relatively long-term (greater than one year original maturity) financial instruments. Financial instruments are bonds, stocks, etc.

In Indonesia, capital markets available are Jakarta Stock Exchange and Surabaya Stock Exchange. The function of Stock exchange are (Husnan, 1994):

- Creating or making a market continuously for the stocks that had been offered to society.
- Creating or making a proper price for the related stock through the market mechanism.
- Helping the business world financing through the society fund collection.
- Expanding the process of society participation expansion in the company share ownership.

In this study, the writer uses Jakarta Stock Exchange to investigate. Referred to Husnan (1994), Jakarta Stock Exchange is a company that has principal service to operate security trade activity at secondary market.

2.4. Stock Price Index

Stock price index is the measurement that is based on statistical measurement to know changes stock price at Jakarta Stock Exchange all the time to basic year. Stock prices at Jakarta Stock Exchange (JSX) fluctuate every time for monthly, weekly, and even every day. The situation in the market always changes based on new information that can be influence (Wardani , 1996).

Stock price index is a core indicator to describe stock price and to dissolve growing in the market for the whole. In the capital market an index are expected to have five functions as follows (Darmadji and Fakhruddin, 2001):

- As a market trend indicator
- As a profit level indicator
- As a benchmark for portfolio performance
- As a facilitator for portfolio making
- As a facilitator for growing derivative product

At Jakarta Stock Exchange there are five indexes (Darmadji and Fakhruddin, 2001) as follows:

- Individual Index that uses each stock price indexes to basic year.
- Sector Stock Price Index that uses all of stock, which is included in each sector.
- LQ 45 Index that uses 45 stocks, which are selected based on stock trading liquidity and conformed every six months (beginning February and August), it means that stock recorded in LQ 45 Index are always changes.
- Composite Stock Price Index (IHSG) that uses all recorded stock as calculating component index. The date of August 10^{th} 1982 was determined as basic day (nominal index = 100).
- Jakarta Islamic Index is a last index that is established by Jakarta Stock Exchange in cooperation with Danareksa Investment Management. Jakarta Islamic Index

uses investment that is applied in Islam or it can be said that based on Islamic Syariah.

2.5.Composite Stock Price Index (IHSG)

Market index used in this study is Composite Stock Price Index (IHSG) with the following reasons: 1) This index covers price fluctuating stock and preference stock for the whole that had been recorded. 2) Composite Stock Price Index (IHSG) is a measurement or the indicator of fluctuation of activity at Stock Exchange. 3) Public regard as Composite Stock Price Index (IHSG) as an economic indicator have the same reorganization with another indicator which are economic growth, inflation level, unemployment level, and foreign payment balance (Suryono, 1998).

Composite Stock Price Index (IHSG) was introduced on April, 1st, 1983 as fluctuating stock indicator for all recorded stock at Jakarta Stock Exchange cover stock and preference stock. The basic date was on August 10th 1982 by nominal 100 and that was recorded for 13 stocks (Guidance Book for Index at Jakarta Stock Exchange). The function of the Composite Stock Price Index (IHSG) is to know capital market performance through the IHSG fluctuation, calculating by IHSG weighted average at Jakarta Stock Exchange and IHSG weighted average at Surabaya Stock Exchange.

2.6. The Dynamic Relationship between Composite Stock Price Index and Rupiah Exchange Rate

Exchange rate is a price of currency from a country to another country. Exchange rate is important because it is used as price of production selling of a country in foreign country and cost for import product. The consequences are, when currency of a country is appreciated so production sells in domestic is more expensive in foreign country (export) and import product is cheaper than before. Currency appreciation can make a trouble for domestic company to sell their product in domestic and foreign country, because import product is produced cheaper (Pribadi, 2000).

Exchange rate fluctuation influencing capital market in investor welfare and deciding company investment. According to Anggarwal (In Granger, Huang and Yang, 2000) it is said that exchange rate fluctuation will make changes in stock price of multinational company directly and will make changes in stock price of domestic company indirectly. The proof that currency fluctuation will cause the value of multinational company change as an effect from activity in foreign country can be seen from company balance in form of profit and loss. It means that whether the devaluation will increase or decrease in stock price depends on the activity of the company (Pribadi, 2000).

2.7.Previous Studies

Rigorous investigations of the link between exchange rate movements and stock market returns by Solnik (1987) (In Setyorini and Supryadi, 2000). The investigation using regression analysis for monthly and quarterly data to eight industrial countries from 1973 to 1983 finds a negative relationship between real domestic stock returns and real exchange rate movements. For monthly data over 1979 to 1983, observes a weak but positive relationship between the two variables. In the same vein, Ma and Kao (1990), using monthly data for six countries, find that domestic currency appreciation affects the domestic stock price movement negatively for an export-dominant economy and affects an import-dominant economy positively.

In Indonesia another the investigation made by Yuliandri (1998), using multiple linear regression, found that exchange rate movements influencing market index movements significantly and negatively, because Indonesia capital market is dominated by foreign investor who think more on gaining capital than dividend. Referred to Prihatmoko (1998) used daily data from June 1997 to October 1997 with multivariate linear regression. The investigation did to know whether Rupiah exchange rate floating have influences to stock returns at Jakarta Stock Exchange. The results, find that Rupiah exchange rate floating does not influencing many stocks return at Jakarta Stock Exchange determined by government.

The investigations above still have weaknesses, because there was possibility on spurious regression in the above model. Spurious regression happened, because stationarity and cointegration were ignored.

Ajay and Mougue (1996) tried to improve study weaknesses by study time series analysis by using unit roots test, cointegration, and error correction model. The analysis are used to examine dynamic relationship between exchange rate with stock indices for a sample of eight advanced economies that are Canada, France, Germany, Italy, Japan, Netherlands, UK, and US. The results show that the foreign exchange rate and stock index series in sample are not stationary in the levels and contain one unit root. This study shows that the foreign exchange rate and stock index for eight countries are cointegrated. The error correction model result shows that increases in aggregate domestic stock prices have a negative short-run effect on domestic currency value. In the long run, however, increases in stock prices have a positive effect on domestic currency value. On the other hand, currency depreciation has a negative short-run and long run effect in the stock market.

Investigation in Indonesia by using unit roots test, cointegration, and error correction model was doing by Astuti (2001). The test is used to test macro variable affects (in this case was Rupiah exchange rate since monetary crisis in 1997 to capital market performance in Indonesia from 1996 to 1999), show that for unit root test the result is not stationary. In the cointegration it shows that between capital market and exchange rate are cointegrated and has causality relationship. In the error correction models, the conclusion is as follows: in the short-time, Rupiah rate variable has negative influence to capital market performance as 1.1469, it means that every increasing for 1% it may cause decreasing in capital market performance as 1.1469 percent. The fact is Rupiah exchange rate fluctuation influencing capital market

performance for the same amount relatively. Increasing Rupiah rate to US dollar has decreased the investors who want to invest their money in Indonesia, because investment in capital market is more expensive than before relatively. In the long-term, the variable of exchange rate, which influencing the capital market performance, is higher than in short time as 2.6564. It means, every increasing Rupiah exchange rate to US dollar will decreasing capital market performance as 2.6564 percent. The indication of increasing exchange rate will give bad influence on capital market performance for long-term.

The investigation made by Setyorini and Supriyadi (2000) is intended to find the relationship between Rupiah exchange rate to US dollar with composite stock price index at Jakarta Stock Exchange and on the contrary, the period is on July 1997 to December 1999. The result shows, between Rupiah exchange rate to US dollar and composite stock price index (IHSG) data are non stationary and has a unit root. Composite stock price index (IHSG) cointegrated with Rupiah exchange rate to US dollar. Causality test show, the IHSG fluctuation influencing Rupiah exchange rate to US dollar fluctuation at foreign currency market and not Rupiah exchange rate to US dollar fluctuation influencing composite stock price index (IHSG). The results of error correction model are to give evidences that there is a dynamic relationship for the long- run and short run. The data from November 1998 to December 1999

find that the composite stock price index influencing Rupiah exchange rate to US dollar negatively and significantly for long- run and short-run.[1]

2.8.Hypotheses Formulation

The decreasing of Rupiah exchange rate to US dollar has caused the investor to doubt the organization that issues a security. Difficulties in anticipating Rupiah fluctuation has made the investor so confused. The effect of Rupiah exchange rate floating make economic calculation does not used relatively. Investor faces the difficulties to predict Rupiah exchange rate in the future. According to Ma and Kao (1990), the domestic rate that becomes weak for short-run and long- run. For the country with significant import, the affects of currency depreciation in import make bearish in stock market for the long- run. In the short-run, the affect of domestic currency depreciation is an inflation that has bad impact in capital market.

According to that explanation, this study is aimed to give empirical evidence about relationship between Rupiah exchange rate to US dollar with composite stock price index at Jakarta Stock Exchange. Based on the illustration, we made hypotheses as follows:

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[1] Long- run is defined as the change that will occur only if there is a certain term of time (it needs a certain term of time). For example; if the Rupiah exchange rate changes, its index will not change at the same time as the Rupiah exchange rate. But, it needs certain time to react to the change of the rate (Astuti, 2001).
Short-run is defined as change which happens immediately (without certain term of time), when the Rupiah exchange rate changes, its index will automatically be changed at the same time (Astuti, 2001).

Hypotheses 1: Rupiah exchange rate to US dollar influencing composite stock price index (IHSG) negatively and significantly for long- run.

Hypotheses 2: Rupiah exchange rate to US dollar influencing composite stock price index (IHSG) negatively and significantly for short-run.

Bullish in the stock market in the country showing an economic expansion and make investor comes from another country. Long-run capital movements to a country increasing domestic currency in foreign currency for short-run. For long- run, increasing domestic currency will influencing domestic currency appreciation. Because, foreign currency investor prefer to using domestic currency to invest in bullish market. Push in the demand to domestic currency causes domestic currency appreciated. Based on the illustration above, we made another hypotheses as follows:

Hypotheses 3: Composite Stock Price Index (IHSG) influencing Rupiah exchange rate to US dollar negatively and significantly for long- run.

Hypotheses 4: Composite Stock Price Index (IHSG) influencing Rupiah exchange rate to US dollar negatively and significantly for short-run.

CHAPTER III

RESEARCH METHOD

3.1. Population and Sample

Based on Djarwanto PS (1996), population is the amount of object, as a whole, which characters, will be estimated. Composite stock price index is described as stock movement at Jakarta Stock Exchange for general, established since August 22nd 1982. Because of that, population will be used in this study started from 1982 until 2000. For exchange rate market, population is exchange rate daily transaction for the whole until 2000. The composite stock price index (IHSG) data gathered from Jakarta Stock Exchange corner in Islamic University of Indonesia Yogyakarta and Bisnis Indonesia daily newspaper, and the Rupiah exchange rate to US dollar data gathered from Indonesia Central Bank in Yogyakarta and Bisnis Indonesia daily newspaper.

In this study, sample period started from January 1996 until January 2000. Sample period is divided into two categorizes; for the first period is managed floating exchange rate system started from January 02nd 1996 until August 13th 1997, and second period is free floating exchange rate system started from August 14th 1997 until January 28th 2000. Using managed floating exchange rate system period is to describe condition in Indonesia when applying band intervene and Indonesia still in normal condition. In other side, using free floating exchange rate

system period is to describe condition in Indonesia when Indonesia release from band intervene and face monetary crisis.

3.2. Research Variable and Measurement

Variables used in this study were Composite Stock Price Index (IHSG) at Jakarta Stock Exchange and Rupiah exchange rate. To know whether Rupiah exchange rate is influenced by composite stock price index, this study uses Rupiah exchange rate as dependent variable and composite stock price index as independent variable. In contrary, to know whether composite stock price index is influenced by Rupiah exchange rate, this study uses composite stock price index as dependent variable, and Rupiah exchange rate as independent variable. Those variables were measured as follows

a. Rupiah exchange rate is measured by direct quote exchange rate (amount of Rupiah that can be exchange with 1 US dollar or Rp. X/ $ 1). Taken as an example, if Rp.2.600 can be exchanged with $ 1, then by using direct quote exchange rate the calculation is Rp.2.600/$ 1 = Rp.2.600.

b. Composite stock price indexes (IHSG) that is uses all recorded stock at Jakarta stock Exchange. The measurement is shown as follow:

$$\text{IHSG} = \frac{\text{Total market share value listed at stock exchange}}{\text{Total market share value listed in bases day}} \times 100$$

3.3. Research Procedure

In order to answer the research problems, it is imperative to construct research procedures. The procedures were arranged as follows:

- Doing the statistical test to find out whether there was a significant variation on the relationship among the two variables.
- Analyzing the interpreted data.
- Deriving conclusions and any other findings.

3.4.Analysis Steps

The analysis steps to organize this research were described as follow:

a. The identification of the period.
b. Obtaining the data of the daily composite stock price index (IHSG), and the data of the daily Rupiah exchange rate.
c. Making stationarity test to find out stationarity of data time series between the IHSG and Rupiah exchange rate to US dollar.
d. Using cointegration test to see whether between the data time series variables have the possibility in long- run relationship.
e. Applying error correction models to capture relationship between time series variables for long- run and short- run.

3.5. Basic Model

The empirical model specification used in this study is linear regression between Composite Stock Price Index (S) as dependent variable, and Rupiah exchange rate fluctuation (F) as independent variable. The following models are used:

$$S_t = a + bF_t + \mu_t$$

Where:

S_t = Composite Stock Price Index (IHSG)

F_t = Rupiah Exchange Rate to US dollar

a= Intercept

b= Slope (regression coefficient)

μ_t = Error term

Meanwhile, when Composite Stock price Index is performed as independent variable, and Rupiah exchange rate as dependent variable, so the following regression model is used:

$$F_t = a + bS_t + \mu_t$$

Where:

F_t = Rupiah Exchange Rate to US dollar

S_t = Composite Stock Price Index (IHSG)

3.6.Hypotheses Testing

The hypothesis consists of multi steps to time series data from daily composite stock price index and daily Rupiah exchange rate to US dollar for the period of January 1996 until January 2000. The steps are derived from the investigations made by Setyorini and Supryadi (2000) and Pribadi (2000). The first step is to test the time series data (IHSG and Rupiah exchange rate) which are stationer, if the time series data are stationer, it is possible that there is long run relationship between Composite Stock Price Index and Rupiah exchange rate. The second step is cointegration process, when time series data integrated of the same order and some of linear combination from time series data are stationer, so there is long run relationship between time series data means that Composite Stock Price Index and Rupiah exchange rate are cointegrated. Third, using error correction model uses an error correction representation and causality to cointegrate time series data.

To examine the hypothesis, the following segment tests were implemented:

a. **Stationarity test**: This test is to know stationarity of data time series between Composite Stock Prices Index (IHSG) and rupiah exchange rate. This test uses unit root test and testing for degree of integration. A time series can be said stationer if average, variance, and autocovarience are constant and independent all the time (Gujarati, 1995:713). A time series which is not stationer (consist of one unit root or random walk time series), is aimed to know the integration need testing for degree integration to see in what level the variable (IHSG and Rupiah exchange rate) will be stationer. A time series

can be integrated in order d, with notice by *I (d)*, and d is an amount of in what level time series are differentiated to be stationer. It means that, a series *I (1)* should be differentiated one time to be stationer and the series indicated has a unit root. A series with *I (0)* showed that series had been stationer without being differentiated.

The regression model for unit root by using Augmented Dickey - Fulier (ADF) (1979):

$$\Delta y_t = \alpha + \beta y_{t-1} + \sum_{j=1}^{k} \gamma_j \Delta y_{t-j} + \varepsilon_t \qquad 3.1$$

Where:

Y = Time series being tested

k= Number of lagged difference

t= Period

β= Backward lag operation

Test for single unit root to test stationarity I (0). If the value of β negative and significant (absolute value t- statistic β bigger than absolute value of critical value have been tabulated by Augmented Dickey Fuller), so the series can be said stationer I (0). But, if the time series are not stationer in I (0), the series need stationarity test I (1) with the regression:

$$\Delta^2 y_t = \alpha + \beta \Delta y_{t-1} + \sum_{j=1}^{k} \gamma_j \Delta^2 y_{t-j} + \varepsilon_t \qquad 3..2$$

y = Time series being tested

k = Number of lagged difference

t = Period

β = Backward lag operation

After unit root test and integration doing into involved variable and had been gained stationer condition and have the same integrated order, so the cointegration process can be done. If two or more economic variables are stationer in the same order, they have possibility to cointegrate (Kuncoro, 2001).

b. **Cointegration test**: This test is to detect that time series variables have the same integration order and have the possibility in long run relationship or have stationer residual (Insukindro, 1992 In Setyorini and Supryadi). The two or more variables are cointegrated if the variable have the same order, although each of time series may wander widely and posses differing short run, but some of linear combination of the series may be stationary so that they are bound in long-run equilibrium relation. Cointegration tests, therefore, are used to detect stable long- run relationship between two or more variables (Ajayi and Mougoue, 1996:198).

Cointegration will be detected by using Engle-Granger cointegration test and the basic model which will be used are:

$S_t = \alpha + \beta F_t + \mu_t$ and $F_t = \alpha + \beta S_t + \mu_t$

μ For the basic model above, is a notation for equilibrium error ($\mu_t = S_t - bF_t$ and $\mu_t = F_t - bS_t$).

Two variables, Rupiah exchange rate to US dollar and IHSG cointegrated if stationer in level null or I (0). Cointegration test based on the formula below:

$$\Delta\mu_t = \beta o\, \Delta\mu_{t-1} + \Sigma\ \beta\mu + \varepsilon_t \qquad 3.3$$

Notation "k" described the number of lagged differences to catch autocorelation. This test is using null hypotheses to said that $\beta o = 0$ or there is no cointegration. A null hypothesis is rejected if Dickey-Fuller t-statistic is negative and absolute value is greater than critical values.

c. Error Correction Model and Causality

- **Causality**

In economic reality, linear regression model which is dependent variable is regressed for independent variable, not really have meaning that dependent variable causally is determined by independent variable. It will be possible that in linear model, dependent variable is determined by independent model, but contrary independent variable is determined by dependent variable so there will be two ways causality. Causality between Rupiah exchange rate to US dollar and composite stock price index, can be detected by using Granger Test (Gujarati, 1995).

- **Error Correction Model**

Granger Representation Theorem said that if the variables cointegrated, the dynamic relationship between variable should be tested by error correction model (In Pribadi, 2000: 27). The error correction model can capture dynamic relationship both of the short-run and long- run equilibrium relationship (Ajayi and Mougou, 1996: 200). In error correction model it can be solved the nonstationary time-series variable problems and **spurious regression** [2] in econometrica analysis through using appropriate difference variable in the model (Setyorini and Supryadi).

The regression model by using Granger Representation Theorem, two cointegrated variables have the following error correction representation:

$$\Delta S_t = v_1 \mu_{t-1} + \sum_{i=1}^{m_1} \lambda_i \Delta S_{t-I} + \sum_{j=1}^{m_2} \delta_j \Delta F_{t-j} + \varepsilon_t \qquad 3.4$$

$$\Delta F_t = v_2 \mu_{t-1} + \sum_{i=1}^{m_3} \xi_i \Delta S_{t-I} + \sum_{j=1}^{m_4} \Phi_j \Delta F_{t-j} + \eta_t \qquad 3.5$$

S = *Composite Stock Price Index (IHSG)*

F = *Rupiah exchange rate to US Dollar*

μ_{t-1} = *Past Values of Error Correction term which is obtained from the cointegrating equation* $\mu_{t-1} = Y_{t-1} - a - bX_{t-1}$

Δ = *Operator first differences*

[2] Regression involving time series data include the possibility of obtaining spurious results in the sense that superficially the results look good but on further probing they look suspect (Gujarati, 1995:724).

ε *and* η – *Are stationary random processes intended to capture other pertinent information not contained in lagged values of* F_t *and* S_t

$v_1, v_2, \lambda_i, \delta_i, \xi_i$ and Φj = *Are the parameters to be estimated*

mi (i=1,2,3,4) = Are the optimal orders of the one-dimensional autoregressive process for a given variable

Model 3.4 and 3.5 are framework to estimate interaction between Rupiah exchange rate to US dollar and the composite stock price index (IHSG). Coefficient δj and ζi explain about short- run relationship between Rupiah exchange rate to US dollar and composite stock price index (IHSG). If δj have value $\neq 0$ and significant statistically, so in Rupiah exchange rate to US dollar fluctuation will have short-run influence for composite stock price index (IHSG). Meanwhile, significance of v_1 and v_2 show the long- run relationship between Rupiah exchange rate to US dollar and the composite stock price index (IHSG).

3.7. Operational Hypothesis

Based on the hypothesis formulation, hypotheses can be drawn as follows:

Hypotheses for hypotheses one, two, three and four are:

H_{O1}: Rupiah exchange rate to US dollar does not influencing composite stock price index (IHSG) negatively and significantly for long- run.

H_{A1}: Rupiah exchange rate to US dollar influencing composite stock price index (IHSG) negatively and significantly for long- run.

H_{O2}: Rupiah exchange rate to US dollar does not influencing composite stock price index (IHSG) negatively and significantly for short-run.

H_{A2}: Rupiah exchange rate to US dollar influencing composite stock price index (IHSG) negatively and significantly for short-run.

H_{O3}: Composite stock price index (IHSG) does not influencing Rupiah exchange rate to US dollar negatively and significantly for long- run.

H_{A3}: Composite stock price index (IHSG) influencing Rupiah exchange rate to US dollar negatively and significantly for long- run.

H_{O4}: Composite stock price index (IHSG) does not influencing Rupiah exchange rates to US dollar negatively and significantly for short-run.

H_{A4}: Composite stock price index (IHSG) influencing Rupiah exchange rate to US dollar negatively and significantly for short-run.

The four hypotheses were tested it the terms of stationarity, cointegration, causality, and error correction model. The data processed by using TSP 0.7 (Time Series Process) computer software. The analysis of the level of significance of the variable for the first, second, third, and fourth hypotheses encountered the following tests:

3.7.1. Stationarity Test

The hypothesis then can be formulated as follows:

Ho: $\beta >$ critical value of MacKinnon

Ha: $\beta <$ critical value of MacKinnon

Where:

β= Dickey Fuller t-statistic

If β in 3.1 has negative and significant value (Dickey Fuller t- statistic value bigger than MacKinnon critical value), it means that Ho is rejected. In other side, if β in 3.1 does not have negative and significant value, it means that Ho is failed to reject and the test will be continued by formula in 3.2.

3.7.2. Cointegration Test

The hypothesis can be formulated as follows:

Ho: μ_t > critical values of MacKinnon

Ha: μ_t < critical values of MacKinnon

Where:

μ_t = Dickey Fuller t-statistic

3.7.3. Causality Test

The hypothesis can be formulated as follows:

Ho: F t-statistic < critical value of F-value in Granger

Ha: F t-statistic > critical value of F-value in Granger

And the hypothesis can be formulated by another formula as follows:

Ho: Probability < significance level

Ha: Probability > significance level

CHAPTER IV

RESEARCH FINDINGS,

AND DISCUSSIONS

4.1 Research Description

This chapter is aimed at describing the data collection process, research findings, discussions, and implications of the variables used in the research. All the results explained here were reached by applying the analysis steps that had been explained in the Research Methods in chapter 3.

4.1.1. Research Preparation

This research began on March 2002, starting with the study of literature, the earlier survey, and the research proposal. The field survey to collect the data was performed on April 2002. The result of the data collection was then analyzed in June 2002 and continued with the writing of the research report.

4.1.2. Data Processing

The data for the composite stock price index from January 1996 until January 2000 were collected from the Jakarta Stock Price Index Corner at UII, and the Business Indonesia daily newspaper. The data for the Rupiah exchange rate from January 1996 until January 2000 were collected from Indonesia Central Bank in Yogyakarta, and the Business Indonesia daily newspaper. Using TSP 7.0 and SPSS release 10.0 then processed the data.

4.2. Research Findings

This section describes the broad picture of the data processing results for each variable used in the research.

4.3. Research Discussion

This section will discuss about data analysis result, and the interpretation from processing result. Analysis data result will be started with basic model, stationarity, cointegration, and causality test. Causality test will be applied to see composite stock price index influencing Rupiah exchange rate or Rupiah exchange rate influencing composite stock price index. If causality is really happened, this study will analyze the influence in short-run and in long- run by using error correction model.

4.3.1. Managed Floating Era

4.3.1.1. Basic Model

$$St = a + bFt + \mu t$$

$$Ft = a + bSt + \mu t$$

Note: S = Composite Stock Price Index

F = Fluctuating Rupiah Exchange Rate to US dollar

Regression Result under Managed Floating Exchange Rate System Era.

Rupiah Exchange Rate Influencing the Composite Stock Price Index

St = -5,788 + 2,541Ft

R Square = 0,563

DW = 0,057

p-value = 0,000

(Source: appendix 1)

Composite Stock Price Index Influencing Rupiah Exchange Rate

Ft = 2,758 + 0,221 St

R Square = 0,563

DW = 0,058

p- value = 0,000

(Source: appendix 1)

The regression result under managed floating have spurious regression (R Square >DW) with probability (ρ =0,000). The spurious regression happened, because stationarity and cointegration are ignored.

4.3.1.2 Stationarity test

This test is aimed to know stationary of data time series between the composite stock price index and Rupiah exchange rate. This test can also be used to determine integrated order for time series to be stationer. A time series can be integrated in order d, with the notice of I (d), and d is an amount in what level time series are differentiated to be stationer. It means that, a series I (1) should be differentiated once in order be stationer and the series indicates has one unit root. A series with I (0) showed that series had been stationer without being differentiated. In this study we use hypotheses null, as time series data under managed floating exchange rate system is not stationer.

After determining hypothesis, we will compare between DF t-statistic and Mac Kinnon critical values. If DF t-statistic >MacKinnon critical values, so Ho is rejected. This study will be started by both time series data composite stock price index (IHSG) and Rupiah exchange rate to US dollar in order null or I (0). If the series does not stationer in order null or I (0), so the test will be continued in order one, two or three until the data are stationer.

Composite stock price index (IHSG) and Rupiah exchange rate to US dollar stationarity test will apply by using test in order null or I (0) and the result is shown in table 4.3.1 and 4.3.2.

The Stationarity Test for Composite Stock Price Index under Managed Floating Exchange Rate System Era.

Integrated of order I (0).

Table 4.3.1

Augmented Dickey-Fuller: UROOT(C, 7) LOG_IHSG

Dickey-Fuller t-statistic		**-7.0356**
MacKinnon critical values:	**1%**	**-3.4499**
	5%	**-2.8693**
	10%	**-2.5709**

(Source: appendix 2)

From the stationary test in table 4.3.1 for the composite stock price index time series data, it showed that the data of the composite stock price index is stationer in order null or I (0), because absolute DF t- statistic > critical values. A time series data in order I (0) showed that the series is stationer without being differentiated.

The Stationarity Test for Rupiah Exchange Rate to US dollar under Managed Floating Exchange Rate System Era.

Integrated of order I (0).

Table 4.3.2

Augmented Dickey-Fuller: UROOT(C, 7) LOG_USD

Dickey-Fuller t-statistic		**-4.7448**
MacKinnon critical values:	**1%**	**-3.4499**
	5%	**-2.8693**
	10%	**-2.5709**

(Source: appendix 2)

From the stationary test in 4.3.2 for Rupiah exchange rate time series data, it showed that the data of Rupiah exchange rate is stationer in order I (0). Absolute DF t- statistic >MacKinnon critical values, have the same result with stationarity test for the composite stock price index, it means that the data series is stationer without being differentiated.

The Composite stock price index time series and Rupiah exchange rate time series are stationer in the same order in I (0). This condition can be seen from the indication that between two variables has the possibility to go to average in order null or I (0). If two or more economic variables are stationer in the same order, they have possibility to cointegrate (Kuncoro, 2001).

4.3.1.3. Cointegration Test

This test is aimed to prove that time series variables have the same integration order and have the possibility in long-run relationship or have stationer residual (Insukindro, 1992 In Setyorini and Supryadi). Two or more variables are cointegrating if they have the same order, although each of time series may wander widely and posses differing short-run, but some of linear combination of the series may be stationary, so they are bound in long-run equilibrium relationship. Cointegration test is focused in variables, which is generally integrated in order null or one (Pribadi, 2001). Cointegration test, therefore, are used to detect stable long-run relationship between two or more variables (Ajayi and Mougoue, 1996: 198).

Cointegration test result for composite stock price index (IHSG) and Rupiah exchange rate to US dollar will be shown in table 4.3.3 and 4.3.4.

Table 4.3.3

Rupiah Exchange Rate Influencing Composite Stock Price Index

```
Engle-Granger Cointegration Test: UROOT(C, 7)
=============================================
          --Cointegrating Vector--
           LOG_IHSG          1.000000
           LOG_USD           1783938.
          ------------------------
 Dickey-Fuller t-statistic           -7.0459
 MacKinnon critical values: 1%       -3.9279
                            5%       -3.3531
                           10%       -3.0567
=============================================
```

(Source: appendix 3)

From the analysis result in table 4.3.3, it showed that DF t-statistic > critical values (in level 1%, 5%, and 10%). Because of that, there is possibility that

between Rupiah exchange rate and the composite stock price index has stable relationship in the long run.

Table 4.3.4

The Composite Stock Price Index Influencing Rupiah Exchange Rate

Engle-Granger Cointegration Test: UROOT(C, 7)

--Cointegrating Vector--		
LOG_USD	1.000000	
LOG_IHSG	1.06E-11	
Dickey-Fuller t-statistic		-4.7588
MacKinnon critical values:	1%	-3.9279
	5%	-3.3531
	10%	-3.0567

(Source: appendix 3)

From the analysis result in table 4.3.3, it showed that DF t-statistic > critical values (in level 1%, 5%, 10%). Because of that, there is possibility that between the composite stock price index and Rupiah exchange rate has stable relationship in long run, since there are cointegration between the composite stock price index and Rupiah exchange rate.

Therefore, the writer used causality test to know the relationship between composite stock price index variable and Rupiah exchange rate to US dollar have one or two directions, and in which variables have significant influence.

4.3.1.4. Causality Test

Causality test is used to detect whether relationships between the composite stock price index and Rupiah exchange rate have one or two directions, whether

the composite stock price index influencing Rupiah exchange rate or in the other way around Rupiah exchange rate influencing composite stock price index. Using causality test, we can see whether the hypotheses in chapter 3 can be failed to reject or rejected. In chapter 3 there are fourth alternative hypotheses as follows:

Ha_1= Rupiah exchange rate to US dollar influencing the composite stock price index (IHSG) negatively and significant for long- run.

Ha_2= Rupiah exchange rate to US dollar influencing the composite stock price index (IHSG) negatively and significant for short- run.

Ha_3= Composite stock price index (IHSG) influencing Rupiah exchange rate to US dollar negatively and significant for long run.

Ha_4= Composite stock price index (IHSG) influencing Rupiah exchange rate to US dollar negatively and significant for short- run.

Hypothesis alternatives 1 and 2 have an aimed to support that Rupiah exchange rate to US dollar influencing composite stock price index in long- run and short- run. Hypothesis 3 and 4 are used to support the argument that the composite stock price index influencing Rupiah exchange rate to US dollar in long- run and short- run.

Using the causality test, it will be analyzed which variable will have significant influence, in alternative hypotheses 1 and 2 or in alternative hypotheses 3 and 4. Causality test in this study will uses Granger test by using probability level indicator as a tool to show whether the influence is significant or not significant between variable analyzed. Usually the research in social field will use

the level of significance at 5 %. The probability value will be compared with the level of significance at 5%. If probability value is less than 5% or <5%, so there is causality relationship significance between composite stock price index (IHSG) and Rupiah exchange rate to US dollar or the other way around, it means that between the composite stock price index and Rupiah exchange rate variable have one direction.

The result of the causality test between the composite stock price index and Rupiah exchange rate to US dollar or the other way around under managed floating exchange rate system era, will be shown in the table 4.3.5.

Table 4.3.5

Causality test in I (0)

Null hypothesis:	F-statistic	Probability
LOG_USD is not Granger Caused by LOG_IHSG	0.001890	1.0000
LOG_IHSG is not Granger Caused by LOG_USD	0.005621	1.0000

(Source: appendix 4)

From the causality test result in table 4.3.5, it is showed that the results are not significant. If the results are not significant, it means that there is no causal relationship. The impact is, between composite stock price index and Rupiah exchange rate does not influencing each other. So, the next step (error correction model) can not be applied in the analysis.

Based on the causality test result, this study gives evidence that all alternative hypotheses (Ha_1, Ha_2, Ha_3, and Ha_4) are rejected and Ho_1, Ho_2, Ho_3, and Ho_4 are failed to reject.

This research shows that between composite stock price index and Rupiah exchange rate to US dollar does not have negative and significant relationship. Based on that, this research has different result with prior research in Indonesia made by Astuti (2001). In Astuti (2001) by using the same model, show that between rupiah exchange rate and IHSG have short run relationship. Silalahi (In Setyorini and Supryadi) supports the result of this research, he said that until the end of July, there was no systematic relationship between Rupiah exchange rate and IHSG fluctuation. The increasing of IHSG was determined by the increasing of interest.

4.3.2. Free Floating

4.3.2.1. Basic Model

$$S_t = a + bF_t + \mu t$$

$$F_t = a + bS_t + \mu t$$

Where:

S= Composite Stock Price Index

F= Fluctuating Rupiah Exchange Rate to US dollar

Regression Result under Free Floating Exchange Rate System Era

Rupiah Exchange Rate Influencing the Composite Stock Price Index

St = 3,317 - 0,165 Ft

R Square = 0,078

DW = 0,087

ρ-value = 0,000

(Source: appendix 5)

The regression result for Rupiah exchange rate influencing the composite stock price index, shows that there is no spurious regression because R Square < DW.

Composite Stock Price Index Influencing Rupiah Exchange Rate

Ft = 5,143 - 0,473 St

R Square = 0,078

DW = 0,019

ρ-value = 0,000

(Source: appendix 5)

The regression result for composite stock price index influencing Rupiah exchange rate, shows that there is no spurious regression R Square > DW. Spurious regression may arise because stationarity and cointegration are ignored. To eliminate spurious regression, the writer will used stationarity test, and will be shown in illustration 4.3.2.2.

4.3.2.2. Stationarity test

This test is aimed to know stationarity of data time series between Composite stock Price Index (IHSG) and Rupiah exchange rate. Stationarity test can also be used to determine integrated order for time series to be stationer. A time series can be integrated in order, with notice by I (d), and d is an amount in what level time series are differentiated one time to be stationer and the series indicated has one unit root. A series with I (0) showed that series had been stationer without being differentiated. In this study we use the same hypotheses as under managed floating exchange rate system. Hypotheses null can be drawn as time series data under free floating exchange rate system are not stationer.

After determining hypotheses, this study will compare between DF t-statistic and MacKinnon critical values. If DF t-statistic > MacKinnon critical values, so Ho is rejected. This study will started with both time series data composite stock price index (IHSG) and Rupiah exchange rate to US dollar in order null or I (0). If the series does not stationer in order null or I (0), so the test will be continued in order one, two or three until the data are stationer.

Composite stock price index (IHSG) and Rupiah exchange rate to US dollar stationarity test will be applied by using test in order null or I (0) and the result are shown in table 4.3.6 and 4.3.7.

Stationarity Test for Rupiah Exchange Rate under Free Floating

Integrated in I (0)

Table 4.3.6

Augmented Dickey-Fuller: UROOT(C, 9) LOG_USD		
Dickey-Fuller t-statistic		-2.5974
MacKinnon critical values:	1%	-3.4412
	5%	-2.8659
	10%	-2.5691

(Source: appendix 6)

Stationarity test for Rupiah exchange rate time series data, shows that Rupiah exchange rate is not stationer in order I (0), because absolute value of DF t-statistic < critical value in level 1%, 5% and 10%. If the data series are not stationer in order null or I (0), so the stationary test will continue in order one.

Stationarity Test for Composite Stock Price Index under Free Floating Integrated in I (0)

Table 4.3.7

Augmented Dickey-Fuller: UROOT(C, 9) LOG_IHSG		
Dickey-Fuller t-statistic		-1.3804
MacKinnon critical values:	1%	-3.4412
	5%	-2.8659
	10%	-2.5691

(Source: appendix 6)

Stationarity test for composite stock price index, showing that Rupiah exchange rate is not stationer in order I (0), because absolute value of DF t-statistic < critical value. If the series are not stationer in order null or I (0), so the test will continue in order one. Rupiah exchange rate and Composite Stock Price Index are stationer in order null I (0), to find out in what order the data are

stationer, we should test the first- difference in the variable. Composite stock price index (IHSG) and Rupiah exchange rate to US dollar stationarity test results in first different or in I (1) will be shown in table 4.3.8.and 4.3.9.

Stationarity Test for Rupiah Exchange Rate in First Difference Integrated in Order One I (1)

Table 4.3.8

Augmented Dickey-Fuller: UROOT(C, 9) DUSD		
Dickey-Fuller t-statistic		-10.2858
MacKinnon critical values:	1%	-3.4414
	5%	-2.8660
	10%	-2.5691

(Source: appendix 6)

The regression result in first differences or I (1), showing that DF t-statistic value (absolute value) > critical value in level 1%, 5% and 10%. So, the Rupiah exchange rate is stationer in fist difference or in order one I (1).

Stationarity Test for Composite Stock Price Index in First Difference Integrated in Order One I (1)

Table 4.3.9

Augmented Dickey-Fuller: UROOT(C, 9) DIHSG		
Dickey-Fuller t-statistic		-9.8176
MacKinnon critical values:	1%	-3.4414
	5%	-2.8660
	10%	-2.5691

(Source: appendix 6)

The regression result for composite stock price index in first difference or I (1), showing that absolute value > critical value in level 1%, 5%, and 10%. So, the composite stock price index time series data is stationer in first difference or in order one I (1).

Composite Stock Price Index and Rupiah exchange rate are stationer in the same order I (1). The indication is, between two variables have average and trend to go to average in order null or I (0). If the two or more economic variables are stationer in the same order, it has possibility to cointegrate (Kuncoro, 2001)

4.3.2.3. Cointegration Test

This test is used to detect that time series variables have the same integration order and have the possibility in long-run relationship (Insukindro, 1992 In Setyorini and Supryadi). The two or more variables are cointegrate if the variable have the same order, although each of time series may wander widely and posses differing short-run, but some of linear combination of the series may be stationary so that they are bound in long run equilibrium relation. Cointegration test focuses in variables which integrated in order null or one generally (Pribadi, 2001). Cointegration tests, therefore, are used to detect stable long run relations between two or more variables (Ajayi and Mougoue, 1996:198).

Cointegration test result for IHSG and Rupiah exchange rate to US dollar will be shown in table 4.3.10 and 4.3.11.

Cointegration Test I (1)

Table 4.3.10

Composite Stock Price Index Influencing Rupiah Exchange Rate

```
Engle-Granger Cointegration Test: UROOT(C, 9)`
==============================================
          --Cointegrating Vector--
           DUSD          1.000000
           DIHSG        -0.030138
          ------------------------
 Dickey-Fuller t-statistic          -10.2970
 MacKinnon critical values: 1%       -3.9152
                            5%       -3.3468
                           10%       -3.0524
==============================================
```

(Source: appendix 7)

The analysis result in table 4.3.10, shows that DF t-statistic> critical value (in level 1%, 5%, and 10%). Because of that, there is possibility that between Rupiah exchange rate and composite stock price index have stable relationships in long- run.

Table 4.3.11

Rupiah Rate Influence Composite Stock Price Index

```
Engle-Granger Cointegration Test: UROOT(C, 9)
==============================================
          --Cointegrating Vector--
           DIHSG         1.000000
           DUSD         -0.004752
          ------------------------
 Dickey-Fuller t-statistic          -9.8246
 MacKinnon critical values: 1%       -3.9152
                            5%       -3.3468
                           10%       -3.0524
==============================================
(Source: appendix 7)
```

The analysis result in table 4.3.11, shows that DF t-statistic > critical values (in level 1%, 5%, and 10%), it means table 4.3.11 have the same result with table 4.3.10, there is possibility that between Rupiah exchange rate and composite stock price index have stable relationship in long run.

Because there are cointegration between composite stock price index and Rupiah exchange rate so, the writer uses causality test to know that relationship have one or two directions, and in which variable have significant influences.

4.3.2.4. Causality Test

Causality test is used to detect whether relationships between composite stock price index and Rupiah exchange rate have one or two directions, whether composite stock price index influencing Rupiah exchange rate or in the other way around, Rupiah exchange rate influencing the composite stock price index. By using causality test, we can see whether hypotheses in chapter 3 can be failed to reject or rejected. In chapter 3 there are forth alternatives hypotheses as like follows:

Ha_1 = Rupiah exchange rate to US dollar influencing composite stock price index (IHSG) negatively and significantly for long- run

Ha_2 = Rupiah exchange rate to US dollar influencing composite stock price index (IHSG) negatively and significantly for short- run

Ha_3 = Composite stock price index (IHSG) influencing Rupiah exchange rate to US dollar negatively and significantly for long- run

Ha_4 = Composite stock price index (IHSG) influencing Rupiah exchange rate to US dollar negatively and significantly for short- run

Hypotheses alternative 1and 2 are aimed to support the argument that Rupiah exchange rate to US dollar influencing IHSG. Hypotheses 3and 4 are aimed to support the argument that IHSG influencing Rupiah exchange rate to US dollar in long- run and short- run.

Causality test for IHSG and Rupiah exchange rate to US dollar under free floating exchange rate system have the same test with managed floating exchange rate system era. So, the causality test will use Granger test by using probability level as indicator to show significance influence between two variables.

Causality test result between IHSG and Rupiah exchange rate to US dollar under free floating exchange rate system era will be shown in the table 4.3.12.

Table 4.3.12

Null hypothesis:	F-statistic	Probability
DUSD is not Granger Caused by DIHSG	0.610376	0.7887
DIHSG is not Granger Caused by DUSD	0.306974	0.9726

(Source: appendix 8)

From the causality test result in table 4.3.12, it is showed that the results are not significant. If the results are not significant it means that there is no causal relationship. The impact is, between composite stock price index and Rupiah

exchange rate not influencing each other. Because of that, the next step (error correction model) can not be applied. Based on the causality test result, series data under free floating exchange rate system has the same result with managed floating era. Alternative hypotheses are rejected and objective hypotheses are failed to reject.

The result under free floating exchange rate system era, show that there is no negative and significant influence between composite stock price index (IHSG) and Rupiah exchange rate to US dollar. Based on that, this research has different result with replication study by Setyorini and Supryadi (2000). In Setyorini and Supryadi by using the same model, shows that there is dynamic relationship between Rupiah exchange rate to US dollar and IHSG for short- run and long- run under free floating exchange rate system era.

Granger, Huang, and Yang (In Pribadi, 2001: 18) support this study, said that when monetary crisis happened in Asia, between exchange rate and price index in Indonesia and Japan capital market there is no significant relationship. Prihatmoko (1998) made another research, by using daily data for June 1997 until October 1997 with multivariate linear regression to know whether Rupiah floating have influence to stock return at Jakarta Stock Exchange. The results in Prihatmoko (1998) give evidence that Rupiah exchange rate floating determined by government does not influencing many stock returns at Jakarta Stock Exchange.

4.3.3. Managed and Free Floating

4.3.3.1. Basic Model

$$S_t = a + bF_t + \mu_t$$

$$F_t = a + bS_t + \mu_t$$

Note = S = Composite Stock Price Index (IHSG)

F = Fluctuating Rupiah Exchange Rate to US dollar

Regression Results for IHSG and Rupiah Exchange Rates to US dollar under Managed and Free Floating Exchange Rate System Era.

Rupiah Rate Influencing Composite Stock Price Index

$S_t = 3{,}509 - 0{,}214\ F_t$

R square = 0,362

DW = 0,079

p-value = 0,000

(Source: appendix 9)

Composite Stock Price Index Influencing Rupiah Exchange Rate

$F_t = 8{,}295 - 1{,}695\ S_t$

R square = 0,362

DW = 0,032

p-value = 0,000

(Source: appendix 9)

The regression result under managed and free floating have spurious regression (R Square > DW) with probability (p=0,000). The spurious regression means that the data time series are not stationer, because the data did not have tendency to have the same average (Kuncoro, 2001). The spurious regression may arise because stationarity and cointegration are ignored.

4.3.3.2. Stationarity test

This test is used to know stationarity of data time series between composite stock price index and Rupiah exchange rate. This test can also be used to determine integrated order for time series to be stationer. A time series can be integrated in order d, with notice by I (d), and d is an amount in what level time series are differentiated to be stationer. Stationarity test under managed and free floating exchange rate system era use hypothesis null as time series data for managed and free floating exchange rate system is not stationer.

Composite stock price index (IHSG) and Rupiah exchange rate to US dollar stationarity test will apply in order null or I (0) and the result will be shown in table 4.3.13 and 4.3.14.

Stationarity Test for Composite Stock Price Index under Managed and Free Floating.

Integrated in Order I (0).

Table 4.3.13

Augmented Dickey-Fuller: UROOT(C, 11) LOG_IHSG		
Dickey-Fuller t-statistic		-9.2105
MacKinnon critical values:	1%	-3.4371
	5%	-2.8641
	10%	-2.5681

(Source: appendix 10)

The stationarity test for composite stock price index time series data, show the data of composite stock price index is stationer in order I (0), because absolute DF t- statistic > critical values. A series with I (0) showing that the data time series stationer without being differentiated.

Stationarity Test for Rupiah Exchange Rates under Managed and Free Floating Exchange Rate System Era.

Table 4.3.14

Integrated in Order I (0)

Augmented Dickey-Fuller: UROOT(C, 11) LOG_USD		
Dickey-Fuller t-statistic		-1.0911
MacKinnon critical values:	1%	-3.4371
	5%	-2.8641
	10%	-2.5681

(Source: appendix 10)

The stationarity test for Rupiah exchange rate time series data, showing the data of Rupiah exchange rate is not stationer in order I (0), because DF t-statistic < critical values (in level 1%, 5%, and also 10%). Because of that, we should test in the first-difference.

Stationarity test for Rupiah exchange rate to US dollar are not stationer in order null, so we should test in the first difference, and the result will be shown in table 4.3.15.

Stationarity Test for Rupiah Exchange Rate under Managed and Free Floating.

Table 4.3.15

Integrated in Order I (1)

Augmented Dickey-Fuller: UROOT(C, 11) DUSD		
Dickey-Fuller t-statistic		-12.3899
MacKinnon critical values:	1%	-3.4375
	5%	-2.8642
	10%	-2.5682

(Source: appendix 10)

The stationarity test for Rupiah exchange rate, shows the data is stationer in order one or I (1), because DF t-statistic > critical values (in level 1%, 5%, and 10%).

Composite stock price index and Rupiah exchange rates are not stationer in the same order. To apply cointegration test, time series data should be integrated in the same order. If two or more variables have different integration, for example X I (1) and Y I (2), so both of variable X and Y cannot be cointegrated (Engle Granger, 1987, Insukindro, 1990 in Astuti, 2001). In Kuncoro (2001) said that if two or more economic variables are not stationer in the same order, it means that the variable does not have possibility to cointegrate (Kuncoro, 2001).

CHAPTER V

CONCLUSION, LIMITATION, IMPLICATION, AND RECOMMENDATION

5.1 Research Conclusion

Based on chapter I, the research objective provide empirical evidence on the dynamic relationship between Rupiah exchange rate to US dollar with IHSG under managed floating and free floating exchange rate system. Four alternative hypotheses are sounded based on related literature to gain research objective. After applying the statistical test and analyzes the data through stationarity test, cointegration test and causality test that have been described in the earlier chapters, conclusions are drawn as follows:

5.1.1 Managed Floating Exchange Rate System Era

1. Time series data for composite stock price index (IHSG) and Rupiah exchange rate to US dollar are stationer in order null or I (0).
2. Time series data for composite stock price index (IHSG) are cointegrate with Rupiah exchange rate to US dollar.
3. From the causality test, it shows that between composite stock price index (IHSG) and Rupiah exchange rate to US dollar does not have causality relationship, it means that Rupiah exchange rate to US dollar variable does

not influencing IHSG, and IHSG variable does not influencing Rupiah exchange rate too.

This research shows that between Rupiah exchange rate to US dollar variable and composite stock price index (IHSG) variable does not have negative and significant relationship. Based on that assumption, this research has different result with prior research in Indonesia made by Astuti (2001). In Astuti (2001), by using the same model, it is found out that between Rupiah exchange rate and composite stock price index have short-run relationship.

Based on Silalahi (1997) In Setyorini and Supryadi (2000) supports the result of this research, by arguing that until the end of July 1997 there was no systematic relationship, and there was no causality between Rupiah exchange rate depreciation and composite stock price index fluctuation. The increasing of composite stock price index (IHSG) is determined by the increase of interest rate level.

5.1.2 Free Floating Exchange Rate System Era

1. Time series data for composite stock price index (IHSG) and Rupiah exchange rate to US dollar are stationer in order one or I (1).
2. Time series data for composite stock price index (IHSG) are cointegrate with Rupiah exchange rate.
3. There is no causality between Rupiah exchange rate and composite stock price index. Its mean that Rupiah exchange rate to US dollar variable does

not influencing composite stock price index (IHSG), and IHSG does not influencing Rupiah exchange rate too.

The result of time series data for composite stock price index (IHSG) and Rupiah exchange rate to US dollar under free floating exchange rate system era, show that there is no negative and significant relationship between two variable above. Based on that, this research has different result with replication study made by Setyorini and Supryadi (2000). In Setyorini and Supryadi (2000), by using the same models, show that there is dynamic relationship between Rupiah exchange rate and composite stock price index (IHSG) for short- run and long- run under free floating exchange rate system era.

Granger, Huang and Yang (2000) support the result of this research (In Pribadi, 2001: 18). He pointed out that when monetary crisis happen in ASIA, between exchange rate with price index in Indonesia and Japan capital market there is no significant relationship. Prihatmoko (1998) gave another support by using daily data from June 1997 until October 1997. By using multivariate linear regression to see whether Rupiah exchange rate floating have influence to stock return at Jakarta Stock Exchange. He found that many stock returns at Jakarta Stock Exchange are not influenced by Rupiah exchange rate floating determined by government.

5.1.3 Managed Floating and Free Floating Exchange Rate System

1. Time series data for composite stock price index (IHSG) is stationer in order null or I (0).

2. Time series data for Rupiah exchange rate to US dollar is stationer in order one or I (0).

Composite stock price index and Rupiah exchange rate to US dollar is not stationer in the same order, if the two or more economic variables are not stationer in the same order. It means that the variable do not have possibility to cointegrate (Kuncoro, 2001).

Based on the result in figure 5.1.1 to 5.1.3, this study has conclusion that all hypotheses in chapter 3 is failed to reject. This study give evidence that there is no dynamic relationship between composite stock price index and Rupiah exchange rate for short run and long run under managed and free floating exchange rate system era. It means that composite stock price index does not influencing Rupiah exchange rate, and Rupiah exchange rate does not influencing the composite stock price index negatively and significantly too.

5.2. Research Limitations

The research done in this study has the following limitations:

- This study used single variable for composite stock price index and Rupiah exchange rate. There are many economics, and social politic variables that are not included in this study. In economic variable there is important variable that can be influencing the composite stock price index like interest rate variable under

managed floating exchange rate system era and purchasing power parity (GDP) as an independent variable for Rupiah exchange rate.

- This study use Rupiah exchange rate to US dollar as independent variable for composite stock price index. In fact, there are many exchange rates that can influence composite stock price index. US dollar just the one of exchange rate can be implied in Rupiah exchange rate.

5.3. Research Implication

The implication of this study is as follows:

- There is no dynamic relationship between composite stock price index and Rupiah exchange rate in Indonesia. It means that for investor does not need to heed the relationship between composite stock price index and Rupiah exchange rate. As the cases in Indonesia, when Rupiah exchange rate depreciation, the investors sell their stock in capital market directly, and it will be lead decreasing the price of stock. Investor in capital market should not be panic if Rupiah exchange rate fluctuate, because Rupiah exchange rate does not influencing stock price in capital market.

5.4 Research Recommendation

After the completion of this research the following recommendations have been drawn as follows:

1. Further research hopefully can use another variables in influence Rupiah exchange rate and composite stock price index (IHSG) for example interest rate.
2. Under free-floating exchange rate, the period of research consideration for the same research hopefully can be conducted over in 1998. Using period over 1998, to avoid external factor like social and political issue (Indonesia faces a president change), and economic influence like monetary crisis in ASIA.
3. Further research concerning with unit root test in research dynamic relationship between Rupiah exchange rate to US dollar and composite stock price index (IHSG), to avoid spurious regression.

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APPENDICES

APPENDIX 1

Basic Model for Managed Floating Exchange Rate System Era

Rupiah Rate Influencing Composite Stock Price Index

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-5,788	,377		-15,337	,000
	LOG_RP	2,541	,112	,750	22,736	,000

a. Dependent Variable: LOG_IHSG

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,750[a]	,563	,561	2,531E-02	,057

a. Predictors: (Constant), LOG_RP

b. Dependent Variable: LOG_IHSG

Composite Stock Price Index Influencing Rupiah Exchange Rate

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,758	,027		101,452	,000
	LOG_IHSG	,221	,010	,750	22,736	,000

a. Dependent Variable: LOG_RP

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,750[a]	,563	,561	7,470E-03	,058

a. Predictors: (Constant), LOG_IHSG

b. Dependent Variable: LOG_RP

APPENDIX 2

Stationarity Test for Rupiah Exchange Rate under Managed Floating Era

Integrated in Order Null or I (0)

Augmented Dickey-Fuller: UROOT(C,7) LOG_USD

Dickey-Fuller t-statistic		-4.7448
MacKinnon critical values:	1%	-3.4499
	5%	-2.8693
	10%	-2.5709

LS // Dependent Variable is D(LOG_USD)
Date: 7-24-2002 / Time: 19:46
SMPL range: 9 - 404
Number of observations: 396
Augmented Dickey-Fuller: UROOT(C,7) LOG_USD

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(LOG_USD(-1))	-0.4065551	0.1096119	-3.7090418	0.0002
D(LOG_USD(-2))	-0.3437303	0.1061250	-3.2389178	0.0013
D(LOG_USD(-3))	-0.2827228	0.1008170	-2.8043153	0.0053
D(LOG_USD(-4))	-0.2228878	0.0934844	-2.3842250	0.0176
D(LOG_USD(-5))	-0.1652023	0.0836586	-1.9747191	0.0490
D(LOG_USD(-6))	-0.1088564	0.0703951	-1.5463636	0.1228
D(LOG_USD(-7))	-0.0536724	0.0511828	-1.0486403	0.2950
LOG_USD(-1)	-0.5281468	0.1113106	-4.7448021	0.0000
C	1.7833967	0.3757335	4.7464404	0.0000

R-squared	0.466521	Mean of dependent var	0.000155
Adjusted R-squared	0.455493	S.D. of dependent var	0.045757
S.E. of regression	0.033764	Sum of squared resid	0.441192
Log likelihood	784.4389	F-statistic	42.30338
Durbin-Watson stat	2.003613	Prob(F-statistic)	0.000000

Stationarity Test for Composite Stock Price Index under Managed Floating era

Integrated in Order Null or I (0)

Augmented Dickey-Fuller: UROOT(C,7) LOG_IHSG		
Dickey-Fuller t-statistic		-7.0356
MacKinnon critical values:	1%	-3.4499
	5%	-2.8693
	10%	-2.5709

LS // Dependent Variable is D(LOG_IHSG)
Date: 7-24-2002 / Time: 19:46
SMPL range: 9 - 404
Number of observations: 396
Augmented Dickey-Fuller: UROOT(C,7) LOG_IHSG

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(LOG_IHSG(-1))	0.0180412	0.1355239	0.1331222	0.8942
D(LOG_IHSG(-2))	0.0154639	0.1253118	0.1234035	0.9019
D(LOG_IHSG(-3))	0.0128866	0.1142482	0.1127947	0.9103
D(LOG_IHSG(-4))	0.0103093	0.1020566	0.1010153	0.9196
D(LOG_IHSG(-5))	0.0077320	0.0882708	0.0875936	0.9302
D(LOG_IHSG(-6))	0.0051546	0.0719806	0.0716115	0.9429
D(LOG_IHSG(-7))	0.0025773	0.0508327	0.0507020	0.9596
LOG_IHSG(-1)	-1.0206186	0.1450644	-7.0356237	0.0000
C	719128.60	719125.74	1.0000040	0.3179

R-squared	0.501289	Mean of dependent var	0.000230
Adjusted R-squared	0.490979	S.D. of dependent var	19854227
S.E. of regression	14165133	Sum of squared resid	7.77E+16
Log likelihood	-7078.000	F-statistic	48.62500
Durbin-Watson stat	2.000013	Prob(F-statistic)	0.000000

APPENDIX 3

Cointegration Test under Managed Floating Era

Rupiah Exchange Rate Influencing Composite Stock Price Index

Integrated in Order Null or I (0)

Engle-Granger Cointegration Test: UROOT(C,7)

--Cointegrating Vector--

LOG_IHSG	1.000000
LOG_USD	1783938.

Dickey-Fuller t-statistic		-7.0459
MacKinnon critical values:	1%	-3.9279
	5%	-3.3531
	10%	-3.0567

LS // Dependent Variable is D(RESID)
Date: 7-24-2002 / Time: 19:48
SMPL range: 9 - 404
Number of observations: 396
Engle-Granger Cointegration Test: UROOT(C,7)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(RESID(-1))	0.0182867	0.1353609	0.1350958	0.8926
D(RESID(-2))	0.0156714	0.1251589	0.1252120	0.9004
D(RESID(-3))	0.0130570	0.1141069	0.1144273	0.9090
D(RESID(-4))	0.0104433	0.1019288	0.1024570	0.9184
D(RESID(-5))	0.0078316	0.0881589	0.0888355	0.9293
D(RESID(-6))	0.0052205	0.0718883	0.0726190	0.9421
D(RESID(-7))	0.0026104	0.0507668	0.0514195	0.9590
RESID(-1)	-1.0209029	0.1448925	-7.0459331	0.0000

R-squared	0.501309	Mean of dependent var	276.7958
Adjusted R-squared	0.492312	S.D. of dependent var	19854394
S.E. of regression	14146704	Sum of squared resid	7.77E+16
Log likelihood	-7077.996	F-statistic	55.71946
Durbin-Watson stat	2.000016	Prob(F-statistic)	0.000000

Cointegration Test under Managed Floating Era

Composite Stock Price Index Influencing Rupiah Exchange Rate

Integrated in Order Null or I (0)

Engle-Granger Cointegration Test: UROOT(C,7)

--Cointegrating Vector--		
LOG_USD	1.000000	
LOG_IHSG	1.06E-11	
Dickey-Fuller t-statistic		-4.7588
MacKinnon critical values:	1%	-3.9279
	5%	-3.3531
	10%	-3.0567

LS // Dependent Variable is D(RESID)
Date: 7-24-2002 / Time: 19:48
SMPL range: 9 - 404
Number of observations: 396
Engle-Granger Cointegration Test: UROOT(C,7)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(RESID(-1))	-0.4056449	0.1094416	-3.7064951	0.0002
D(RESID(-2))	-0.3427810	0.1059491	-3.2353356	0.0013
D(RESID(-3))	-0.2817928	0.1006437	-2.7999035	0.0054
D(RESID(-4))	-0.2220325	0.0933223	-2.3792001	0.0178
D(RESID(-5))	-0.1644752	0.0835168	-1.9693680	0.0496
D(RESID(-6))	-0.1083139	0.0702825	-1.5411232	0.1241
D(RESID(-7))	-0.0533712	0.0511091	-1.0442613	0.2970
RESID(-1)	-0.5289546	0.1111533	-4.7587838	0.0000

R-squared	0.466437	Mean of dependent var	0.000155
Adjusted R-squared	0.456811	S.D. of dependent var	0.045757
S.E. of regression	0.033724	Sum of squared resid	0.441271
Log likelihood	784.4035	F-statistic	48.45525
Durbin-Watson stat	2.003472	Prob(F-statistic)	0.000000

APPENDIX 4

Causality Test under Managed Floating Era

Integrated in Order Null or I (0)

Null hypothesis:	F-statistic	Probability
LOG_USD is not Granger Caused by LOG_IHSG	0.001890	1.0000
LOG_IHSG is not Granger Caused by LOG_USD	0.005621	1.0000

APPENDIX 5

Basic Model under Free Floating ExchangeRate System Era

Rupiah Exchange Rate Influencing Composite Stock Price Index

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,280[a]	,078	,077	9,507E-02	,087

a. Predictors: (Constant), LOG_RP

b. Dependent Variable: LOG_IHSG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	3,317	,088		37,645	,000			
	LOG_RP	-,165	,023	-,280	-7,272	,000	-,280	-,280	-,280

a. Dependent Variable: LOG_IHSG

Composite Stock Price Index Influencing Rupiah Exchange Rate

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,280[a]	,078	,077	,160881410	,019

a. Predictors: (Constant), LOG_IHSG

b. Dependent Variable: LOG_RP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	5,143	,174		29,512	,000			
	LOG_IHSG	-,473	,065	-,280	-7,272	,000	-,280	-,280	-,280

a. Dependent Variable: LOG_RP

APPENDIX 6

Stationarity Test under Free Floating Era

Stationarity Test for Rupiah Exchange Rate

Integrated in Order Null or I (0)

Augmented Dickey-Fuller: UROOT(C,9) LOG_USD

Dickey-Fuller t-statistic		-2.5974
MacKinnon critical values:	1%	-3.4412
	5%	-2.8659
	10%	-2.5691

LS // Dependent Variable is D(LOG_USD)
Date: 7-24-2002 / Time: 20:04
SMPL range: 11 - 626
Number of observations: 616
Augmented Dickey-Fuller: UROOT(C,9) LOG_USD

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(LOG_USD(-1))	-0.6737726	0.0415976	-16.197382	0.0000
D(LOG_USD(-2))	-0.4533005	0.0497362	-9.1140869	0.0000
D(LOG_USD(-3))	-0.3277732	0.0528583	-6.2009813	0.0000
D(LOG_USD(-4))	-0.2599933	0.0541694	-4.7996342	0.0000
D(LOG_USD(-5))	-0.1957152	0.0545745	-3.5862024	0.0004
D(LOG_USD(-6))	-0.1459274	0.0540518	-2.6997700	0.0071
D(LOG_USD(-7))	-0.1058198	0.0526011	-2.0117402	0.0447
D(LOG_USD(-8))	-0.0599316	0.0492243	-1.2175212	0.2239
D(LOG_USD(-9))	-0.0196996	0.0403902	-0.4877335	0.6259
LOG_USD(-1)	-0.0366233	0.0140999	-2.5974092	0.0096
C	0.1442944	0.0547313	2.6364135	0.0086

R-squared	0.336739	Mean of dependent var	0.000669
Adjusted R-squared	0.325776	S.D. of dependent var	0.070660
S.E. of regression	0.058020	Sum of squared resid	2.036612
Log likelihood	885.2173	F-statistic	30.71593
Durbin-Watson stat	2.000063	Prob(F-statistic)	0.000000

Stationarity Test for Rupiah Exchange Rate

Integrated in Order One or I (1)

Augmented Dickey-Fuller: UROOT(C,9) DUSD

Dickey-Fuller t-statistic		-10.2858
MacKinnon critical values:	1%	-3.4414
	5%	-2.8660
	10%	-2.5691

LS // Dependent Variable is D(DUSD)
Date: 7-24-2002 / Time: 20:05
SMPL range: 12 - 626
Number of observations: 615
Augmented Dickey-Fuller: UROOT(C,9) DUSD

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(DUSD(-1))	1.6293540	0.3088579	5.2754158	0.0000
D(DUSD(-2))	1.1581130	0.2858391	4.0516250	0.0001
D(DUSD(-3))	0.8175928	0.2579016	3.1701731	0.0016
D(DUSD(-4))	0.5484630	0.2266345	2.4200335	0.0158
D(DUSD(-5))	0.3463292	0.1927115	1.7971387	0.0728
D(DUSD(-6))	0.1958629	0.1566895	1.2500060	0.2118
D(DUSD(-7))	0.0866514	0.1191324	0.7273542	0.4673
D(DUSD(-8))	0.0241420	0.0801352	0.3012661	0.7633
D(DUSD(-9))	0.0022379	0.0406526	0.0550488	0.9561
DUSD(-1)	-3.3287804	0.3236284	-10.285812	0.0000
C	0.0022393	0.0023644	0.9470737	0.3440

R-squared	0.773047	Mean of dependent var	-3.07E-05
Adjusted R-squared	0.769290	S.D. of dependent var	0.121555
S.E. of regression	0.058385	Sum of squared resid	2.058953
Log likelihood	879.9259	F-statistic	205.7349
Durbin-Watson stat	2.000120	Prob(F-statistic)	0.000000

Stationarity Test for Composite Stock Price Index

Integrated in Order Null or I (0)

Augmented Dickey-Fuller: UROOT(C,9) LOG_IHSG

Dickey-Fuller t-statistic		-1.3804
MacKinnon critical values:	1%	-3.4412
	5%	-2.8659
	10%	-2.5691

LS // Dependent Variable is D(LOG_IHSG)
Date: 7-24-2002 / Time: 20:04
SMPL range: 11 - 626
Number of observations: 616
Augmented Dickey-Fuller: UROOT(C,9) LOG_IHSG

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(LOG_IHSG(-1))	-0.4245006	0.0414934	-10.230559	0.0000
D(LOG_IHSG(-2))	-0.2285845	0.0448805	-5.0931760	0.0000
D(LOG_IHSG(-3))	-0.1182298	0.0456740	-2.5885585	0.0099
D(LOG_IHSG(-4))	-0.0520328	0.0457859	-1.1364374	0.2562
D(LOG_IHSG(-5))	-0.0307580	0.0457985	-0.6715944	0.5021
D(LOG_IHSG(-6))	-0.0518979	0.0457290	-1.1349010	0.2569
D(LOG_IHSG(-7))	-0.0535748	0.0454204	-1.1795317	0.2387
D(LOG_IHSG(-8))	-0.0376366	0.0443634	-0.8483696	0.3966
D(LOG_IHSG(-9))	-0.0173824	0.0406204	-0.4279229	0.6689
LOG_IHSG(-1)	-0.0151069	0.0109442	-1.3803569	0.1680
C	0.0406145	0.0292962	1.3863420	0.1662

R-squared	0.165657	Mean of dependent var	9.40E-05
Adjusted R-squared	0.151866	S.D. of dependent var	0.028022
S.E. of regression	0.025806	Sum of squared resid	0.402914
Log likelihood	1384.275	F-statistic	12.01213
Durbin-Watson stat	2.000801	Prob(F-statistic)	0.000000

Stationarity test for Composite Stock Price Index

Integrated in Order One or I (1)

Augmented Dickey-Fuller: UROOT(C,9) DIHSG		
Dickey-Fuller t-statistic		-9.8176
MacKinnon critical values:	1%	-3.4414
	5%	-2.8660
	10%	-2.5691

LS // Dependent Variable is D(DIHSG)
Date: 7-24-2002 / Time: 20:05
SMPL range: 12 - 626
Number of observations: 615
Augmented Dickey-Fuller: UROOT(C,9) DIHSG

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(DIHSG(-1))	0.7719795	0.2131130	3.6223957	0.0003
D(DIHSG(-2))	0.5301360	0.1976474	2.6822306	0.0075
D(DIHSG(-3))	0.3972049	0.1805286	2.2002325	0.0282
D(DIHSG(-4))	0.3314189	0.1624991	2.0395123	0.0418
D(DIHSG(-5))	0.2896607	0.1434032	2.0199038	0.0438
D(DIHSG(-6))	0.2259139	0.1221760	1.8490855	0.0649
D(DIHSG(-7))	0.1571909	0.0980880	1.6025501	0.1096
D(DIHSG(-8))	0.0992829	0.0708840	1.4006393	0.1618
D(DIHSG(-9))	0.0531611	0.0405303	1.3116388	0.1901
DIHSG(-1)	-2.2098312	0.2250879	-9.8176359	0.0000
C	0.0002473	0.0010411	0.2375599	0.8123

R-squared	0.690421	Mean of dependent var	2.16E-05
Adjusted R-squared	0.685296	S.D. of dependent var	0.046017
S.E. of regression	0.025815	Sum of squared resid	0.402502
Log likelihood	1381.844	F-statistic	134.7039
Durbin-Watson stat	2.004768	Prob(F-statistic)	0.000000

APPENDIX 7

Cointegration Test under Free Floating Era

Composite Stock Price Index Influencing Rupiah Exchange Rate

Integrated in Order One I (1)

Engle-Granger Cointegration Test: UROOT(C,9)

--Cointegrating Vector--		
DUSD	1.000000	
DIHSG	-0.030138	
Dickey-Fuller t-statistic		-10.2970
MacKinnon critical values:	1%	-3.9152
	5%	-3.3468
	10%	-3.0524

LS // Dependent Variable is D(RESID)
Date: 7-24-2002 / Time: 20:06
SMPL range: 12 - 626
Number of observations: 615
Engle-Granger Cointegration Test: UROOT(C,9)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(RESID(-1))	1.6253732	0.3079944	5.2772816	0.0000
D(RESID(-2))	1.1565594	0.2850210	4.0578039	0.0001
D(RESID(-3))	0.8177001	0.2571557	3.1797864	0.0015
D(RESID(-4))	0.5493356	0.2259871	2.4308270	0.0154
D(RESID(-5))	0.3476248	0.1921867	1.8087867	0.0710
D(RESID(-6))	0.1967854	0.1562984	1.2590368	0.2085
D(RESID(-7))	0.0871049	0.1188827	0.7326961	0.4640
D(RESID(-8))	0.0245455	0.0800172	0.3067531	0.7591
D(RESID(-9))	0.0025119	0.0406186	0.0618406	0.9507
RESID(-1)	-3.3233284	0.3227473	-10.296997	0.0000

R-squared	0.772718	Mean of dependent var	-3.14E-05
Adjusted R-squared	0.769337	S.D. of dependent var	0.121537
S.E. of regression	0.058371	Sum of squared resid	2.061340
Log likelihood	879.5697	F-statistic	228.5434

Durbin-Watson stat	2.000127	Prob(F-statistic)	0.000000

Rupiah Exchange Rate Influencing Composite Stock Price Index

Integrated in Order One or I (1)

Engle-Granger Cointegration Test: UROOT(C,9)

--Cointegrating Vector--	
DIHSG	1.000000
DUSD	-0.004752

Dickey-Fuller t-statistic		-9.8246
MacKinnon critical values:	1%	-3.9152
	5%	-3.3468
	10%	-3.0524

LS // Dependent Variable is D(RESID)
Date: 7-24-2002 / Time: 20:18
SMPL range: 12 - 626
Number of observations: 615
Engle-Granger Cointegration Test: UROOT(C,9)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(RESID(-1))	0.7707184	0.2127590	3.6224942	0.0003
D(RESID(-2))	0.5301358	0.1973152	2.6867460	0.0074
D(RESID(-3))	0.3974990	0.1802185	2.2056510	0.0278
D(RESID(-4))	0.3315076	0.1622142	2.0436407	0.0414
D(RESID(-5))	0.2897158	0.1431547	2.0237946	0.0434
D(RESID(-6))	0.2254230	0.1219700	1.8481836	0.0651
D(RESID(-7))	0.1565259	0.0979382	1.5982120	0.1105
D(RESID(-8))	0.0990690	0.0708022	1.3992367	0.1623
D(RESID(-9))	0.0531750	0.0404975	1.3130431	0.1897
RESID(-1)	-2.2077817	0.2247198	-9.8245971	0.0000

R-squared	0.690185	Mean of dependent var	2.18E-05
Adjusted R-squared	0.685576	S.D. of dependent var	0.046010
S.E. of regression	0.025799	Sum of squared resid	0.402686
Log likelihood	1381.703	F-statistic	149.7528
Durbin-Watson stat	2.004753	Prob(F-statistic)	0.000000

APPENDIX 8

Causality Test under Free Floating Era

Integrated in Order One or I (1)

Null hypothesis:	F-statistic	Probability
DUSD is not Granger Caused by DIHSG	0.610376	0.7887
DIHSG is not Granger Caused by DUSD	0.306974	0.9726

APPENDIX 9

Basic Model under Managed and Free Floating Exchange Rate System Era

Rupiah Exchange Rate Influencing Composite Stock Price Index

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,602[a]	,362	,362	7,855E-02	,079

a. Predictors: (Constant), Log Rupiah

b. Dependent Variable: LOG_IHSG

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	3,509	,033		107,506	,000			
	Log Rupiah	-,214	,009	-,602	-24,164	,000	-,602	-,602	-,602

a. Dependent Variable: LOG_IHSG

Composite Stock Price Index Influencing Rupiah Exchange Rate

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,602[a]	,362	,362	,221257063	,032

a. Predictors: (Constant), LOG_IHSG

b. Dependent Variable: Log Rupiah

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	8,295	,191		43,407	,000			
	LOG_IHSG	-1,695	,070	-,602	-24,164	,000	-,602	-,602	-,602

a. Dependent Variable: Log Rupiah

APPENDIX 10

Stationary test in Managed and Free Floating Era

Stationary test for Composite Stock Prince Index

Integrated in order I (0)

Augmented Dickey-Fuller: UROOT(C,11) LOG_IHSG

Dickey-Fuller t-statistic		-9.2105
MacKinnon critical values:	1%	-3.4371
	5%	-2.8641
	10%	-2.5681

LS // Dependent Variable is D(LOG_IHSG)
Date: 8-13-1996 / Time: 14:54
SMPL range: 13 - 1030
Number of observations: 1018
Augmented Dickey-Fuller: UROOT(C,11) LOG_IHSG

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(LOG_IHSG(-1))	0.0109344	0.1051378	0.1040006	0.9172
D(LOG_IHSG(-2))	0.0099404	0.1001957	0.0992095	0.9210
D(LOG_IHSG(-3))	0.0089463	0.0950072	0.0941647	0.9250
D(LOG_IHSG(-4))	0.0079523	0.0895295	0.0888231	0.9292
D(LOG_IHSG(-5))	0.0069582	0.0837058	0.0831274	0.9338
D(LOG_IHSG(-6))	0.0059642	0.0774583	0.0769990	0.9386
D(LOG_IHSG(-7))	0.0049702	0.0706745	0.0703249	0.9439
D(LOG_IHSG(-8))	0.0039761	0.0631819	0.0629317	0.9498
D(LOG_IHSG(-9))	0.0029821	0.0546900	0.0545274	0.9565
D(LOG_IHSG(-10))	0.0019881	0.0446321	0.0445435	0.9645
D(LOG_IHSG(-11))	0.0009940	0.0315440	0.0315127	0.9749
LOG_IHSG(-1)	-1.0119284	0.1098668	-9.2105012	0.0000
C	277359.40	277356.66	1.0000099	0.3175

R-squared	0.500497	Mean of dependent var	5.57E-05
Adjusted R-squared	0.494533	S.D. of dependent var	12373457
S.E. of regression	8797060.	Sum of squared resid	7.78E+16
Log likelihood	-17715.68	F-statistic	83.91667
Durbin-Watson stat	2.000002	Prob(F-statistic)	0.000000

Stationarity test for Rupiah rate

Integrated in order I (0)

Augmented Dickey-Fuller: UROOT(C,11) LOG_USD

Dickey-Fuller t-statistic		-1.0911
MacKinnon critical values:	1%	-3.4371
	5%	-2.8641
	10%	-2.5681

LS // Dependent Variable is D(LOG_USD)
Date: 8-13-1996 / Time: 14:55
SMPL range: 13 - 1030
Number of observations: 1018
Augmented Dickey-Fuller: UROOT(C,11) LOG_USD

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(LOG_USD(-1))	-0.7137611	0.0319819	-22.317652	0.0000
D(LOG_USD(-2))	-0.5086660	0.0390791	-13.016325	0.0000
D(LOG_USD(-3))	-0.3843642	0.0421057	-9.1285641	0.0000
D(LOG_USD(-4))	-0.3168950	0.0435886	-7.2701413	0.0000
D(LOG_USD(-5))	-0.2531351	0.0443538	-5.7071742	0.0000
D(LOG_USD(-6))	-0.2209469	0.0445035	-4.9647073	0.0000
D(LOG_USD(-7))	-0.1769876	0.0443071	-3.9945672	0.0001
D(LOG_USD(-8))	-0.1375522	0.0434900	-3.1628436	0.0016
D(LOG_USD(-9))	-0.1047639	0.0419448	-2.4976613	0.0127
D(LOG_USD(-10))	-0.0471002	0.0388246	-1.2131532	0.2254
D(LOG_USD(-11))	-0.0019122	0.0315310	-0.0606463	0.9517
LOG_USD(-1)	-0.0070597	0.0064703	-1.0910948	0.2755
C	0.0278990	0.0238717	1.1687064	0.2428

R-squared	0.343539	Mean of dependent var	0.000495
Adjusted R-squared	0.335700	S.D. of dependent var	0.070196
S.E. of regression	0.057213	Sum of squared resid	3.289725
Log likelihood	1474.529	F-statistic	43.82794
Durbin-Watson stat	1.999999	Prob(F-statistic)	0.000000

Stationarity test for Rupiah rate

Integrated in order I (1)

Augmented Dickey-Fuller: UROOT(C,11) DUSD

Dickey-Fuller t-statistic		-12.3899
MacKinnon critical values:	1%	-3.4375
	5%	-2.8642
	10%	-2.5682

LS // Dependent Variable is D(DUSD)
Date: 8-13-1996 / Time: 15:03
SMPL range: 14 - 1030
Number of observations: 1017
Augmented Dickey-Fuller: UROOT(C,11) DUSD

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
D(DUSD(-1))	2.1767576	0.3035258	7.1715725	0.0000
D(DUSD(-2))	1.6631291	0.2858967	5.8172376	0.0000
D(DUSD(-3))	1.2745156	0.2641038	4.8258129	0.0000
D(DUSD(-4))	0.9539405	0.2396446	3.9806476	0.0001
D(DUSD(-5))	0.6976436	0.2131096	3.2736371	0.0011
D(DUSD(-6))	0.4740057	0.1850251	2.5618456	0.0106
D(DUSD(-7))	0.2947727	0.1557778	1.8922629	0.0587
D(DUSD(-8))	0.1554295	0.1254180	1.2392927	0.2155
D(DUSD(-9))	0.0493288	0.0943756	0.5226862	0.6013
D(DUSD(-10))	0.0014218	0.0627812	0.0226474	0.9819
D(DUSD(-11))	-0.0006531	0.0315602	-0.0206922	0.9835
DUSD(-1)	-3.8963936	0.3144816	-12.389893	0.0000
C	0.0019271	0.0018026	1.0690390	0.2853

R-squared	0.777149	Mean of dependent var	-5.30E-06
Adjusted R-squared	0.774486	S.D. of dependent var	0.120610
S.E. of regression	0.057276	Sum of squared resid	3.293618
Log likelihood	1471.980	F-statistic	291.7718
Durbin-Watson stat	2.000022	Prob(F-statistic)	0.000000

APPENDIX II

YEAR	MONTH	DATE	RUPIAH_R	IHSG	LOG_RUPI	LOG_IHSG
1996	January	2	2300.00	512.48	3.36172784	2.70967692
	January	3	2300.00	519.84	3.36172784	2.71586552
	January	4	2301.00	532.80	3.36191662	2.72656422
	January	5	2301.00	533.28	3.36191662	2.72695530
	January	8	2302.00	533.12	3.36210532	2.72682498
	January	9	2302.00	530.81	3.36210532	2.72494073
	January	10	2303.00	528.64	3.36229394	2.72316084
	January	11	2303.00	533.78	3.36229394	2.72736148
	January	12	2304.00	550.99	3.36248247	2.74114293
	January	15	2305.00	563.90	3.36267093	2.75120518
	January	16	2305.00	558.43	3.36267093	2.74697107
	January	17	2306.00	557.01	3.36285930	2.74585987
	January	18	2306.00	557.71	3.36285930	2.74640687
	January	19	2307.00	562.35	3.36304759	2.75000979
	January	22	2308.00	571.32	3.36323580	2.75688171
	January	23	2308.00	574.30	3.36323580	2.75913882
	January	24	2309.00	569.96	3.36342393	2.75584285
	January	25	2309.00	570.13	3.36342393	2.75597466
	January	26	2310.00	566.86	3.36361198	2.75347428
	January	29	2310.00	565.79	3.36361198	2.75265143
	January	30	2310.00	569.17	3.36361198	2.75524429
	January	31	2311.00	578.56	3.36379995	2.76234465
	February	1	2311.00	581.06	3.36379995	2.76421724
	February	2	2312.00	587.57	3.36398783	2.76905814
	February	5	2312.00	591.14	3.36398783	2.77169108
	February	6	2312.00	592.92	3.36398783	2.77299464
	February	7	2313.00	591.36	3.36417563	2.77185048
	February	8	2314.00	592.65	3.36436335	2.77279682
	February	9	2314.00	581.01	3.36436335	2.76418361
	February	12	2315.00	577.48	3.36455100	2.76153319
	February	13	2315.00	584.82	3.36455100	2.76702296
	February	14	2316.00	590.20	3.36473856	2.77099921
	February	15	2316.00	590.77	3.36473856	2.77141549
	February	16	2317.00	595.53	3.36492603	2.77490146
	February	19	2318.00	595.53	3.36511343	2.77490146
	February	23	2319.00	595.53	3.36530075	2.77490146
	February	26	2322.00	594.21	3.36586222	2.77393630
	February	27	2322.00	597.36	3.36586222	2.77623614
	February	28	2322.00	595.28	3.36586222	2.77471837
	February	29	2322.00	585.21	3.36586222	2.76731100
	March	1	2322.00	589.11	3.36586222	2.77019861
	March	4	2323.00	592.05	3.36604921	2.77235618
	March	5	2324.00	591.48	3.36623612	2.77194227
	March	6	2324.00	587.87	3.36623612	2.76928425
	March	7	2325.00	581.54	3.36642296	2.76458258
	March	8	2325.00	568.10	3.36642296	2.75442326
	March	11	2327.00	544.54	3.36679638	2.73602899
	March	12	2332.00	560.86	3.36772855	2.74885602
	March	13	2334.00	560.13	3.36810085	2.74828806
	March	14	2336.00	569.91	3.36847284	2.75580399
	March	15	2336.00	576.79	3.36847284	2.76101772
	March	18	2334.00	578.86	3.36810085	2.76256979
	March	19	2335.00	587.35	3.36828688	2.76889402
	March	20	2336.00	585.98	3.36847284	2.76788205
	March	22	2336.00	586.02	3.36847284	2.76791392
	March	25	2338.00	585.93	3.36884451	2.76784351
	March	26	2334.00	585.88	3.36810085	2.76781090
	March	27	2336.00	587.07	3.36847284	2.76868693
	March	28	2337.00	585.71	3.36865871	2.76767893
1996	April	1	2338.00	578.60	3.36884451	2.76238143
	April	2	2336.00	588.27	3.36847284	2.76957892
	April	3	2335.00	595.06	3.36828688	2.77456368
	April	4	2335.00	605.09	3.36828688	2.78181782
	April	8	2336.00	597.64	3.36847284	2.77644184
	April	9	2337.00	597.35	3.36865871	2.77623105
	April	10	2337.00	603.94	3.36865871	2.78099092
	April	11	2338.00	605.34	3.36884451	2.78199722
	April	12	2338.00	607.05	3.36884451	2.78322446
	April	15	2339.00	613.00	3.36903022	2.78745764
	April	16	2339.00	619.26	3.36903022	2.79187373
	April	17	2340.00	624.17	3.36921586	2.79530289
	April	18	2340.00	620.97	3.36921586	2.79307342

	April	19	2340.00	624.53	3.36921586	2.79555609
	April	22	2341.00	628.39	3.36940141	2.79822650
	April	23	2341.00	627.83	3.36940141	2.79784137
	April	24	2342.00	630.22	3.36958689	2.79949149
	April	25	2342.00	625.38	3.36958689	2.79614399
	April	26	2342.00	628.24	3.36958689	2.79812628
	April	29	2342.00	625.33	3.36958689	2.79610649
	April	30	2342.00	623.91	3.36958689	2.79512125
1996	May	1	2343.00	629.47	3.36977229	2.79897642
	May	2	2343.00	622.86	3.36977229	2.79439253
	May	3	2343.00	608.12	3.36977229	2.78399000
	May	6	2344.00	599.67	3.36995761	2.77791377
	May	7	2344.00	613.84	3.36995761	2.78805519
	May	8	2345.00	615.53	3.37014285	2.78924570
	May	9	2345.00	620.27	3.37014285	2.79258218
	May	10	2346.00	619.28	3.37032801	2.79188705
	May	13	2347.00	621.49	3.37051309	2.79343694
	May	14	2347.00	618.02	3.37051309	2.79100464
	May	15	2347.00	619.84	3.37051309	2.79227750
	May	17	2348.00	621.40	3.37069809	2.79336985
	May	20	2349.00	617.69	3.37088302	2.79077198
	May	21	2349.00	617.29	3.37088302	2.79049206
	May	22	2350.00	616.39	3.37106786	2.78985629
	May	23	2350.00	617.32	3.37106786	2.79051035
	May	24	2351.00	618.06	3.37125263	2.79103134
	May	27	2352.00	620.67	3.37143732	2.79285935
	May	28	2352.00	620.99	3.37143732	2.79308181
	May	29	2353.00	622.49	3.37162193	2.79412889
	May	30	2353.00	617.24	3.37162193	2.79045547
	May	31	2353.00	617.47	3.37162193	2.79061305
1996	June	3	2354.00	624.48	3.37180646	2.79551645
	June	4	2355.00	615.92	3.37199091	2.78952360
	June	5	2355.00	616.08	3.37199091	2.78963570
	June	6	2356.00	613.22	3.37217529	2.78761560
	June	7	2356.00	612.77	3.37217529	2.78729466
	June	10	2357.00	611.69	3.37235958	2.78653280
	June	11	2357.00	608.53	3.37235958	2.78428057
	June	12	2358.00	596.10	3.37254380	2.77531694
	June	13	2338.00	581.53	3.36884451	2.76456988
	June	14	2338.00	592.36	3.36884451	2.77258719
	June	17	2339.00	590.73	3.36903022	2.77139197
	June	18	2339.00	588.23	3.36903022	2.76954865
	June	19	2339.00	583.18	3.36903022	2.76579890
	June	20	2339.00	580.67	3.36903022	2.76393238
	June	21	2340.00	572.85	3.36921586	2.75804092
	June	24	2341.00	578.77	3.36940141	2.76250826
	June	25	2341.00	584.21	3.36940141	2.76656676
	June	26	2342.00	592.79	3.36958689	2.77289721
	June	27	2342.00	592.04	3.36958689	2.77234958
	June	28	2342.00	594.26	3.36958689	2.77397577
1996	July	1	2342.00	596.28	3.36958689	2.77545097
	July	2	2343.00	594.41	3.36977229	2.77408465
	July	3	2344.00	594.07	3.36995761	2.77383835
	July	4	2344.00	588.61	3.36995761	2.76982911
	July	5	2345.00	575.05	3.37014285	2.75970561
	July	8	2346.00	573.83	3.37032801	2.75878476
	July	9	2346.00	574.89	3.37032801	2.75958475
	July	10	2346.00	577.96	3.37032801	2.76189478
	July	11	2347.00	579.69	3.37051309	2.76319656
	July	12	2347.00	579.95	3.37051309	2.76338831
	July	15	2348.00	579.01	3.37069809	2.76268681
	July	16	2348.00	573.33	3.37069809	2.75840239
	July	17	2347.00	576.27	3.37051309	2.76062300
	July	18	2347.00	576.33	3.37051309	2.76067047
	July	19	2347.00	580.07	3.37051309	2.76348340
	July	22	2348.00	579.76	3.37069809	2.76325050
	July	23	2348.00	578.19	3.37069809	2.76206682
	July	24	2349.00	571.73	3.37088302	2.75718794
	July	25	2350.00	568.45	3.37106786	2.75468998
	July	26	2350.00	561.31	3.37106786	2.74920201
	July	29	2351.00	540.74	3.37125263	2.73298689
	July	30	2351.00	533.48	3.37125263	2.72711896
	July	31	2353.00	536.03	3.37162193	2.72918829
1996	August	1	2352.00	548.94	3.37143732	2.73952171

	August	2	2352.00	560.96	3.37143732	2.74893344
	August	5	2352.00	562.83	3.37143732	2.75038032
	August	6	2353.00	554.79	3.37162193	2.74412862
	August	7	2354.00	553.94	3.37180646	2.74346508
	August	8	2354.00	548.18	3.37180646	2.73892398
	August	9	2355.00	547.71	3.37199091	2.73855384
	August	12	2355.00	543.95	3.37199091	2.73555499
	August	13	2356.00	537.51	3.37217529	2.73038655
	August	14	2357.00	535.90	3.37235958	2.72908376
	August	15	2357.00	532.41	3.37235958	2.72624539
	August	16	2358.00	536.73	3.37254380	2.72975668
	August	19	2358.00	537.08	3.37254380	2.73003655
	August	20	2358.00	539.61	3.37254380	2.73207597
	August	21	2359.00	542.20	3.37272794	2.73416031
	August	22	2359.00	544.28	3.37272794	2.73582397
	August	23	2360.00	549.21	3.37291200	2.73974002
	August	26	2360.00	552.74	3.37291200	2.74252089
	August	27	2361.00	549.52	3.37309599	2.73998350
	August	28	2362.00	548.43	3.37327989	2.73911724
	August	29	2362.00	550.03	3.37327989	2.74038480
	August	30	2363.00	547.61	3.37346372	2.73847137
1996	September	2	2364.00	545.02	3.37364747	2.73641244
	September	3	2365.00	540.54	3.37383115	2.73282864
	September	4	2365.00	546.00	3.37383115	2.73719344
	September	5	2365.00	543.03	3.37383115	2.73482622
	September	6	2366.00	543.75	3.37401474	2.73540007
	September	9	2367.00	542.52	3.37419826	2.73441335
	September	10	2367.00	545.11	3.37419826	2.73648176
	September	11	2333.00	542.72	3.36791474	2.73457583
	September	12	2333.00	546.46	3.36791474	2.73755997
	September	13	2333.00	549.04	3.36791474	2.73960082
	September	16	2334.00	554.40	3.36810085	2.74382400
	September	17	2334.00	561.94	3.36810085	2.74969149
	September	18	2335.00	559.70	3.36828688	2.74795298
	September	19	2335.00	565.56	3.36828688	2.75248176
	September	20	2336.00	568.99	3.36847284	2.75510769
	September	23	2337.00	570.17	3.36865871	2.75600208
	September	24	2337.00	569.77	3.36865871	2.75569653
	September	25	2337.00	572.29	3.36865871	2.75761312
	September	26	2338.00	571.26	3.36884451	2.75683230
	September	27	2339.00	573.30	3.36903022	2.75838421
	September	30	2340.00	573.94	3.36921586	2.75886574
1996	October	1	2340.00	580.21	3.36921586	2.76358671
	October	2	2341.00	589.31	3.36940141	2.77034160
	October	3	2341.00	589.79	3.36940141	2.77069740
	October	4	2341.00	588.35	3.36940141	2.76963502
	October	7	2342.00	586.31	3.36958689	2.76812804
	October	8	2342.00	574.78	3.36958689	2.75950165
	October	9	2343.00	566.32	3.36977229	2.75306037
	October	10	2344.00	567.93	3.36995761	2.75429405
	October	11	2344.00	571.23	3.36995761	2.75681177
	October	14	2344.00	570.98	3.36995761	2.75661861
	October	15	2345.00	568.59	3.37014285	2.75479922
	October	16	2346.00	565.78	3.37032801	2.75264759
	October	17	2346.00	569.12	3.37032801	2.75520537
	October	18	2347.00	570.20	3.37051309	2.75602721
	October	21	2348.00	572.47	3.37069809	2.75775197
	October	22	2348.00	571.81	3.37069809	2.75724947
	October	23	2348.00	575.40	3.37069809	2.75997137
	October	24	2349.00	575.89	3.37088302	2.76033652
	October	25	2350.00	571.34	3.37106786	2.75689083
	October	28	2351.00	567.27	3.37125263	2.75379288
	October	29	2351.00	567.75	3.37125263	2.75416020
	October	30	2351.00	568.86	3.37125263	2.75500769
	October	31	2352.00	568.03	3.37143732	2.75437051
1996	November	1	2353.00	570.66	3.37162193	2.75637667
	November	4	2353.00	578.31	3.37162193	2.76215920
	November	5	2354.00	583.87	3.37180646	2.76631616
	November	6	2355.00	588.73	3.37199091	2.76991617
	November	7	2356.00	594.59	3.37217529	2.77421979
	November	8	2357.00	602.02	3.37235958	2.77961092
	November	11	2357.00	601.13	3.37235958	2.77897129
	November	12	2358.00	597.05	3.37254380	2.77601070
	November	13	2358.00	595.49	3.37254380	2.77487739

	November	14	2359.00	600.91	3.37272794	2.77881088
	November	15	2360.00	616.89	3.37291200	2.79020773
	November	18	2361.00	620.86	3.37309599	2.79299368
	November	19	2362.00	615.21	3.37327989	2.78902127
	November	20	2362.00	606.76	3.37327989	2.78301551
	November	21	2363.00	602.99	3.37346372	2.78030795
	November	22	2364.00	612.86	3.37364747	2.78736199
	November	25	2365.00	628.24	3.37383115	2.79812351
	November	26	2366.00	626.23	3.37401474	2.79673040
	November	27	2366.00	620.27	3.37401474	2.79258078
	November	28	2367.00	611.50	3.37419826	2.78639788
	November	29	2368.00	613.01	3.37438170	2.78746968
1996	December	2	2369.00	616.17	3.37456506	2.78969914
	December	3	2370.00	620.81	3.37474835	2.79295800
	December	4	2370.00	626.27	3.37474835	2.79676091
	December	5	2371.00	634.30	3.37493155	2.80229197
	December	6	2372.00	628.12	3.37511468	2.79804470
	December	9	2373.00	634.58	3.37529774	2.80248364
	December	10	2374.00	626.68	3.37548071	2.79704445
	December	11	2374.00	626.57	3.37548071	2.79697237
	December	12	2375.00	627.90	3.37566361	2.79788979
	December	13	2376.00	624.46	3.37584644	2.79550323
	December	16	2377.00	623.61	3.37602918	2.79491586
	December	17	2377.00	623.81	3.37602918	2.79504885
	December	18	2378.00	629.45	3.37621185	2.79896262
	December	19	2379.00	628.32	3.37639444	2.79818019
	December	20	2380.00	632.52	3.37657696	2.80107701
	December	23	2380.00	633.07	3.37657696	2.80145379
	December	24	2381.00	632.74	3.37675940	2.80122804
	December	26	2382.00	632.50	3.37694176	2.80105847
	December	27	2382.00	637.43	3.37694176	2.80443386
	December	30	2383.00	637.43	3.37712404	2.80443386
1997	January	2	2384.00	638.10	3.37730625	2.80489079
	January	3	2385.00	646.19	3.37748838	2.81036292
	January	6	2386.00	653.96	3.37767044	2.81554919
	January	7	2386.00	660.37	3.37767044	2.81978536
	January	8	2386.00	662.21	3.37767044	2.82099246
	January	9	2387.00	657.43	3.37785242	2.81785150
	January	10	2387.00	657.87	3.37785242	2.81813876
	January	13	2388.00	656.09	3.37803432	2.81696342
	January	14	2389.00	656.65	3.37821615	2.81733593
	January	15	2390.00	656.06	3.37839790	2.81694621
	January	16	2390.00	658.70	3.37839790	2.81868832
	January	17	2391.00	663.97	3.37857958	2.82215107
	January	20	2392.00	674.13	3.37876118	2.82874301
	January	21	2392.00	681.94	3.37876118	2.83374871
	January	22	2392.00	686.12	3.37876118	2.83639691
	January	23	2393.00	684.98	3.37894270	2.83567916
	January	24	2393.00	678.91	3.37894270	2.83181157
	January	27	2393.00	684.98	3.37894270	2.83567916
	January	28	2394.00	689.97	3.37912415	2.83883273
	January	29	2394.00	691.34	3.37912415	2.83968854
	January	30	2395.00	687.29	3.37930552	2.83714192
	January	31	2396.00	691.12	3.37948681	2.83955095
1997	February	3	2396.00	687.47	3.37948681	2.83725375
	February	4	2397.00	680.33	3.37966803	2.83272090
	February	5	2398.00	686.86	3.37984918	2.83686633
	February	6	2399.00	694.28	3.38003025	2.84153403
	February	7	2400.00	695.37	3.38021124	2.84221283
	February	12	2401.00	701.06	3.38039216	2.84575209
	February	13	2401.00	707.37	3.38039216	2.84964602
	February	14	2402.00	704.48	3.38057300	2.84786620
	February	17	2402.00	701.47	3.38057300	2.84600601
	February	18	2403.00	695.22	3.38075377	2.84212038
	February	19	2403.00	694.88	3.38075377	2.84191169
	February	20	2404.00	698.67	3.38093446	2.84427147
	February	21	2404.00	696.50	3.38093446	2.84291800
	February	24	2404.00	687.37	3.38093446	2.83718994
	February	25	2405.00	701.31	3.38111508	2.84590817
	February	26	2405.00	712.61	3.38111508	2.85285008
	February	27	2405.00	709.92	3.38111508	2.85121002
	February	28	2406.00	705.37	3.38129562	2.84841945
1997	March	3	2407.00	700.11	3.38147609	2.84516566
	March	4	2408.00	695.52	3.38165648	2.84231150

	March	5	2408.00	686.16	3.38165648	2.83642476
	March	6	2409.00	683.11	3.38183680	2.83448937
	March	7	2409.00	638.81	3.38183680	2.80536899
	March	10	2410.00	688.05	3.38201704	2.83761937
	March	11	2410.00	687.93	3.38201704	2.83754677
	March	12	2410.00	682.61	3.38201704	2.83417010
	March	13	2411.00	669.99	3.38219721	2.82606897
	March	14	2412.00	666.84	3.38237730	2.82402295
	March	17	2413.00	670.94	3.38255732	2.82668110
	March	18	2413.00	659.44	3.38255732	2.81917595
	March	19	2412.00	663.17	3.38237730	2.82162749
	March	20	2413.00	663.13	3.38255732	2.82159999
	March	21	2414.00	656.11	3.38273727	2.81697467
	March	23	2415.00	649.62	3.38291714	2.81265939
	March	24	2416.00	657.59	3.38309693	2.81795256
	March	25	2418.00	659.39	3.38345630	2.81914499
	March	26	2418.00	662.24	3.38345630	2.82101279
	March	31	2419.00	662.12	3.38363587	2.82093867
1997	April	1	2419.00	652.01	3.38363587	2.81425226
	April	2	2418.00	650.88	3.38345630	2.81349893
	April	3	2419.00	641.62	3.38363587	2.80727857
	April	4	2420.00	637.43	3.38381537	2.80443046
	April	7	2421.00	636.64	3.38399479	2.80389392
	April	8	2422.00	638.22	3.38417414	2.80497245
	April	10	2423.00	635.56	3.38435341	2.80315451
	April	11	2423.00	637.15	3.38435341	2.80424032
	April	14	2424.00	635.17	3.38453262	2.80288724
	April	15	2425.00	631.27	3.38471174	2.80021790
	April	16	2425.00	632.82	3.38471174	2.80127951
	April	17	2426.00	637.59	3.38489080	2.80454422
	April	21	2426.00	642.26	3.38489080	2.80771087
	April	22	2427.00	646.24	3.38506978	2.81039451
	April	23	2428.00	651.45	3.38524868	2.81388109
	April	24	2431.00	652.98	3.38578496	2.81490254
	April	25	2437.00	652.48	3.38685553	2.81456454
	April	28	2430.00	656.53	3.38560627	2.81725458
	April	29	2430.00	647.23	3.38560627	2.81105864
	April	30	2433.00	652.05	3.38614211	2.81428023
1997	May	1	2433.00	650.46	3.38614211	2.81321926
	May	2	2433.00	647.89	3.38614211	2.81150396
	May	5	2431.00	652.79	3.38578496	2.81477150
	May	6	2432.00	659.60	3.38596357	2.81928328
	May	7	2432.00	666.84	3.38596357	2.82402360
	May	9	2431.00	673.69	3.38578496	2.82845946
	May	12	2430.00	675.81	3.38560627	2.82982654
	May	13	2431.00	672.87	3.38578496	2.82792794
	May	14	2434.00	670.29	3.38632057	2.82626015
	May	15	2438.00	656.99	3.38703370	2.81755612
	May	16	2433.00	657.07	3.38614211	2.81761362
	May	19	2442.00	652.55	3.38774566	2.81461379
	May	20	2443.00	652.83	3.38792347	2.81479678
	May	21	2444.00	654.09	3.38810120	2.81563817
	May	23	2443.00	658.52	3.38792347	2.81857029
	May	26	2440.00	663.20	3.38738983	2.82164124
	May	27	2439.00	668.85	3.38721180	2.82532808
	May	28	2439.00	672.50	3.38721180	2.82769164
	May	29	2440.00	689.50	3.38738983	2.83853301
	May	30	2440.00	696.03	3.38738983	2.84262671
1997	June	2	2441.00	699.73	3.38756778	2.84493111
	June	3	2441.00	698.40	3.38756778	2.84410485
	June	4	2442.00	693.54	3.38774566	2.84107089
	June	5	2443.00	691.98	3.38792347	2.84009480
	June	6	2443.00	695.02	3.38792347	2.84199480
	June	9	2443.00	692.50	3.38792347	2.84042229
	June	10	2444.00	689.77	3.38810120	2.83870115
	June	11	2444.00	691.17	3.38810120	2.83958488
	June	12	2445.00	695.22	3.38827886	2.84212226
	June	13	2445.00	698.62	3.38827886	2.84424101
	June	16	2446.00	705.29	3.38845645	2.84836649
	June	17	2446.00	705.08	3.38845645	2.84824086
	June	18	2446.00	710.79	3.38845645	2.85173887
	June	19	2447.00	708.45	3.38863397	2.85030614
	June	20	2448.00	712.22	3.38881141	2.85261660
	June	23	2448.00	719.64	3.38881141	2.85711409

	June	24	2448.00	713.39	3.38881141	2.85332519
	June	25	2448.00	712.50	3.38881141	2.85278182
	June	26	2449.00	709.41	3.38898879	2.85089547
	June	27	2449.00	716.83	3.38898879	2.85541557
	June	30	2450.00	724.56	3.38916608	2.86007196
1997	July	1	2451.00	731.62	3.38934331	2.86428498
	July	2	2451.00	730.16	3.38934331	2.86341506
	July	3	2451.00	735.49	3.38934331	2.86657795
	July	4	2451.00	736.60	3.38934331	2.86722995
	July	7	2452.00	738.01	3.38952047	2.86805989
	July	8	2453.00	740.83	3.38969755	2.86972032
	July	9	2453.00	738.14	3.38969755	2.86813756
	July	10	2454.00	729.15	3.38987456	2.86281748
	July	11	2431.00	723.42	3.38578496	2.85938811
	July	14	2457.00	722.50	3.39040516	2.85883665
	July	15	2449.00	722.21	3.38898879	2.85866290
	July	16	2461.00	723.50	3.39111161	2.85944034
	July	18	2489.00	724.00	3.39602490	2.85973857
	July	21	2619.00	712.40	3.41813550	2.85272513
	July	22	2600.00	711.44	3.41497335	2.85213889
	July	23	2573.00	718.19	3.41043979	2.85623875
	July	24	2590.00	712.05	3.41329976	2.85250805
	July	25	2616.00	710.06	3.41763774	2.85129382
	July	28	2595.00	710.82	3.41413736	2.85175903
	July	29	2583.00	716.36	3.41212441	2.85512830
	July	30	2580.00	721.98	3.41161971	2.85852457
	July	31	2559.00	721.27	3.40807029	2.85809787
1997	August	1	2609.00	721.77	3.41647408	2.85840003
	August	4	2604.00	718.71	3.41564098	2.85655308
	August	5	2600.00	713.88	3.41497335	2.85362521
	August	6	2596.00	699.86	3.41430469	2.84501055
	August	7	2591.00	677.94	3.41346741	2.83119062
	August	8	2597.00	675.44	3.41447195	2.82958420
	August	11	2612.00	658.17	3.41697317	2.81833808
	August	12	2640.00	662.95	3.42160393	2.82147881
	August	13	2653.00	658.60	3.42373725	2.81862436
	August	14	2657.00	643.01	3.42439155	2.80821840
	August	15	2890.00	617.31	3.46089784	2.79050331
	August	18	2985.00	599.64	3.47494434	2.77788770
	August	19	2985.00	590.53	3.47494434	2.77124197
	August	20	2760.00	593.17	3.44090908	2.77317991
	August	21	2745.00	603.05	3.43854235	2.78035548
	August	22	2725.00	574.39	3.43536651	2.75920914
	August	25	2690.00	542.65	3.42975228	2.73451741
	August	26	2775.00	554.24	3.44326299	2.74369630
	August	27	2850.00	555.46	3.45484486	2.74465435
	August	28	2940.00	530.37	3.46834733	2.72457568
	August	29	3035.00	493.96	3.48215870	2.69369442
1997	September	1	2995.00	458.97	3.47639683	2.66178335
	September	2	2995.00	479.01	3.47639683	2.68034821
	September	3	3030.00	512.59	3.48144263	2.70976843
	September	4	3040.00	533.87	3.48287358	2.72743552
	September	5	2990.00	594.11	3.47567119	2.77386906
	September	8	2943.00	600.31	3.46879026	2.77837630
	September	9	2909.00	598.00	3.46374372	2.77670409
	September	10	2923.00	575.02	3.46582882	2.75967993
	September	11	2944.00	556.14	3.46893781	2.74518101
	September	12	2950.00	546.64	3.46982202	2.73769902
	September	15	2941.00	550.76	3.46849502	2.74096318
	September	16	2944.00	534.83	3.46893781	2.72821495
	September	17	2984.00	533.08	3.47479882	2.72678832
	September	18	2965.00	532.53	3.47202470	2.72634000
	September	19	2985.00	531.08	3.47494434	2.72515913
	September	22	3030.00	535.60	3.48144263	2.72884138
	September	23	3015.00	539.48	3.47928732	2.73197776
	September	24	2980.00	553.65	3.47421626	2.74323217
	September	25	3029.00	559.22	3.48129927	2.74758270
	September	26	3085.00	549.92	3.48925517	2.74029951
	September	29	3178.00	546.24	3.50215389	2.73738191
	September	30	2270.00	546.69	3.35602586	2.73773954
1997	October	1	3355.00	536.99	3.52569252	2.72996296
	October	2	3395.00	536.92	3.53083978	2.72991282
	October	3	3540.00	515.48	3.54900326	2.71220929
	October	6	3810.00	512.89	3.58092498	2.71002677

	October	7	3645.00	513.95	3.56169753	2.71092003
	October	8	3655.00	518.94	3.56288738	2.71511715
	October	9	3575.00	521.11	3.55327605	2.71693107
	October	10	3472.00	534.75	3.54057972	2.72815079
	October	13	3475.00	534.83	3.54095481	2.72821251
	October	14	3475.00	528.92	3.54095481	2.72338917
	October	15	3490.00	518.92	3.54282543	2.71509622
	October	16	3615.00	517.09	3.55810830	2.71356698
	October	17	3673.00	520.69	3.56502093	2.71657507
	October	20	3685.00	514.17	3.56643749	2.71110758
	October	21	3630.00	514.97	3.55990663	2.71178024
	October	22	3663.00	505.23	3.56383692	2.70349171
	October	23	3660.00	494.14	3.56348109	2.69384737
	October	24	3618.00	490.40	3.55846856	2.69054780
	October	27	3575.00	490.12	3.55327605	2.69030242
	October	28	3625.00	448.00	3.55930801	2.65127414
	October	29	3643.00	472.05	3.56145917	2.67398892
	October	30	3643.00	502.87	3.56145917	2.70145659
	October	31	3670.00	500.42	3.56466606	2.69933292
1997	November	3	3380.00	501.71	3.52891670	2.70045622
	November	4	3230.00	494.85	3.50920252	2.69447270
	November	5	3325.00	490.99	3.52179165	2.69106911
	November	6	3330.00	478.91	3.52244423	2.68025663
	November	7	3295.00	466.17	3.51785542	2.66854059
	November	10	3315.00	462.69	3.52048353	2.66529199
	November	11	3320.00	448.16	3.52113808	2.65142825
	November	12	3335.00	449.64	3.52309584	2.65286494
	November	13	3365.00	437.95	3.52698507	2.64142156
	November	14	3435.00	436.84	3.53592674	2.64032538
	November	17	3445.00	439.54	3.53718923	2.64299643
	November	18	3455.00	434.21	3.53844805	2.63769882
	November	19	3483.00	415.65	3.54195347	2.61873196
	November	20	3500.00	396.13	3.54406804	2.59783773
	November	21	3590.00	391.26	3.55509445	2.59246323
	November	24	3623.00	410.21	3.55906833	2.61300201
	November	25	3625.00	395.67	3.55930801	2.59733751
	November	26	3660.00	391.26	3.56348109	2.59246545
	November	27	3648.00	401.71	3.56205483	2.60391264
1997	December	1	3688.00	398.62	3.56679091	2.60055473
	December	2	3780.00	394.12	3.57749180	2.59563068
	December	3	3875.00	389.63	3.58827171	2.59065016
	December	4	3920.00	401.93	3.59328607	2.60414610
	December	5	3960.00	415.61	3.59769519	2.61868912
	December	8	4060.00	423.61	3.60852603	2.62696928
	December	9	4335.00	425.50	3.63698910	2.62889548
	December	10	4460.00	415.94	3.64933486	2.61902756
	December	11	4475.00	396.11	3.65079304	2.59781361
	December	12	4485.00	365.85	3.65176245	2.56330662
	December	15	4495.00	339.54	3.65272970	2.53088583
	December	16	5050.00	356.38	3.70329138	2.55191576
	December	17	5125.00	368.69	3.70969387	2.56665547
	December	18	5175.00	378.39	3.71391035	2.57793506
	December	19	5200.00	378.80	3.71600334	2.57840538
	December	22	5250.00	385.85	3.72015930	2.58641738
	December	23	5625.00	397.03	3.75012253	2.59882442
	December	24	5825.00	396.53	3.76529593	2.59827715
	December	26	5500.00	396.53	3.74036269	2.59827605
	December	29	5130.00	398.01	3.71011737	2.59989835
	December	30	5250.00	724.56	3.72015930	2.86007196
	December	31	5300.00	401.71	3.72427587	2.60391481
1998	January	2	5650.00	401.01	3.75204845	2.60315629
	January	5	6300.00	410.83	3.79934055	2.61366215
	January	6	7350.00	402.27	3.86628734	2.60451225
	January	7	7850.00	384.77	3.89486966	2.58520459
	January	8	8825.00	347.11	3.94571471	2.54046462
	January	9	8250.00	343.43	3.91645395	2.53584202
	January	12	8450.00	365.35	3.92685671	2.56271149
	January	13	8575.00	382.14	3.93323413	2.58221909
	January	14	7800.00	403.98	3.89209460	2.60636094
	January	15	7450.00	387.24	3.87215627	2.58798358
	January	16	8650.00	413.92	3.93701611	2.61691641
	January	19	8600.00	439.03	3.93449845	2.64249222
	January	20	9888.00	448.04	3.99510846	2.65131582
	January	21	10150.00	466.00	4.00646604	2.66838871

	January	22	11500.00	443.53	4.06069784	2.64692202
	January	23	12900.00	450.98	4.11058971	2.65416113
	January	26	13600.00	473.69	4.13353891	2.67549055
	January	27	12825.00	476.31	4.10805737	2.67789061
	January	28	10175.00	482.22	4.00753442	2.68324072
	January	29	9950.00	496.56	3.99782308	2.69596911
	January	30	9750.00	524.34	3.98900462	2.71960885
1998	February	2	9550.00	554.11	3.98000337	2.74359364
	February	3	9550.00	536.79	3.98000337	2.72980442
	February	4	8550.00	519.93	3.93196611	2.71594404
	February	5	8750.00	515.66	3.94200805	2.71236597
	February	6	9000.00	535.43	3.95424251	2.72870189
	February	9	9075.00	529.25	3.95784663	2.72366415
	February	10	8450.00	517.70	3.92685671	2.71407900
	February	11	8550.00	495.44	3.93196611	2.69499107
	February	12	8650.00	474.99	3.93701611	2.67668630
	February	13	8750.00	448.16	3.94200805	2.65143309
	February	16	10050.00	457.71	4.00216606	2.66058850
	February	17	9850.00	564.50	3.99343623	2.75166702
	February	18	9400.00	472.68	3.97312785	2.67456631
	February	19	8700.00	496.25	3.93951925	2.69570227
	February	20	8650.00	495.23	3.93701611	2.69480870
	February	23	9300.00	505.04	3.96848295	2.70332148
	February	24	9350.00	498.22	3.97081161	2.69742464
	February	25	9400.00	483.41	3.97312785	2.68431114
	February	26	9000.00	483.81	3.95424251	2.68467215
	February	27	8800.00	482.38	3.94448267	2.68338749
1998	March	2	8750.00	496.73	3.94200805	2.69611952
	March	3	8650.00	518.69	3.93701611	2.71490453
	March	4	9150.00	516.62	3.96142109	2.71317122
	March	5	9500.00	514.56	3.97772361	2.71143265
	March	6	10800.00	512.23	4.03342376	2.70946586
	March	3	10750.00	495.81	4.03140846	2.69531879
	March	10	10750.00	490.48	4.03140846	2.69061776
	March	11	9550.00	491.87	3.98000337	2.69185298
	March	12	10025.00	498.19	4.00108438	2.69739065
	March	13	10025.00	506.73	4.00108438	2.70477919
	March	16	9750.00	510.79	3.98900462	2.70823899
	March	17	9750.00	512.14	3.98900462	2.70938870
	March	18	9750.00	504.00	3.98900462	2.70243398
	March	19	9750.00	504.15	3.98900462	2.70255719
	March	20	9750.00	516.73	3.98900462	2.71326452
	March	23	9600.00	526.48	3.98227123	2.72138188
	March	24	8650.00	501.66	3.93701611	2.70040947
	March	25	8350.00	504.10	3.92168648	2.70251239
	March	26	8338.00	532.81	3.92106189	2.72657400
	March	27	8338.00	542.10	3.92106189	2.73407781
	March	30	8325.00	541.43	3.92038424	2.73353831
1998	April	1	8325.00	523.95	3.92038424	2.71928819
	April	2	8325.00	528.78	3.92038424	2.72327338
	April	3	8325.00	533.30	3.92038424	2.72697158
	April	4	8350.00	532.20	3.92168648	2.72607487
	April	5	8375.00	530.99	3.92298482	2.72508634
	April	8	8400.00	530.04	3.92427929	2.72430537
	April	9	8200.00	528.74	3.91381385	2.72324217
	April	10	8000.00	527.59	3.90308999	2.72229244
	April	13	7750.00	524.06	3.88930170	2.71938433
	April	14	7500.00	516.10	3.87506126	2.71273470
	April	15	7500.00	513.45	3.87506126	2.71049393
	April	16	8075.00	510.07	3.90714253	2.70762808
	April	17	7765.00	507.90	3.89014146	2.70577992
	April	20	7945.00	508.16	3.90009390	2.70599706
	April	21	7800.00	497.71	3.89209460	2.69697375
	April	22	7775.00	500.64	3.89070040	2.69952641
	April	23	7775.00	491.86	3.89070040	2.69183797
	April	24	7800.00	480.88	3.89209460	2.68203671
	April	27	7850.00	460.55	3.89486966	2.66327962
	April	28	7850.00	444.85	3.89486966	2.64821652
	April	29	7970.00	465.25	3.90145832	2.66768358
	April	30	7970.00	458.36	3.90145832	2.66120671
1998	May	1	7925.00	451.22	3.89899927	2.65438834
	May	4	7925.00	445.99	3.89899927	2.64932902
	May	5	8963.00	435.16	3.95245340	2.63864897
	May	6	8019.00	414.63	3.90412021	2.61765548

	May	7	8332.00	425.32	3.92074926	2.62871581
	May	8	8669.00	434.66	3.93796900	2.63814468
	May	12	8669.00	430.53	3.93796900	2.63399938
	May	13	9150.00	402.06	3.96142109	2.60428763
	May	14	9150.00	403.70	3.96142109	2.60605767
	May	15	9750.00	405.94	3.98900462	2.60845864
	May	18	10770.00	388.92	4.03221570	2.58985804
	May	19	12250.00	413.82	4.08813609	2.61681567
	May	20	10200.00	424.01	4.00860017	2.62737200
	May	21	12250.00	424.01	4.08813609	2.62737200
	May	22	10900.00	445.14	4.03742650	2.64849955
	May	25	10700.00	439.55	4.02938378	2.64300828
	May	26	10400.00	428.63	4.01703334	2.63208256
	May	27	10100.00	416.97	4.00432137	2.62010168
	May	28	10100.00	414.22	4.00432137	2.61723106
	May	29	10638.00	420.47	4.02685999	2.62372985
1998	June	1	11150.00	414.08	4.04727487	2.61708321
	June	2	11150.00	399.60	4.04727487	2.60162439
	June	3	11400.00	392.61	4.05690485	2.59395914
	June	4	11400.00	406.33	4.05690485	2.60887996
	June	5	11540.00	420.46	4.06220581	2.62372469
	June	8	11525.00	409.42	4.06164093	2.61216799
	June	9	11525.00	411.07	4.06164093	2.61391790
	June	10	11650.00	408.08	4.06632593	2.61074531
	June	11	12613.00	411.54	4.10081840	2.61441627
	June	12	12613.00	408.37	4.10081840	2.61105596
	June	15	13300.00	406.50	4.12385164	2.60906055
	June	16	13300.00	411.07	4.12385164	2.61391790
	June	17	15250.00	419.44	4.18326984	2.62267192
	June	18	14900.00	440.09	4.17318627	2.64354446
	June	19	14350.00	425.45	4.15685190	2.62885159
	June	22	14350.00	420.66	4.15685190	2.62393019
	June	23	14400.00	423.09	4.15836249	2.62642763
	June	24	14500.00	430.96	4.16136800	2.63443696
	June	25	14500.00	428.81	4.16136800	2.63226490
	June	26	14725.00	430.87	4.16805530	2.63434626
	June	29	14850.00	431.23	4.17172645	2.63470997
	June	30	14900.00	445.92	4.17318627	2.64925695
1998	July	1	14000.00	456.54	4.14612804	2.65947979
	July	2	13850.00	466.37	4.14144977	2.66873340
	July	3	13850.00	470.55	4.14144977	2.67260116
	July	6	14100.00	478.54	4.14921911	2.67991825
	July	7	14550.00	483.95	4.16286299	2.68479601
	July	8	14600.00	477.53	4.16435286	2.67899611
	July	9	14625.00	470.32	4.16509587	2.67239437
	July	10	14700.00	463.58	4.16731733	2.66612563
	July	13	14600.00	463.63	4.16435286	2.66616685
	July	14	14550.00	463.87	4.16286299	2.66640003
	July	15	14550.00	467.34	4.16286299	2.66963202
	July	16	13750.00	473.77	4.13830270	2.67556939
	July	17	13150.00	486.23	4.11892575	2.68684532
	July	20	13150.00	488.69	4.11892575	2.68903345
	July	21	13450.00	488.24	4.12872228	2.68863247
	July	22	13750.00	483.06	4.13830270	2.68399658
	July	23	13750.00	473.81	4.13830270	2.67559964
	July	24	13800.00	479.56	4.13987909	2.68084567
	July	27	13800.00	482.98	4.13987909	2.68393005
	July	28	13650.00	483.53	4.13513265	2.68442432
	July	29	13100.00	485.10	4.11727130	2.68582769
	July	30	13000.00	482.69	4.11394335	2.68366650
	July	31	13000.00	481.72	4.11394335	2.68279197
1998	August	3	12900.00	471.58	4.11058971	2.67355814
	August	4	12800.00	461.34	4.10720997	2.66402488
	August	5	12700.00	441.78	4.10380372	2.64520998
	August	6	12700.00	433.83	4.10380372	2.63732258
	August	7	12700.00	423.61	4.10380372	2.62696928
	August	10	12700.00	421.17	4.10380372	2.62445434
	August	11	12700.00	407.06	4.10380372	2.60966270
	August	12	12775.00	408.64	4.10636091	2.61133556
	August	13	12775.00	402.94	4.10636091	2.60524146
	August	14	12775.00	414.63	4.10636091	2.61766072
	August	18	12500.00	403.86	4.09691001	2.60622546
	August	19	12275.00	405.89	4.08902150	2.60840835
	August	20	11250.00	399.33	4.05115252	2.60133194

	August	21	11250.00	388.35	4.05115252	2.58921772
	August	24	11400.00	369.52	4.05690485	2.56763677
	August	25	11400.00	367.14	4.05690485	2.56483525
	August	26	11200.00	360.93	4.04921802	2.55741937
	August	27	11200.00	354.95	4.04921802	2.55016106
	August	28	11075.00	339.02	4.04434373	2.53022660
	August	31	11075.00	331.22	4.04434373	2.52011655
1998	September	1	10900.00	325.85	4.03742650	2.51302306
	September	2	10825.00	329.63	4.03442791	2.51802014
	September	3	10725.00	334.79	4.03039730	2.52476988
	September	4	10725.00	325.56	4.03039730	2.51263104
	September	7	10725.00	335.08	4.03039730	2.52514980
	September	8	10775.00	330.41	4.03241728	2.51905713
	September	9	10775.00	325.76	4.03241728	2.51290042
	September	10	11550.00	325.56	4.06258198	2.51262570
	September	11	11550.00	324.04	4.06258198	2.51059862
	September	14	11550.00	320.60	4.06258198	2.50595674
	September	15	10975.00	292.15	4.04040453	2.46561035
	September	16	10925.00	290.96	4.03842145	2.46383478
	September	17	10925.00	285.48	4.03842145	2.45556808
	September	18	11465.00	271.67	4.05937406	2.43404328
	September	21	10963.00	256.84	4.03992941	2.40965421
	September	22	10975.00	260.88	4.04040453	2.41643413
	September	23	10975.00	262.25	4.04040453	2.41871550
	September	24	10975.00	282.16	4.04040453	2.45049545
	September	25	10850.00	280.67	4.03542974	2.44819135
	September	28	10800.00	279.98	4.03342376	2.44712701
	September	29	10750.00	277.22	4.03140846	2.44282456
	September	30	10700.00	276.15	4.02938378	2.44114505
1998	October	1	10700.00	273.87	4.02938378	2.43754129
	October	2	10725.00	263.23	4.03039730	2.42033373
	October	5	10500.00	261.31	4.02118930	2.41716268
	October	6	10250.00	258.11	4.01072387	2.41179810
	October	7	9650.00	266.17	3.98452731	2.42515910
	October	8	9000.00	288.55	3.95424251	2.46022108
	October	9	9000.00	304.84	3.95424251	2.48407195
	October	12	9000.00	307.42	3.95424251	2.48772788
	October	13	9000.00	313.99	3.95424251	2.49691028
	October	14	8650.00	303.19	3.93701611	2.48171487
	October	15	8650.00	304.85	3.93701611	2.48408193
	October	16	8470.00	337.59	3.92788341	2.52838571
	October	19	8000.00	336.42	3.90308999	2.52687922
	October	20	7700.00	336.58	3.88649073	2.52708314
	October	21	7125.00	322.32	3.85278487	2.50828860
	October	22	7125.00	316.80	3.85278487	2.50077832
	October	23	7300.00	313.42	3.86332286	2.49611978
	October	26	7600.00	315.31	3.88081359	2.49873912
	October	2	7400.00	318.10	3.86923172	2.50256503
	October	28	7400.00	312.29	3.86923172	2.49455808
	October	29	7575.00	309.41	3.87938264	2.49053715
	October	30	7550.00	300.77	3.87794695	2.47823452
1998	November	2	7525.00	307.20	3.87650650	2.48741838
	November	3	7800.00	317.18	3.89209460	2.50130853
	November	4	7975.00	330.46	3.90173069	2.51911758
	November	5	8600.00	355.53	3.93449845	2.55087381
	November	6	8200.00	353.98	3.91381385	2.54897627
	November	9	8200.00	364.39	3.91381385	2.56156645
	November	10	8200.00	357.30	3.91381385	2.55303788
	November	11	7750.00	363.01	3.88930170	2.55991500
	November	12	7700.00	357.98	3.88649073	2.55385391
	November	13	7813.00	355.54	3.89281782	2.55088847
	November	16	7813.00	356.23	3.89281782	2.55172561
	November	17	7813.00	356.23	3.89281782	2.55172561
	November	18	7338.00	369.99	3.86557771	2.56819468
	November	19	7428.00	386.55	3.87087190	2.58720792
	November	20	7428.00	403.63	3.87087190	2.60597806
	November	23	7428.00	424.99	3.87087190	2.62837565
	November	24	7500.00	420.08	3.87506126	2.62333201
	November	25	7500.00	402.73	3.87506126	2.60501398
	November	26	7450.00	394.68	3.87215627	2.59624292
	November	27	7300.00	392.32	3.86332286	2.59364045
	November	30	7300.00	386.27	3.86332286	2.58689210
1998	December	1	7400.00	387.74	3.86923172	2.58853501
	December	2	7450.00	396.96	3.87215627	2.59875112

	December	3	7473.00	393.80	3.87349498	2.59527020
	December	4	7560.00	390.40	3.87852180	2.59150425
	December	7	7531.00	399.46	3.87685265	2.60147330
	December	8	7533.00	398.90	3.87696797	2.60086513
	December	9	7423.00	398.78	3.87057946	2.60073664
	December	10	7516.00	403.67	3.87598677	2.60602432
	December	11	7480.00	405.60	3.87390160	2.60809259
	December	14	7522.00	404.70	3.87633333	2.60713642
	December	15	7550.00	400.77	3.87794695	2.60288979
	December	16	7880.00	412.44	3.89652622	2.61535973
	December	17	7850.00	404.65	3.89486966	2.60708384
	December	18	7800.00	403.69	3.89209460	2.60605014
	December	21	7700.00	404.50	3.88649073	2.60692175
	December	22	7700.00	406.47	3.88649073	2.60902316
	December	23	7902.00	400.52	3.89773703	2.60262312
	December	24	7848.00	401.86	3.89475899	2.60406938
	December	28	7813.00	400.18	3.89281782	2.60225104
	December	29	8058.00	396.73	3.90622726	2.59849833
	December	30	8068.00	398.04	3.90676589	2.59992454
1999	January	4	8050.00	394.01	3.90579588	2.59550504
	January	5	7885.00	408.70	3.89680170	2.61140783
	January	6	7874.00	427.08	3.89619541	2.63050923
	January	7	7924.00	457.94	3.89894447	2.66080858
	January	8	7941.00	439.49	3.89987520	2.64295295
	January	11	7978.00	473.30	3.90189403	2.67513283
	January	12	8013.00	436.19	3.90379514	2.63967570
	January	13	8435.00	419.10	3.92608509	2.62232181
	January	14	8700.00	408.55	3.93951925	2.61124947
	January	15	9090.00	402.40	3.95856388	2.60466013
	January	18	8444.00	370.65	3.92654822	2.56895932
	January	21	8643.00	366.64	3.93666451	2.56423984
	January	22	8893.00	362.55	3.94904829	2.55937270
	January	25	9322.00	382.48	3.96950910	2.58260646
	January	26	9168.00	398.15	3.96227460	2.60004890
	January	27	9118.00	410.25	3.95989959	2.61304859
	January	28	9300.00	407.27	3.96848295	2.60988349
	January	29	8950.00	411.93	3.95182304	2.61482553
1999	February	1	8850.00	409.11	3.94694327	2.61184222
	February	2	8825.00	405.16	3.94571471	2.60763085
	February	3	8660.00	410.56	3.93751789	2.61337240
	February	4	8514.00	409.02	3.93013365	2.61174667
	February	5	8667.00	405.55	3.93786880	2.60804762
	February	8	8869.00	399.69	3.94787465	2.60172328
	February	9	8927.00	402.83	3.95070553	2.60511749
	February	10	8576.00	398.68	3.93328477	2.60062554
	February	11	8673.00	402.65	3.93816935	2.60492555
	February	12	8712.00	400.55	3.94011787	2.60265890
	February	15	8650.00	396.92	3.93701611	2.59870736
	February	16	8570.00	398.85	3.93298082	2.60080742
	February	17	8738.00	397.98	3.94141204	2.59985579
	February	18	8866.00	403.41	3.94772773	2.60575097
	February	19	8857.00	399.18	3.94728664	2.60116877
	February	22	8929.00	398.67	3.95080282	2.60061356
	February	23	8857.00	397.94	3.94728664	2.59981214
	February	24	8829.00	402.00	3.94591152	2.60422389
	February	25	8820.00	339.64	3.94546859	2.53101883
	February	26	8814.00	337.44	3.94517305	2.52819656
1999	March	1	8809.00	396.33	3.94492661	2.59805147
	March	2	8858.00	394.97	3.94733568	2.59655971
	March	3	8839.00	395.81	3.94640313	2.59748347
	March	4	8900.00	394.15	3.94939001	2.59566594
	March	5	8900.00	388.68	3.94939001	2.58959108
	March	8	8910.00	384.57	3.94987770	2.58497314
	March	9	8950.00	379.42	3.95182304	2.57912136
	March	10	9060.00	373.80	3.95712820	2.57264162
	March	11	9224.00	378.64	3.96491929	2.57823108
	March	12	9450.00	375.94	3.97543181	2.57511507
	March	15	8993.00	372.32	3.95390459	2.57091403
	March	16	8790.00	379.45	3.94398888	2.57915799
	March	17	8911.00	387.88	3.94992644	2.58869851
	March	19	8892.00	394.22	3.94899945	2.59573535
	March	22	8848.00	392.28	3.94684511	2.59359949
	March	23	8969.00	394.81	3.95274402	2.59638704
	March	24	8819.00	391.35	3.94541934	2.59255979

	March	25	8839.00	395.83	3.94640313	2.59750761
	March	26	8838.00	392.95	3.94635400	2.59433508
	March	29	8842.00	392.86	3.94655051	2.59424002
	March	30	8651.00	393.63	3.93706631	2.59508267
	March	31	8685.00	393.63	3.93876982	2.59508267
1999	April	1	8671.00	394.43	3.93806919	2.59597324
	April	5	8643.00	395.34	3.93666451	2.59696746
	April	6	8730.00	395.51	3.94101424	2.59716076
	April	7	8740.00	398.25	3.94151143	2.60015578
	April	8	8752.00	400.00	3.94210731	2.60206216
	April	9	8717.00	421.21	3.94036705	2.62450177
	April	12	8733.00	421.15	3.94116346	2.62443681
	April	13	8723.00	432.52	3.94066587	2.63600419
	April	14	8645.00	435.56	3.93676500	2.63904400
	April	15	8647.00	447.48	3.93686546	2.65077266
	April	16	8655.00	479.53	3.93726707	2.68081759
	April	19	8660.00	508.15	3.93751789	2.70598937
	April	20	8627.00	485.97	3.93585980	2.68660946
	April	21	8654.00	480.63	3.93721689	2.68180636
	April	22	8649.00	479.24	3.93696590	2.68055487
	April	23	8584.00	473.59	3.93368971	2.67539977
	April	26	8618.00	470.41	3.93540649	2.67247285
	April	27	8620.00	469.21	3.93550727	2.67136263
	April	28	8550.00	481.34	3.93196611	2.68245556
	April	29	8414.00	490.99	3.92500251	2.69107265
	April	30	8260.00	495.22	3.91698005	2.69479993
1999	May	3	8075.00	321.75	3.90714253	2.50751991
	May	4	8026.00	547.77	3.90449916	2.73859904
	May	5	8100.00	563.84	3.90848502	2.75115588
	May	6	8080.00	580.91	3.90741136	2.76410511
	May	7	7966.00	575.12	3.90124030	2.75975696
	May	10	7790.00	571.98	3.89153746	2.75737705
	May	11	7611.00	573.23	3.88144172	2.75832891
	May	12	7935.00	576.50	3.89954693	2.76079931
	May	14	7785.00	591.63	3.89125862	2.77205312
	May	17	8050.00	590.80	3.90579588	2.77144049
	May	18	7913.00	577.89	3.89834117	2.76184217
	May	19	8030.00	593.60	3.90471555	2.77349682
	May	20	8137.00	594.05	3.91046432	2.77382300
	May	21	8105.00	591.66	3.90875302	2.77207515
	May	24	8174.00	613.64	3.91243463	2.78791437
	May	25	8046.00	619.88	3.90558003	2.79230552
	May	26	8090.00	605.79	3.90794852	2.78231995
	May	27	8094.00	603.12	3.90816320	2.78040373
	May	28	8175.00	583.65	3.91248776	2.76615175
	May	31	8104.00	585.24	3.90869943	2.76733549
1999	June	1	8124.00	583.26	3.90976991	2.76585996
	June	2	8122.00	574.32	3.90966299	2.75915016
	June	3	8171.00	587.57	3.91227521	2.76905887
	June	4	8148.00	583.65	3.91105102	2.76615175
	June	7	7920.00	612.38	3.89872518	2.78701958
	June	8	7765.00	686.95	3.89014146	2.83692323
	June	9	7743.00	678.97	3.88890926	2.83185059
	June	10	7724.00	662.60	3.88784227	2.82125012
	June	11	7711.00	668.28	3.88711070	2.82495911
	June	14	7576.00	675.45	3.87943997	2.82959256
	June	15	7340.00	670.16	3.86569606	2.82617850
	June	16	7300.00	661.85	3.86332286	2.82076089
	June	17	7363.00	681.04	3.86705480	2.83317198
	June	18	7275.00	707.88	3.86183300	2.84996210
	June	21	7235.00	716.46	3.85943854	2.85519195
	June	22	6920.00	410.68	3.84010609	2.61350567
	June	23	6688.00	700.67	3.82529626	2.84551290
	June	24	6720.00	682.12	3.82736927	2.83386015
	June	25	6850.00	673.16	3.83569057	2.82811508
	June	28	6713.00	672.13	3.82691665	2.82745134
	June	29	6649.00	680.56	3.82275633	2.83286706
	June	30	6726.00	662.03	3.82775686	2.82087439
1999	July	1	6731.00	667.36	3.82807959	2.82436017
	July	2	6873.00	670.54	3.83714634	2.82642339
	July	5	6808.00	665.14	3.83301955	2.82291568
	July	6	6698.00	681.59	3.82594514	2.83352130
	July	7	6745.00	665.77	3.82898195	2.82332487
	July	8	6734.00	660.25	3.82827311	2.81971104

	July	9	6688.00	656.64	3.82529626	2.81732733
	July	12	6623.00	663.12	3.82105476	2.82159475
	July	13	6660.00	656.19	3.82347423	2.81702762
	July	14	6640.00	664.88	3.82216808	2.82274458
	July	15	6735.00	660.54	3.82833760	2.81990044
	July	16	6671.00	662.37	3.82419094	2.82110065
	July	19	6700.00	658.27	3.82607480	2.81840472
	July	20	6680.00	649.86	3.82477646	2.81282047
	July	21	6704.00	641.11	3.82633401	2.80693052
	July	22	6755.00	642.66	3.82962535	2.80797789
	July	23	6880.00	625.83	3.83758844	2.79645638
	July	26	7018.00	592.72	3.84621336	2.77285031
	July	27	6961.00	573.22	3.84267163	2.75831830
	July	28	6920.00	599.26	3.84010609	2.77761312
	July	29	6848.00	616.43	3.83556375	2.78988095
	July	30	6875.00	597.87	3.83727270	2.77660967
1999	August	2	6855.00	596.51	3.83600746	2.77561991
	August	3	6875.00	520.99	3.83727270	2.71682605
	August	4	6920.00	416.40	3.84010609	2.61950551
	August	5	6925.00	606.27	3.84041978	2.78266608
	August	6	7015.00	607.84	3.84602768	2.78378570
	August	9	7020.00	594.11	3.84633711	2.77386613
	August	10	7098.00	576.34	3.85113600	2.76068102
	August	11	7750.00	554.26	3.88930170	2.74371589
	August	12	7969.00	565.22	3.90140383	2.75221598
	August	13	7867.00	557.71	3.89580915	2.74640765
	August	16	7755.00	560.48	3.88958180	2.74856089
	August	18	7610.00	561.37	3.88138466	2.74924533
	August	19	7510.00	557.71	3.87563994	2.74640765
	August	20	7410.00	576.17	3.86981821	2.76054838
	August	23	7591.00	584.80	3.88029899	2.76700959
	August	24	7699.00	586.24	3.88643432	2.76807248
	August	25	7565.00	585.26	3.87880893	2.76734662
	August	26	7402.00	551.51	3.86934908	2.74155575
	August	27	7645.00	572.67	3.88337749	2.75790216
	August	30	7700.00	566.67	3.88649073	2.75333022
	August	31	7565.00	567.03	3.87880893	2.75360297
1999	September	1	7565.00	571.78	3.87880893	2.75722592
	September	2	7748.00	571.12	3.88918961	2.75672357
	September	3	7817.00	565.20	3.89304011	2.75219908
	September	6	7935.00	540.43	3.89954693	2.73273704
	September	7	8235.00	545.35	3.91566360	2.73667611
	September	8	8375.00	520.62	3.92298482	2.71652168
	September	9	8956.00	538.02	3.95211408	2.73079438
	September	10	8250.00	562.78	3.91645395	2.75033557
	September	13	7878.00	569.65	3.89641598	2.75560963
	September	14	8170.00	562.06	3.91222206	2.74978191
	September	15	8013.00	548.61	3.90379514	2.73926530
	September	16	8090.00	548.76	3.90794852	2.73937928
	September	17	8205.00	547.02	3.91407859	2.73800082
	September	20	8240.00	543.33	3.91592721	2.73506608
	September	21	8375.00	547.26	3.92298482	2.73819688
	September	22	8320.00	545.45	3.92012333	2.73675335
	September	23	8967.00	528.17	3.95264717	2.72277537
	September	24	8775.00	517.54	3.94324713	2.71394560
	September	27	8485.00	515.07	3.92865185	2.71186373
	September	28	9560.00	529.22	3.93247376	2.72363707
	September	29	8348.00	526.47	3.92158244	2.72137280
	September	30	8386.00	547.94	3.92355486	2.73873063
1999	October	1	8217.00	566.04	3.91471329	2.75284866
	October	4	7637.00	555.30	3.88292279	2.74453080
	October	5	7788.00	566.25	3.89142594	2.75300898
	October	6	7779.00	588.75	3.89092377	2.76993018
	October	7	7723.00	585.35	3.88778603	2.76741191
	October	8	7815.00	588.24	3.89292898	2.76955234
	October	11	7815.00	584.06	3.89292898	2.76645746
	October	12	7825.00	571.38	3.89348435	2.75692655
	October	13	7937.00	571.95	3.89965638	2.75735579
	October	14	8275.00	567.78	3.91776800	2.75417780
	October	15	8000.00	567.92	3.90308999	2.75428563
	October	18	7900.00	553.21	3.89762709	2.74289238
	October	19	7788.00	583.65	3.89142594	2.76615026
	October	20	7070.00	584.43	3.84941941	2.76672879
	October	21	7200.00	616.49	3.85733250	2.78992604

	October	22	6775.00	604.18	3.83090930	2.78116922
	October	25	6828.00	597.07	3.83429351	2.77602380
	October	26	6810.00	594.25	3.83314711	2.77397138
	October	27	6745.00	576.52	3.82898195	2.76081362
	October	28	6940.00	577.93	3.84135947	2.76187674
	October	29	6900.00	593.87	3.83884909	2.77369066
1999	November	1	6765.00	595.08	3.83026780	2.77457827
	November	2	6745.00	594.41	3.82898195	2.77408245
	November	3	6730.00	603.59	3.82801506	2.78073988
	November	4	6865.00	618.51	3.83664054	2.79134673
	November	5	6800.00	626.04	3.83250891	2.79660486
	November	8	6855.00	628.31	3.83600746	2.79817190
	November	9	6823.00	638.82	3.83397537	2.80537850
	November	10	6876.00	683.91	3.83733587	2.83500022
	November	11	7000.00	638.49	3.84509804	2.80515546
	November	12	7170.00	635.23	3.85551916	2.80293100
	November	15	6965.00	635.80	3.84292112	2.80331916
	November	16	6925.00	641.73	3.84041978	2.80735302
	November	17	7055.00	641.48	3.84849702	2.80717974
	November	18	6960.00	636.62	3.84260924	2.80387960
	November	19	7029.00	633.31	3.84689354	2.80161772
	November	22	7017.00	630.17	3.84615148	2.79945772
	November	23	7100.00	618.45	3.85125835	2.79130389
	November	24	7100.00	599.72	3.85125835	2.77795070
	November	25	7120.00	588.66	3.85247999	2.76986453
	November	26	7200.00	596.36	3.85733250	2.77550486
	November	29	7245.00	582.82	3.86003839	2.76553296
	November	30	7425.00	583.80	3.87069646	2.76626409
1999	December	1	7265.00	597.54	3.86123562	2.77636771
	December	2	7278.00	598.41	3.86201205	2.77699812
	December	3	7333.00	613.49	3.86528168	2.78780395
	December	6	7160.00	624.39	3.85491302	2.79545316
	December	7	7168.00	621.65	3.85539800	2.79354524
	December	8	7220.00	620.98	3.85853720	2.79307551
	December	9	7265.00	631.55	3.86123562	2.80040980
	December	10	7245.00	633.84	3.86003839	2.80197896
	December	13	7230.00	630.56	3.85913830	2.79972297
	December	14	7235.00	648.39	3.85943854	2.81183899
	December	15	7215.00	652.38	3.85823634	2.81450330
	December	16	7081.00	646.51	3.85009459	2.81057256
	December	17	7085.00	638.82	3.85033985	2.80537986
	December	20	7085.00	646.06	3.85033985	2.81027218
	December	21	7094.00	656.89	3.85089118	2.81749133
	December	22	7095.00	661.05	3.85095240	2.82023694
	December	23	7085.00	666.13	3.85033985	2.82356095
	December	24	6975.00	666.13	3.84354421	2.82356095
	December	27	7000.00	681.38	3.84509804	2.83339002
	December	28	7005.00	677.22	3.84540814	2.83072849
	December	29	7075.00	674.88	3.84972644	2.82922656
	December	30	7100.00	676.92	3.85125835	2.83053670
2000	January	3	6935.00	676.84	3.84104647	2.83048602
	January	4	7095.00	677.59	3.85095240	2.83096699
	January	5	7175.00	678.09	3.85582191	2.83128542
	January	6	7165.00	688.52	3.85521619	2.83791719
	January	7	7195.00	676.92	3.85703080	2.83053735
	January	10	7115.00	688.52	3.85217490	2.83791656
	January	11	7210.00	698.00	3.85793526	2.84385542
	January	12	7270.00	690.16	3.86153441	2.83894979
	January	13	7208.00	691.61	3.85781478	2.83986126
	January	14	7225.00	690.89	3.85883785	2.83940891
	January	17	7215.00	703.48	3.85823634	2.84725175
	January	18	7285.00	685.71	3.86242956	2.83614048
	January	19	7265.00	655.99	3.86123562	2.81689722
	January	20	7305.00	670.15	3.86362022	2.82617202
	January	21	7207.00	664.69	3.85775452	2.82261915
	January	24	7315.00	656.72	3.86421433	2.81738024
	January	25	7300.00	649.86	3.86332286	2.81281981
	January	26	7333.00	643.39	3.86528168	2.80847093
	January	27	7455.00	644.65	3.87244765	2.80932399
	January	28	7363.00	634.66	3.86705480	2.80254113