THE IMPACT OF MOVEMENT OF SELECTED USD EXCHANGE RATES TOWARD STOCK PRICE DURING 2007-2011 (CASE STUDY OF STANDARD & POOR 500 INDEX)

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THESIS ADVISER
RECOMMENDATION LETTER

This thesis entitled “THE IMPACT OF MOVEMENT OF SELECTED USD EXCHANGE RATE TOWARDS STOCK PRICE DURING 2007-2011 (CASE STUDY OF STANDARD & POOR 500 INDEX)” prepared and submitted by Juniaty Gunawan in partial fulfillment of the requirements for the degree of Economic in the Faculty of Economics has been reviewed and found to have satisfied the requirements for a thesis fit to be examined. I therefore recommend this thesis for Oral Defense.

Cikarang, Indonesia, January 28th 2013
Acknowledged by

Irfan Habsjah, MBA, CMA
Head of Management Study Program

Recommended by,

Ir. Farida Komalasari, M.Si.
Thesis Advisor
DECLARATION OF ORIGINALITY

I declare that this thesis entitled “THE IMPACT OF MOVEMENT OF SELECTED USD EXCHANGE RATE TOWARDS STOCK PRICE DURING 2007-2011 (CASE STUDY OF STANDARD & POOR 500 INDEX)” is, to the best of my knowledge and belief, an original piece of work that has not been submitted, either in whole or in part, to another university to obtain a degree.

Cikarang, Indonesia, January 28th 2013

Juniaty Gunawan
PANEL OF EXAMINERS
APPROVAL SHEET

The Panel of Examiners declare that the thesis entitled “THE IMPACT OF MOVEMENT OF SELECTED USD EXCHANGE RATE TOWARDS STOCK PRICE DURING 2007-2011 (CASE STUDY OF STANDARD & POOR 500 INDEX)” that was submitted by Juniaty Gunawan majoring in Management from the Faculty of Economic was assessed and approved to have passed the Oral Examinations on February 26th 2013

Irfan Habsjah, MBA, CMA
Chair-Panel of Examiners

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Examiner

Ir. Iman Heru WIjayanto, MBA
Examiner
ABSTRACT

Financial market especially stock market and foreign exchange market has been used recently by many investors to determine economic condition of a country. Australia, China, and Japan has been known as countries that have many economic relationship to United States and Standard & Poor 500 Index often used as representative of United States because it consist of 500 companies that considered as the largest on their own industries.

This research is going to examine whether there is impact of movement of selected USD exchange rate especially AUD/USD, USD/JPY, USD/RMB towards movement on Standard & Poor 500 index both partially and collectively. This research also to find out a variable that brings significant impact to Standard & Poor 500 Index.

The period covered in this research is starting from January 2007-December 2011. The analysis is use monthly time series secondary data. The correlation and multiple regression models are used as statistical tools to analyze and test the hypothesis.

The result of this research shows that there is impact of movement of AUD/USD, USD/JPY, and USD/RMB towards Standard & Poor 500 Index both partially and collectively.

Keywords: USD exchange rate, AUD/USD, USD/JPY, USD/RMB, Standard & Poor 500 index
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With deepest gratefulness to Lord Jesus Christ for His blessings, finally I can step forward to the next level of my life path in President University to finish this thesis with title “THE IMPACT OF MOVEMENT OF SELECTED USD EXCHANGE RATE TOWARDS STOCK PRICE DURING 2007-2011 (CASE STUDY OF STANDARD & POOR 500 INDEX)”.

This thesis is one of the requirements to accomplish Bachelor Degree in Faculty of Economics, President University.

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Cikarang, Indonesia, January 28th 2013

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LIST OF ACRONYMS

ANOVA : Analysis of Variance
AUD : Australian Dollar
USD : United States Dollar
JPY : Japanese Yen
CNY : Chinese Yuan
S&P 500 : Standard & Poor 500 Index
CHAPTER 1
INTRODUCTION

1.1 Background of Study

Financial market has been popular nowadays people or company is no longer interested to put their money in the bank, they rather to invest it in order to get more returns. Company can use financial market especially capital market to raise funds by issue stock or bonds, and individual investor keen to buy it to gain a return. People do realize that investment is not without risk, it might give more return instead of saving money in bank, but still high returns high risk. Therefore to reduce the risk in order to get more return on their investment, both individual and corporate investor tend to know what kind of factor that can determine the movement of stock prices. Individual and corporate investors, especially portfolio managers and hedge fund managers, are interested in factors that affect the stock market index (Anlas, 2012).

There are a lot of factor can be used to measure economic condition in one country, many investor use stock market in that country as a reference. The higher it goes, the highest the development in that country. Investor can monitor the movement of the stock price from composite index which is known as index of stock price of largest companies which measured through market capitalization. There should be at least one composite index in development or big country. Stock market is important for one country because it indicates economic development in that country. Numerous composite indexes that often used as reference for investor are Nikkei, Dow Jones, Hangseng, Kospi, Standard & Poor 500, and NASDAQ. Some composite index plays a big role in global economic like composite index in Europe and American countries. They are such Standard & Poor 500 Index, Dow Jones, NASDAQ. Standard & Poor 500 Index has become a benchmark
for many researchers because most researchers agree that the Standard & Poor 500 Index is a better representation of the U.S. market.

According to Madura (2008), stock prices are affected by three types of factors, namely the economic factor, market related factor, and firm-specific factor. Mumcu stated that among the myriad of factors that affect the stock market, foreign exchange rates have become increasingly important in today’s globalized world because of the international fund transfers between countries are becoming much more important in capital markets (Anlas 2012). Besides the relationship between stock returns and foreign exchange rates has frequently been utilized in predicting the future trends for each other by investors (Li and Huang, 2008). Exchange rate is rate which one currency can be exchanged for another. The exchange rates also represent price of one country in another country in currency. In developing countries exchange rate are national & international political and social & economic indicators. It reacts quickly to events like war, terrorism and also to the changes in the political situation as well as to main economic indicators like unemployment and interest rate.

There are some developing countries which the currencies are being considered as a reserve currency or as a benchmark currency like United States (US dollar) or Europe (Euro). The fluctuation in US dollar is believed that will affect other countries because United States known as a country that has a global influence. Besides developing countries can cause a contagion effect, contagion can be defined more restrictively as a shock in one country that generates price movements in other countries (Lost, 2004). Other countries that feel the impact are usually countries that have many relationship with the developing country itself especially in economic. Thus a change in major stock market and exchange rates of developing countries like United States will cause movement in another stock market and exchange rate of other countries.

Over last decade Australian dollar has appreciated against US dollar because of the high term of trade. USD exchange rates become important in Australia’s trade even if the United States is not a direct participant in the
transaction (Garton, Gaudry, and Wilcox, 2012). Whereas China maintains a low exchange rate especially towards United States dollar in order to promote export. In order to maintain the stability of the exchange rates towards US dollar, People’s Bank of China (PBC) has to continuously intervene by buying into the dollar and selling out the Yuan (Jin, 2009). Japan also popular with the strong relationship with United States’s Treasury Bill. Investopedia stated that when treasury bonds, notes and bills rise, USD/JPY prices weaken, and vice versa.

Based to the evidence above researcher plan to do deeper analyst about impact of the movement of selected USD exchange rates (AUD/USD, USD/CNY, USD/JPY) towards Standard & Poor 500 Index (consist of Stock price measurement). Exchange rates are chosen to become independent variable because it is as important as stock market in determining economic condition in one country. USD exchange rates are chosen to be variables because USD exchange rates are considered as a reserve currency and have a global influence to another country. Meanwhile Standard & Poor 500 Index is chosen as representative of capital market because it consists of 500 largest companies in United States. By doing this study researcher has the expectation that exchange rate can be a benchmark to analyze the movement of capital market movement especially stock market and it will give a clear explanation about the impact of movement on exchange rate towards stock market

1.2 Problem Identified

There are a lot of studies that have been done regarding interaction between stock market and foreign exchange market (exchange rates). It is become an issue and debate subject for researcher or investor about the interaction, whether exchange rate affects the stock market or vice versa. Although those research in different object and different time series but basically their objective is same which to determine the relationship between exchange rates and stock market. Some of them found that there is positive
relationship or negative relationship and some of them even found that there is no relationship.

Studies regarding the relationship between stock prices and exchange rates such as Dornbush and Fisher (1983), Aggarwal (1981), Anlas (2012) provide evidence that there is significant relationship between exchange rate and stock market. Aggarwal (1981) studied the relationship between change in the dollar exchange rates and changes in three indices of stock prices: the New York Exchange index, the Standard and Poor’s 500 Stock index, and the Department of Commerce Index of 500 Stocks and the results shows that there is a positive correlation between the three indices of stock prices and the value of the dollar.

In his study about the relationship between foreign exchange and stock market in Singapore, Jeffrey (2008) found that in four times given to be tested, there is no same result, so he concluded that the exchange rate and stock market relationship differs. The research about relationship between foreign exchange and stock market has become more complex. This is understandable because both of exchange rates and stock market play a crucial path in determining a country’s economic condition. Thus the researcher wants to do the analysis about possibilities change in exchange rate will affect the Standard & Poor 500 Index.

1.3 Statement of Problem

Based on early explanation, this research is about selected USD exchange rate which are AUD/USD, USD/CNY, and USD/JPY and Stock market which is Standard & Poor 500 Index. The problem that will be analyzed and evaluated is the impact of movement of AUD/USD, USD/CNY, and USD/JPY towards Standard & Poor 500 Index.
From the problem statement above, the problem of the research can be formulated in the form of questions below:

1. Is there any impact of movement of AUD/USD, USD/CNY, and USD/JPY towards Standard & Poor 500 Index collectively?

2. Is there any impact of movement of AUD/USD, USD/CNY, and USD/JPY towards Standard & Poor 500 Index partially?

3. How big is the impact of movement of AUD/USD towards the Standard & Poor 500 Index?

4. How big is the impact of movement of USD/CNY towards the Standard & Poor 500 Index?

5. How big is the impact of movement USD/JPY towards the Standard & Poor 500 Index?

6. What is the variable (AUD/USD, USD/CNY, and USD/JPY) that has the highest impact towards Standard & Poor 500 Index?

7. What is the variable (AUD/USD, USD/CNY, and USD/JPY) that has the least impact towards Standard & Poor 500 Index?

1.4 Hypothesis

There are three variables that will be tested and evaluated which are AUD/USD, USD/CNY, and USD/JPY. In this study AUD/USD, USD/CNY, and USD/JPY are independent variables (X) while stock market in this case researcher use Standard & Poor 500 Index as a dependent variable (Y). This research is going to test whether there is any impact of independent variables towards dependent variables both partially and collectively and also the level of the impact of each independent variables towards dependent variable. The null hypothesis ($H_0$) indicates that there is no significant relationship between dependent variable and independent variables, while alternate hypothesis ($H_a$) is hypothesis used when the null hypothesis ($H_0$) is rejected.
- $H_0$ : $\beta_1 = \beta_2 = \beta_3 = 0$
  There is no significant impact of AUD/USD, USD/CNY, and USD/JPY to Standard & Poor 500 Index collectively

  $H_a$ : at least one of $\beta_1 \neq 0$
  There is significant impact of AUD, USD, USD/CNY, and USD/JPY toward Standard & Poor 500 Index collectively.

- $H_{01}$ : $\beta_1 = 0$

  “There is no significant impact of movement of AUD/USD towards Standard & Poor 500 Index”

  $H_{a1}$ : $\beta_1 \neq 0$

  “There is significant impact of movement of AUD/USD towards Standard & Poor 500 Index”

- $H_{02}$ : $\beta_2 = 0$

  “There is no significant impact of movement of USD/CNY towards Standard & Poor 500 Index”

  $H_{a2}$ : $\beta_2 \neq 0$

  “There is significant impact of movement of USD/CNY towards Standard & Poor 500 Index”

- $H_{03}$ : $\beta_3 = 0$

  “There is no significant impact of movement of USD/JPY towards Standard & Poor 500 Index”

  $H_{a3}$ : $\beta_3 \neq 0$

  “There is significant impact of movement of USD/JPY towards Standard & Poor 500 Index”
1.5 Research Objective

The objective in this research
1. To know the impact of movement of AUD/USD USD/CNY, and USD/JPY toward Standard & Poor 500 Index collectively
2. To know the impact of movement of AUD/USD USD/CNY, and USD/JPY toward Standard & Poor 500 Index partially
3. To analyze and measure the impact of AUD/USD towards Standard & Poor 500 Index
4. To analyze and measure the impact of USD/CNY towards Standard & Poor 500 Index
5. To analyze and measure the impact of USD/JPY towards Standard & Poor 500 Index
6. To know what variables ((AUD/USD, USD/CNY, and USD/JPY) that has the highest impact on Standard & Poor 500 Index
7. To know what variables (AUD/USD, USD/CNY, and USD/JPY ) that has the least impact on Standard & Poor 500 Index

1.6 Significance of Study

- For investor

This study is expected to give individual investor and fund manager an input when they want to maximize the return on the investment or to analyze the movement of the stock market.

- For researcher

Researcher shares the idea and knowledge during college period into this research. Researcher is also wants to get a deeper knowledge about stock market and foreign exchange market and
also to fulfill one of the requirements for the students of the University to finish Undergraduate Program (Bachelor) in faculty economy.

- For Student and Academic Community

This study can be used as a consideration and reference to develop a new research and theory related with financial market especially in foreign exchange market and stock market.

- For other researcher

The next researcher can use the information in this research as the reference to develop the new idea and concept in both of stock market and exchange rate for the next research.
1.7 THEORITICAL FRAMEWORK

Figure 1.1 Theoretical Framework


Figure 1.1 Theoretical Framework
Figure above shows about the theory and related field which will be explained in more detail in chapter II. Standard & Poor 500 index, AUD/USD exchange rate, USD/CNY exchange rate, and USD/JPY exchange rate will be the main part in this research. Aggarwal (1981), Jeffrey (2008), LiHuang(2008), and Anlas (2012) has done research about the correlation between stock market and foreign exchange rate with different evidence and time series.

The previous researcher made stock market as dependent variable of the research and the foreign exchange rates as independent variable of the research. The result that has been proved by previous researcher stated that foreign exchange rate has positive correlation towards stock market of the country. As the result from the previous study, researcher will make Standard & Poor 500 index as the dependent variable (represent the stock market) while AUD/USD, USD/CNY, and USD/JPY will be the independent variables (represent the foreign exchange rate)

1.8 Scope and Limitation of Study

The scope and limitation of the study have purpose to make this research more specify, detailed and avoid the overload information. Regarding to the research title “THE IMPACT OF MOVEMENT OF SELECTED USD EXCHANGE RATES TOWARDS STOCK PRICE DURING 2007-2011 (CASE STUDY OF STANDARD & POOR 500 INDEX)”, the scope of the study is to evaluate the impact of the selected USD exchange rate's movement toward Standard & Poor 500 index, and to analyze how significant the impact that might be occurred.

The country that will be used as benchmark in this research is United States. Standard & Poor 500 index is chosen as the representative of the United States Market and AUD/USD, USD/CNY, and USD/JPY are chosen as representative of United States exchange market especially in USD exchange rates. Researcher use 60 months data from January 2007 –
December 2011 for both of the indexes. The data will be taken monthly during 5 years from January 2007 – December 2011.

1.9 Definition Of Terms

1. Index : Statistical composite that measures changes in the economy or in financial markets, often expressed in percentage changes from a base year or from the previous month.

2. Composite Index : The value of some securities or stock in some period of time to represent something such as stock market.

3. Regression : Equation that describes the relationship between a dependent variable and independent variable.

4. Securities : A negotiable financial instrument that represents some type of financial value.

5. Market Capitalization : The value of shareholders ownership interest calculated by share price times number of shares outstanding.

6. Large Cap : A term used by the investment community to refer to companies with large market capitalization ( $10Billion).

7. Mid Cap : Company with a market capitalization between $2billion-$10billion.

9. **Dividend**: a distribution of a portion of a company’s earnings, decided by the board of directors, to a class of its shareholders.

10. **Interest rate**: Certain amount of money that should be paid by borrower to lender calculated by the percentage of principal.

11. **Appreciated**: when the price of a currency tend to increase

12. **Depreciated**: when the price of a currency tend to decrease

13. **GDP**: Gross Domestic Product/ total value of goods and services produced within a country over a particular period of time usually one year

14. **Portfolio**: Collection of investments all owned by the same individual or organization.

15. **Variable**: Characteristics of items.
CHAPTER II
LITERATURE REVIEW

2.1 Investment

2.1.1 Theory Investment

Many people define investment is when an assets or item that purchased today with expectation that the asset or item will have higher price in the future. The item will not be consumed when it is purchased because in future the asset or the item may generate incomes. There is not a solid guarantee that the investment that done today will give the return as the investor expected because of an uncertainty in future. That uncertainty in the future makes the investment should be done through a careful analysis on what should be purchased today to maximize the return or benefits in the future.

There are many definitions about investment, but basically investment is allocation of income that received today to purchase an asset or an item through a careful thought and analysis, it will be consumed in the future with the expectation to gain profit.

2.1.2 Real Asset and Financial Asset

In investment there are two important basic that should be known, real asset and financial asset. Real asset is item that can be touch and it is believed that will have more value in the future, such as building, land, equipment, machine, jewel and etc. On the other hand financial asset is item that cannot be touch, it is just sheet of paper as the representative of the item. Financial asset is usually issued by company or government. The financial asset itself consist of stock, bonds, and etc. Financial asset may not give direct contribution compared to real assets, but it is definitely contribute profit to the holders. The value of financial asset is depends on the amount that issued and also depends on the use of the real asset by the
company, in other word when company use real assets to produces good or services, it will create the market value of the company, thus the higher the market value of the company the higher the value of the financial asset that issued by that company like stocks. The other things that differentiate real asset and financial asset are financial asset are created and destroyed in the ordinary course of doing business whereas the real asset can be destroyed through times and misuse of that real asset.

2.2 Stock Market

2.2.1 Definition of Stock Market

Stock represents an ownership; a share of stock in a firm means an ownership of that firm. Corporate or individual investor that own stock called stockholder. Stockholder owns a percentage interest in a firm, consistent with the percentage of outstanding stock held. Investors can earn a return from stock in one of two ways, either the price of the stock rises over time, or the firm pays the stockholder dividends. Most of investors earn a return from both increasing in stock price and dividend. Stock is riskier than bonds because stockholders have a lower priority than bondholders when the firm is in trouble, the returns to investors are less assured because dividends can be easily changed and stock price increases are not guaranteed. (Mishkin and Eakin, 2012) Despite these risks, it is possible to make a great deal of money by investing in stock, whereas that is very unlikely by investing in bonds. Another distinction between stock and bonds is that stock does not mature.
2.2.2 Stock market instrument

- Common stock

Common stocks, also known as equity securities, or equities, represent ownership shares in a corporation. Each share of common stock entitles its owners to one vote on any matters of corporate governance put to a vote at the corporation’s annual meeting and to a share in the financial benefits of ownership.

- Preferred stock

Preferred stock is an equity investment. The firm retains discretion to make the dividend payments to the preferred stockholders: It has no contractual obligation to pay those dividends. Instead, preferred dividends are usually cumulative; that is, unpaid dividends cumulate and must be paid in full before any dividends may be paid to holders of common stock.

However there are several things that differentiate common stock and preferred stock. First, because preferred stockholders receive a fixed dividend that never changes, a share of preferred stock is as much like a bond as it is like common stock. Second, because the dividend does not change, the price of preferred stock is relatively stable. Third, preferred stockholders do not usually vote unless the firm has failed to pay the promised dividend. (Mishkin and Eakin, Financial Market and Institutions 7th edition p. 303)

2.2.3 Stock exchange and Stock market index

According to Jeff Madura on International Financial Management 9th edition stock market index is used to monitor the behavior of a group of stocks, by reviewing the average behavior of a group of stocks, investors are able to gain some insight as to how a broad group of stocks may have performed. Various stock market indexes are reported to give investors an indication of the performance of different groups of stocks.
Downes, Goodman & Elliot (1994:251) stated that index is statistical composite that measures changes in economy or in financial market and often expressed in percentage changes from a base year or previous month. According to Saputro (2010), Index value is the value that is constructed to make the comparison of the same activities such as production, export, purchasing, circulation of money and so on. The values of indices are cited by news or financial service firms to be used as reference to measure the portfolios performance. Basically, the purpose of creating the stock market index is to know the changes of stock price in a specified period for evaluation and business research purpose.

In the capital market, people know about composite stock index. Composite index is known as the index of the stock (equity) prices of the largest companies on a country as measured by market capitalization or price weighted. The performance of composite stock index can give the picture of economic condition in a country. Saputro (2010) has listed the function of composite stock index in the capital market:

1. Give the information about derivative products that being traded in the capital market.
2. As the benchmark to measure the performance of investment portfolio.
3. As the base to form business portfolio.
4. As the indicator to know whether there is increase or decrease in capital market performance.
5. As the indicator to monitor the stock price.

Composite stock index become the indicator to show the movement of stock price in the certain period of time. From the value in the composite stock index, people can visualize the market condition at that time. People can know the tendency of stock price movement whether the stock price is bearish, bullish or stabile. Most investors will make the composite stock index as the benchmark to hold, buy or sell the stock price.
2.2.4 Standard & Poor 500 Index

Standard & Poor 500 is a free float capitalization index published since 1957 of the prices of 500 large-cap common stock actively traded in the United States. S&P 500 is known as the indices owned by Standard & Poor’s, a division of McGraw-Hill. The components of S&P 500 are chosen by the index committees. The index committees are the Standard & Poor’s economist and index analysts. Companies who are included in S&P 500 list are the companies who have some characteristic such as:

1. Company should be the United States Company
2. Company should have market capitalization excess of $ 4 billion.
3. There must be public float of at least 50%.
4. Company should have positive reported earnings in 4 consecutive quarters.
5. Company should have adequate liquidity and reasonable stock price.

<table>
<thead>
<tr>
<th>Company</th>
<th>Float Adj Market Cap (USD Million)</th>
<th>Index Weight</th>
<th>Sector Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Inc.</td>
<td>625,493.5</td>
<td>4.86%</td>
<td>24.14%</td>
</tr>
<tr>
<td>Exxon Mobil Corp</td>
<td>422,127.6</td>
<td>3.28%</td>
<td>28.99%</td>
</tr>
<tr>
<td>General Electric Co</td>
<td>239,731.3</td>
<td>1.66%</td>
<td>18.97%</td>
</tr>
<tr>
<td>Chevron Corp</td>
<td>228,707.0</td>
<td>1.78%</td>
<td>15.71%</td>
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<td>Microsoft Corp</td>
<td>224,691.8</td>
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<tr>
<td>Int'l Business Machines Corp</td>
<td>222,844.6</td>
<td>1.73%</td>
<td>8.60%</td>
</tr>
<tr>
<td>AT&amp;T Inc</td>
<td>217,491.3</td>
<td>1.69%</td>
<td>51.49%</td>
</tr>
<tr>
<td>Google Inc</td>
<td>199,864.6</td>
<td>1.55%</td>
<td>7.71%</td>
</tr>
<tr>
<td>Procter &amp; Gamble</td>
<td>191,036.5</td>
<td>1.46%</td>
<td>13.66%</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td>189,987.7</td>
<td>1.47%</td>
<td>12.29%</td>
</tr>
</tbody>
</table>

Source: Standard & Poor 500 Index

Figure 2.1: Top 10 Companies by Weight S&P 500

Companies that listed in Standard & Poor 500 index is from many kind of industries. According data from Standard & Poor 500 index the info tech sector has the highest contribution while telecommunication has the less contribution.
Bodie, Kane and Marcus stated on Investment Book 6th Edition, (p.:51) that Standard & Poor’s Composite 500 (S&P 500) stock index represents an improvement over the Dow Jones averages because S&P 500 index is more broadly. That is because Standard & Poor 500 index is consisting of 500 firms and it is a market-value-weighted index. The Standard & Poor 500 index is computed by calculating the total market value of the 500 firms in the index and the total market value of those firms on the previous day of trading. Companies that listed on Standard & Poor 500 index are mostly companies that have large capitalization and considered as the leading companies in their own industrial sector.

2.3 Factor of Stock Market

There are many factors that can be used by investor to analyze the movement of the stock market especially the price. According to Jeff Madura on Financial Market and Institution 8th edition p. 270 the factors can be
categorized as three factors which is market related factor, firm specific factor and economic factor.

2.3.1 Market Related Factor

Factor that considered as market related factor which will affect stock price are investor sentiment and January effect. Investor Sentiment is a key market-related factor, which represents the general mood of investors in the stock market. Since stock valuations reflect expectations in some periods, the stock market performance is not highly correlated with existing economic conditions. Even though the economy is weak stock prices may rise if most investors expect that the economy will improve in the near future. January Effect, because many portfolio managers are evaluated over the calendar year, they prefer investing in riskier, small stocks at the beginning of the year and then shifting to larger, more stable companies near the end of the year in order to lock in their gains. This tendency places upward pressure on small stocks in January each year, resulting in the January effect. Some studies have found that most of the annual stock market gains occur in January once investors discovered the January effect; they attempted to take more positions in stocks in the prior month. This has placed upward pressure on stocks in mid-December, causing the January begin in December. (Jeff Madura, Financial Market and Institutions 8th edition p.272)

2.3.2 Firm Specific Factor

Value of the firms is not affected by only macroeconomic and market conditions but also by firm-specific conditions. Some firms are more exposed to conditions within their own industry than to general economic conditions, so participants monitor industry sales forecasts, entry into industry by new competitors, and price movements of the industry’s products. Stock Market participants may focus on announcements by specific firms that signal information about a firm’s sales growth, earnings, or other characteristics that may cause a revision in the expected cash flows to be generated by that firm, like change in dividend policy, earning
surprises, acquisitions and divestitures and expectations. A change in dividend policy like an increase in dividends may reflect the firm’s expectation that it can more easily afford to pay dividend, in contrast, a decrease in dividends may reflect the firm expectations that it will not have sufficient cash flow. Then earnings surprises, recent earnings are used to forecast future earnings and thus to forecast a firm’s future cash flows. When a firm announced earning are higher than expected, some investors raise their estimates of the firm’s future cash flows and hence revalue its stock upward. However, an announcement of lower than expected earnings can cause investors to reduce their valuation of a firm’s future cash flows and its stock. (Jeff Madura, Financial Market and Institutions 8th edition p.272)

Expectations, investors do not necessarily wait for a firm to announce a new policy before they revalue the firm’s stock. Instead, they attempt to anticipate new policy so that they can make their move in the market before other investors. In this way, they may be able to pay a lower price for a specific stock or sell the stock at a higher price. (Jeff Madura, Financial Market and Institutions 8th edition p.:274)

2.3.3 Economic factors

An increase in economic growth is expected to increase the demand for products and services produced by firms and thereby increase a firm’s cash flows and valuation participants in the stock markets monitor economic indicators such as employment, gross domestic product, retail sales, and personal income because these indicators may signal information about economic growth and therefore affect cash flows. In general unexpected favorable information about the economic tends to cause a favorable revision of a firm’s expected cash flows and hence places upward pressure on the firm’s value. Because the government’s fiscal and monetary policies affect economic growth, they are also continually monitored by investors (Madura, Financial Market and Institutions 8th edition p.270).
Interest rate, the relationship between interest rates and stock prices can vary over time. In theory high interest rates should raise the required rate of return by investors, and therefore reduce the present value of future cash flow generated by a stock. However, interest rates commonly rise in response to an increase in expected cash flows even if investors require rate of return rises. Conversely, a lower interest rate should boost the present value of cash flows and therefore boost stock prices. However lower interest rates commonly occur in response to weak economic conditions, which tend to reduce expected cash flows of firms (Madura, Financial Market and Institutions 8th p.270).

Exchange rates, the value of the dollar can affect us stock prices for variety of reasons. First, foreign investors prefer to purchase US stock when the dollar is weak and to sell them when the dollar is near its peak. Thus, the foreign demand for any given us stock may be higher when the dollar is expected to strengthen, other things being equal. Stock prices of us firm primarily involved in exporting could be favorably affected by a weak dollar and adversely affected by a strong dollar, whereas US companies may also be affected by exchange rates if stock market participants measure performance by reported earnings. A multinational corporations consolidated reported earnings will be affected by exchange rate fluctuations even if the company’s cash flows are not affected. A weaker dollar tends to inflate the reported earnings of a US based companies foreign subsidiaries. Some analysts argue that any effect of exchange rate movement on financial statements is irrelevant unless cash flow is also affected. The changing value of the dollar can also affect stock prices by affecting expectations of economic factors that influence the firm’s performance. For example, if a weak dollar stimulates the US economy, it may enhance the value of a US firm whose sales depend on the US economy. A strong dollar, however could adversely affect this firm if it happens, because inflations affects some firms, a weak dollar could indirectly affect a firms stock by putting upward pressure on inflation. A strong dollar would have the opposite indirect impact. Some companies
attempt to insulate their stock price from the dollars changing value, but other companies purposely remain exposed with the intent to benefit from any changes. (Madura, Financial Market and Institutions 8\textsuperscript{th} edition p.270-271)

2.4 Foreign Exchange Market

2.4.1 DEFINITION OF FOREIGN EXCHANGE MARKET

Foreign exchange market is a market consisting of large international banks that allows sale and purchase currencies to facilitate international purchases of services, products, and securities. The foreign exchange market is not based in one location; it is composed of large banks around the world that serve as intermediaries between those firms or investors who wish to purchase a specific currency and those that wish to sell it. The foreign exchange market can be categorized as the most active financial market in the world because it is opened 24 hours a day, 365 days a year. Exchange rates become more important in a country because they affect the relative price of domestic and foreign goods.

The foreign currency market is also a market where demand and supply plays their parts. Besides the value of the dollar relative to other currencies has become a major consideration since the importance of international trade to US economy is increasing. A rise in the value of the dollar makes American industries less competitive with those abroad, and declines in the value of the dollar stimulate inflation in the United States. In addition, preventing large changes in the value of the dollar makes it easier for firms and individuals purchasing or selling goods abroad to plan ahead. Stabilizing extreme movements in the value of the dollar in foreign exchange markets is thus an important goal of monetary policy. In other countries, which are even more dependent on foreign trade, stability in foreign exchange markets takes on even greater importance because exchange rate risk is clearly important when we are discussing the movement of capital from one country to another (Howell and Bain,2007).
Exchange rate systems can be classified according to the degree by which exchange rates are controlled by the government (Madura, International Financial Management 9th edition p. 153). The two common types are fixed exchange rate and floating exchange rate.

1. Fixed Exchange Rate System

Fixed exchange rate system is where exchange rates are either held constant or allowed to fluctuate only within very narrow boundaries. One way of attempting to overcome the problems associated with volatile exchange rates is for governments to enter into fixed exchange rate systems in which central rates or parities are established for each country’s currency and each central bank has an obligation to buy or sell its own currency in order to maintain its exchange rate within a band of agreed width around its central rate (Howell, Financial and Market Institutions 5th edition p. 251).

2. Floating Exchange Rate

In other hand freely floating exchange rate system is where exchange rate values are determined by market forces without intervention by governments. Whereas a fixed exchange rate system allows no flexibility for exchange rate movements, a freely floating exchange rate system allows complete flexibility. A freely floating exchange rate adjusts on a continual basis in response to demand and supply conditions for that currency (Madura, International Financial Management 9th edition p. 156).

The exchange rate system that exists today for some currencies lies somewhere between fixed and freely floating. It resembles the freely floating system in that exchange rates are allowed to fluctuate on a daily basis and there are no official boundaries. It is similar to the fixed rate system in that governments can and sometimes do intervene to prevent their currencies from moving too far in a certain direction. This type of system is known as a managed float or “dirty” float (as opposed to a “clean” float where rates float freely without government intervention) (Madura, International Financial Management 9th Edition p. 158).
Based on all the explanation above can be concluded that the foreign exchange market is the market where currencies of different countries are traded because different countries in the world tend to buy goods and services from each other, the different currencies change hands between countries. For one currency to be exchanged for another currency there needs to be an exchange rate that specifies the rate at which one currency can be exchanged for another.

2.4.2 Factors of foreign exchange rate

According to Jeff Madura on International Financial Management 9th Edition p 89-97, there are several factors that considered can affect foreign exchange rates those are monetary policy, political situation of a country, investor expectations, and international trade.

2.4.2.1 Monetary Policy

Monetary policy is being ruled by a central bank in a country. When a central bank believes that intervention in the forex market is effective and the results would be consistent with the government’s monetary policy, it will participate in forex trading and influence the exchange rates. Different central bank will have different level of intervention of exchange rates. There are some reasons why government does intervention, which are to smooth exchange rate movement, to establish implicit exchange rate boundaries, and to respond to temporary disturbances (Madura, 2008). A central bank generally participates by buying or selling the domestic currency so as to stabilize it at a level that it deems realistic and ideal. Judgment on the possible impact of government’s monetary policy and prediction on future policy by other market players will affect the exchange rates as well.

2.4.2.2 Political Situation

Foreign exchange market is similarly to other financial markets, it reacts to any news that may have a future effect. Markets don’t like news
that may give surprises especially when it comes to bad surprises because currency markets are very ‘liquid’. Exchange rates are proved to move quickly in response to surprises. The stability of a foreign currency is closely related to the political situation of that place. In general, the more stable the country is, the more stable its currency will be (Madura, 2012).

2.4.2.3 Expectations

Sometimes money markets do not go logical. Investors tend to follow their speculations. Speculation by major market operators is another crucial factor that influences exchange rates. In the foreign exchange market, the proportion of transaction that is directly related to international trade activities is relatively low. Most of the transactions are actually speculative trading which cause currency movement and influence exchange rates. When the market predicts that a certain currency will rise in value, it may spark a buying frenzy that pushes the currency up and fulfill the prediction. It is like other financial markets, foreign exchange markets react to any news that may have a future effect (Madura, 2012).

2.4.2.4 International Trade

The starting point for understanding how exchange rates are determined is a simple idea called the law of one price: If two countries produce an identical good, and transportation costs and trade barriers are very low, the price of the good should be the same throughout the world no matter which country produces it. In the long run, there are four major factors that affect the exchange rate: relative price levels, tariffs and quotas, preferences for domestic versus foreign (Mishkin and Eakins, 2012). Frederic S. Mishkin and Eakins also stated on the Financial markets and institutions book 7th edition (p.351) that basically anything that increases the demand for domestically produced goods that are traded relative to foreign traded goods tends to appreciate the domestic currency because domestic goods will continue to sell well even when
the value of the domestic currency is higher. Similarly, anything that increases the demand for foreign goods relative to domestic goods tends to depreciate the domestic currency because domestic goods will continue to sell well only if the value of the domestic currency is lower. In other words, if a factor increases the demand for domestic goods relative to foreign goods, the domestic currency will appreciate; if a factor decreases the relative demand for domestic goods, the domestic currency will depreciate.

2.5 Understanding of International Trade

The first factor according to Mishkin and Eakin on Financial Market and Institutions 7th edition is Price Levels. In line with PPP theory, when prices of American goods rise (holding prices of foreign goods constant), the demand for American goods falls and the dollar tends to depreciate so that American goods can still sell well. By contrast, if prices of Japanese goods rise so that the relative prices of American goods fall, the demand for American goods increases, and the dollar tends to appreciate because American goods will continue to sell well even with a higher value of the domestic currency. In the long run, a rise in a country’s price level (relative to the foreign price level) causes its currency to depreciate, and a fall in the country’s relative price level causes its currency to appreciate.

Barriers to free trade such as tariffs (taxes on imported goods) and quotas (restrictions on the quantity of foreign goods that can be imported) can affect the exchange rate. If a country increases its taxes on imported goods and put a restrictions on the quantity of foreign goods that can be imported it will increase the value of its currency. Increasing trade barriers causes a country’s currency to appreciate in the long run.

Besides that a preferences for domestic goods compared to foreign goods will also affect foreign exchange in a country, say the American prefers to buy goods from other country like Japan, it will make the US dollar tend to depreciate and Japanese yen tends to appreciate. This is similar in other
country when a country prefers to foreign goods then domestic goods, it will depreciate its currency and appreciate the currency of the foreign country. In other words an increased demand for a country’s export causes its currency to appreciate, conversely, increased demand for imports causes the domestic currency to appreciate.

The other factor that Mishkin and Eakins analyze is a level of productivity. When productivity in a country rises, usually it happens in domestic sectors that produce traded goods rather than non-traded goods. When productivity level is higher, the price will be decrease which will increase the demand of the domestic good. As a result, the demand for traded domestic goods rises, and the domestic currency tends to appreciate. If, however, a country’s productivity lags behind that of other countries, its traded goods become relatively more expensive, and the currency tends to depreciate. In the long run, as a country becomes more productive relative to other countries, its currency appreciates.

2.5.1 Australia

The important of the economic partner makes United Stated and Australia has an agreement, The Australia-United States Free Trade Agreement (AUSFTA). Australia-United States Free Trade Agreement (AUSFTA) is a long-term commitment and framework to strengthen trade relations and economic integration with the United States across all sectors of the economic relationship. While Australia’s economy is dominated by its services sector, the agricultural, mining, and energy sectors account for the bulk of its exports. Among its largest export items are coal, gold, iron ore, aluminum, mineral fuels, meat, and wheat. The Australian economy and balance of trade are strongly influenced by world prices for primary products.

That kind of influenced make it is important for Australian to pay attention to United States. The USD exchange rate is important as a significant proportion of Australia’s trade is dominated in US Dollar (Garton, Gaudry, and Wilcox, 2012). This also make United States is
Australia’s most important economic partner country (http://www.dfat.gov.au). According to the census.gov the total of United States Import from Australia and Exports to Australia is increasing during 2007-2011, the data can be seen below:

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports</th>
<th>Imports</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL 2007</td>
<td>19,178.2</td>
<td>8,615.0</td>
<td>10,563.2</td>
</tr>
<tr>
<td>TOTAL 2008</td>
<td>22,218.6</td>
<td>10,588.8</td>
<td>10,588.8</td>
</tr>
<tr>
<td>TOTAL 2009</td>
<td>19,599.3</td>
<td>8,011.5</td>
<td>11,587.8</td>
</tr>
<tr>
<td>TOTAL 2010</td>
<td>60,485.6</td>
<td>8,582.9</td>
<td>13,214.7</td>
</tr>
<tr>
<td>TOTAL 2011</td>
<td>27,541.8</td>
<td>10,241.1</td>
<td>17,300.7</td>
</tr>
</tbody>
</table>

*Source: Census.gov, retrieved December 2012*

Table 3.1 US-Australia Export & Import

2.5.2 Japan

Japan and the United States are considered as the two largest economic powers. Economic conditions in the United States and Japan have a significant impact on the rest of the world. Furthermore, the U.S.-Japan bilateral economic relationship can influence economic conditions in other countries (Cooper, 2012). The economic relationship between United States-Japan is very strong and mutually advantageous. Both of Japan and United states economies are highly integrated via international trade in goods and services. They are large markets for each other’s export and important source of imports.

The trades between United States are settled either in Japanese Yen or United States Dollar. The price of the goods and services are depends on the exchange rates. According to the Census.gov the amount of United States export and import in goods to or from Japan in 2007-2011 is below:
The United States is Japan’s Largest trade partner and in recent year, trade with United States has accounted for about a quarter of total Japanese trade (import plus exports) (Institute for International Economic, www.iie.com)

### Table 3.2 US-Japan Export & Import

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports</th>
<th>Imports</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL 2007</td>
<td>61,159.6</td>
<td>145,463.3</td>
<td>-84,303.8</td>
</tr>
<tr>
<td>TOTAL 2008</td>
<td>65,141.8</td>
<td>139,262.2</td>
<td>-74,120.4</td>
</tr>
<tr>
<td>TOTAL 2009</td>
<td>51,134.2</td>
<td>95,803.7</td>
<td>-44,669.5</td>
</tr>
<tr>
<td>TOTAL 2010</td>
<td>60,485.5</td>
<td>120,545.2</td>
<td>-60,059.6</td>
</tr>
<tr>
<td>TOTAL 2011</td>
<td><strong>65,706.1</strong></td>
<td><strong>128,924.6</strong></td>
<td><strong>-63,218.5</strong></td>
</tr>
</tbody>
</table>

*Source: Cencus.gov, retrieved December 2012*

2.5.3 China

U.S.-China economic ties have expanded substantially over the past three decades. China is currently the second-largest U.S. trading partner, its third-largest export market, and its biggest source of imports, because U.S. imports from China have risen much more rapidly than U.S. exports to China, the U.S. merchandise trade deficit has surged, rising from $10 billion in 1990 to an estimated $273 billion in 2010 (Morrison, 2011).

China’s large population and booming economy have made China as a large and growing market for world. According to the cencus.gov China is the three largest importers for United States. U.S. imports of low-cost goods from China greatly benefit U.S. consumers by increasing their purchasing power. Most of the United States firms are using China as the final point of assembly their products, or use Chinese-made inputs for production in the United States. With that way firms in United States are able to lower costs and become more globally competitive.
2.6 Overview of Previous Research

1. In a study “Exchange Rates and Stock Prices: A Study Of the U.S Capital Markets Under Floating Exchange Rates” Raj Aggarwal (1981) examine the effect of change in exchange rates on stock prices. Variables used in this study is New York Stock Exchange (NYSE), the Standard and Poor 500 Stock index(S&P 500), the Department of Commerce Index of 500 Stocks (DC 500) and US dollar. The research is using the data for period July 1974-December 1978. The result show that there is positive relationship between United States stock market prices and the value of the United States Dollar, a decrease in the value of the U.S Dollar was correlated with a decline in stock prices and vice versa.

2. Mun, H. W., Siong, E. C., & Thing, T. C. (2008) in the research “Stock Market and Economic Growth in Malaysia: Causality Test” their purpose is to evaluate the stock market as a leading economic indicator and explore causal relationship between stock market and economy. Research method used is Granger Causality. The data taken yearly for period 1977-2006. The result indicated a causal relationship between the stock market and the economy, but they also found that the length of significant relationship is relatively short between fluctuations in the stock market and changes in the real economy. The longest significant length observed from the results was two years.
3. In a study “The Effects of Changes in Foreign Exchange Rates on ISE-100 Index”, Tulin Anlas (2012) examine the effect of the seven exchange rate (US dollar, Euro, British Pound, Japanese Yen, Swiss Franc, Canadian Dollar, and Saudi Arabia Riyal) on Istanbul composite index. The variables used in this study are Euro/TL, GBP/TL, CNY/TL, CHF/TL, USD/TL, CAD/TL, SA/TL and the main composite index at Istanbul Stock Exchange. The data taken monthly from January 1999-November 2011 and the research method used is Autoregressive Conditional Heteroscedasticity (ARCH). The result indicate that Canadian Dollar, Saudi Arabia Riyal, US dollar have significant effect on Istanbul Stock Exchange 100 index, where Canadian Dollar and US Dollar are positively related to Istanbul Stock Exchange 100 index, and Saudi Arabian Riyal negatively related to Istanbul Stock Exchange 100 index. The other exchange rates (Euro, British Pounds, Japanese, Swiss Franc) do not have a significant effect on Istanbul Stock Exchange.
CHAPTER III
RESEARCH METHOD

3.1 Type of Research

There are two research method; qualitative method and quantitative method. Neither of these methods is better than the other; it is just where the method is suitably used. Sugiyono (2007) stated that the characteristic of both methods are different, by using quantitative research, the problem should be clear, specified, and stay the same as it is firstly stated. On the other hand, the problem which analyzed using qualitative is still unclear, quite complex, and dynamic.

In this research numbers and statistics will be used to approve or disapprove a hypothesis of this research, therefore Quantitative method will be suitable for this research. Quantitative variables enable us to determine how much of something is possessed, not just whether it is possessed (Weiers, 2008).

Besides descriptive analysis method also will be used in this research, descriptive analysis is used to presenting quantitative data in an informative way.
The research is begun by defining the problem as mentioned in chapter one. After the problem has been defined, the researcher begin to gather the secondary data from reserve.gov and yahoofinance.com. After the data has been found, the data is processed through statistical software. In statistical software there are some statistical tools that will be used for processing the data and produce the result of the research. The last step of the research is interpret the statistical results that are come out from statistical software activities in processing the data (see figure 3.1).

3.2 Research Instruments

This research use secondary data because the number of data source is a lot and using primary data considered as complicated way and time consuming. Secondary data is data that has been published by agency to the society. The secondary data (dependent variable and independent variables)
is retrieved from federal reserve.gov, and yahoofinance.com. Researcher uses the monthly data from period January 2007 until the end of December 2011 (60 months). All data is taken at the end of month closing; start from period January 2007 – December 2011.

Researcher will also use statistical tools to help in analyzing the data such as correlation test, classical assumption tests (normality test, autocorrelation test, multicollinearity test, heteroscedasticity test), multiple regression and test for significance (F-test and T-Test). The tools and programs that are used to calculate and analyze the data are Microsoft Excel 2007 and statistical software for windows version 16. Microsoft excel is used by researcher to record and calculate the data while statistical software is used as statistic software to provide calculation and data analysis for measuring correlation between selected USD exchange rates (AUD/USD, USD/CNY, USD/JPY) and Standard & Poor 500 index.

3.2.1 Normality Test

In statistic normality test is used in the beginning step of analysis. The purpose of this test is to determine whether the data is normally distributed or not. The normality test can be done by using software, for example statistical software, in the graph of histogram and normal P-P of regression standardized residual. Throughout the histogram, we can see the bell-shaped of data distribution (no skewed to the left or right).

While in normal P-P plot of data distributions, if the data is spread around the diagonal line and follow the direction of the diagonal or histogram charts. It shows the distribution pattern normal.

Even though most tests are quite robust with regard to violations of this assumption, but it would be better before drawing final conclusion, to review the distribution of the major variables of interest.
3.2.2 Multicollinearity Test

Multicollinearity test is used to examine whether there is relationships among independent variables. Regression can be a good one if there is no correlation between independent variables. There is always the possibility of multicollinearity if there are many variables which might make precise estimation of one or more parameters difficult (Gujarati, 2005). When multicollinearity happens, the partial regression coefficients become both statistically unreliable and difficult to interpret (Weier, 2008). To assess a multicollinearity test, we can use both an individual $R^2$ value (distinct from the overall $R^2$ of the model) and a variance inflation factor (VIF). When those $R^2$ and VIF values are high for $x$ variables, the $x$ is affected by multicollinearity. According to Santoso (2000) if the VIF is below 10 the model is good for prediction because there is no multicollinearity problem or in other words there is no correlation between independent variables.

3.2.3 Autocorrelation Test

Autocorrelation Test is used to determine whether there is a correlation or not among the variables especially independent variable (AUD/USD, USD/CNY, and USD/JPY). If autocorrelation happens in regression model, the sample will not show the variance of the population, and as consequence, the result of regression model cannot be used to predict the value of dependent variable toward particular independent variable. Autocorrelation test is used in this study is to test the Durbin Watson (DW TEST) which is in the range of tolerance between -2 and +2.

3.2.4 Heteroscedasticity Test

Heteroscedasticity test aimed to examine whether in the regression model there is inequality of variance from residual of another observation, if the variance from residual of one observation to another observation is different, it called heteroscedasticity, on the other hand if it is fixed, it called homoscedasticity. The good model is homoscedasticity. Heteroscedasticity
can also arise as a result of the presence of an outlying observation, or outlier, is an observation that is much different (either very small or very large) in relation to the observations in the sample, heteroscedasticity often occurred in cross-sectional data compared to time series data, if heteroscedasticity occurred the data is no longer efficient for a research (Gujarati, 2003)

3.3 Multiple Regressions

Multiple regressions is an extension of the simple linear regression model, it consists of two or more independent variable instead of just one. The purpose of the multiple correlation analysis is to measure the strength of the relationship between the dependent ($Y$) and the set of independent ($X$) variables. The multiple regressions will be used in this research because there is more than one independent variable in this research. Multiple regressions is used to test correlation among the AUD/USD rate, USD/CNY rate, USD/JPY rate towards Standard & Poor 500 Index. The multiple regressions model in this research is as follows:

\[
Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon
\]

Where :
- $Y$ : Standard & Poor 500 index
- $\beta_0$ : intercept or constant (value of $Y$ when $X=0$)
- $\beta_1$ : regression coefficient of the $i^{th}$ independent variable
- $X_1$ : AUD/USD rates
- $X_2$ : USD/CNY rates
- $X_3$ : USD/JPY rates
- $\epsilon$ : random error
In multiple regression method, there are several statistical technique should be done in order to proof that the data is valid. The classic assumption test model will be useful for this analysis. Some of the classic assumption test will be applied are normality test, autocorrelation test, multicollinearity test.

3.3.1 Multiple Regression Model Interpretation

Based on previous explanation, multiple regressions will be applied. In order to calculate the value, we need to construct model first. The purpose of construct model is to understand by analyzing what the interpretation of the equation is. Regression equation can be developed for any variables X and Y, even in random number. Researcher will use statistical tools in measuring the variability.

a. Coefficient of Determination ($R^2$)

Coefficient of determination is denoted by $R^2$. Coefficient of determination (R2) indicates what percentage of the change in the dependent variable is explained by the independent variables (Anlas, 2012). In this research can be said that Coefficient of determination measures the variability in Standard & Poor 500 Index is explained by (AUD/USD, USD/CNY, USD/JPY). The range of $R^2$ is from lowest value of 0 to the highest value ($0 \leq R^2 \leq 1$)

1. If $R^2 = 0$, it indicates that X explain 0% of variability in Y (in this case, variables (AUD/USD, USD/CNY, USD/JPY) cannot explain the variability of Standard & Poor 500 Index

2. If $R^2 = 1$, it indicates that each point in the sample were on the regression line (all errors are 0). Or in other words, 100% of the variability in Y could be explained by regression equation

3. In developing regression model, a good model will have $R^2$ value close to 1
b. Coefficient of Regressions (β)

Coefficients of regression are computed by statistical software. Coefficients of regression are values, one for each explanatory variable. In this case $\beta_1$ is for AUD/USD, $\beta_2$ is for USD/CNY, $\beta_3$ is for USD/JPY. When the relationship of independent variables and dependent variable is positive the sign for the associated coefficient is also positive and when the relationship is negative the sign of associated is also negative. Besides when the relationship is a strong one, the coefficient of regression is large and vice versa. $\beta_0$ is regression intercept which represent the expected value for the dependent variable if all of the independent variables are zero (Weier, 2008).

3.3.2 Level of Significance

There are two tests; F-test and T-test that used to test the model for significance. These tests determine whether the hypothesis accepted or rejected both partially and collectively and whether there is a linear relationship between X and Y or not. The null hypothesis indicates that there is no linear relationship between two variables, while the alternate hypothesis means that there is linear relationship. If the null hypothesis can be rejected, we can prove that a linear relationship does exist. Since the tool that used to help in calculating is statistical software, the significance level $\alpha$ used is 0.05

a. F-test

F-test is applied to determine the relationship between independent variables and dependent variable collectively. The significance standard that will be used in this research is 0.05 ($\alpha$). Thus if the significant level is lower than significance standard (0.05) the $H_0$ will be rejected and the decision is there is a linear relationship and vice versa.

$\text{Sig.F (p-value)} > 0.05 \quad \rightarrow \quad H_0: \beta_1 = \beta_2 = \beta_3 = 0 \quad \rightarrow \quad \text{accept } H_0$
Sig. F (p-value) <0.05 → $H_a : \beta_1 \neq 0$ → reject $H_a$

b. T-test

T-test is applied to determine the partial relationship between independent variables and dependent variables. The significance standard that will be used in this research is 0.05 ($\alpha$). Thus if the significant level is lower than significance standard (0.05) the $H_0$ will be rejected and the decision is there is a linear relationship and vice versa.

Sig. t (p-value) > 0.05 → $H_0 : \beta_1 = 0$ → accept $H_0$
Sig. t (p-value) < 0.05 → $H_a : \beta_1 \neq 0$ → reject $H_0$

Sig. t (p-value) > 0.05 → $H_0 : \beta_2 = 0$ → accept $H_0$
Sig. t (p-value) < 0.05 → $H_a : \beta_2 \neq 0$ → reject $H_0$

Sig. t (p-value) > 0.05 → $H_0 : \beta_3 = 0$ → accept $H_0$
Sig. t (p-value) < 0.05 → $H_a : \beta_3 \neq 0$ → reject $H_0$

3.4 Testing the Hypothesis

Hypothesis testing is a method of using sample information to evaluate a claim that has been converted into a set of statements called the null and alternative hypotheses. The null hypothesis can be either rejected or not rejected; if it is not rejected, the alternative hypothesis, which asserts the null hypothesis to be wrong, must be rejected. The null hypothesis is given the benefit of the doubt and is assumed to be true unless we are faced with statistically overwhelming evidence to the contrary (Weier, 2008).
The hypothesis test from $H_a.1$ to $H_a.3$ will be done by using multiple linear regressions. F test is used to see whether independent variables such as AUD/USD rates, USD/CNY rates, USD/JPY rates will affect the dependent variable which is Standard & Poor 500 index from January 2007- December 2011. The significance level of each independent variable is important to know whether these hypotheses are rejected or not.

If the level of significance (sig.F) is less than $\alpha(0.05)$, so $H_a$ is accepted. It means collectively the independent variable affect dependent variable significantly. On the other hand, if the level of significance (sig.F) is more than $\alpha(0.05)$, so $H_0$ is accepted. It means collectively the independent variable do not affect dependent variable significantly.

$h_0$: $\beta_1 = \beta_2 = \beta_3 = 0$, if $\text{sig.F} > 0.05$, accept $H_0$

(H$_0$) “There is no significant impact of movement of AUD/USD, USD/CNY, and USD/JPY toward Standard & Poor 500 index”

$H_a$: at least there is one $\beta \neq 0$, if $\text{sig.F} < 0.05$, reject $H_0$

(H$_a$) “There is significant impact of movement of AUD/USD, USD/CNY, and USD/JPY toward Standard & Poor 500 Index”

While the effect of each independent variable toward dependent variable in the regression model can be seen using t-test, by comparing the level of significance (sig.t) of each independent variable with $\alpha = 0.05$

$H_0.1$: $\beta_1 = 0$, if $\text{sig.t} > 0.05$, accept $H_0.1$

(H$_0$) 1 “there is no significant impact of movement of AUD/USD towards Standard & Poor 500 Index”

$H_a.1$: $\beta_1 \neq 0$, if $\text{sig.t} < 0.05$, reject $H_0.1$

(H$_a$) 1 “there is significant impact of movement of AUD/USD towards Standard & Poor 500 Index”

$H_0.2$: $\beta_2 = 0$, if $\text{sig.t} > 0.05$, accept $H_0.2$
(H₀) 2 “there is no significant impact of movement of USD/CNY towards Standard & Poor 500 Index”

Hₐ 2 : β₁ ≠ 0, if sig.t < 0.05, reject H₀ 2

(H₀) 2 “there is significant impact of movement of USD/CNY towards Standard & Poor 500 Index”

H₀ 3 : β₁ = 0, if sig.t > 0.05, accept H₀ 3

(H₀) 3 “there is no significant impact of movement of USD/JPY towards Standard & Poor 500 Index”

Hₐ 3 : β₁ ≠ 0, if sig.t < 0.05, reject H₀ 3

(Hₐ) 3 “there is significant impact of movement of USD/JPY towards Standard & Poor 500 Index

3.5 Limitations

The limitation of this research is the researcher could not find the data for independent variable and dependent variable from same resource. The exchange rates AUD/USD rate, USD/CNY rate, and USD/JPY rate) are from the central bank of United States (federalreserve.gov) and the central bank does not provide historical data for Standard & Poor 500 Index. Researcher also found two sources that provide historical data for Standard & Poor 500 Index which are bloomberg.com and yahoofinance.com. Researcher choose to use Yahoofinance.com it provides the complete historical data that needed for Standard & Poor 500 index. Although yahoofinance.com provides the complete chart for the data needed but for the dependent variable (Standard & Poor 500 Index) the time cannot be set, thus it will be a complicated when researcher want to see the chart for Standard & Poor 500’s movement for the time needed. The researcher is using the monthly data from January 2007-December 2011, there are 60 data that will be analyzed in this research.
CHAPTER IV
DATA ANALYSIS

4.1 Research Objective Description

The object of this research are AUD/USD rate, USD/CNY, USD/JPY and S&P 500 for period January 2007 – December 2011. The value of the index will be taken weekly for 60 weeks as the secondary data from fedreserve.us and yahoofinance.com

4.1.1 Standard & Poor 500 Index

Standard and Poor 500 Index is the index that consist of 500 companies that considered with highest market capitalization in United States. Standard & Poor 500 index components include 500 leading companies in the industrial sector that described through company’s stock price. The movement of the index from January 2007 – December 2011 can be seen through this figure below:

![Source: Yahoo Finance retrieved January 2013](image)

Figure 4.1: Movement of S&P 500 index from January2007-December2011
4.1.2 AUD/USD Rate

AUD/USD exchange rate is a comparison of the value of one currency relation to other. In other words is the price of Australian in United States in term of currency or the price of United States in Australia in term of currency. The movement of the AUD/USD exchange rate from January 2007 – December 2011 can be seen through this figure below:

Figure 4.2: Movement of AUD/USD rates from January 2007 - December 2011

4.1.3 USD/CNY Rate

USD/CNY exchange rate is a comparison of the value of one currency relation to other. In other words is the price of United States in China term of currency or the price of China in United States in term of currency. The movement of the USD/CNY exchange rate from January 2007 – December 2011 can be seen through this figure below:
4.1.4 USD/JPY Rate

USD/JPY exchange rate is a comparison of the value of one currency relation to other. In other words is the price of United States in Japan term of currency or the price of Japan in United States in term of currency. The movement of the USD/JPY exchange rate from January 2007 – December 2011 can be seen through this figure below:
4.2 Descriptive Statistic

The research is using descriptive statistic in order to obtain general information of central tendency of data observations. Descriptive statistic result can be used to know whether the data follow normal distribution or not. The data will be described from minimum value, maximum value, mean and standard deviation.
From the table 4.1, there are three dependents variable (AUD/USD rate, USD/CNY rate, and USD/JPY rate) and one independent variable (Standard &Poor 500 index). The descriptive data explains about the mean value, standard deviation, also minimum and maximum value of each variable.

Variable AUD/USD rate has a mean 0.8869 with standard deviation 0.11304. The maximum value 1.08 happened in August 2011, while the minimum value 0.65 happened in February 2009.

Variable USD/CNY has a mean 6.9147 with standard deviation 0.40119. The maximum value 7.79 happened in January 2007, while the minimum value 6.29 happened in February 2010.

Variable USD/JPY has a mean 96.4375 with standard deviation 13.80116. The maximum value 122.69 happened in June 2007, while the minimum value 76.64 happened in February 2009 October 2011.

Variable Standard & Poor 500 Index has a mean 1.2107E3 with standard deviation 205.43013. The maximum value 1.549.38 happened in October 2007, while the minimum value 735.09 happened in January 2009.

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>StandardPoor</td>
</tr>
<tr>
<td>AUD</td>
</tr>
<tr>
<td>Yuan</td>
</tr>
<tr>
<td>Jpy</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
</tr>
</tbody>
</table>

Table 4.1 Descriptive Statistics

Source: Statistical Software
4.3 Normality Testing

4.3.1 Histogram

The figure of histogram shows that there is a normal distribution in the data that is being used. The histogram form a bell-curve pattern, (the curve tend to skews on the center of histogram) which means the normal distribution was happen in using the data.

Figure 4.5: Histogram
4.3.2 Normal Probability Plot

The data that is used can be described as normally distributed if the graphic in normal probability plot, show the pattern of the points spread around the diagonal line and follow the direction of the diagonal line. From the figure below, the normal p-p plot of regression standardized residual with the S&P 500 Index as the independent variable and AUD/USD rate, USD/CNY rate and USD/JPY rate as the dependent variable show the spread of the points are around the diagonal line and tend to follow the direction of the diagonal line. The researcher can conclude that the data has followed a liner correlation model and the standardized deviation has followed the normal standardized distribution.

Figure 4.6: Normal P-P Plot
4.4 Autocorrelation Test

Autocorrelation test is used to measure the data in time series. This research is using monthly data from January 2007- December 2011 (60 month), so the autocorrelation test is applied in this research.

<table>
<thead>
<tr>
<th></th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.903</td>
</tr>
</tbody>
</table>

Table 4.2 Autocorrelation Test

Autocorrelation does not exist when Durbin-Watson value in the range of -2 and +2. The result of Durbin-Watson test that has been done shows the value is equal 0.903, it means there is no autocorrelation.

4.5 Multicollinearity Test

Multicollinearity test is to measure the value of coefficient correlation between independent variables. If among independent variables there is high correlation (above 0.9 to 1), it means there is multicollinearity. According to Santoso (2000), if the variance Inflation Factor is below 10, then there is no multicollinearity, and the model is good for prediction.

From the table 4.2, correlation, we can see that there is some values equal to 1 because every variable is 100% correlated with itself, and the rest, there is no value between 0.9 to 1. So, we can conclude that there is no multicollinearity in this case.

To make it easier in calculate the value of tolerance and VIF, we can use statistical software. Then the value of tolerance and VIF can be measured as follows:
Table 4.3 Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>(Constant)</th>
<th>aud</th>
<th>yuan</th>
<th>jpy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>.759</td>
<td>.138</td>
<td>.131</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.317</td>
<td>7.265</td>
<td>7.625</td>
</tr>
</tbody>
</table>

From the table 4.3, VIF value of each independent variable is below 10, and it means that multicollinearity does not exist.

4.6 Heteroscedasticity test

Heteroscedasticity can be detected in a research by using Scatter plot. Heteroscedasticity is a condition where the variables are not same for all research. A good equation of regression model should not have a heteroscedasticity. Heteroscedasticity can be considered happen if the points in the scatter plot tend to form a certain pattern. On the other hand, if the points are spread and there is no pattern created, meanings the heteroscedasticity is not happen and the data is normally distributed. From the result of the test, the points are spread randomly and not tend to form a pattern. The following figure shows that the data are spread randomly which means the data is normally distributed and the tendency of heteroscedasticity is not happen.
4.7 Regression Model Result

4.7.1 Coefficient of determination (R2)

From the table above, the value of Adjusted R square (coefficient of determination) for variable is 0.889 or 88.9% for period January 2007 – December 2011. The value of coefficient of determination (R2) which is 88.9% shows that the dependent variable (Standard & Poor 500) can be explained by the variability in the independent variable (AUD/USD, USD/CNY, and USD/JPY). The rest 11.1% of the variability in dependent variable is considered to the factors other than what is accounted for the
linear regression model that use AUD/USD, USD/CNY, and USD/JPY. The rest 11.1\% might be other factors such as global economic condition, politic situation and any other issues that might give certain effect to the index.

4.8 Significance of the Model

4.8.1 F-Test

F-test is used to determine whether there is significant level of relationship between dependent variable and independent variables. The confidence level used for this research is 0.05. From the statistical software output, the ANOVA (Analysis of Variance) table could be described as follow:

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>2227667.658</td>
<td>3</td>
<td>742555.866</td>
<td>158.579</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>2622223.222</td>
<td>56</td>
<td>4882.558</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>2489880.880</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to table 4.6, the result of F-test shows that the value of F is 158.579 with the significance is 0.000. It indicates that there is strong evidence of a linear regression relationship because the significance F is lower than 0.05. Thus H₀ is rejected and accept Hₐ which there is significant level of correlation between AUD/USD rate, USD/CNY rate and USD/JPY rate and Standard & Poor 500 Index. The result of F-test also answers one of the question in research objective which is “is there any impact on movement of AUD/USD, USD/CNY, and USD/JPY and Standard & Poor 500 Index collectively?” and the answer is yes, AUD/USD, USD/CNY, and USD/JPY affect Standard & Poor 500 Index collectively.

4.8.2 T-test
From table 4.6 the significance value of AUD/USD is 0.000, USD/CNY is 0.000, and USD/JPY is 0.000 and the value is higher than the confidence level (0.05). From the result (0.000 < 0.05), $H_0$ is rejected and $H_a$ is accepted. The result concludes that there is a positive and significant level of correlation between AUD/USD, USD/CNY and USD/JPY and Standard & Poor 500 Index partially.

### Table 4.6 T-Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>-2725.374</td>
<td>288.739</td>
<td>-9.439</td>
<td>.000</td>
</tr>
<tr>
<td>AUD</td>
<td>1707.919</td>
<td>92.870</td>
<td>.917</td>
<td>18.430</td>
</tr>
<tr>
<td>CNY</td>
<td>256.758</td>
<td>59.854</td>
<td>.501</td>
<td>4.290</td>
</tr>
<tr>
<td>JPY</td>
<td>6.697</td>
<td>1.783</td>
<td>.450</td>
<td>3.757</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Standard and Poor

From the table above, we can draw the equation for multiple regressions for this research which is shown in the following equation as follows:

$$Y = -2725.374 + 1707.919X_1 + 256.758X_2 + 6.697X_3 + e$$

Where:

- $Y$ : Standard & Poor 500 index
- $X_1$ : AUD/USD rates
- $X_2$ : USD/CNY rates
- $X_3$ : USD/JPY rates
From the table 4.6, P-value (significant T) of variable AUD/USD rate is 0.000 which is lower than 0.05 (significant Y < 0.05). It means that variable AUD/USD rate significantly affects the Standard and Poor 500 index. The beta value (B) is 1707.919 gives a signal of positive correlation between AUD/USD rates significantly affects the Standard & Poor 500 index. Thus we reject Null Hypothesis (H₀) and then accept the Alternate Hypothesis (Hₐ). The result from table 4.7 already answered one of the questions in research objectives which is “How Significance correlation of AUD/USD rates to the Standard & Poor 500?” and the answer is that there is significant correlation of AUD/USD rate to Standard & Poor 500 (0.000).

From the table 4.6, P-value (significant T) of variable USD/CNY rate is 0.000 which is lower than 0.05 (significant Y < 0.05). It means that variable USD/CNY rate significantly affects the Standard & Poor 500 index. The beta value (B) is 256.758 a signal of positive correlation between USD/JPY rate and Standard & Poor 500. Thus we reject Null Hypothesis (H₀) and then accept the Alternate Hypothesis (Hₐ). The result from table 4.7 already answered one of the questions in research objectives which is “How Significance correlation of USD/CNY rates to the Standard & Poor 500 index?” and the answer is that there is significant correlation of USD/CNY rate to Standard & Poor 500 (0.000).

From the table 4.6, P-value (significant T) of variable USD/JPY rate is 0.000 which is lower than 0.05 (significant Y < 0.05). It means that variable USD/JPY rate significantly affects the Standard & Poor 500 index. The beta value (B) is 6.697 a signal of positive correlation between USD/JPY rate and Standard & Poor 500. Thus we reject Null Hypothesis (H₀) and then accept the Alternate Hypothesis (Hₐ). The result from table 4.7 already answered one of the questions in research objectives which is “How Significance correlation of USD/JPY rates to the Standard & Poor 500 index?” The answer is that there is significant correlation of USD/JPY rate to Standard & Poor 500 (0.000).

From the table 4.6, all of three independent variables which are AUD/USD rates, USD/CNY rates and USD/JPY rates have significant effect toward
dependent variable which is Standard & Poor 500 index. According to the beta value (B) of three independent variables which is 1707.919(AUD/USD), 256.758(USD/CNY), and 6.697(USD/JPY), the independent variable that have the highest value is 1707.919 (AUD/USD). It means that the movement of AUD/USD rates has the highest effect to the movement of Standard & Poor 500 Index. It answered one of the questions in research objectives which is “What is the variable (AUD/USD, USD/CNY, and USD/JPY) that has the highest influence to Standard & Poor 500 index?” AUD/USD rates has the highest effect to Standard & Poor 500 index.

From the table 4.6, all of three independent variables which are AUD/USD rates, USD/CNY rates and USD/JPY rates have significant effect toward dependent variable which is Standard & Poor 500 index. According to the beta value (B) of three independent variables which is 1707.919(AUD/USD), 256.758(USD/CNY), and 6.697(USD/JPY), the independent variable that have the lowest value is 6.697 (USD/JPY). It means that the movement of USD/JPY rates has the least effect to the movement of Standard & Poor 500 Index. It answered one of the questions in research objectives which is “What is the variable (AUD/USD, USD/CNY, and USD/JPY) that has the least influence to Standard & Poor 500 index?” USD/JPY rates has the highest effect to Standard & Poor 500 index.

4.9 Interpretations of Result

After the calculation has been done to examine and evaluate the hypothesis by using some of statistical method and statistical software, all of the hypothesis in this research has been examined and tested. From the result, the data in this research is normally distributed; there is no heteroscedasticity and multicollinearity found in the data.

AUD/USD rates, USD/CNY rates and USD/JPY rates are altogether used to find the correlation to Standard & Poor 500 Index collectively. Coefficient of Determination (R2) is used to evaluate the data. By using statistical
software, coefficient of determination (R²) is equal to 0.889, which means that 88.9% variability of the Standard & Poor 500 Index is explained by variability of the combination variables AUD/USD rates, USD/CNY rates and USD/JPY rates.

The variables that have the highest influence toward Standard & Poor 500 index is AUD/USD rate, and the variables that have the least influence to Standard & Poor 500 index is CNY/USD rate. The result of the test can be strengthen by the chart below:

![Source: Yahoo finance](image)

**Figure 4.8: S&P 500 Index, AUD/USD,USD/CNY, USD/JPY movement**

There are many variables (outside of the foreign exchange market) that might contribute to the Standard & Poor 500 Index performance. Type of the industry and the nature of the company also play part in determining the stock price of the company listed. Most of times, the companies in the same industry will have same movement with each other. It is because market conditions will have the same impact in the same way to the same industry. There also possibility that one company in one industry will have different movement with each other because one company take advantage of bad news from competitors.
Most of the company will feel the impact of the movement on exchange rates to the stock price because by buying a foreign currency, it can be considered as an investment. Foreign currencies are often considered as an asset and it include in a company’s portfolio. If the nature of company is multinational company, it will more rely to the exchange rate because exchange rate movement affect the amount of cash inflows received from operation like export and the cash outflow needed to pay the export cost. Basically the movement of exchange rates can affect the company’s cash flow and it will impact to the company’s profit.

Furthermore if the company makes more profit, it will affect the dividend. The stock price may increase by an amount close to the dividend per share value and less profit will make the stock price to decrease. If the profit of a company decreases, it will affect the dividends and of course it will affect the stock price of the company.
CHAPTER V
Conclusion and Recommendation

5.1 Conclusion

From the previous examinations and explanation in previous chapter especially in Chapter IV about analyzing the problem through testing the hypothesis, some conclusions are drawn regarding to the test result. In the early explanation about there are some objectives and hypothesis appear reflecting to the problem statement “THE IMPACT OF MOVEMENT OF SELECTED USD EXCHANGE RATES TOWARDS STOCK PRICE DURING 2007-2011 (CASE STUDY OF STANDARD & POOR 500 INDEX)”

From the multiple regression tests, the researcher also got result that AUD/USD rate, USD/CNY rate and USD/JPY rate collectively have the positive correlation toward Standard & Poor 500 index. It means that the Null hypothesis ($H_0$) is rejected and the alternative hypothesis ($H_a$) is accepted. The changing on movement of AUD/USD rate, USD/CNY rate and USD/JPY rate will gave impact to the Standard & Poor 500 index’s movement.

Through the tested of hypothesis, researcher found that the independent variables (AUD/USD, USD/CNY, and USD/JPY) has the impact on Standard & Poor 500 index partially. As partially AUD/USD has positive impact towards Standard & Poor 500 Index 1707.919(highest impact), USD/CNY has positive relationship towards Standard & Poor 500 Index 256.758, and USD/JPY has positive relationship towards Standard & Poor 500 Index Index 6.697(least impact). The movement on AUD/USD rate, USD/CNY rate and USD/JPY rate has impact on Movement Standard & Poor 500 Index. It means that the Null hypothesis ($H_{01}$- $H_{03}$) is rejected and the alternative hypothesis ($H_{a1}$- $H_{a3}$) is accepted.
5.2 Recommendation

According to the above conclusion, the researcher has some recommendations for investors, other researchers, and the public. Some recommendation that proposed in this research are:

1. Investors

For investors that plan to invest especially in stock, the researcher recommends that they should put more attention to the companies that have trading partner from Australia and China because both of AUD/USD rate, and USD/CNY rate have significant effect to Standard & Poor 500 Index.

2. Other Researcher

For other Researcher that plan to conduct a further study on foreign exchange market and stock market index, the researcher recommends them to add more independent variable (GBP/USD rates, EUR/USD rates, and etc) with a wider time perspective.

3. Public

For the public who want to invest their money in foreign exchange market and stock market, researcher recommends them to track down first the exchange rate of the country and the performance of stock market because both of them play a crucial path in determining economic condition of a country.
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Yahoo Finance. (n.d.). *Interactive Chart for USD/JPY rate*. Retrieved December 20, 2012, from Yahoo Finance: [http://finance.yahoo.com/echarts?s=JPYUSD%3DX#symbol=;range=20070129,20111228;compare=;indicator=volume;charttype=candlestick;crosshair=on;ohlcvalues=0;logscale=off;source=undefined](http://finance.yahoo.com/echarts?s=JPYUSD%3DX#symbol=;range=20070129,20111228;compare=;indicator=volume;charttype=candlestick;crosshair=on;ohlcvalues=0;logscale=off;source=undefined)
<table>
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<tr>
<th>No</th>
<th>Period</th>
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<th>USD/CNY</th>
<th>USD/JPY</th>
<th>Standard&amp;Poor 500</th>
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<td>1</td>
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<td>0.7826</td>
<td>7.7876</td>
<td>120.45</td>
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<td>feb'07</td>
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<td>7.7502</td>
<td>120.50</td>
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a. All requested variables entered.

b. Dependent Variable: standard and poor

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a. Predictors: (Constant), jpy, aud, yuan

b. Dependent Variable: standard and poor

### Model Summary

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a. Predictors: (Constant), jpy, aud, yuan

b. Dependent Variable: standard and poor

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a. Predictors: (Constant), jpy, aud, yuan

b. Dependent Variable: standard and poor

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a. Dependent Variable: standard and poor
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a. Dependent Variable: standard and poor

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a. Dependent Variable: standard and poor

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a. Dependent Variable: standard and poor

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a. Dependent Variable: standard and poor

### Charts