ANALYSIS OF FACTORS AFFECTING
FOREIGN DIRECT INVESTMENT
MINERAL MINING SECTOR IN INDONESIA
PERIOD 2009-2012

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THESIS ADVISOR
RECOMMENDATION LETTER

This thesis entitled “ANALYSIS OF FACTORS AFFECTING FOREIGN DIRECT INVESTMENT MINERAL MINING SECTOR IN INDONESIA PERIOD 2009-2012” prepared and submitted by Zeflin Angga Winata in partial fulfillment of the requirements for the degree of Bachelor 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, 26th February 2013

Acknowledged by, Recommended by,

Irfan Habsjah, MBA, CMA Purwanto, ST. MM
Head of Management Study Program Thesis Advisor
DECLARATION OF ORIGINALITY

I declare that this thesis, entitled “ANALYSIS OF FACTORS AFFECTING FOREIGN DIRECT INVESTMENT MINERAL MINING SECTOR IN INDONESIA PERIOD 2009-2012” 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, 26th February 2013

Zeflin Angga Winata
The Panel of Examiners declare that the thesis entitled “ANALYSIS OF FACTORS AFFECTING FOREIGN DIRECT INVESTMENT MINERAL MINING SECTOR IN INDONESIA PERIOD 2009-2012” that was submitted by Zeflin Angga Winata majoring in Management from the Faculty of Economics was assessed and approved to have passed the Oral Examinations on 21st February 2013.

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Indonesia is a country with plenty of natural resource and recently Indonesia needs investment in the mining sector reached IDR 830 trillion by 2014 in the context of the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development (MP3EI).

In order to reach target, the researcher analyzing the effect of export mining sector, exchange rate, interest rate on foreign direct investment mining sector in Indonesia during 2009-2012. This research using quantitative analysis with secondary data. Quantitative analysis consists of classical assumption test, multiple regression analysis, hypothesis testing by T test and F test, and determination coefficient ($R^2$) analysis.

Hypothesis test using T test shows that partially exchange rate have significant influence on FDI mining sector in Indonesia, but export mining sector and interest rates not significant on FDI mining sector in Indonesia, with $\alpha=5\%$. Export mining sector has a positive effect while exchange rate and interest rates have a negative effect to FDI mining sector in Indonesia.

F test showed that all independent variable are adequate to test dependent variable, means that independent variable have a significant effect into dependent variable with F score is 7.844. Adjusted $R^2$ is 0.323 shows that 32.3\% can be explained by the independent variables (Export mining sector, Exchange rates, and Interest Rates). And the other 67.7\% is explained by other causes outside the model.

Keywords: Foreign direct investment mining sector, export mining sector, exchange rate, interest rate
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All praise and gratitude writer prayed to Allah SWT for all the blessings and guidance and to Prophet Muhammad SAW, so the author can complete the thesis entitled “ANALYSIS OF FACTORS AFFECTING FOREIGN DIRECT INVESTMENT MINERAL MINING SECTOR IN INDONESIA PERIOD 2009-2012” very well, both morally or spiritually so in this occasion the author would like to thank to:

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The authors realize that in writing this thesis is still far from perfectly. Therefore, all criticism and constructive suggestions will refine this thesis writing and useful for writers, readers, and for future research.
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CHAPTER I
INTRODUCTION

1.1. Background of the Study

Indonesia is a potential country and has a contribution for the world's natural resources. Particularly concerning to mining sector, various kinds of mineral resources spread across Indonesia from Miangan to Rote Island including nickel, gold, coal, copper, coal, etc. And another mineral resources has in large number are silver, oil and gas, bauxite. Currently Indonesia produces a wide range of mineral that are useful for domestic and international markets. Investors who invest in mining sector could increase the state income, open new job field, creation of output, and contribute to the fiscal. Indonesia should be a proud with all of natural resources. Mining also support to another sector such as transportation, industry, trade, finance sector, etc.

As we can see Investment in exploration in Indonesia (1.5% or approximately U.S. $ 57 million) is relatively small compared to the scale of global exploration in 2004 amounted to U.S. $ 3.8 billion, for example, Latin America (21.9%), Canada (19.6 %), Africa (16.1%), and Australia (14.7%). In 2006, investment in Indonesia has risen to U.S. $ 157 million from the average during the year 1996-2000 of U.S. $ 109 million and the year 2001-2005 amounted to U.S. $ 57 million per year. (W.Soelistijo, 2012)

Figure 1.1 Global Exploration Share

As a country has high potential of natural resources but still a small number of exploration, Indonesia requires substantial funds to implement exploitation. Indonesia government able to seeking funding through government savings but the state has limited funds to carry out mining development, government expect to get funding from international private sector.

Investing is an activity to transform the resource potential into real economic strength. Natural resources in each region is processed and used to improve the prosperity of all people fairly and equally. However, the use of natural resources and the need to balance preservation of the environment for development. The role of investment in Indonesia tends to increase along with the amount of funds needed to continue national development. Investment is a crucial factor for the sustainability of the economic development process, or long-term economic growth. Economic development involves the activities of production in all sectors of the economy.

According to Economists (INDEF) Eny Sri Hartati said direct investment in Indonesia more sectors into the capital-intensive industry. "Especially the manufacturing, automotive and the chemical's most capital-intensive" She expects the government directs foreign and domestic investment into the industrial sector downstream oil and mining commodities. Eny said commodity processing industry development will create new jobs at a time can sustain the mining and plantation sectors are able to absorb more labor. (Gosta, 2012)

Indonesia still needs investment in the mining sector reached Rp830 trillion by 2014 in the context of the Master Plan for the Acceleration and Expansion of Indonesia's Economic Development (MP3EI). Deputy for Energy, Mineral and Forest Resources Coordinating Ministry for Economic Affairs Wimpy S Tjetjep said the need for investment in the mining sector is still very high and expected state and the private sector could participate more. "Until 2014 we need Rp830 trillion, it's huge. Almost all seem a lot more private and state-owned enterprises. The government just help and guide investor, because it's a great investment. (Pradipta, 2011)
President Director of PT Antam Alwinsyah Lubis said, Indonesia has the potential for considerable mineral reserves. But the problem is how to manage these reserves well. And Lubis said "The potential is certainly necessary governance and provide added value., And I think the trend in recent years the contribution of the mining to the state increased. But it is not enough because it is not exhibited significantly," To that end, he said, the contribution of this sector needs to be improved. And of course there is the challenge. Moreover, he said, Indonesia's position in the mining sector investment is still quite low. And this is contrary to Indonesia's mining potential is quite large (Asmadi, 2012).

The development of investment in the mining sector in Indonesia has fluctuating. In 2009, foreign direct investment in mining sector worth US$173,086,200 and has increased the following year to US$ 2,200,548,100

Table 1.1 FDI Mining Sector in Indonesia Period 2009 -2012(Q3)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Project</th>
<th>FDI Mining Sector(US$-Thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>36</td>
<td>173,086.2</td>
</tr>
<tr>
<td>2010</td>
<td>227</td>
<td>2,200,548.1</td>
</tr>
<tr>
<td>2011</td>
<td>320</td>
<td>3,619,218.2</td>
</tr>
<tr>
<td>2012-Q3</td>
<td>337</td>
<td>3,156,809.100</td>
</tr>
</tbody>
</table>

Source: Indonesia Investment Coordinating Board 2012

There are several factors that able affect number of Foreign Direct Investment Mining Sector in Indonesia such as export mining sector, exchange rates, and interest rates.

(Sarwedi, 2002) The total value of exports continued to rise is believed to be followed by a rise in the number of foreign direct investment into the economy of the country, because the total value of exports has a positive and significant impact on foreign direct investment as well as can be inferred to have a complementary relationship foreign direct investment.
In the beginning of 2009 Export in mining sector was US$ 746,800,000 and increased to US$ 2,251,200,000 by the end of 2009. The highest point in July 2011 was US$ 3,315,700,000.

(Campa, 1993), however, puts forward a different argument for the relationship between exchange rate level and FDI. In his model, the firm’s decision whether or not to invest abroad depends on the expectations of future profitability. In such a case, the higher the level of the exchange rate (measured in units of foreign currency per host currency) and the more it is rising, the higher will be expectations of future profits from entering a foreign market. Therefore, Campa’s model predicts that an appreciation of the host currency will increase FDI into the host country.

Nominal and real exchange rates have fluctuated significantly since the early 1970s following the collapse of the Bretton Woods System. (David Greenaway, 2009). Exchange rates in Indonesia towards US$ in the beginning of 2009 is IDR 11,980.00. And appreciation in lowest point at IDR 8,508.00 (2011) or decreasing IDR 3,472.00.

In addition to the export mining sector and exchange rates, the interest rates of a country is also believed to have an influence on the amount of foreign direct investment mining sector.

(Sukirno, Makroekonomi Modern, 2000) states that the investment will have to consider the interest rate, if the interest rate is higher than the return on capital, the planned investment is not profitable, therefore the company plans to invest will be canceled. The interest rate in Indonesia refers to the interest rate of Bank Indonesia Certificates called SBI is now called the BI Rate. In determining the BI Rate, Bank Indonesia as the government agencies in determining monetary policies always pay attention to the state of the economy is happening, because of the large BI Rate will be responded by the interest rate at which commercial banks affect the economy.
In the beginning of 2009 interest rates in Indonesia was 8.75% and decreased 2.25% to 6.5% by the first of 2010. In February until August 2012 interest rates in Indonesia was getting lower to 5.75%.

1.2. Problem Identified

Foreign investors will consider several aspect before investing in Indonesia. In this study will look at macro-economic factors as a pull factors of foreign direct investment mining sector that is owned by Indonesia are mining export, exchange rates and interest rates.

According to (Mudrajad Kuncoro, 2009) as cited (Mudara, 2012) Indonesia was the weakest in the management of the PMA and guided to explanation in background, the writers interested to further analyze which these variables affect investment in the mining sector, the writers chose the title: "Analysis of Factors Affecting Foreign Direct Investment Mineral Mining Sector in Indonesia Period 2009-2012”

1.3. Statement of The Problem

This research conducted in order to explore:

1. Is there any influence between mining export towards FDI mining sector in Indonesia?
2. Is there any influence between exchange rates towards FDI mining sector in Indonesia?
3. Is there any influence between interest rates towards FDI mining sector in Indonesia?
4. What variables of mining export, exchange rates, interest rates that mostly influence FDI mining sector?
1.4. **Research Objective**

In accordance with the problem as posed in the previous section, the objectives of this research are:

1. To analyze the influence of mining export to FDI mining sector in Indonesia
2. To analyze the influence of exchange rates to FDI mining sector in Indonesia
3. To analyze the influence of interest rates to FDI mining sector in Indonesia
4. To determine the most dominant variables are influence on FDI mining sector in Indonesia

1.5. **Significance of The Study**

This thesis gives some benefits to the researcher. It is hope also can give contribution to Indonesia government, academic community and especially the economist or next researcher.

1. Researcher hope this thesis can give and provide a reflection of FDI mining sector condition in Indonesia; especially for Investment Coordinating Board (BKPM), Bank Indonesia, Ministry of Commerce, Ministry of Energy and Mineral Resources Indonesia in order to create better policy and more stability investment environment
2. As a reference materials and editorial improvements for further research that are related to this research
3. To understand and explore the issues in the macro-economics field, particularly in FDI mining sector
4. The studies can be known by the influence of FDI mining sector to the level of mining export, exchange rates and interest rates.
5. This study is expected to add to the library of President University
1.6. **Theoretical Framework**

Theoretical framework of the research:

![Diagram](source: Constructed by Researcher)

**Figure 1.2 Research Theoretical Framework**

1.7. **Scope and Limitations of The Study**

Due to the limitation of research time (September 2012-January 2013), this thesis will only rely on mining export based on data from Ministry of Commerce Indonesia website, interest rates and exchange rated based on data from Bank Indonesia website, and FDI mining sector based on data from Indonesia Investment Coordinating Board E-mail.

The research itself will only focus on data in time period of January 2009-August 2012. There is no data has been manipulated and the research is not responsible to the other calculation based on another data that might be different by the other institution.
1.8. Assumption and Hyphothesis

In this research, the writer assumes that mining export, exchange rates and interest rates are important factors compared to other macroeconomic factors.

Some hypotheses want to be tested by the research:

H₀: There is no significant influence between (mining export, exchange rates, interest rates) towards FDI mining sector

H₁: There is a significant influence between (mining export, exchange rates, interest rates) towards FDI mining sector

1.9. Definition of Terms

1. FDI Mining Sector is an mining investing activity to do business in the territory of the state of the Republic Indonesia that is carried out by a foreign investor both by use of all of foreign capital and by engagement.

2. Mining Export is an outgoing transfer process of mineral commodities from domestic to foreign countries.

3. Real Interest Rates is the current interest rates minus the current inflation.

4. Exchange Rates is the price of one country’s currency expressed in another country’s currency. In other words, the price of host country currency expressed in home country’s currency.

5. Correlation Analysis is degree and type of relationship between any two or more variables in which they vary together over a period.

6. Variable is characteristic, number or quantity that increases or decreases over time, or takes different values in different situations.

7. Independent Variable is factor or phenomenon that causes or influences another associated factor or phenomenon.

8. Dependent Variable is factor or phenomenon that is changed by the effect of an associated factor or phenomenon.
CHAPTER II
LITERATURE REVIEW

2.1. Investment

Investment is simply any vehicle into which funds can be placed with the expectation that it will generate positive income and/or preserve or increase its value (Gitman&Joehnk, 2008). Understanding of investment by (Sukirno, Makroekonomi Modern, 2000): “Investment” means expenditures to purchase capital goods and production equipment in order to replace and especially adding capital goods in the economy that will be used to produce goods and services in the future. Statistically investments or expenditures to purchase capital goods and production equipment, divided to four components; the investments of private companies, expenditures to establish residence, changes in company inventories and investment undertaken by the government.


The objectives of the capital investment, are:

a. to increase growth in national economy;

b. to create job opportunities;

c. to improve sustainable economic development;

d. improve the competitiveness of the national business world;

e. to increase the capacity and capability of national technology;

f. to foster the enhancement of the people’s economy;
g. to turn economic potentials into real economic strength by use of capital derived from both and foreign investment

h. to improve social welfare.

2.1.1. Type of investment

When you invest, the organization in which you invest—whether it is a company or a government entity—offers you an expected future benefit in exchange for the current use of your funds (Gitman & Joehnk, 2008). There are six types of investment:

1. Securities or Property
   Investment that represents debt or ownership or the legal right to acquire or sell an ownership interest are called securities. The most common types of securities are stocks, bonds, and options. Property, on the other hand, consist of investment in real property or tangible personal property. Real property is land, buildings, and that which is permanently affixed to the land. Tangible personal property includes items such as gold, artwork, antiques, and other collectibles.

2. Direct or Indirect
   A direct investment is one in which an investor directly acquires a claim on a security or property. And an indirect investment is an investment made in a collection of securities or properties, typically constructed to meet one or more investment goals.

3. Debt, Equity, Or Derivative Securities
   Debt represents funds lent in exchange for interest income and the promised repayment of the loan at a given future date. Equity represents ongoing ownership in a business or property. Derivative securities are neither debt nor equity.

4. Low-or High Risk
   Low risk investment are those considered safe with regard to a positive return. High risk investments are considered speculative; their levels of return are highly uncertain.
5. Short-or Long Term

Short term investment typically mature within one year. Long term investment are those with longer maturities or, like common stock, with no maturity at all.

6. Domestic or Foreign

Domestic Investment; the debt, equity, and derivative securities of U.S-based companies. Today, investors also look for foreign investment (both direct and indirect) that might offer more attractive returns than purely domestic investment.

Another types of investment also explain by (Herlambang, 2001). There are three types of investment spending:

1. Business fixed investment
   Investment which surrounding equipment and structures where the business afford to be used in production.

2. Residential Investment
   Investment which covers the purchase of new housing to be occupied or owner for the purchase of capital lease.

3. Inventory investment
   Investment includes raw materials and auxiliary materials, semi-finished goods and finished goods

2.1.2. The determinant of investment

Macroeconomic factors have been empirically shown to have an influence on the development of investment in some countries. (Tendelilin, 2010) summarizes several macroeconomic factors that influence investments in the country are: the growth rate of gross domestic product, the rate of growth of inflation, interest rate and currency exchange rate.

   Every entrepreneur willing to get profit from their business, but this profit can not be obtained immediately or in near future. In general, the results of the sales and profits will be earned during the business is still running. So, the present
investment activity greatly influenced by forecasting number of sales and expected future profits.

According to (Sukirno, Makroekonomi Modern, 2000), there are two decision approach to invest in certain business. First, determining the present value of net income will be earned during project life. Second, rate of returns; is the percentage between net income of the project and capital.

A recent study by (Oman, 2000) suggests the existence of two-stage investment decision process. First, investors initially shortlist a set of potential host countries on the country’s fundamental, economic background, and political fundamental. In this stage, it seems that investment incentives play no role. Second, after the shortlist is made, investors may consider and seek out investment incentives before deciding where to invest. Investment incentives and policies are regard as signaling devices about government’s country general welcoming attitude toward FDI and the overall business environment. In second stage, such incentives and policies of host country’s government may play a role in decision of location. For example, if a firm has two more or less similar location alternatives for its investment, incentives can be regard as key factor in the investment decision.

Another factors also describe by (Sukirno, Pengantar Bisnis Edisi Pertama, 2006), The main factors that determine the level of investment are:

1. The predicted of profit to be obtained in the future
2. Interest rates.
3. Forecasting about the state economy in the future.
4. Advances in technology.
5. Level of national income
2.2. **Foreign Direct Investment**

From six types of investment in Gitman & Joehnk book which already explained before, this research will discuss deeply about foreign investment. According to Ministry of law and human right (Rights, 2007), Foreign investment means an investing activity to do business in the territory of the state of the Republic of Indonesia that is carried out by a foreign investor both by use of all of foreign capital and by engagement in a joint venture with a domestic investor.

Flows of foreign direct investment in Indonesia comes from several countries are; Singapore, Japan, United States, South Korea, UK etc. Foreign direct investment occurs when a firm invests directly to foreign country and start the business or producing goods. Another definition also defined by (Krugman, 1995), Foreign direct investment is formally defined as ownership of assets in one country by residents of another for purposes of controlling the use of those assets.

(Mudrajad Kuncoro, 2009) as cited (Mudara, 2012) in his book wrote that in order to show the performance and potential of a country to FDI by looking at a variety of indicators, one of which is the macroeconomic indicators, the United Nations Conference on Trade and Development (UNCTAD) since 1998 to create a matrix that is divided into four parts are (1) front runner, is country with performance and high FDI potential, (2) above potential, is countries with low FDI potential but has a high FDI performance, (3) below potential, is countries with FDI potential high but has a low FDI performance, (4) under performers, is countries with FDI potential and performance levels. In the period 2004-2006, Indonesia was the weakest in the management of the PMA, while the position of Brunei Darussalam, Malaysia, Singapore, Thailand and Vietnam are the front runners category.
2.2.1. Type of foreign direct investment

Another type of foreign direct investment defined by (Hill, 2009). FDI takes on two main forms. The first is a greenfield investment, which involves the establishment of a new operation in a foreign country. The second involves acquiring or merging with an existing firm in the foreign country.

Foreign investment can be divided into two components: First, portfolio investment which is the purchase of stocks and bonds solely for the purpose of obtaining a return on the funds invested and second, direct investment, by which the investors participate in the management of the firm in addition to receiving a return on their money. (Ball, 2006)

According to Indonesia Investment Coordinating Board type of foreign direct investment in Indonesia divided into 3 main category; primary, secondary, tertier. Every category has several sub category are;

1. Primary Sector
   a. Food Crops & Plantation
   b. Livestock
   c. Forestry
   d. Fishery
   e. Mining

2. Secondary Sector
   a. Food Industry
   b. Textile Industry
   c. Leather Goods & Footwear Industry
   d. Wood Industry
   e. Paper and Printing Industry
   f. Chemical and Pharmaceutical Industry
   g. Rubber and Plastic Industry
   h. Non Metallic Mineral Industry
   i. Metal, Machinery & Electronic Industry
   j. Medical Preci. & Optical Instru, Watches & Clock Industry
2.3. Mining

Indonesia is famous as a country with plenty of mining material. Mineral deposits in Indonesia are found on land and at sea. To obtain and process these minerals required a lot of capital, expertise, and high technology. The government collects all of this from within and from abroad.

Mining means a part or all of stages of research, management and business of minerals and coal, which include general surveys, explorations, feasibility studies, construction, mines, processing and refining/smelting, transportation and sale as well as post mining activities (Indonesia, 2009). We can see mining phase from beginning till the end as below:

In support of sustainable national development, management of mineral and coal shall aim the following:

a. To ensure effectiveness of the conduct and control of efficient, effective and competitive mining business activities;

b. To ensure the benefit of sustainable and environmentally-sound mineral and coal Mining;

c. To ensure the supply of mineral and coal as raw materials and/or as energy sources for domestic needs;
d. To support and develop the national capability in order to better compete in national, regional, and international levels;

e. To improve the income of the local community, regions, and state as well as to create job opportunities in the greatest prosperity of the people;

f. To assure legal certainty in the conduct of mineral and coal business activities

Large-scale mining in Indonesia with modern appliances, newly implemented for mining and energy-producing minerals metals. Mining venture held by the government and partly by private companies. The result is mostly exported. Nonmetallic mineral mining and rock performed by residents or local businesses, usually on a small scale and with simple equipment. Production has not been regularly and used only for domestic purposes.

The procurement and utilization of mining resources in an efficient will have an impact on the improvement of the welfare of society in a whole, either directly or indirectly. Efforts to improve the welfare of the people in energy sector, for example; construction of power plants as a source of energy and household lighting, can directly improve the quality of people's lives.

The mining sector are concerned with the environment will directly affect community livelihood. In order to improve the welfare of people who are not directly from the mining sector will be through state revenue in the form of tax, non-tax revenues, regional income are (Law 4 of 2009 concerning mineral and coal mining);

a. Tax income
   - Taxes within the authority of the Government under the provisions of laws and regulations in the field of taxation
   - Customs and excise duties

b. Nontax state revenues
   - Dead rents
   - Exploration royalties
- Production royalties
- Compensation for data/information

c. Regional income
- Regional taxes
- Regional charges
- Other lawful income under provisions of laws and regulations

2.3.1. Type of mining in Indonesia

According to Law of the Republic of Indonesia number 4 of 2009 concerning in mineral and coal mining, type of mining business in Indonesia shall be classified into two kind:

a. Mineral mining
   Mineral mining means any mining of mineral assemblages in the form of ores or rocks other than geothermal, petroleum and natural gas as well as ground water.

b. Coal mining
   Coal mining means any mining of carbon sediments found in the earth, including solid bitumen, peat, and asphalt rocks.

Mineral mining shall be classified into(Law number 23,2010):

a. Radioactive mineral mining
   Radioactive inerals, covering radium, thorium, uranium, monazite and other radioactive minerals

b. Metal mineral mining
   Metal minerals, covering lithium, berylium, magnesium, kalium, calcium, gold, copper, silver, lead, zinc, tin, nickel, magnese, platinum, bismuth, moliobdenum, bauxite etc

c. Nonmetal mineral mining
Nonmetal mineral, covering diamond, corundum, graphite, arsenic, quartz sand, flourspar, cryolite, osmium, bromine, chlor, sulphur, phosphate, halite, asbestos, talc, mica, etc

d. Rock mining
Rocks, covering pumice, trace, toseki, obsidian, marble, perlite, diatomic earth, fuller earth, slate etc

2.4. Export

Export supply is affected by foreign investment (PMA). Increased foreign investment will indirectly enhance industrialization. As a result, the number of goods produced will increase. This positive relationship is still being debated by some observers. This is due to the possibility of foreign investment is highly dependent and influenced by the policies of the recipient country or the host country. (Sarwedi, 2002)

The total value of exports continued to rise is believed to be followed by a rise in the number of foreign direct investment into the economy of the country, because the total value of exports has a positive and significant impact on foreign direct investment as well as can be inferred to have a complementary relationship foreign direct investment. (Sarwedi, 2002)

(Graham, 1996) in case studies for the USA and Japan using the approach model of gravity (gravity models approach) concluded that there is a relationship complementary between exports and FDI in these countries. while Brenton and Di (Mauro, 1999) in his study in European countries (France, UK and Germany) states that there is a statistically significant positive relationship between FDI and export so that it can be concluded that there is a complementary relationship strong between the two variables. As cited (Sarwedi, 2002)
2.5. Exchange Rate

Exchange rate can be regarded rate at which one currency may be converted into another currency. There are four types of exchange rate regime that a country can adopt: fully fixed, floating, managed floating and semi fixed;

a. A fully fixed exchange rate regime is where a government sets and maintains the official exchange rate. A set price is determined against a major world currency

b. A floating exchange rate regime is where a country exchange rate is determined by the private market through supply and demand

c. A managed floating exchange rate is where the value of a currency is determined by market demand for and supply of the currency with no predetermined target set for the exchange rate by the government. Host countries' government at one time or another "manage" the value of their currency through changes in interest rates and other controls

d. A semi fixed exchange rate is where the value of a country's currency is set by its government to move between permitted bands of fluctuation, and its central bank intervenes to ensure that exchange rate stays within those bands. (Froot, 1991)

Firstly the level of the real exchange rate affects FDI in various ways depending on the destination of the goods produced. If the investor aims at serving the local market, FDI and trade then become substitutes, and various mechanism then can be considered. It is expected that an appreciation of the local currency increases FDI inflows. (Domar, 1997)

(Campa, 1993), in his model, the firm’s decision whether or not to invest abroad depends on the expectations of future profitability. In such a case, the higher the level of the exchange rate (measured in units of foreign currency per host currency) and the more it is rising, the higher will be expectations of future profits from entering a foreign market. Therefore, Campa’s model predicts that an appreciation of the host currency will increase FDI into the host country,
2.6. **Interest Rates**

Investment is the component of expenditure that is probably most sensitive to the real interest rates. Recall that part of investment is the purchase of new equipment or a new factory by a business firm. Many firms must borrow funds to pay for such investments. Higher real interest rates make such borrowing more costly. The additional profits the firm might expect to earn from purchasing truck, heavy equipment are more likely to be lower than the interest costs on the loan if the real interest rates is high. Hence, business that are thinking about buying a new machine and need to borrow funds will be less inclined to purchase such an investment good if real interest rate are higher, and so higher real interest rates reduce investment spending by business. (Taylor, 2007)

At the macro level, the interest rate consists of nominal and real interest rates. Nominal interest rate is the rate that can be observed in the market, the rate of interest paid by the bank and does not account for inflation, while the real interest rate is real interest rate equals the stated, or nominal, interest rate minus the inflation rate. In other word and according to The Fisher Effect states that a country’s “nominal” interest rates (i) is the sum of the required “real” rate of interest (r) and the expected rate of inflation over the period for which the funds are to be lent (I) and the formula is (i = r + I).

The influence of interest rates on investment is explained by the idea classical economists stating that the investment is a function of the interest rate. If the interest rate is high, the willingness to invest is also small. An investor will increase investment spending when the expected benefits of the investment is greater than the interest rate. The lower the interest rate, then investors will be more motivated to invest, because the cost of capital is also getting smaller.

2.6.1. **The influence interest rate of investment**

The interest rate used in this research is the real interest rate. Real interest rate is the interest rate minus inflation ( Real Interest Rate = Nominal Interest Rate - Inflation expectations). Relationships with the investment rate is negative.
The interest rate is one of the important factors that affect investment. Interest rate fluctuations into consideration for investors. If the interest rate is lower than expected, then one would choose to invest their money rather than save their money in bank or lend money to others. If investment funds derived from borrowing banks or other parties with an interest rate lower than the gains can be used to cover the loan interest rate.

To determine the relationship between interest rates and investment can use the concept of marginal efficiency of investment or with MEI curve by (Keynes in The General Theory book) which explains that the investment will be made by the investor if the rate of return on capital is greater than or equal to the interest rate. If the interest rate is greater than the rate of return on the capital investment will not be made by the investor.

![Marginal Efficiency of Investment Curve](image)

**Figure 2.1 Marginal Efficiency of Investment Curve**

Source: (Sukirno, Makroekonomi Modern, 2000)

Based on Figure 2.2 where there MEI curve (marginal efficiency of investment) explained that at an interest rate of $r_1$ with the rate of return on capital of $r_1$ or more, the amount of investment of $I_1$. Meanwhile, if the interest rate increased by $r_0$ the rate of return of $r_0$ or more, the amount of existing investments decreased by $I_0$. (Sukirno, Makroekonomi Modern, 2000)
2.7. Previous Research

Sarwedi (2002) in his study entitled "Foreign Direct Investment in Indonesia and Factors Affecting" aims to analyze the factors that affect the amount of foreign direct investment into Indonesia. This study concludes that the factor of GDP, economic growth, and exports showed a positive and significant to explain the factors influencing FDI in Indonesia. Labor cost and political stability as measured by the number of indicators riots or strikes that occurred in Indonesia during the study period showed a negative and significant results.

I made yogatama pande mudara (2011) in his research “The effect of gross domestic product, interest rate, labor cost, and the total exports of foreign direct investment in Indonesia(1990-2009)” The aim of this research is for analyzing the effect of GDP, interest rate, labor cost, and total value exports on foreign direct investment in Indonesia during 1990-2009. This research using the secondary data and multiple linear regression models with ordinary least squares method. From the results of the research show that interest rate have no significant influence on foreign direct investment in Indonesia, but GDP, labor cost, and total value exports has a significant effect on foreign direct investment in Indonesia, with $\alpha=5\%$. GDP and total value of exports has a positive effect while interest rates and labor cost have a negative effect to foreign direct investment in Indonesia.

Jason Kiat (2008) in his study “The effect of exchange rate and inflation on foreign direct investment and its relationship with economic growth in South Africa” determine the relationship between FDI inflow, economic growth, exchange rate and inflation. Experts in the field of macroeconomics were interviewed to gain a better understanding of these relationships and apply them in a South African context. This research found that FDI follows economic growth, but the reverse is inconclusive. Inflation has a negative impact, while the effect of exchange rate was debated. The reason for portfolio flows into South Africa was identified in the literature review, and it suggested that the success of South Africa created the preference toward portfolio flows.
Jinping Yu, Yao Cheng (2010) in her study “An Empirical Study of the Effects of RMB Exchange Rate on China’s Inflows of FDI” analyzes the level and volatility effects of RMB real effective exchange rate on the inflow of FDI with the process of Chinese exchange rate regime adjustment. In particular, it also examines different effects of exchange rate on resource-seeking FDI and market-seeking FDI. It concludes that (1) the expected appreciation and temporary volatility of exchange rate of RMB can stimulate the inflow of FDI in a short term, but the effect is ambiguous in the long run; (2) appreciation of exchange rate will reduce the inflow of resource-seeking FDI while increase that of market-seeking FDI; (3) increasing exchange rate volatility in China will reduce the inflow of FDI in the future; (4) appreciation of RMB real effective exchange rate intends to increase capital intensity per contract of resource-seeking FDI but to decrease that of market-seeking FDI.

Isa Salim (2006) in his study "Analysis of Factors Affecting Investment In Agriculture Sector In Indonesia Period 1984-2004" analyzes the effect of economic growth, the price index of agricultural products, interest rates and inflation rates are related to the sale of agricultural products abroad, foreign currency exchange rates are an important factor in determining the level of public investment is a good investment (domestic) and foreign investors (FDI). Based on the results obtained Growth of Gross Domestic Production, the rupiah against the U.S. dollar, agricultural product price index, interest rates and inflation simultaneously affect the amount of investment in the agricultural sector. While the variables of the rupiah against the U.S. dollar has contributed negatively affect the value of Investment in Agriculture Sector.

Gery Perdana Putra Pasambe (2010) in his study “Economic analysis of influence factors of Foreign Direct Investment in Indonesia” analyze the economic factors which most influence on foreign investment (PMA). The analysis used is quantitative analysis, the analysis describes the nature of the description or in the form of sentences and secondary data which the authors used data obtained from the books published by the institution or agency concerned. The results showed
after a statistical test to determine the effect of the independent variables simultaneously Inflation (X1), Interest Rates (X2), Foreign Exchange (X3) and the Composite Stock Price Index (X4) to the Foreign Investment dependent variable (Y), which means that overall factors simultaneously influence the independent variables and the real impact on foreign investment.
CHAPTER III
RESEARCH METHODOLOGY

3.1. Research Method

According to (Sugiyono, Metode Penelitian Bisnis, 2007) research method can be defined into two main groups, which are quantitative and qualitative research method.

1. Quantitative research method is a method of research that is based on the philosophy of positivism, used to examine the population or a particular sample, the sampling technique is generally carried out at random, using a data collection instrument of research, data analysis is statistical in order to test the hypotheses that have been determined.

2. Qualitative research method is a method of research based on the philosophy of research methods postpositivisme, is used to examine the condition of the natural objects, where the researcher is a key instrument, sampling conducted by purposive data sources and snowbaal, collecting technique by triangulation (combined), inductive data analysis, and qualitative research results further emphasize the significance than generalization

This research will conduct as a quantitative research approach which involves analysis of numerical data in an attempt to explain the matters observed. The numerical data then will use to prove or disprove a significant hypothesis. The advantage of using quantitative method for the researcher it is more controllable and more reliable to test the correlation between variables.

This research will engage in hypothesis testing which is aimed to understand the certain relationships that exist among variables at a point of time. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypothesis pertaining to natural phenomena.
3.2. **Research Framework**

Research framework is a diagram or a chart that describes the methods used in this study. Research framework in this paper can be seen from the figure 3.1 below:

![Research Framework Diagram]

Figure 3.1 Research Framework

Source: Constructed by Researcher
3.3. Research Time and Place

The research will conduct by using secondary data and variable of this thesis is exports, exchange rate, and interest rates has an influence on foreign direct investment mining sector. This research data started from January 2009 to August 2012 and total observation is 44 monthly data. The research started from September 2012 until January 2013. The researcher has done this research in Indonesia Investment Coordinating Board Office, National Library, President University Library.

3.4. Research Instrument

Research instrument will describe the procedures and tools used by the researchers to collect and analyze the data.

3.4.1 Method of data collections

There are two different categories for data collection, which are Primary data and Secondary data. (Kothari, 2004) Primary data are those which are collected afresh and for the first time, and thus happen to be original in character. The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process.

According Kothari, secondary data can be also obtained from published data or unpublished. Usually published data are available in: (a) various publications of the central, state are local governments; (b) various publications of foreign governments or of international bodies and their subsidiary organisations; (c) technical and trade journals; (d) books, magazines and newspapers; (e) reports and publications of various associations connected with business and industry, banks, stock exchange etc; (f) reports prepared by research scholars, universities, economist, etc, in different fields; (g) public records and statistic, historical documents, and other sources of published information. The sources of unpublished data are many, they may be found in diaries, letters, unpublished
biographies and autobiographies and also may be available with scholars and research workers, trade associations, labour bureaus and other public/private individuals and organisations.

The research will conduct by using secondary data: Foreign Direct Investment in Mining Sector, request by E-mail on November 2\textsuperscript{nd}, 2012 from Investment Coordinating Board Indonesia; Export mining sector, gathered on November 9\textsuperscript{th}, 2012 from Ministry of Trade Republic of Indonesia website; Exchange rates and Interest rates gathered on November 18\textsuperscript{th}, 2012 from Bank Indonesia website.

3.4.2 Instrument for data analysis

There are several tools that writer use in this research to help writer in processing the data which are:

1. IBM Statistics 20.0
   SPSS is statistic software for windows. It is use for analyze the data in order to find out and analyze the correlation between two variables, and perform normality test, auto-correlation test, and other analysis and test needed for this research. Where then, the conclusion can be taken by describing the result of test using Pearson (R), whether to accept or reject the hypothesis.

2. Microsoft Excel 2007
   Microsoft Excel help researcher to construct FDI Mining Sector, Export Mining sector, Exchange Rates, Interest rates per month data in tables form to make the researcher easier to monitor the data movement.
3.5. **Sampling Design**

Sampling Design will explain the method that was used to obtain the sample and statistical treatment use for those samples.

3.5.1 **Sampling technique**

The researcher use data time series (2009-August 2012) from several Government Institutions are;

1. FDI mining sector in Indonesia (quarterly data-US$) request to Investment Coordinating Board. Then the researcher convert quarterly data into monthly data,
2. Export mining sector (US$) in Indonesia data from Ministry of Trade Republic of Indonesia website and copy into Microsoft Excel 2007,
3. Exchange rates (USD/IDR) collected from Bank Indonesia website and copy into Microsoft Excel 2007,
4. Interest rates (%) collected from Bank Indonesia and copy into Microsoft Excel 2007.

3.6 **Statistical Treatment**

In doing the research, there are two main instruments used to process the data collection: Ms. Excel and SPSS. In Ms. Excel the raw numerical data will be processed before it is inputted into SPSS. The correlation analysis will be used in this study.

It is important to make sure the instrument that is developed by researcher to measure a particular concept is indeed accurately measuring the variable, means, researcher is accurately measuring the concept that he/she wants to measure (Bougie, 2009). There are several statistical technique that can be applied in order to show the data validity or data redundancy. Statistical method that is used to analyze the data in this research is Multiple Regression Analysis.
Before researcher performing the multiple regression analysis, classical test assumptions has to be done, in order to estimate an unbiased and efficiency from a multiple regression equation. There are some classical assumptions eligibility criteria that has to be met:

1. **Normality test**

A normality test is used to determine whether sample data has been drawn from a normally distributed population (within some tolerance). An informal approach to testing normality is to compare a histogram of the residuals to a normal probability curve. The actual distribution of the residuals (the histogram) should be bell-shaped and resemble the normal distribution. This might be difficult to see if the sample is small. In this case one might proceed by regressing the measured residuals against a normal distribution with the same mean and variance as the sample. If the regression produces an approximately straight line, then the residual can be assumed to be normally distributed.

2. **Heterocedasticity test**

A simple test for heteroscedastic in linear regression model is developed using the framework of the lagrangian multiplier test. (Pagan, 1979). In contrast, a sequence of random variables is called homoscedastic. When it is homoscedastic, it does not have to question about the assumption of constant variance from Y to the value of X. Homoscedasticity is not required for the estimates to be unbiased, consistent and asymptotically normal. To investigate the relationship between variables, it is helpful to look at the graph of the data. Such graph is often called scatter diagram or a scatter plot.

3. **Multicolinearity test**

Multicollinerity means a statistical phenomenon in which two or more independent variables in multiple regression model are highly correlated (Bougie, 2009). In its most severe case (if the correlation between two independent variables is equal to 1 or -1) multicollinearity
makes the estimation of the regression coefficients unreliable. The simplest and most obvious way to detect multicollinearity is to check the correlation matrix for the independent variables. The presence of high correlations (most people consider correlations of 0.70 and above high) is a first sign of sizeable multicollinearity. However, when multicollinearity is the result of complex relationship among several independent variables, it may not be revealed by this approach. And more common measures for identifying multicollinearity are therefore the tolerance value and the variance inflation factor (VIF—the inverse of tolerance value). These measures indicate the degree to which one independent variable is explained by other independent variables. A common cutoff value is a tolerance value of 0.10 which corresponds to a VIF of 10.

4. Autocorrelation test

Often, and especially with time series data, the data is correlated with itself, it is correlated with its lagged values. A lagged value is the value of the data one or more prior time periods before the current time period. For example, sales in this time period are related to sales in the previous time period earlier. The correlation between the lag values and the data itself is called autocorrelation. (Kenneth D Lawrence, 2009)

(Porter, 2012) also said the presence of autocorrelation in the OLS (Ordinary Least Squares) has consequences, which are: the estimated OLS is still linear, unbiased, also consistent and normally asymptotic distributed, but the estimators is no longer efficient (having the smallest variance). And (Widjarjono, 2009)said, if the variance is not the minimum, then the cause OLS standard error calculation is no longer credible. Furthermore, interval estimation and hypothesis testing based on the distribution of t and F no longer is trusted to evaluate the results of the regression. To see the existence of autocorrelation of dependent variable with itself can be shown from the value of Durbin-Watson which the range of tolerance is between -2 until 2.
3.7. Multiple Regression Analysis

Multiple Regression Analysis is a statistical technique to predict the variance in the dependent variable by regressing the independent variable against it. Multiple regression analysis used in situation where more two or more independent variables are hypothesized to affect one dependent variable. Multiple regression analysis provides a means of objectively assessing the degree and the character of the relationship between independent variables and dependent variables. The regression coefficients later used to indicate the relative importance of each of the independent variables in the prediction of the dependent variable. (Bougie, 2009)

Then the model equation used in this research can be explain as follows

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

Where:

- \( Y \) = Foreign Direct Investment Mining Sector
- \( \beta_0 = \) Constant
- \( \beta_1 = \) \( X_1 \) regression coefficient
- \( X_1 = \) Dimension score of Export Mining Sector
- \( \beta_2 = \) \( X_2 \) regression coefficient
- \( X_2 = \) Dimension score of Exchange Rates
- \( \beta_3 = \) \( X_3 \) regression coefficient
- \( X_3 = \) Dimension score of Interest Rates
3.8. Testing Hypothesis

3.8.1. Correlation coefficient (R)

The correlation coefficient (also known as Pearson’s correlation coefficient) is used to describe the strength and direction of the linear relationship between two variables depending on the level of measurement of variables. According to (Sugiyono, Metode Penelitian Bisnis, 2007) regardless of whether parametric or nonparametric correlation coefficient is used, it typically ranges between 0.0 and 1.0 or between 0.0 and -1.0. The plus or minus sign in front of correlation coefficient indicates whether the correlation is positive or negative (inverse) as shown in table 3.1. Having a minus sign does not mean that the correlation is weaker. It only shows that the variables are inversely related.

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Correlation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 – 0.20</td>
<td>Slight correlation</td>
<td>Almost negligible relationship</td>
</tr>
<tr>
<td>0.20 – 0.40</td>
<td>Low correlation</td>
<td>Definite but small relationship</td>
</tr>
<tr>
<td>0.40 – 0.70</td>
<td>Moderate correlation</td>
<td>Substantial relationship</td>
</tr>
<tr>
<td>0.70 – 0.90</td>
<td>High correlation</td>
<td>Marked relationship</td>
</tr>
<tr>
<td>0.90 – 1.00</td>
<td>Very high correlation</td>
<td>Very dependable relationship</td>
</tr>
</tbody>
</table>

Source: (Sugiyono, Metode Penelitian Bisnis, 2007)

3.8.2. Coefficient of multiple determination (R²)

Coefficient of multiple determination in multiple regression is define as the proportion variation in the dependent variable that is explained or accounted for the covariation in the independent variables (Gilbert A. Churchill, 2009). From the calculation of R, we can see the relationship between independent variable (X1, X2, X3) and dependent variable (Y) is positive or negative relationship. Meanwhile determinants are used to view the contribution of independent variables (X1, X2, X3) in explaining the dependent variable (Y).
3.8.3 F test

Significant testing in order to know whether the independent variables have significant influence into dependent variable simultaneously, then the equation can be described as follow (Sugiyono, Metode Penelitian Bisnis, 2007)

\[
Fh = \frac{R^2/k}{(1-R^2)/(n-k-1)}
\]

Where: 
- \(R\) = Multiple correlation coefficient 
- \(k\) = Number of independent variable 
- \(n\) = Number of sample 

Here is the step in conducting F test:
1. Hypothesis formulation:
   - \(H_0 = \beta_1 = \beta_2 = \beta_3 = 0\), mean that simultaneously the independent variables \((X_1, X_2, X_3)\) do not have significant influence on the dependent variable \((Y)\).
   - \(H_a = \beta_1 \neq \beta_2 \neq \beta_3 \neq 0\), mean that simultaneously the independent variables \((X_1, X_2, X_3)\) have significant influence on the dependent variable \((Y)\).

2. Find out the value of F-table with 5% significant
   \[F\text{table} = F_{\alpha}; \text{numerator};\text{denumerator}\]
   \[= 0.1; k-1; n-k\]

3. Accepted Criteria:
   - \(H_0\) accepted if \(F\) count < \(F\) table at \(\alpha = 5\%\)
   - \(H_a\) accepted if \(F\) count > \(F\) table at \(\alpha = 5\%\)
3.8.4 T test

Significant testing in order to know whether the independent variables is partially have significant influence into dependent variable simultaneously or not, then the equation can be described as follow:

\[ t = \frac{r\sqrt{n - 2}}{\sqrt{1 - r^2}} \]

Where:  \( t \) = Hypothesis testing
\( r \) = Coefficient regression
\( n \) = Number of sample

Here is the step in conducting T test:

1. Hypothesis formulation:
   \( H_0 = \beta_1 = \beta_2 = \beta_3 = 0 \), mean that partially the independent variables (X1, X2, X3) do not have significant influence on the dependent variable (Y).
   \( H_a = \beta_1 \neq \beta_2 \neq \beta_3 \neq 0 \), mean that partially the independent variables (X1, X2, X3) have significant influence on the dependent variable (Y).

2. Find out the value of F-table with 5% significant
   \[ T \text{ table} = T(\alpha/2; n-k-1) \]
   \[ = T 0.05; n-k-1 \]

3. Accepted Criteria:
   \( H_0 \) accepted if \( F \text{ count} < F \text{ table} \) at \( \alpha = 5\% \)
   \( H_a \) accepted if \( F \text{ count} > F \text{ table} \) at \( \alpha = 5\% \)
CHAPTER IV
ANALYSIS OF DATA AND INTERPRETATION OF RESULTS

4.1. Analysis of Data Collection

4.1.1. Foreign direct investment mining sector

As stated in background of study that foreign direct investment is fluctuating and increasing year by year, and the investment instrument also keep vary, understanding every aspect of the foreign direct investment instrument that we choose and also factors that may affect it is very important. The researcher collected the data from IndonesiaInvestment Coordinating Board (BKPM) by email from January 2009 to August 2012, and the data that the researcher collect is summarized in monthly form which researcher get from calculating division of quartely foreign direct investment mining sector into monthly data. The data are summarized in table below.

Table 4.1 Foreign direct investment mining sector

<table>
<thead>
<tr>
<th>Period</th>
<th>FDI Mining Sector (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
</tr>
<tr>
<td>Jan</td>
<td>13,233,800</td>
</tr>
<tr>
<td>Feb</td>
<td>13,233,800</td>
</tr>
<tr>
<td>Mar</td>
<td>13,233,800</td>
</tr>
<tr>
<td>Apr</td>
<td>31,083,333</td>
</tr>
<tr>
<td>May</td>
<td>31,083,333</td>
</tr>
<tr>
<td>Jun</td>
<td>31,083,333</td>
</tr>
<tr>
<td>Jul</td>
<td>10,387,300</td>
</tr>
<tr>
<td></td>
<td>Aug</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
</tr>
<tr>
<td>FDI</td>
<td>10,387,300</td>
</tr>
<tr>
<td>Mining</td>
<td>291,622,233</td>
</tr>
<tr>
<td>Sector</td>
<td>352,828,667</td>
</tr>
</tbody>
</table>

Source: Indonesia Investment Coordinating Board 2012

![Figure 4.1 FDI Mining Sector](image)

Based on Table 4.1 about foreign direct investment mining sector amount in Indonesia period 2009-2012; it shows that highest FDI mining sector in April 2011 and the lowest in the end of 2009. As people see in Figure 4.1, in 2009 a number of FDI Mining was low and flat around US$ 10,387,300, then in the end of year decreasing. In the beginning of 2010 increasing rapidly until US$ 232,295,533 (July) and fall in October. In beginning of 2011 FDI mining sector rebound just like previous year. In july 2011 a number of FDI mining sector decreasing rapidly in US$ 69,084,567 until end of year. In 2012 was climb in January US$ 360,862,767 and flat around that number. Overall FDI mining sector was fluctuating but still increasing.
4.1.2. Export mining sector

Export is an indicator to show a number of goods carried out from one country to host country. Export mining sector is one of four sectors categorized by the Ministry of Trade Republic of Indonesia. The researcher collected the data from Indonesia Ministry of Trade Republic of Indonesia website from January 2009 to August 2012, and the data that the researcher collects is summarized in monthly. The data are summarized in the table below:

Table 4.2 Export Mining Sector

<table>
<thead>
<tr>
<th>Period</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>1,014,800,000</td>
<td>2,173,600,000</td>
<td>2,307,800,000</td>
<td>2,653,900,000</td>
</tr>
<tr>
<td>Feb</td>
<td>746,800,000</td>
<td>2,002,100,000</td>
<td>2,484,400,000</td>
<td>2,480,700,000</td>
</tr>
<tr>
<td>Mar</td>
<td>1,650,600,000</td>
<td>2,520,800,000</td>
<td>2,675,000,000</td>
<td>3,028,500,000</td>
</tr>
<tr>
<td>Apr</td>
<td>1,277,300,000</td>
<td>1,960,700,000</td>
<td>2,193,400,000</td>
<td>2,958,400,000</td>
</tr>
<tr>
<td>May</td>
<td>1,528,600,000</td>
<td>2,123,900,000</td>
<td>2,880,700,000</td>
<td>3,013,100,000</td>
</tr>
<tr>
<td>Jun</td>
<td>1,434,000,000</td>
<td>1,975,700,000</td>
<td>3,215,000,000</td>
<td>2,390,600,000</td>
</tr>
<tr>
<td>Jul</td>
<td>2,095,300,000</td>
<td>2,152,800,000</td>
<td>3,315,700,000</td>
<td>2,318,600,000</td>
</tr>
<tr>
<td>Aug</td>
<td>1,890,000,000</td>
<td>2,240,900,000</td>
<td>2,921,900,000</td>
<td>2,146,500,000</td>
</tr>
<tr>
<td>Sept</td>
<td>2,002,100,000</td>
<td>2,213,200,000</td>
<td>3,235,400,000</td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td>2,094,100,000</td>
<td>1,589,200,000</td>
<td>3,282,500,000</td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td>1,707,500,000</td>
<td>2,840,500,000</td>
<td>2,950,400,000</td>
<td></td>
</tr>
<tr>
<td>Dec</td>
<td>2,251,200,000</td>
<td>2,862,100,000</td>
<td>3,189,800,000</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Trade Republic of Indonesia Website (2012)
Based on Table 4.2 in above, the highest US$ 3,315,700,000 on July 2011 and the lowest was US$ 746,800,000 on February 2009. And based on figure 4.2 a number of export mining sector in 2009 was fluctuating and increasing until highest point at US$ 2,251,200,000 in December. And the condition of following year was stagnant until September and fall in October US$ 1,589,200,000. As people see in 2011 a number of mining exports was higher than previous year until highest point on July 2011. In 2012 the trends of mining export try to increasing but getting weak in May 2012. The researcher summarize that figure 4.2 was fluctuating and increasing slowly during 2009-2012.

4.1.3. Exchange rate

In doing this research the researcher use middle exchange from Bank Indonesia website. The researcher collected the data from Bank Indonesia website from January 2009 to August 2012. The data of Exchange Rates are presented in table below:
### Table 4.3 Exchange Rates

<table>
<thead>
<tr>
<th>Period</th>
<th>Exchange Rates (IDR)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
</tr>
<tr>
<td>Jan</td>
<td>11,355</td>
</tr>
<tr>
<td>Feb</td>
<td>11,980</td>
</tr>
<tr>
<td>Mar</td>
<td>11,575</td>
</tr>
<tr>
<td>Apr</td>
<td>10,713</td>
</tr>
<tr>
<td>May</td>
<td>10,340</td>
</tr>
<tr>
<td>Jun</td>
<td>10,225</td>
</tr>
<tr>
<td>Jul</td>
<td>9,920</td>
</tr>
<tr>
<td>Aug</td>
<td>10,060</td>
</tr>
<tr>
<td>Sept</td>
<td>9,681</td>
</tr>
<tr>
<td>Oct</td>
<td>9,545</td>
</tr>
<tr>
<td>Nov</td>
<td>9,480</td>
</tr>
<tr>
<td>Dec</td>
<td>9,400</td>
</tr>
</tbody>
</table>

Source: Bank Indonesia 2012

### Figure 4.3 Exchange Rates (IDR)

Source: Bank Indonesia 2012
As it shows in Table 4.3, Indonesia middle exchange rate recorded by Bank Indonesia has the highest rate of exchange rates is IDR 11,980 in February 2009 and the lowest is IDR 8,508 on July 2011. Based on figure 4.3 Indonesia has moderate volatility during 2009 until 2012. In 2009 the trend of exchange rates was appreciation. And following year until 2012 was flat between IDR 10,000 and IDR 8,500.

4.1.4. Interest rate

In this research the researcher use real interest rate from Bank Indonesia or BI rate. BI rate is the interest rate that reflects the attitude or policy of monetary policy set by Bank Indonesia and announced to the public. BI Rate announced by the Board of Governors of Bank Indonesia every monthly meeting of the Board of Governors and implemented on monetary operations conducted by Bank Indonesia through the management of liquidity. The researcher collected the data from Bank Indonesia website from January 2009 to August 2012, The data of Interest Rates are presented in table below:

<table>
<thead>
<tr>
<th>Period</th>
<th>Real Interest Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
</tr>
<tr>
<td>Jan</td>
<td>8.75</td>
</tr>
<tr>
<td>Feb</td>
<td>8.25</td>
</tr>
<tr>
<td>Mar</td>
<td>7.75</td>
</tr>
<tr>
<td>Apr</td>
<td>7.5</td>
</tr>
<tr>
<td>May</td>
<td>7.25</td>
</tr>
<tr>
<td>Jun</td>
<td>7.00</td>
</tr>
<tr>
<td>Jul</td>
<td>6.75</td>
</tr>
<tr>
<td>Aug</td>
<td>6.50</td>
</tr>
<tr>
<td>Sept</td>
<td>6.50</td>
</tr>
<tr>
<td>Oct</td>
<td>6.50</td>
</tr>
<tr>
<td>Nov</td>
<td>6.50</td>
</tr>
<tr>
<td>Dec</td>
<td>6.50</td>
</tr>
</tbody>
</table>

Source: Bank Indonesia 2012
The influence of interest rates on investment is explained by the idea of classical economists stating that the investment is a function of the interest rate. If the interest rate is high, the willingness to invest is also small. An investor will increase investment spending when the expected benefit of the investment is greater than the interest rate.

![Figure 4.4 Interest Rates (%)](image)

Source: Bank Indonesia 2012

As it shows in Table 4.4 Figure 4.4, Indonesia interest rates reach in the highest is 8.75% in the beginning of 2009 and the lowest is 5.75 % during February until August 2012. During 2009 interest rates was decreasing and low fluctuate after 2009. In 2010 until 2012 the range of interest rates between 5.75 % and 6.75%. The researcher summarizes that interest rate during 2009 until 2012 is decreasing and then flat but still fluctuates.
4.2. Descriptive Statistic of Variables

Descriptive statistic is made to obtain calculation results of mean and standard deviation for both, independent and dependent variable. In analyzing the data, the researcher use monthly data of each of variables (FDI Mining Sector, Export Mining, Exchange rates, Interest rates) for the period taken from January 2009 until August 2012 as it shows from table in previous part. The statistic descriptive research variable will be described below using SPSS Statistics 20.0.

Table 4.5 Descriptive Statistic of Dependent and Independent Variables

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI_Mining_Sector</td>
<td>199928021.20</td>
<td>155939137.462</td>
<td>44</td>
</tr>
<tr>
<td>Export_Mining_Sector</td>
<td>2317956818.18</td>
<td>621414127.128</td>
<td>44</td>
</tr>
<tr>
<td>Exchange_Rates</td>
<td>9387.20</td>
<td>784.875</td>
<td>44</td>
</tr>
<tr>
<td>Interest_Rates</td>
<td>6.5682</td>
<td>.62030</td>
<td>44</td>
</tr>
</tbody>
</table>

Source: Primary Data, Processed 2012

As we can see from the table above, the dependent variables, which is FDI Mining Sector, from 44 samples processed, FDI Mining Sector has a mean or average amount of 199,928,021.20 with the standard deviation of 155,939,137.462. While the independent variables results are: Export Mining Sector have mean 2,317,956,818.18 and standard deviation of 621,414,127.128; Exchange Rate have mean of 9,387.20 with standard deviation of 784.875; and Interest Rates have mean of 6.5682 and standard deviation of 0.62030.

4.3. Assumption Test Result

Assumption test that will be conducted in this research for this correlation models is classic assumption test which includes: normality test, multicollinearity test, heterocedascity test and autocorrelation test.
4.3.1. Normality test

Normality test aims is to test whether the regression model, residual confounding, or residual variable has a normal distribution or not (Ghozali, 2005) There are 2 ways to detect whether or not the residuals are normally distributed with graphical analysis and statistical analysis.

a. Graphical analysis

![Histogram Graphics](image)

**Figure 4.5 Histogram Graphics**

Source: Primary Data, Processed by SPSS V.20

According to histogram displayed above, we can conclude that the histogram provide a normal distribution pattern (symmetrical / not skewed). This shows that the regression model fulfill the assumptions of normality.
Figure 4.6 Normal Probability Plot

Source: Primary Data, Processed by SPSS V.20

From normal probability plot graphics shown above, the dots are spread around the diagonal line and follow the diagonal line. This also shows that the regression model fulfills the normality test.

b. Statistical analysis

Normality with graphs can be misleading if not visually looks normal, but statistically the result could be different (Ghozali, 2005). Therefore, in this research, graphical test comes with a statistical test. The statistical test used for normality test in this research is a non-parametric statistical test of Kolmogorov-Smirnov (KS). K-S test is done by testing criteria:

1. If the significance value (Asymp.Sig.) > 0.05, then the residual data is normally distributed.
2. If the significance value (Asymp. Sig.) < 0.05, then the residual data is not normally distributed.

Table 4.6 Non-Parametic Kolmogorov-Smirnov Test

<table>
<thead>
<tr>
<th></th>
<th>Unstandardized Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>44</td>
</tr>
<tr>
<td>Mean</td>
<td>-1E-7</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>123734730.105</td>
</tr>
<tr>
<td>Absolute</td>
<td>15146</td>
</tr>
<tr>
<td>Positive</td>
<td>.104</td>
</tr>
<tr>
<td>Negative</td>
<td>-.100</td>
</tr>
<tr>
<td>Kolmogorov-Smirnov Z</td>
<td>.688</td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.730</td>
</tr>
</tbody>
</table>

a. Test distribution is Normal.
b. Calculated from data.
Source: Primary Data, Processed by SPSS V.20

According to the result of K-S Test above, it shows that the significance value (Asymp. Sig) is 0.730 which mean it’s higher than 0.05. So, we can conclude that the residual data is normally distributed. The result from this statistical analysis is consistent with the results from graphical analysis of normality test from before. This shows that the regression model in this research is have a normal distribution.

4.3.2. Multicollinearity test

Multicollinearity test aims is to testing whether the independent variables in this regression model have a correlation of each other or not. In good regression model, the correlation between the independent variables should not happen (Bougie, 2009). Multicollinearity can be seen from Tolerance value and Variance Inflation Factor (VIF) value. If Tolerance value > 0.10 or if VIF value < 10, it can
be concluded that there are no multicollinearity between the independent variables in regression model of the research.

**Table 4.7 Tolerance and VIF value**

<table>
<thead>
<tr>
<th>Coefficients(^a^)</th>
<th>Model</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Constant)</td>
<td>.403</td>
<td>2.481</td>
</tr>
<tr>
<td>1</td>
<td>Export_Mining_Sector</td>
<td>.403</td>
<td>2.481</td>
</tr>
<tr>
<td></td>
<td>Exchange_Rates</td>
<td>.377</td>
<td>2.654</td>
</tr>
<tr>
<td></td>
<td>Interest_Rates</td>
<td>.555</td>
<td>1.800</td>
</tr>
</tbody>
</table>

\(^a^) Dependent Variable: FDI_Mining_Sector

Source: Primary Data, Processed by SPSS V.20

If we see the calculation from Table 4.7, it shows that there are no independent variables that have the *Tolerance* value below 0.10 (*Tolerance* > 0.10) which means there are no correlation between the independent variables. The calculation result from *Variance Inflation Factor* (VIF) also shows same result, none of the independent variables have VIF value more than 10 (VIF < 10). Based from both *Tolerance* and VIF results, we can conclude that there are no multicollinearity between the independent variables in this regression model of the research.

4.3.3. **Heterocedasticity test**

Heterocedasticity test is used to test whether inequalities occur in the regression model from residual variance of one observation to the other observations (Ghozali, 2005). If variance from residual of one observation to the other observations is constant, it is called homocedasticity, and if its different, it is called heterocedasticity. Good regression model is the homocedasticity one or when heterocedasticity doesn’t occur. In this research, researcher used *Scatterplot* diagram to test whether heterocedasticity in this regression model is happen or not. The trick is to look at the scatterplot graph. If there is a particular pattern,
such as the existing dots forming a regular pattern (wavy, widened and then narrowed), it has been indicated heteroscedasticity. And if there is no clear pattern, and the points spread above and below the 0 on the Y axis, then heteroscedasticity does not happen (homocedasticity).

![Scatter Plot Graph](source)

**Figure 4.7 Scatter Plot Graph**

*Source: Primary Data, Processed by SPSS V.20*

From Scatter Plot above, we can see that there is no particular pattern formed, and the dots are spreading below and above 0 on Y axis. It can be concluded that heterocedacity did not occurs on regression model.

### 4.3.4. Autocorrelation test

Autocorrelation test is used to test the correlation between the variables from the data time series. (Sunyoto, 2011) If autocorrelation happens, the sample cannot show its variance of population and as a result it can’t be used to predict the value of dependent variable towards the independent variable. Furthermore, interval estimation and hypothesis testing based on the distribution of t and F no longer be trusted to evaluate the results of the regression. To see the existence of autocorrelation of dependent variable with itself can be shown from the value of
Durbin-Watson which the range of tolerance is between -2 and 2. And to decide whether there is autocorrelation or not are based on:

1. Autocorrelation positive if the value of DW is -2 or (DW < -2)
2. No autocorrelation between -2 and +2 or \(-2 \leq DW \leq +2\)
3. Autocorrelation negative if the value of DW is +2 (DW > +2)

Table 4.8 Durbin-Watson Test

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.609*</td>
<td>.370</td>
<td>.323</td>
<td>128290898.710</td>
<td>.585</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Interest_Rates, Export_Mining_Sector, Exchange_Rates
b. Dependent Variable: FDI_Mining_Sector

Source: Primary Data, Processed by SPSS V.20

Based on the result above, it shows that DW value is 0.585. And because of counted DW value is between -2 and +2 or \(-2 \leq DW \leq +2\), we can conclude that there is no autocorrelation in this regression model. So, the regression model can be used to see whether the independent variables: Export Mining Sector, Exchange Rates, Interest Rate have an impact to Foreign Direct Investment mining sector.

4.4. Multiple Regression Analysis

From multiple regression analysis tests, the following results are obtained: regression coefficient, t counted value, and level of significance as shown from table below:
This study used a standardized regression test results due to match the size of the independent variables (Export Mining Sector, Exchange Rates, and Interest Rates) which have different measurement. The advantage of using a standardized regression results are able to eliminate the differences in units of measurement in the independent variable. Besides the standardisd regression test results are used because researcher wants to see the level of priority.

According to the result of multiple regression analysis test that has been done, formed the following regression equation:

\[ Y = 1053761728.208 + 0.036X_1 - 92139.813X_2 - 10923488.605X_3 \]

Where:

\[ Y \quad \text{= FDI Mining Sector} \]
\[ X_1 \quad \text{= Export Mining Sector} \]
\[ X_2 \quad \text{= Exchange Rates} \]
\[ X_3 \quad \text{= Interest Rates} \]

From the regression linear above, we can conclude that:

1. The equation have a Constanta of 1,053,761,728.208 which means that even though there are no changes in Export Mining Sector (X_1),
Exchange Rates ($X_2$) and Interest Rates ($X_3$), there is still an FDI Mining Sector of 1,053,761,728.208.

2. Independent Variable Export Mining Sector ($X_1$) have positive influence on FDI Mining Sector with coefficient of 0.036

3. Independent Variable Exchange Rates ($X_2$) have negative influence on FDI Mining Sector with coefficient of -92139.813

4. Independent Variable Interest Rates ($X_3$) have negative influence on FDI Mining Sector with coefficient of -10923488.605

4.5. Model Testing

4.5.1. Coefficient correlation (R)

Coefficient correlation is used to measure to depict the strength and direction of the linear relationship between two variables depending on the level of measurement of variables. If R values are close to 1, it means that it have strong relationship and can predict perfect correlations between variable X and Y.

**Table 4.10 Coefficient Correlation (R) and Determination ($R^2$) Test Result**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.609$^a$</td>
<td>.370</td>
<td>.323</td>
<td>128290898.710</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Interest_Rates, Export_Mining_Sector, Exchange_Rates

b. Dependent Variable: FDI_Mining_Sector

Source: Primary Data, Processed by SPSS V.20

From the table above, we can see that the R value is 0.609. It means that the independent variable (Export Mining, Exchange rates, Interest Rate) have moderate correlation (see table 3.2) towards its dependent variable (Foreign
Direct Investment Mining Sector). Also, it means that every increase in one variable, there is a corresponding increase in other variable.

4.5.2. Coefficient determination (R²)

Coefficient of determination (R²) is used to measure how far the model's ability to explain variation in the dependent variable (Ghozali, 2005). R² values are getting close to 1, meaning the independent variables provide almost all the information needed to predict the variation in the independent variable.

The coefficient of determination being used is the value of Adjusted R Square because it is more reliable in evaluating the regression model. Adjusted R Square value can go up or down when the independent variable is added to the model. In contrast to the value of R² which would have increased an additional independent variable, regardless of whether these variables significantly influence the dependent variable.

From the table 4.10 above, it shows that the value of Adjusted R Square is 0.323 it means that the change of dependent variable, Foreign Direct Investment Mining Sector 32.3 % can be explained by the independent variables (Export Mining, Exchange rates, Interest Rate). And the other 67.7 % is explained by other causes outside the model.

Standard Error of the Estimate (SEE) in the table above 128,290,898.710, which have value smaller than the standard deviation which is 155,939,137.462. Smaller value of SEE will make regression equation more precise in predicting the dependent variable.
4.5.3. F-test

F test shows whether all the independent variables included in the model have an influence together on the dependent variable (Ghozali, 2005). This test is done by comparing the value of F calculated by the value of F table using a significant level of 5%. If the count value of F is greater than F table then simultaneously all the independent variables affect the dependent variable. In addition, you can also see the value of probability. If the probability value less than 0.05 (for a significance level = 5%), the independent variables simultaneously affect the dependent variable. Meanwhile, if the probability is greater than 0.05 then the independent variables simultaneously has no effect on the dependent variable.

Table 4.11 F-Test Result

<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>387289439805547390.000</td>
<td>3</td>
<td>12909647993518246.000</td>
<td>7.844</td>
<td>.000a</td>
</tr>
<tr>
<td>Residual</td>
<td>658342187670370690.000</td>
<td>40</td>
<td>16458554691759268.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1045631627475918080.000</td>
<td>43</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: FDI_Mining_Sector
b. Predictors: (Constant), Interest_Rates, Export_Mining_Sector, Exchange_Rates

Source: Primary Data, Processed by SPSS V.20

According to ANOVA test or F-Test Above, the result shows F value of 7.844 with probability of 0.000. Because F count > F Table which is 3.23, or the significant value is less than is less than 0.05, then the regression model can be used to predict the dependent variable (FDI Mining Sector) and all the independent variable which are Export Mining, Exchange rates and Interest Rate simultaneously affect the dependent variable.
4.5.4. T-test

T test is used to see whether independent variables (Export Mining, Exchange rates and Interest Rate) individually affect FDI Mining Sector dependent variable or not. T table value in this study is 1.68385 (Based on T-Table with significance level of 0.05).

Table 4.12 T-Test Result

<table>
<thead>
<tr>
<th>Coefficientsa</th>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>1053761728.208</td>
<td>480414182.643</td>
<td>.142</td>
<td>.721</td>
<td>.034</td>
</tr>
<tr>
<td>Export_Mining_Sector</td>
<td>.036</td>
<td>.050</td>
<td>.712</td>
<td>.475</td>
<td></td>
</tr>
<tr>
<td>Exchange_Rates</td>
<td>-92139.813</td>
<td>40607.371</td>
<td>-.464</td>
<td>-2.269</td>
<td>.029</td>
</tr>
<tr>
<td>Interest_Rates</td>
<td>-10923488.605</td>
<td>42317757.803</td>
<td>-.043</td>
<td>-.258</td>
<td>.798</td>
</tr>
</tbody>
</table>

a. Dependent Variable: FDI_Mining_Sector
Source: Primary Data, Processed by SPSS V.20

The descriptions about T-Test result above are as follows:

1. Value of T counted of Export Mining Sector variable (X_1) is 0.721 with significance level of 0.475. Because the value of T counted < T table and significance level > α significance probability = 0.05, then H₀ is accepted and Hₐ is rejected. It means that Export Mining Sector variable individually have positive but not significant effect on dependent variable.
2. Value of T counted of Exchange Rates variable (X₂) is -2.269 with significance level of 0.029. Because the value of T counted < T table and significance level < \( \alpha \) significance probability = 0.05, then \( H_0 \) is rejected and \( H_a \) is accepted. It means that exchange rate variable individually have negative influence and significant effect on dependent variable.

3. Value of T counted of Interest Rate variable (X₃) is -0.258 with significance level of 0.798. Because the value of T counted < T table and significance level > \( \alpha \) significance probability = 0.05, then \( H_0 \) is accepted and \( H_a \) is rejected. It means that Interest Rate variable individually have negative and not significant effect on dependent variable.

4. According to statement of the problem in chapter 1, the most variable influence FDI mining sector is exchange rates (X₂) with significance level below of 0.029. Export mining sector and interest rates variable not significant, those significant value more than significance probability = 0.05. Its means that exchange rate variable individually have most influence on dependent variable.

4.6. Results Interpretation

This part will present the discussion about the results of the analysis that has been done before. The results are described as follows:

4.6.1. The Influence of Export Mining Sector (X₁) towards FDI Mining Sector (Y)

Statement of the first hypothesis (\( H_a \)) which states that “higher export Mining Sector (X₁) will results in higher FDI Mining Sector rejected because the variable, Export mining sector, have positive effect and not significant to the FDI
Mining Sector with regression coefficient of 0.036 which means that each increases of 1 unit of Export mining sector \((X_1)\), while the other variable is constant, it will cause an increase of FDI Mining Sector by 0.036.

The total value of exports continued to rise is believed to be followed by a rise in the number of foreign direct investment into the economy of the country, because the total value of exports has a positive and significant impact on foreign direct investment as well as can be inferred to have a complementary relationship foreign direct investment. (Sarwedi, 2002)

From Sarwedi statement in above export and FDI has positive effect same like as in this research result, export mining sector has positive effect on FDI mining sector. If export mining export in Indonesia increasing, FDI mining sector will also increasing. As we can compare between figure 4.1 (FDI mining sector) and figure 4.2 (Export mining sector). FDI mining sector in 2009 until 2012 has a bullish trend eventhough in the end of 2010 and 2011 get a chance decreasing. Same like as export mining sector, in 2009 until 2012 has a bullish trend. In 2009 export mining sector increasing and increasing also by following year. In October 2010 export mining sector get a chance to decreasing from US$ 2.2 billion to US$ 1.5 billion and rebound to US$ 2.8 billion by following month and still climb in 2011. Thus its matched with Sarwedi theory export and FDI has a positive effect.

4.6.2. **The Influence of Exchange Rate** \((X_2)\) **towards FDI Mining Sector** \((Y)\)

Statement of the hypothesis \((H_a)\) which states that “lower exchange rate \((X_2)\) will results in higher FDI mining sector can be accepted because the variable, Exchange Rate, have negative and significant effect to the FDI mining sector return with regression coefficient of -92,139.813 which means that each increases of 1 unit of Exchange rate \((X_2)\), while the other variable is constant, it will cause an decrease of FDI mining sector by 92,139.813.

(Campa, 1993) theory, in his model, the firm’s decision whether or not to invest abroad depends on the expectations of future profitability. In such a case, the higher the level of the exchange rate (measured in units of foreign currency
per host currency) and the more it is rising, the higher will be expectations of future profits from entering a foreign market, and Campa predicts that an appreciation of the host currency will increase FDI into the host country.

As we can see figure 4.1 (FDI mining sector) and figure 4.3 (exchange rate), since 2009 until 2012 FDI mining sector has a rising trend, contrast to exchange rate has a bearish trend. In the beginning 2009 exchange rates around IDR 11,500 and the middle of 2012 is IDR 9,480, in other word exchange rates is appreciation from 2009 to 2012. Thus, it matches with Campa theory, Campa predicts that an appreciation of the host currency will increase FDI into the host country.

4.6.3. The Influence of Interest Rates \( (X_3) \) towards FDI Mining Sector \( (Y) \)

Statement of hypothesis \( (H_a) \) which states that “Higher interest rates \( (X_3) \) will results in lower FDI Mining Sector” rejected because the variable, interest rates, have negative effect and not significant to the FDI mining sector with regression coefficient of \(-10,923,488.605\) which means that each increases of 1 unit of interest rates \( (X_3) \), while the other variable is constant, it will cause a decrease of FDI mining sector by 10,923,488.605.

According to Keynes in The General Theory book which explains that the investment will be made by the investor if the rate of return on capital is greater than or equal to the interest rate. If the interest rate is greater than the rate of return on the capital investment will not be made by the investor.

As people see in figure 4.1, FDI mining sector has a raise trend from 2009 until 2012. FDI mining sector climb little bit harder because in the end of 2010 and 2009 decreasing rapidly, but still increasing year by year. Contrast to figure 4.4 (interest rates), starts from 2009 until 2012 interest rates has a down trend. In the beginning 2009 interest rates is 8.75 % and the beginning of 2012 is 5.75% or
decreasing 3%. Thus, it matches with Keynes in The General Theory that an increasing interest rates will decreasing FDI, and vice versa.

4.6.4. The Influence of Export Mining Sector (X1), Exchange Rates (X2), and Interest Rates (X3) towards FDI Mining Sector (Y)

The results of this research show that FDI Mining Sector be affected by Export mining sector, Exchange rates, and Interest Rates. This is proved with the F Test that had been done before, with the score of 7.844. It means that all the independent variable which is Export mining sector, Exchange rates, and Interest Rates affects to dependent variable. If the independent variables show the change, it will affect the FDI Mining Sector.
CHAPTER V
CONCLUSION AND RECOMMENDATION

5.1. Conclusion

This study was made to determine how much Export mining sector, Exchange rates, and Interest Rates influenced the FDI Mining Sector in order to make foreign investor aware about the variable that can be used to predict future expectations. Based on the analysis and discussion that has been done in previous chapter, it can be concluded as follows:

Based on the analysis and discussion that has been done, it can be concluded as follows:

1. Export Mining ($X_1$) is an independent variable which have positive influence to FDI mining sector with $T$ value is less than $t$ table and significance level more than significance probability 0.05. Its mean that export mining has positive effect and not significant towards FDI Mining Sector ($Y$).

2. Exchange rates ($X_2$) is an independent variable which have negative influence to FDI mining sector with $T$ value is less than $t$ table and significance level less than significance probability 0.05. Its mean that exchange rates has negative effect and significant towards FDI Mining Sector ($Y$).

3. Interest rates ($X_3$) is an independent variable which have negative influence to FDI mining sector with $T$ value is less than $t$ table and significance level more than significance probability 0.05. Its mean that interest rates has negative effect and not significant towards FDI Mining Sector ($Y$).
4. From total the independent variables (Export mining sector, Exchange rates, and Interest Rates), Exchange rates is most dominant variables are influence on FDI mining sector in Indonesia with T value more than t table and significance level less than significance probability 0.05. Its mean that exchange rates has negative effect and significant towards FDI Mining Sector (Y). If compare with other independent variabel, Export mining sector and interest rates variable not significant, those significant value more than significance probability = 0.05.

5.2. Recommendation

After finish the analysis and give the conclusion for this research, the writer also will give some recommendations and suggestions for government, and the next researcher.

1. Government

From the result has been done, the writer suggest the government should therefore implement policies that will makes appreciation exchange rates; consider the exchange rate as a factor that influenced and significant the foreign direct investment mining sector in Indonesia.

2. The next researcher

To the next researcher, the writer suggest to research other FDI primer sector in Indonesia such as Food Crops & Plantation, Livestock, Forestry, and Fishery sector it may give another result, and also use more period of time (n) for the researcher in order to arrive with better and more effective result.

Beside that, it will be more accurate if the next researcher uses more independent variables (X) in researching the factors that affect the foreign direct investment (Y) for example gross domestic product, inflation rate, tariff and tax, infrastructure, labor cost.
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Books


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