"THE IMPACT OF U.S. DOLLAR MONEY SUPPLY ON FINANCIAL MARKET VOLATILITY: THE CASE OF INDONESIA BEFORE AND DURING QUANTITATIVE EASING PROGRAM"

(JANUARY 2003 – DESEMBER 2013)

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MOTTO

"NOTHING IS TRUE EVERYTHING HAS BEEN PERMITTED"

-ASSASSIN CREED

"NEVER THINK THAT THERE IS ANYBODY TO HELP YOU, WE ARE BORN ALONE AND DIE ALONE."

-REDHA VAHLEVI

"MAN ISN'T BORN FOR LOVING WOMAN, MAN IS BORN FOR FIGHTING IN ORDER TO DEFEND HIS COUNTRY".

-REDHA VAHLEVI

"WHEN GOVERNMENT SEIZE THE POEPLE'S RIGHTS, INSURRECTION AND REBELLION IS THE MOST SACRED THING IN HUMAN RIGHTS."

-MARQUISE DE LAFAYETTE

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ABSTRACT

During May 2013 until December 2013 Indonesia's financial market index was damaged by the issue of tapering off Quantitative Easing program(QE) which extremely excess USD money supply by The Fed. Therefore, This research aims to examine the impact of the USD money supply during and before quantitative easing program towards financial market volatility in Indonesia which is proxied by variance of financial market index such as IHSG, Gold Price in IDR, and Exchange Rate IDR/USD to find out the effect of the excess USD money supply on Indonesia's financial market volatility. This reseacrh has used monthly time series data of M1 of USD, IHSG, IDR/USD Exchange Rate, and Gold Price from December 2008 to December 2013. This research is conducted following previous research such as Panyasombat (2012), Techarongrojwong (2013), Ahmed & Zlate (2012), Liu (2013), Srikanth and Kishor (2012).

The model which is used to measure volatility of financial market in this research is TGACRH. The reason of using TGACRH in this research is to find out wheter the volatility or variance at previous time affects volatility of these financial market index at present time and assymetric information is exist in the financial market index.

The result showed that there's a difference between the effect of USD money supply to financial market index volatility in Indonesia during QE program and before QE program. Before and during QE program, USD money supply positively affects IDR/USD exchange rate volatiliy and IHSG volatility and negatively affects Gold Price volatility. During QE program, USD money supply negatively affects volatility of IDR/USD exchange rate and IHSG, and positively affects Gold Price volatility.

Keywords : USD Money Supply, Financial Market Volatility, IHSG, Gold Price, IDR/USD Exchange Rate.

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CHAPTER I

PREFACE

1.1 Reseacrh Background

Financial market risk is a systemic risk that have powerfull effect for banking industry and firm, if market risk is very uncertainty and have high volatility then banking industry and firms will struggle enough to manage that risk. Financial institution's ability to manage market risk effect will determine theFinancial institution's financial performance, if they could manage risk driver of financial market risk carefully then the their performace will be better. Financial market risk includes movement of interest rate, stock market index, comodity index, or exhange rates.

In this day, comodity market and financial market is experiencing fast globalization. the economic condition among countries become more integrated and dependendabilty. World financial and comodity market be more integrated. There is so many factors that causing world market more integrated. Integrated economic in financial market and comodity market triggered by globalization tren to liberalization market also extremely affected by the existance of regional economic cooperation. For example, APEC (Asia Pasific Economic Cooperation), NAFTA (North American Free Trade Agreement), EU (Europena Union) and WTO (World Trade Organization) which encourage so many countries to reduce

their trade restriction or even dissapears it. Expansion of multinational firms to their foreign countries also boosting the integration of economic among the countries.

The intergration of world financial market extremely affected by technology development and telecomunication development which could decrease physical restriction and institutional restriction, along with fasten the movement of capital flow from a country to other country. In addition, the blooming of international trading in comodity market also give a contribution for the integration of financial market.

The change in USD supply will impact world economy because its function as international currency. Liu (2013) argues that one reason why people care so much about QE of US is that US dollar serves as both US national currency and a "world currency". There is no doubt about it, USD is the international currency because there are so many countries which use dollar as a foreign exchange. Dollar growth will impact world economy because its function as international currency. Liu (2013) explain that US dollar and Euro make up above 85% of official foreign exchange reserves globally, while the former is always above 60% and more than double of the latter. Due to the Euro crisis since 2009, the share of Euro reserves declines from 27.7% to 23.7% in 2013. Generally speaking, US dollar is the global currency and play a dominant role in the world financial and economic. Schulmeister (2000) argues that the most important events in postwar economic development ranging from the oil price shocks in the 1970s to the financial crises in Latin America in the 1980s and in East

Asia(includes Indonesia) in the late 1990s could be related to US dollar's double role. The monetary crisis in Indonesia because lack of foreign reserve that is denominated by USD and depreciation rupiah againts USD.

Salvatore (2011) state that the U.S. dollar is more than international currency, it's the dominant vehicle currency, serving as a unit of account, medium of exchange, and store of value not only for domestic transactions but also for private and official international transaction. Table on this following paragraph shows the importance of dollar as international currency, about 43,2% foreign exchange trading uses U.S. dollar and 63,9% foreign exchange reserve were held in U.S. dollar.

Table 1.1

Relative International Importance of Major currency in 2007 (in Percentage)

Currency	Foreign Exchange Trading	Foreign Exchange Reserve
U.S. dollar	43,2	63,9
Euro	18,5	26,5
Japanese yen	8,3	2,9
Pound Sterling	7,5	4,7
Swiss franc	3,4	0,2
Other currencies	19,1	0,8

Source : Salvatore, 2011

United States is one of Indonesian's trading partners. Monetary policy and economic condition in that country will affect Indonesian's financial market. During financial crisis 2008, the crisis that was occured in United States(Subprime mortgage) made Bank Indonesia increased the Bank Indonesia's

interest rate, so the condition of financial and monetary policy which affected the financial condition in United States could be said connected each other. Therefore, U.S Dollar's performance as international exchange will affect againts world financial market volatility index. When QE is occuring, lower interest rate occurs in United States then U.S. Dollar will be invested to other countries like Indonesia. When dividen is distributed then the demand of U.S. Dollar will increase because they want the return denominated in their currency.

The empirical studies about impact of dollar supply was did by Liu (2013) who examine the impact of USD supply on the China's macroeconomic condition. He concluded that positive shock to US money supply, China will have higher inflation rate and lower GDP level. Srikanth and Kishor (2012) concluded that relative money supply(M3 of India – M2 of US)are one of the most significant variable in determining the USD/INR exchange rate. And the impact of US dollar supply on gold price was investigated by Artigas (2010), he argues 1% change in money supply in the US dollar, the European Union and United Kingdom, India,and Turkey tend to correlate to an increment in the price of gold by 0.9%, 0.5%, 0.7%, and 0.05%, respectively and other are Siklos and Anusiewicz(1998) who state that unexpected high growth M1 USD led to higher Canadian stocks price. And low growth in M1 US led to lower Canadian stocks price.

Although U.S. dollar is the world currency, its supply policy just only depend on The Federal Reserve as U.S. Central Bank. Therefore, the monetary policy which is established by The Fed may affect the world economy and financial economy. Just like other countries's central bank, The Fed decide

monetary policy to affect the money supply and demand for reach the macroeconomy target such as full employnment, price stability and balance of payment surpluss. The Fed such as other central banks could give stimulus to impact the money supply in United States. For example, purchasing and sell asset to affect the money supply, regulate the Fed Fund Rate, etc. If dollar serve as world currency, then The Fed monetary policy will impact the world financial and economy condition.

Since January 2009, the Chairman of Federal Reserve, Ben Bernanke, has established easy money policy which namely quantitative easing. This is a policy which sets low interest rate to excess money supply for solving recession, spurs investment growth, decreasing unemployment, etc. Purwantoro (2013) argues that low interest rate policy that establihed by the Fed will affects world economic where amount of dollars in this world is 60% which has been used as reserves in the various contries in the world. About 75% from global import of other countries except United States also still use United States dollar.

During the Financial crisis in 2007-2008, The Fed was lowering the Fed Fund Rate near zero, but economic wasn't moving towards to good condition. So, the Fed has established quantitative policy, unconventional monetary policy which purchase the Bank and government securities when interest rate near to zero. Usually, central bank just only use one monetary policy to affect money supply. Such as, lowering interest rate or open market policy- purchase or sell securities for injecting money or liquidity. In quantitative easing policy, central bank execute both of lowering interest rate and purchase the securities that out

standing. Sheriff (2013) argues that The U.S. post 2008 saw its economy experience is near recession with annual GDP experiencing a negative 0.4% for the year 2008 and a negative 3.1 in year 2009 where the full effects of the financial crisis were felt. With U.S. Labour markets faced with double digit unemployment rates, touching a high of 10% in November of 2009, and Deflation of 2.1 in August 2009. The United States Federal Reserve (Fed) as a measure to curb the U.S. financial crisis introduced Quantitative easing where it increased the money supply by purchasing Treasury securities in order increase consumption and investment, so when the consumption is increasing, unemployment will decrease and the deflation will decline.

Quantitative easing policy was established because unstablility of the economic and financial condition in United States in that time. For making out that problem, The Fed established a money printing policy for give stimulus in order to United States economic could rotates again and unemployment rate could be decreased. At the present, that policy is reach fourth phase. The Table 1.2 shows the quantitative easing program, during quantitative easing program, on the QE 1 The Fed purchases US$. 100 billion of each month of Mortgage Backed Securities and on QE 2, QE 3, and QE 4 The Fed purchases US$. 85 billion each month long-term asset to inject money on circulation.

Table 1.2

The Quantitative Easing Program by The Fed

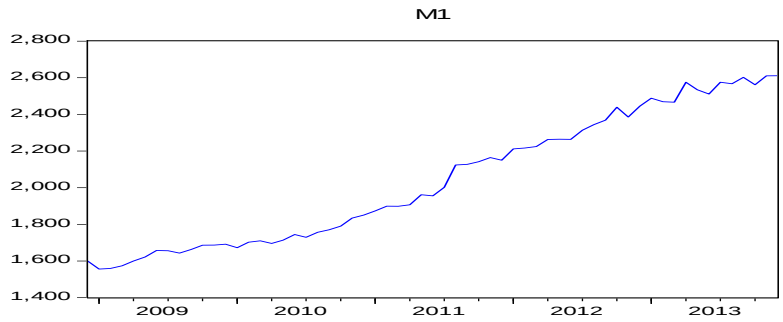
QE 1	QE 2	QE 3	QE 4
Introduced in January 2009 Fed Purchased US $ 100 Bn each month of MBS.	Introduced in November 2010 to June 2011 Fed Purchased US $ 85 in treasuries per month. From commercial banks instead of defaulted MBS, unlike in QE 1.	Introduced in July 2012 Purchases of US $ 85 Bn treasuries and MBS per month.	Introduced January 2013 Purchases of US $ 85 Bn treasuries and MBS per month.

Source : Sheriff (2013)

The purpose of the quantitative easing is to increase the money supply in the United States. Therefore, during the quantitative easing program, the money growth in the United States experiencing its extreme growth. This following figure shows the USD supply growth from January 2009 until December 2013 :

Figure 1.1

M1 of USD's Growth in Billion (January 2009-Desember 2013)



Source : Federal Reserve Data Base

The figure above shows the quantitative easing has succsessfully excess the USD money supply, since January 2009 USD money supply was extremely increased from 1555,57 billion dollars to 1672,1 billion dollars in January 2010. And then the USD money supply increased again to 1837,3 billion dollars in January 2011. Since quantitative easing 3 was established, the USD money supply reach the higher level to 2488,8 billion dollars. Finally in the december 2013, the quantitative easing program was successfully excess USD money supply to 2611,2 billion dollars.

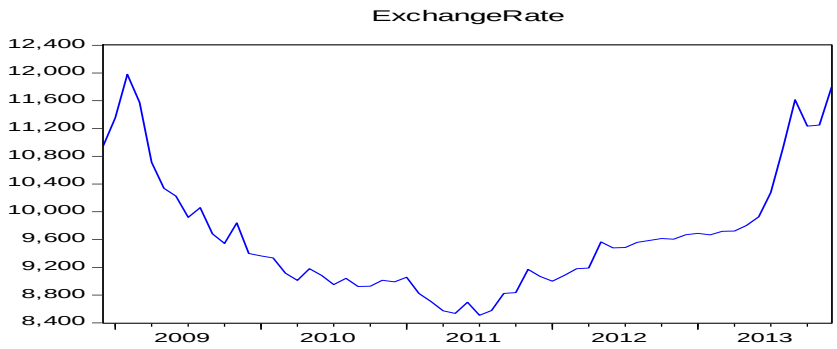
In past several months, the exchange rate condition of Rupiah toward U.S. dollar is more apprehensive about. Throughout 2013, exchange rate of rupiah toward U.S. dollar has been depreciated more than 10%. Meanwhile, a number of national banks has postulated the exchange rate of rupiah to the up level. The various bad sentiment keep on trigger the depretiation of rupiah. The planning of tappering off from the Fed, United States Central Bank, have shaked exchange rate and financial market on the emerging markets. The tappering off is triggering the drawing of funds by foreign investors who are anticipate the tapering off policy (Warta Ekonomi 2013).

As far as, just China's currency which could still reinforce againts U.S. Dollar, meanwhile in a various emerging contries keep on depreciate or stagnant. In the middle of July, rupiah still could keep strong againts dollar, meanwhile the other currency like India's rupee, Brasil's lira, and moreover Singapore's dollar has been sharply depreciated. Yet, in the middle of August, rupiah and rupee couldn't strong again toward U.S. dollar even sharply declined enough. The

reseacrh of Quantitative easing's effect on exchange rates in Asia has did by Liu (2013), she found that the tremendous increase in the supply of US dollars caused by QE results in passive appreciation of other countries' currencies, and causes actual depreciation of USD assets owned by other countries. The figure below this paragraph shows the volatility of the exchange rates during the quantitative easing program on January 2009 until the post of the tapering talks from The Fed in May 2013. What Liu (2013) said is right, rupiah experiencing passive appreciation againts USD during quantitative easing program. The excess money supply of USD result in appreciation on rupiah. Quantitative easing which have a purpose to increase money supply of USD cause the dollar depreciate againts rupiah, during quantitative easing program, rupiah appreciates againts dollar, the exchange rate rupiah againts dollar decrease (appreciate) to level 8.000-9.000 rupiah/USD during quantitative easing program.

Figure 1.2

Rupiah Againts USD Exchange Rate's Fluctuation



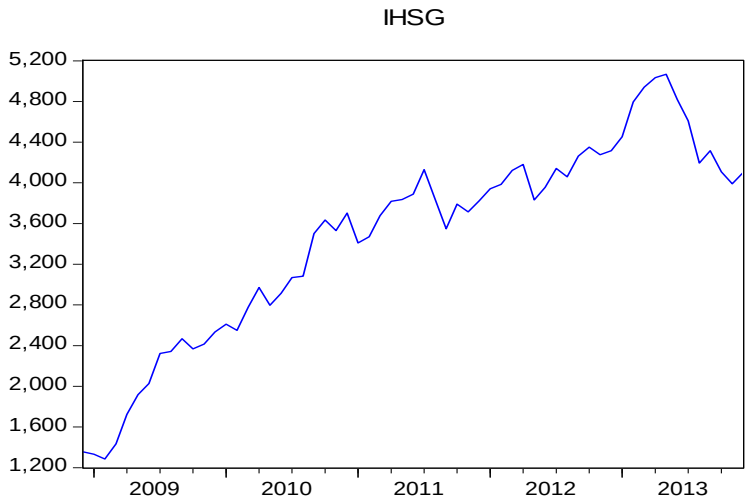
Source : Statistika Ekonomi dan Keuangan Indonesia (2009-2013)

The currently depreciation on Rupiah is the worst in past five years, actually since 2008. On Desember 2013 Rupiah almost reach Rp.12.500/ US Dollar Rupiah is the worst object of the impact of tapering off from the Federal Reserve after Brazil. Despite the World Bank says that Indonesia have a good macroprudential to maintain its currency value in this crisis. Despite the other emerging countries have the same problem in depreciation currency because the tapering off issue from The Fed, Indonesia is the worst among the other Asian countries. The effect from domestic like inflation and high import also cause rupiah more depreciate. From the phenomenons and research that mentioned above, we could conclude that the quantitative easing have a positive impact in exchange rates of the United States Dollar towards other currencies.

In addition, from fundamental sides of IHSG, there is also condition that affects the decline of IHSG, that is the tappering off discourse from the Fed, for decreasing quantitative easing. As a consequence, there is so many funds from foreign investors which came from U.S. is drawing back and huge capital outflow occurs and crushing dollar reserves almost until touch $90 billion (stabilitas keuangan, 2013). Although plan of tappering off still limited on discourse, financial market respons it fastly by drawing out hot money that out standing on the stock markets in developing countries in order to back to United States. Although, outboard of the assesment, finally, the Fed decides for maintain purchasing bond program. The Fed explained still waiting for many proof that show United States growth is solid (Stabilitas Keuangan 2013).

Figure 1.3

IHSG's Fluctuation (IDR)



The figure above shows the fluctuation of IHSG during quantitative easing program periods, from January 2009 until April 2013 IHSG was increasing extremely. This event is assummed because the capital inflow from U.S. during QE program causes IHSG reach its higher value level. But, when The Fed issuing the tapering off quantitative easing program, IHSG is going down from its peak at Rp. 5000 level.

Furthermore, in his research,Techarongrojwong (2012) concluded that the Q.E. announcement in the U.S. provides the negative effect on the stock return of the SET. Phavaskar et al (2013) argue that Extra liquidity through QEs, in a method similar to that of osmosis, often goes beyond domestic boundaries and flows tocapital-parched emerging market (EM) economies, offering ahigher return on investment. Panyasombat (2012) also argue that Quantitative Easing programs

one and two had an effect on major financial markets. They generated abnormal returns for many financial markets during the event window periods.

Ahmed & Zlate (2012) didn't found statistically signifcant effects of unconventional U.S. monetary policy expansion(quantitative easing) on total net inflows of capital into EMEs. Then, Fratzscher et al. (2012) have found that unconventional monetary policies in the United States have exerted sizable effects on net inflows. But they also conclude that the effects of U.S. quantitative easing have been relatively smallcompared to other factors., so there is still a doubt that the quantitative easing impact the emerging stock market.

Capital flight is just a common phenomenon in this globalization era, capital flow is more easy to move from one country to others. The more decrease in restriction of capital inflow encourage the capital outflow from developed countries flow to emerging countries, besides the emerging countries need the capital inflow for the investment in those countries. Quantitative Easing from the Fed caused the capital outflow from United States because low interest rate means low return and lending or borrowing rate is low too then the investor will be more easier to make reinvestment, with low return, according to liquidity theory, the capital will flow to other countries with higher return. Therefore, when the Federal Reserve will make a decision to do tapering off, the announcement of this decision will make the investors expect the United States' economic condition will be better, and they will draw back their capital in emerging country to make a new portfolio.

Quantitative easing have the same effect on the other financial assets, for example is Gold, it's because quantitative easing will cause the excess amount of U.S. Dollar in circulation, then it will give occasion the other's comodity value higher than before, because extreme growth in money supply will cause its currency value depreciate and inflationary effect on other comodity. According to Ariston (2012) Gold which included in comodity chategory recieve positive impact from the Fed's stimulus. On the first phase realization of quantitative easing on March 2010 with injection as big as $ 1,25 trillion, gold price increased as big as 27,4%. Such as with second phase of quantitative easing, gold price stronger 5,9% than before in November 2011-Juni 2012. The table below this paragraph will show the movement of gold price during the quantitative easing program since January 2009 until September 2012 :

Table 1.3

Gold Price Movement During Quantitative Easing Program

Monetary Policy	Periods	Total Funds	Explanation	Price Gold Increase (%)
Quantitative Easing 1	January 2009 – March 2010	$1,25 Trillion	Purchasing Mortgage Backed Securities	27,4%
Quantitative Easing 2	Nov 2010 – June 2011	$ 600 Billion	Purchasing Long Term Bonds	5,9%
Operation Twist 1	September 2011 – June 2012	$400 Billion	Purchasing Long Term Bonds and Selling Short Term Bonds	-14,9%
Operation Twist 2	July 2012 – Desember 2012	$267 Billion	Purchasing Long Term Bonds and Selling Short Term Bonds	Still continues
Quantitative Easing 3	September 2012 - Full Employment of AS	$40 Billion/Month	Purchasing Mortgage Backed Securities	Still Continues

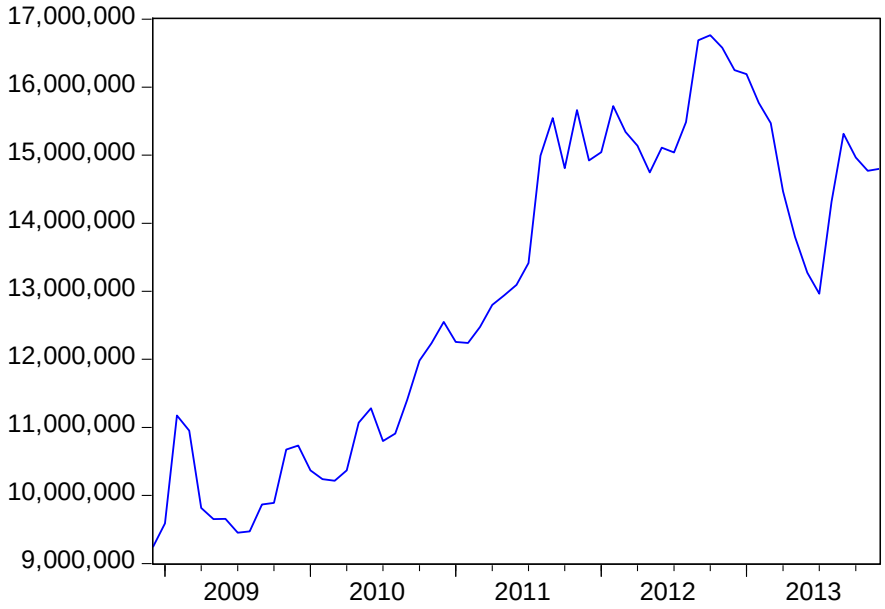
Source : Ariston (2012)

Furthermore, Fernandes (2012) argues that Quantitative easing have positive impact on Gold. Because Excess money growth causes infationary effects on other comodity. Fernandes (2012) and Ariston (2012) was right, gold price was

extremely hike during quantitative easing program. This figure below shows the gold price in IDR during quantitative easing program :

Figure 1.4

Gold Price (IDR/Troyounce) During Quantitative Easing Program



Source : Goldpricefix.com (2009-2013)

The figure above shows the gold price during quantitative easing program, gold has reached it's highest level to Rp.16.716.000. It was an extreme hike of gold price. The volatility clustering is very discernible during quantitative easing program. The Figure 1.2 and the Figure 1.3 shows there is a volatility clustering and for the financial assets like currency, gold, and stock, are very sensitive to bad news or good news. So, TGARCH model is very recomended to find out the asymetric information and to see wheter the volatility of the assets is affected by its variance or volatility from previous time.

Based on data, phenomenons, and reseach above this paragraph, it is an possibility of impact from quantitative easing from United States to the financial market index in Indonesia. IHSG, exchange rates, and gold price are financial market index, volatility in market index is called by market risk. Market risk is a risk that can't avoid by financial institution. If the financial institution couldn't control the market risk, then financial sector will decline. And the decline in financial sector will also make a decline in riil sector and it also decline aggregat economy activity.So it's important for looking at how much the quantitative easing affect the market risk and wheter it will make a new equilibrium in market index in Indonesia. Panyasombat (2012) argues that there are, however, few papers on the effect of monetary policy surprises in domestic areas in Asian stock markets using an Event Study approach as most of them focus on the United State and Europe. Because there is few papers on the effect of monetary policy surprise from United State in domestic areas in Asian stock market or financial market, it's necessary to find out what the effect of monetary policy or USD money supply from The Fed towards financial market volatility in Indonesia. Based on data and phenomenons above, the title of this research is "**THE IMPACT OF USD MONEY SUPPLY ON FINANCIAL MARKET VOLATILITY : THE CASE OF INDONESIA, PRE AND DURING QUANTITATIVE EASING POLICY"**

1.2 Problem Formulation

The problem which is being a reason for this research is the phenomenon gap, that is, as showed by the Figure 1.2, 1.3, and 1.4, when the M1 USD was still exceed after May 2013 IHSG and Gold price are going down, it is different from what state by portfolio balance theory. And IDR/USD exchange rate was experiencing a sharp depreciation when the M1 USD was still increasing, it is different from the Monetary approach theory which states that the country that has a higher money supply rather than another country will experience a sharp depreciation on its currency and appreciation on another country's currency.

In integrated world economy one country's economic policies usually affect other countries as well. United States as one of the important countries always have a big impact by it's economy policies throghtout the world. Until this day, United states dollar is still used for international exchange and there is so many countries use dollar as their international monetary reserve. So, monetary policies that established by United States will affect the so many countries in this world, because the function of dollar as international exchange.

If United states establish the quantitative easing- unconventional monetary policy, it will be affect the world economic. Indonesia and United states have a trade relationship, therefore, United states dollar is used for international exchange reserve in Indonesia, so if there is any change of monetary policy in United States that used to affect their currency would be affected the financial market index in Indonesia. This kind of conflict generates some new questions for

Indonesia's financial market volatility: does an increase in US money supply will affect the Indonesia's financial market volatility?.

Therefore, it's important to analysis what the effect of U.S. dollar money supply on financial market volatility Based on the news and data on sub chapter above shows there is a reaction from Indonesia's financial market volatility towards the reduction of the USD money supply in order to tape off the quantitative easing program from The Fed, if the financial market is crash, then this condition will be a dangerous event to Indonesia because Indonesia is an emerging economy country which do not have a credibility to handle a great financial crisis, besides the double function of dollar as world currency and U.S. currency which it's action will cause the world financial and macroeconomic condition.

Based on the phenomenon above, then the concern question of this research is :

1. How the USD money supply affect the exchange rate volatility in Indonesia ?
2. How the USD money supplyaffect the IHSG volatility in Indonesia ?
3. How the USD money supply affect the gold price volatility in Indonesia ?

1.3 Research Objectives and Utility

1.3.1 Reseacrh Objectives

Approriate to the problem of research and the concern questions of this research, then the objectives of this research are :

1. For analysis the effect of the USD money supply towards Rupiah againts U.S. dollar Exchange Rate volatility.
2. For analysis the effect of the USD money supplytowards IHSG volatility.
3. For analysis the effect of the USD money supply towards Gold Price volatility.

1.3.2 Research Utility

The Utilities of this reseacrh is as following :

1. Academics

   This reseacrh is hopable to gives knowledge furthermore to the academics. The result of this reseacrh is hopable to gives support to the next research which be related to Market risk index and Quantitative easing effect to emerging country's financial market.

2. Market Performers

   This reseacrh is hopable to gives efforts to the market performers like Stokeholders, Investors, and Financial Institution in make a financial decision if there is anychange of United States' monetary policies.

1.4 Research Systematication

Research systematication in this reseacrh is chronogically formed which composed by several chapter, that is : Chapter I Preface, Chapter II Literature Review, Chapter III Reseacrh Method, Chapter IV Result and Working Through, Chapter V Occlusion. For each of contents from each section is as follow :

CHAPTER I :PREFACE

It contents Backrground, Problem Formulation, Research Objectives and Utility, and Research Systematication.

CHAPTER II :LITERATURE REVIEW

It contents Theoretical Basis, Dependent Variable And Independent Variable Relationship, Empirical Evidence, Framework of Theory and Hypotesis Conceptual, and Theoritical Framework.

CHAPTER III :RESEARCH METHOD

It contents Operational Definition, Dependent and Independent Variables, Sample and Population, Data Gathering Method, and Analysis Method.

CHAPTER IV :RESULT AND ANALYSIS

It contents Object Description, Data Analysis, ACF Test, Unit Root Test, ARCH-LM Test, TGACRH Model and Hypotesis Test, Discussion and Interpretation.

CHAPTER V :OCCLUSION

It contents Conclusion, Restriction of Research, Sample and Population, Managerial Implication, and Advise.

CHAPTER II

LITERATURE REVIEW

2.1 Theoretical Basis

2.1.1 International Financial Theory

2.1.1.1 Capital Flows

Since the collapse of Bretton Woods system, the most important feature of the international financial system has been the increased the volume of financial flows between nations. In recent years there has been dramatic growth of the volume transactions in the international capital markets. To understand the nature of this recent upswing, it is important to account for differences between the capital flows experienced by developed countries and emerging economies. It is also crucial to distinguish between foreign direct invesment and portofolio capital flows.The sizable increase private capital flows to emerging economies is one of the most prominent features of International monetary and financial market today. After World War II, the industrialized nations pursued a goal greater trade liberalization. To improve the prospects for achieving this objective, they established the General Agreement on Tariffs and Trade (GATT), which became the World Trade Organization (WTO). Overtime, trade barriers and transportation costs declined, which led to greater flows of goods and services between most of

the world's nations. Not until the 1970s, however, did most industrialized nations begin to liberalize financial markets (Daniels and VanHoose, 2007).

Changes in communication technology, combined with introduction of innovative new financial instruments, have moved even reluctant nations to liberalize and deregulate their financial markets. Instant and low-cost communications and information innovations allow a wider range of firms and indiviuals to participate in international financial markets and to manage their risk exposure more effectively. As result, since 1970s the growth of international financial markets has far outpaced the growth of international trade in goods and services. Between 1973 and 2002, for example, daily foreign exchange turnover increased from $15 billion to approximately $2 trillion, and U.S. cross-broder transactions of bonds and equities increased from 15 percent of GDP in 1980 to more than 500 percent (Daniels and VanHoose, 2007).

Table 2.1

Growth of Financing in the International Capital Markets (US$ Billion) From 1986's to 2000's

$ BILLION	**1986**	**2000**	**CHANGE**	**PERCENTAGE CHANGE**
TOTAL	389,5	1860,7	1471,2	377,7
SECURITIES	195,5	1056,7	861,2	440,5
LOANS	88,5	804,0	715,2	808,5

Source : (Daniels and VanHoose, 2007)

Table above this paragraph presents evidence on the dramatic growth of financing in the international capital markets. Between 1986 and 2000 total financing activity on the international capital markets increased by more than $1,4 trillion, an increase of 3378 percent.In that table, the securities category includes two very important components : international bonds and international equities. A third component of the international capital market is foreign direct investment (Daniels and VanHoose, 2007).

2.1.1.1.1 Foreign Direct Investment

Growth of FDI is one of most important developments in the evolution of global capital markets. FDI is the acquisiton of foreign financial assets results in an ownership share 10% or more. Hence, an FDI inflow is an acquisiton of domestic financial assets that results in foreign residents owning 10 percent or more of a domestic entity. An FDI outflow is an acquisiton of foreign financial assets that results in domestic residents owning 10 percent or more for a foreign entity. Two important developmets in the global capital markets are the growth of FDI among developed nations(Daniels and VanHoose, 2007).

A second important development in the recent evolution of global capital markets in growth of the private capital flows to the emerging economies. Since 1990, private capital flows to emerging country approximately $150 anually. Privates capital flows to the emerging economies in the western hemisphere, such as Mexico, Brazil, and Argentina experieced a significant private capital inflow during 1990s. A large portion of this capital inflow, however, was portofolio

capital instead of FDI. The 1994-1995 financial crisis that struck the region resulted in a preciptous decrease in private capital, but capital inflows eventually recovered by 1996 (Daniels and VanHoose, 2007).

2.1.1.1.2 Portofolio Diversification

The development and growth of the international capital market allows individual and bussiness greater opportunities to manage risk and increase potential returns. Nonethless, savers do not utilize the international capital potential returns. Nonetheless, savers do not utilize the international capital market to extent we might expect. Recent reseacrh has shown, however, that as markets become more integrated internationally, global diversification may be difficult to achieve. Consider the pharmaceutical industry as an example. Individuals could diversify their portofolios by holding equity shares of U.S., U.K., and German corporations. If national markets are not internationally integrated, international diversification might mitigate capital gains losses resulting from, say, lower earning of U.S. corporations due to a downturn the U.S. pharmaceutical firms in all three nations. In light of increased international integration, some analysts now recomend that savers diversify across sectors, as well as diversifying across countries(Daniels and VanHoose, 2007).

2.1.1.1.3 Capital Flight

When the risk of doing bussiness in a country rises sharply or the expected return falls, we sometimes observe large outflows of investment funds so that the country experiences massive capital account deficits. Such outflows of funds are

often descriptively reffered to as capital flight. The change in risk-return relationship that gives rise tp capital flight may be result of political or financial crisis, tightening capital controls, tax increases, or fear of domestic currency depreciation.The discussion of capital flight highlights the importance of economic and political stability for encouraging domestic investment. Bussinesss firms and individuals respond to lower risk and higher return. The stable and growing developing country face little,if any, capital flight and attracts foreign capital to aid in expanding the productive capacity of the economy (Melvin, 2004).

2.1.1.1.4 Motive For International Capital Flow

2.1.1.1.4.1 Motive For International Portfolio Investments

The basic motive for international portfolio investments to earn higher returns aboard. Thus, residents of one country purchase bonds of another country if the returns on bonds are higher in the other country. The explanation that international portfolio investments occur to take advantage of higher yields aboard is certainly correct as far as it goes. If returns on securities are lower in one nation than in another nation, this could explain the flow of capital investments from former nation to the latter but is incosistent with the simultaneous flow of capital in the opposite direction. And then the element of risk must be introduced. That is, investors are interested not only in the rate of return but also in the risk associated with a particular investment (Salvatore, 2011). Therefore, if yield or return in Indonesia is higher than in U.S. because the excess money supply in U.S.

causedeclining its interest rate. So the capital will flow from U.S. to Indonesia to seek higher return or yield. Furthermore, the quantitative easing program will cause the decline of interest rate in U.S. because the extreme growth of money supply, so it will cause the capital outflow from U.S. to country which has higher return or interest rate than U.S. for seek the optimal portfolio investment with higher return with conditional risk.

2.1.1.1.4.1 Motive For Direct Foreign Investment

The motives for direct investment aboard are generally the same as for portfolio investment, that is, to earn higher returns and to diversify risk. Indeed, it has been found that firms with a strong international orientation, either through exports or through foreign production and/or sales facilities, are more profitable and have a much smaller variability in profits than purely domestic firms.

Direct foreign investments require additional explanations. These are to exploit aboard some unique production knowledge or managerial skill (horizontal integration), to gain control control over a foreign source of a needed raw material or a foregin marketing outlet (vertical integration),to avoid import tariffs and other trade restrictions and/or to take advantage of production subsidies, to enter a foreign oligopolistic market, to acquire a foreign firm in order to avoid future competition, or because of the unique to obtain financing Therefore, if yield or return in Indonesia is higher than in U.S. because the excess money supply cause declining interest rate, then the capital will flow from U.S. to Indonesia to find higher return or yield. Furthermore, the quantitative easing program cause the

extreme decline of interest rate in U.S. because the extreme growth of money supply, so it will cause the capital outflow from U.S. to country which has higher return or interest rate than U.S. for seek the optimal direct foreign investment with higher return with conditional risk.

2.1.1.2 Parity Conditions in International Finance

2.1.1.2.1 Interest Rate Parity Theory

According to Shapiro (2006), spot and forward rates are closely linked to each other and interest rates in different currencies through the medium of arbitrage. Specifically, the movement of funds between two currencies to take advantage of interest rate differentials is a major determinant of the spread between forward and spot rates. In fact, forward discount and premium is closely related to the interest rate differential between the two currencies. According to interest rate parity (IRP) theory, the currency of the country with a lower interest rate should be at forward premium in terms of the currency of the country with high rate. More specifically, in an efficient market with no transaction costs, the interest rate differential should be equal to the forward differential. When this condition met, the forward rate is said to be at interest rate parity, and equilibrium prevails in the money markets. It could be modeled as follow :

$$\frac{1+rh}{1+rf} = \frac{f1}{eo} \quad \text{.....(1)}$$

Denotes :

rh : Home interest rate

rf: Foreign interest rate

f1 :Forwad discount/premium

eo : Spot rate

According to this theory, if U.S. excess its money supply then its interest rate will decline, so if Indonesia has higher interest rate than U.S. then Indonesia's currency will experience forward discount on it's forward rate and the U.S. dollar will experience forward premium on it's forward rate. The extreme money supply because the quantitative easing program will cause the extreme decline of U.S. interest rate so according to this theorem, U.S. dollar will experience a forward premium with another currency with higher interest rate. If Indonesia have a higher interest rate return during quantitative easing program, so according to this theorem rupiah will experience forward discount. Because if Indonesia have a higher interest rate than U.S. the capital will flow from U.S. to Indonesia, so if the dollar is drawing out from Indonesia to get dividen, the demand of U.S. dollar will hikes and rupiah will depreciate.

2.1.2 Market Risk

Market risk is risk which occures because movement of market variables from bank's or frm's portfolio which could damaged them balance sheet. Market risk usually contained in trasury activity, security and money maket investment activity, financial insitution inclussionallity, loanable fund supply, funding activity, and bond issuing. Market risk includes interest rate risk, exchange rate risk, equity risk, and comodity risk. Market risk is calculated by using standart deviation or volatility. Lossess can arise from two factors : volatility from

financial variables or exposure from the risk within. Bank or firm couldn't control market risk volatility but they could adjust the exposure againts the risk (Bessis, 2002)

According to Jorion (2002), Market risk arises from movement in the level or volatility of market prices. Market Risk can take two forms : absolute risk, measured in the relevant currency and relative risk, measured relative to a benchmark index. While the former focuses on the volatility of total returns, the latter measures risk in terms of tracking error or deviation from index. Market risk can be classified into directional and nondirectional risks. Directional risk involve exposures to the direction movements in financial variables, such as stock prices, interest rates, exchange rates, and comodity prices. The exposures are measured by linear approximations such as beta for exposure to stock market movements, duration for exposure to interest rates, and delta for exposure of options to the underlying asset price. Nondirectional risks, then, involve the remaining risks, which consist of nonlinear exposures and exposures to hedged positions or to volatilities. Table 2.2 is table of building block of market risk.

Table 2.2

Building Block of Market Risk

1. Risk Drivers	Market parameters (interest rates, equity indexes, foreign exchange rates)
2 Risk Exposure	Mark-to-market values. Mapped to market parameters.
3. Standalone risk	Valuation of adverse deviations of market returns over liquidation period.
4. Correlations	Correlations between selected market parameters mapped to individual exposures
5. Portofolio risk	Loss distribution aggregate algebraically the individual assets returns.
6. Capital	VaR is a loss percentile

(Bessis ,2002)

2.1.3 Interest Rate

Interest rate is the cost of borrowing or the price paid for rental of funds (usually expressed as a percentage of the rental of $100 per year). There are many interest rates in the economy-mortgage interest rates, car interest rates, loan rates, and interest rates on many different types of bonds (Mishkin, 2002).

Interest rate are important on a number of levels. On a personal level, high interest rates could deter you from buying a house or a car because the cost of financing it would be high. Conversely, high interest rates could encourage you to save because you can earn more money by putting aside of your earnings as savings. On a more general level, interest rates have an impact on the overall health of the economy because they affect not only the costumers willingness to spend or save but also bussiness investment decisions. High Interest rates, for

example, might cause a corporation to postpone building a new plant that would provide more jobs (Mishkin, 2002).

Because change of the interest rates have important effects on individuals, financial institutions, bussiness, and the overall economy, it is important to explain fluctuations in interest rates that have been substantial over the past twenty years. For example, the interest rate of three month Treasury Bills peaked at over 16% in 1981. This rate fell to 3% in late 1992 and 1993, rose to above 5% in the mid-late 1990s, and fell to below 1% in 2004, only to begin rising again (Mishkin, 2009).

Interest rate is loanable funds. Direct translation from loanable funds is outstanding funds for lent activity.Interest rate as value from use of money for periods. 18% interest rate for a year means that if we borrow money from bank Rp.100 then next another year we must give it back on Rp. 118 which establish from Rp.100 (basis) and Rp. 18 (Interest rate) to our creditor. Definiton of interest rate as value can also stated as price which it must be pay if there is an exchange among one rupiah today and one rupiah on the future. Payable accounts arise because there is an exchange like this. Debitor is buyer of one rupiah today at once seller of one rupiah tomorrow. Creditor is seller of one rupiah today and buyer of one rupiah tomorrow. Debitor must make interest payment to creditor (Boediono, 1982).

2.1.4 Exchange Rates

According to Mishkin (2009), Price of one curency in terms of another currency is called exchange rate, they are highly volatile. The exchange rate affects the economy and our daily lives, because when the U.S dollar becomes more valuable relative to foreign currencies, foreign goods become cheaper for Americans and American goods become more expensive for foreigners. When the U.S dollar falls in value, foreign goods become more expensive for Americans dan American goods become cheaper for foreigners. Fluctuation in the exchange rate also affect both inflation and output, and are an important concern to monetary policymakers. When the U.S. dollar falls in value, the higher price of imported goods feed directly into higher price level and inflation. A declining U.S. Dollar, which makes U.S. goods cheaper for foreigners, increase the demand of U.S. goods leads to higher production and output.

Exchange rates are important becaues they affect the relative price of domestic and foreign goods. The dollar price of French goods to an American is determined by the interaction of two factors : the price of French goods in euros and the euro/dollar exchange rate. When a country's currency appreciates, country goods aboard become more expensive and foreign goods in that country become cheaper. Conversely, when a country's currency depreciates, its goods aboard become cheaper and foreign goods in that country become more expensive.Depreciation of a currency makes it easier for domestic manufactures to sell goods aboard and makes foreign goods less competitive in domestic markets. From 2002 to 2005, the depreciating dollar helped U.S. Industries sell more

goods, but it hurt American consumers because foreign goods were more expensive. The price of French wine and cheese andthe cost of vacationing aboard all rose as a result of the weak dollar (Mishkin, 2009).

2.1.4.1 Foreign Exchange Volatility

The currency risk is that of incurring losses due to changes in the exchange rates. Variations in earnings result from the indexation of revenues and charges to exchange rates, or of the changes of the values of assets and liabilites in foreign currencies. Foreign exchange risk is a classsical field of international finance, so that we can rely on traditional techniques. For banking portofolio, foreign exchange risk relatest to ALM. For more transactions, foreign exchange rates are a subset of market parameters, so that techniques applying to other market parameters apply as well. A credit loss in a foreign country might result in magnified losses in local currency if the local currency depreciates relative to the currency of the foreign exposure (Bessis, 2002).

2.1.4.2 Exchange Rates in the Long Run

According to Mishkin (2009), in the long run, four major factors affect the exchange rate, relative price levels, tarrifs and quotas, preferences for domestic versus foreign goods, and productivity. We examine how each of these factors affects the exchange rate while holding the others constant.The Basic reasoning proceeds along the following lines : anything that increases the demand for domestically produced goods that are traded relative to foreign traded goods tends to appreciate the domestic currency because domestic goods will continue to sell

well even when the value of the domestic currency is higher. Similarly, anything that increases the demand for foreign goods relative to domestic goods tends to the depreciate the domestic currency because domestic goods will continue to sell well only if the value of the domestic currency lower.

- **Relative Price Level**

  In line with PPP theory, when the price of American goods rise, the demand for American goods falls and the dollar tends to depreciate so that American goods can still sell well. By contrast, if the price of Japanese goods rise so that relative prices of American goods fall, the demand for American goods increases, and the dollar tends to appreciate, because American goods will continue to sell well even with a higher value of domestic currency. In the long tun, a rise in a country price level cause its currency to depreciate, and a fall in the country's relative price level causes its currency to appreciate.(Mishkin, 2009).

- **Trade Barriers**

  Barriers to fredd trade such as tarrifs (taxes on imported goods) and quotas (restrictions on the quantity of foreign goods that can be imported) can affect the exchange rate. Suppose that the United States increases its tarrif or puts a lower quota for a Japaneses steel. The increase in trade barriers increase the demand for American steel, and the dollar tends to appreciate because American steel will still sell well even a higher value of the dollar. Increasing trade barriers cause a country's currency to appreciate in the long run. (Mishkin, 2009).

- **Preferences for Domestic Versus Foreign Goods**

  If the japanese develope an appetite for American goods-say. For Florida oranges and American Movies- the increase demand for American goods (exports) tends to appreciate the dollar, because the American goods will continue to sell well even at a higher value of dollar. Like wise, if Americans decide that they are prefer Japanese cars to American cars, increased for Japanese goods tend to depreciate dollar. Increased demand for a country's exports causes its currency to appreciate in the long run, conversely, increased demand for imports causes the domestic currency to depreciate . (Mishkin, 2009)

- **Productivity**

  When productivity in a country rises, it tends to rise in domestic sectors that produce traded goods rather than nontraded goods. Higher productivy, therefore, is associated with a decline in the price of domestically produced traded goods rises, and the domestic currency tends to appreciate. If however, a country's productivity lags behind that of the other countries, its traded goods become relatively more expensive, and the currency tends to depreciate. In the long run, as a country becomes more productive relative to other countries, it's currency appreciates.. (Mishkin, 2009)

2.1.4.3 Exchange Rates in The Short Run

According to Frederic Mishkin (2009), the key to understanding the short-run behaviour of exchange rates is to recognize that an exchange rate is the price of domestic assets (Bank Deposits, bonds, equities, etc, dominated in the domestic currency) in terms of foreign assets (similiar assets denominated in the foreign currency). Because the exchange rate is the price one asset in terms of another, the natural way to investigate the short-run determination of exchange rates is with a supply and demand analysis that uses an asset market approach, which relies heavily on the theory of asset demand. In the past, supply and demand approaches to exchange rate determination emphasized the role of import and export demand. The more modern asset market approach used here emphasizes stock of assets rather than the flows of exports and imports over the short periods, because export and import transactions are small relative to the amount of domestic and foreign assets at any given time. For example, foreign exchange transactions in the United States each year are well over 25 times greater than amount of U.S exports and imports. Thus, over short periods, decisions to hold domestic or foreign assets play a much greater role in exchange rate determination than the demand for exports and imports.

1. The Demand for a Currency

   The primary function of a currency is to facilitate transaction. Thus, the demand for a currency is a derived demand. That is, we derive the demand for a currency from the demand for the goods, services, and assets that people use the currency to purchase. Consider two countries, Germany and the United States. The demand for the euro stems from the U.S. residents'

demand for German goods, services, and euro dominated assets. If U.S consumer' rise in the demand for German goods were to increase, then, indirectly, there would be a rise in the demand for the euro to purchase the German goods. The price the U.S. consumer would have to pay for the euro would be the prevailing U.S. dollar-per-euro exchange rate.

2. The Supply of a Currency

   To understand the supply of a currency, consider a German consumer's demand for the U.S. dollar, which we may derive from the German consumer's demand for U.S. goods, services, and assets. When the German consumer purchases U.S. dollars in order to buy more U.S. goods, the German consumer exchange euros for dollars. As a result, there is an increase in the supply of euros in the foreign exchange market. Thus, the German demand for the dollar also represents the supply of euros.

2.1.4.4 Theories of Exchange Rates Movement

2.1.4.4.1 Purchasing Power Parity

According to Salvatore (2011), Purchasing power parity proceeds from the notion that at some point there is an equilibrium level of exchange rate which equates the price of externally traded goods in one country with the price of those goods in another country. In purchasing power parity theory, the currency with the higher inflation rate will have lost value relatively faster, and exchange rate will worsen by the ratio of the two inflation rate.

2.1.4.4.2 Portfolio Balance Approach

According to Salvatore (2011), if the money supply in domestic country excess it's demand there will be a capital outflow in domestic currency. Reversely, if the money demand in domestic country excess it's supply, there will be a capital inflow in domestic country. Portfolio balance approach said that the domestic currency is just one of the other financial assets. If the domestic curency is experienced a worsen condition, or because the domestic currency could be depreciate which can make the depreciation in financial assets which is denominated in domestic curreny at anytime, be side that, if the obligation which is denominated in other currency offers higher return, so the investors in the domestic country will arranged their portfolio.

The change of each fundamental factors which is being a consideration such as interest rate differential, political risk, the expected value of the future exchange rate, and investor's preference would be encourage the investors to arranged their portfolio.

According to this theory, if the USD money supply excess extremely because of the quantitative easing program, which could be encourage the capital flow because its supply excess its demand. Furthermore, if the USD money supply growth extremely, there will be a depreciation in it's currency and its interest rate will fall. So the Investors will seek another country which offers higher interest rate. During Quantitative Easing Program, extreme growth of USD money supply causes its currency depreciate, encourage capital outlow, and lower U.S. interest rate. So, Investors will arrange their portfolio and seek a country which offers higher interest rate such as Indonesia which its interest rate is higher than U.S.

during Quantitative Easing Program. Fortunately, the Indonesia's Interest rate is higher than U.S. Interest rate during Quantitative Easing program (Statistika Ekonomi dan Keuangan Indonesia, 2008-2013).

2.1.4.4.3 Monetary Approach

According to Salvatore (2011), Monetary Approach said that the exchange rate between two currency is determined by its money suppy growth. If the money supply growth in a currency higher than its demand, the currency will be depreciate againts another currency. According to this theory, if the U.S. excess its growth of money supply during Quantitative Easing program or before Quantitative Easing program which exceeds its demand, so IDR will experience appreciates in it's value which denominated in USD.

2.1.4.4.3 Balance of Payment Approach

According to Douch (1990), currenct account and capital account are both important, but at certain times the role of capital account flows seems to become all pervading, and currency appreciate even though the currenct account is slipping into deficit.

2.1.5 Stock Market

According to Mishkin (2009), the stock market , in which claims on the earnings of the corporations are traded, is the most widely followed financial market in almost every country that has one ; that's why it is often called simply "the market". A big swing in the price of the shares in stock market is always a

major story on the evening news. Poeple often speculate on where the market is heading and get very excited when they can brag about their latest “big killing”, but they become depressed when they suffer a big loss.

The attention the market receives can probably be best explained by one simple fact. It is a place where people can get rich or poor quickly.On “Black Monday”, October 19, 1987, it experienced the worst day drop in its entire history, with Dow Jones Industrial Average (DJIA) falling by 22%. Form then until 2000, the stock market experienced one of the great bull markets in its history, with the Dow climbing to a peak of over 11000. With the collapse of the high-tech bubble in 2000, the stock market fell sharply, dropping by over 30% by late 2002. It then covered again to over 10000 level in 2004-2005. The considerable fluctuations in stock price affect the size of people’s wealth and as a result may affect their willingness spend (Mishkin 2009).

According to Mishkin (2009),The stock market is also an important factor in bussiness investment decisions, because the price of shares affects the amount of funds that can be raised by selling new issued stock to finance investment spending. A higher price for a firm’s shares means that it can raise a larger amount of funds, which can be used to buy production facilities and equipment.

2.1.5.1 IHSG

IHSG is stock market index which used by BEI (Indonesia Stock Exchange). First introduced on 1st April 1983 as indicator of stock market volatility in BEJ (Jakarta Stock Exchange). It covers volatility of all stocks and

preferen stocks which recorded in Indonesia Stock Exchange. Basis day for it's calculation is 10th August 1982. On that day, index has been set with 100 basis value and number of stocks which recorded on that day was 13 stocks. Basic calculation IHSG is number of market values from total stocks which recorded on 10th Auguts 1982. The number of market value is total multiplication each stocks which recorded with stock market price on Indonesia Stock Exchange at that day (Wikipedia.com).

$$IHSG = \frac{\sum p}{d} x\ 100 \quad \text{.....(3)}$$

Which *p* is *Closing price on second market, **x** is number of stocks*, and *d* is *Basic Value*.

Calculation of index gives information of stocks price movement on market. Basic value will adjust with quickly if there is anychange on emiten's capital or there is other factors which unrelated with stock price. Adjustment will establish if there is a new emiten, right issue, partial/company listing, waran, and convertion on bonds. In the event of stock split, dividend or stock bonus, there is no adjustment of basic value because market value wouldn't affected. Stock price which used in calculating IHSG is stock price on secondary market that based on price which occurs because trading activity. Calculation of this index done everyday after the close of trading each day. In the near future, it is expected CSPI calculations can be done multiple times or even in a few minutes, this can be done after the trade system automation is implemented properly (Wikipedia.com)

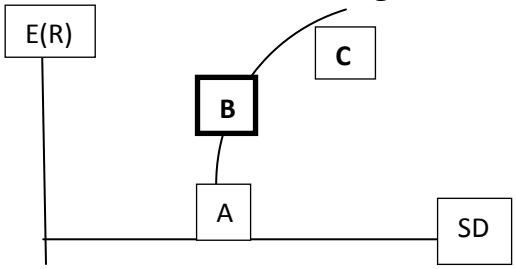
2.1.5.2 Models of Equilibrium in The Capital Markets

2.1.5.2.1 Capital Asset Pricing Model

According to Elton et al (2007), The Standart form of general equilibrium relationship for asset returns was developed independently by Sharpe, Lintner, and Mossin. Hence, it is often referred to as Sharpe-Lintner-Mossin form of capital assetn pricing model. This model has been derived in several forms involving different degrees of rigor and mathematical complexity. However, because of their complexity, they do not convey the economic intuition behind the capital asset pricing model as readily as some of the simpler forms.Recall that in the presence of short sales, but with out riskless lending and borrowing, each investor faced an efficient frontier such as in this figure :

Figure 2.1

Risk-Return Figure



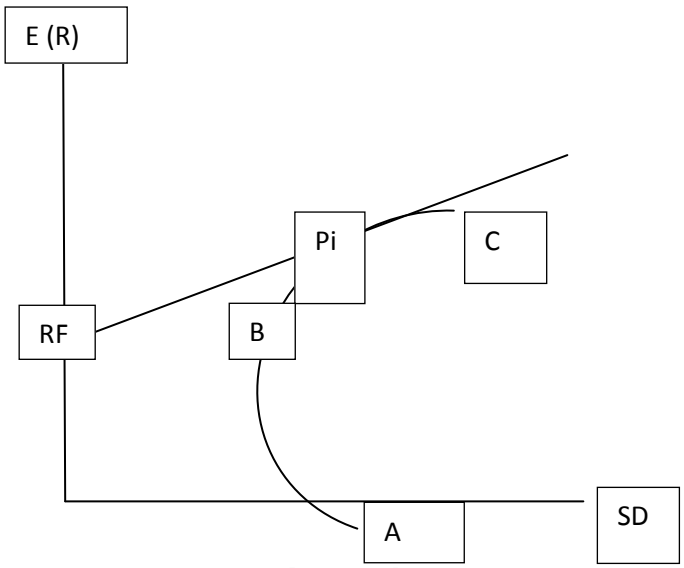
Source : (Elton et al, 2007).

in this figure, BC represents the efficient frontier while ABC presents the set of minimum variance portfolios. In general the efficient frontier will differ among investor because difference of expectation.

When we introduced riskless lending and borrowing, we showed that the portfolio of risky asset that any investor would hold could be identified with out regard to the investor's risk preferences. This portfolio lies at tangency point between the original efficient frontier of risky assets and a ray passing through the riskless return (on the vertical axis). This is depdicted in this following figure :

Figure 2.2

Capital Asset Pricing Model Figure



Source : (Elton et al, 2007).

Where Pi denotes investor i's portfolio of risky assets. The investor satisfy their risk preferences by combining portfolio Pi with lending or borrowing. If all investors have homogenous expectations and they all face the same lending and borrowing rate, then they will each face a diagram like above, and furthermore, all of diagram will be identical to the portfolio of risky assets held by any other investor. If all investor hold the same risky portfolio, then in equilibrium, it must

be the market portfolio. The market portfolio is a portfolio comprised of all risky assets. Each asset is held in the proportion that the market value of that asset represents of total market value of all risky assets. For example, if IBM stock represents 3% of all risky assets, then the market portfolio contains 3% IBM stock and each investor will take 3% of the money that will be invested in all risky assets and place it i IBM stock (Elton at al, 2007).

Notice that we have already learned something important. All investor will hold combinations of only two portfolios : the market portfolio (M) and riskless security. This is sometimes referred to as the mutual fund theorem because all investor would be satisfied with a market fund, plus ability to lend and borrow a riskless security. Straight line depiced in the figure above is usually referred to as the capital market line. All investor will end up with portfolios somewhere along the capital market line and all efficient portfolios would lie along the capital market line. In fact, from the derivation of the efficient frontire, we know that all portfolios of risky and riskless assets, except those are efficient, lie below the capital market line. By looking at the capital market line, we can learn something about the market price of risk (Elton et al, 2007).

.

$$E(Ri) = RF + \beta im\ (RM - RF) \quad \text{..... (4)}$$

Denotes :

E(Ri) : Expected Return Stock i

RF : Risk Free Rate

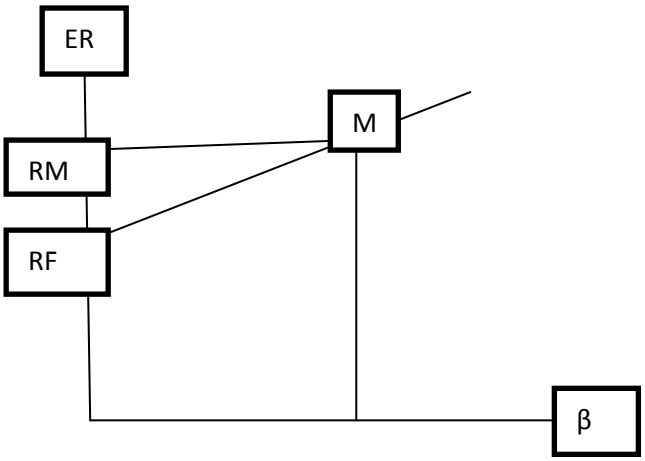
RM : Market Return Rate

βim : Sensivity of Stock Return i towards Market Return

Think about this relationship for a momment. It represents one of the most important discoveries in field of finance. Here is a simple equation, called the security market line, that describe the expected return for all assets and portfolios of assets in the economy. The expected return on any assets, or portfolio, wheter it is efficient or not, can be determined from this relationship. Notice that RM and RF are not function of the assets we examine. Thus, the relationship between expected return on any assets can be related simply to their difference in Beta. The higher Beta is for any security, the higher return must be it equilibrium return. In this following figure we can see about the return and beta relationship. The figure below this paragraph presents the Security Market Line (Elton et al, 2007).

Figure 2.3

Security Market Line Figure



Source : (Elton et al, 2007).

Furthermore, the relationship between Beta and expected return is linear. Denotes that RF is riskfree rate such as deposit rate, RM is market index rate such as Dow Jones, S&P500 etc. And β is sensitivity of risky asset towards the market (Elton et al, 2007). According to this theorem, the excess of money supply in U.S. will decline its interest rate and extreme money growth during quantitative easing program will decline its interest rate extremely (Krugman & Obstfeld, 2011). Therefore, if U.S. Interest rate decline so the U.S. lending and borrowing rate will decline and the risk premia will decline too. Then, according to Salvatore (2011), the capital will flow from U.S. to country with higher interest rate such as Indonesia. Because Indonesia have higher lending and borrowing rate, so Indonesia have higher risk premia than U.S. during quantitative easing program.

2.1.5.2.2 Multifactor Model

The market return reflects macro factors as well as the average sensitivity of firms to those factors. When we estimate a single-index regression, therefore, we implicity impose an (incorrect) assumption that each stock has the same relative sensitivity to each risk factor. If stocks actually differ in their betas relative to the various macroeconomic factors, then lumping all systematic sources of risk into one variable such as the return on the market index will ignore the nuances that better explain individual stock returns. It stands reason that more explicit representation of systematic risk, allowing for the posibility that different stocks exhibit different sensitivities to its various components, would constitute a useful refinement of the single-factor model. It easy to see that models that allow

for several factors-**Multifactor Models**-can provide better descriptions of security returns (Bodie et al, 2011).

Lets's start with a two factor model. Suppose the two most important macroeconomic sources risk are uncertainties surrounding the state of business cycle, news of which we will again measure by unticipated growth in GDP and changes in interest rates. We will donate by IR any unexpected change in interest rates. The return on any stock will respond both sources of macro risk and to it's own firm spesific influences. We therefore can write a two-factor model describing the rate of return stock *i* in some time period as follows :

$$R(i)= E(ri) + \beta_{iexch} EXCH + \beta_{iIR} IR + e_i \quad .....(5)$$

Denotes :

R (i) : Return Stock i

E (ri) : Expected Return Stock i

β_{iexch} : Sensitivity of Stock i Towards Exchange Rate index

β_{iIR} : Sensitivity of Stock i Towards Interest rate index

According to Krugman and Obsfiel (2011), the excess money growth and money supply will decline interest rate and exchange rate will depreciate. So, if money supply in U.S. is experiencing an extreme growth during quantitative easing program, so the exchange rate of U.S. againts other currency such as rupiah will depreciate and rupiah will experience an appreciation againts U.S. dollar, so the change on rupiah/USD exchange rate will affect the stock return and market stock index according to this theory.

2.1.6 Quantitative EasingAnd Central Bank's Policy

2.1.6.1 Definition

Quantitative easing (QE) is an unconventional monetary policy used by central banks to stimulate the economy when standard monetary policy has become ineffective. A central bank implements quantitative easing by buying specified amounts of long term financial assets from commercial banks and other private institutions, thus increasing the monetary base and lowering the yield on those financial assets. This is distinguished from the more usual policy of buying or selling government bonds in order to keep market interest rates at a specified target value. Expansionary monetary policy typically involves the central bank buying short-term government bonds in order to lower short-term market interest rates.However, when short-term interest rates are at or close to zero, normal monetary policy can no longer lower interest rates.Quantitative easing may then be used by monetary authorities to further stimulate the economy by purchasing assets of longer maturity than short-term government bonds, and thereby lowering longer-term interest rates further out on the yield curve. Quantitative easing raises the prices of the financial assets bought, which lowers their yield (Wikipedia.com).

Quantitative easing can be used to help ensure that inflation does not fall below target. Risks include the policy being more effective than intended in acting against deflation (leading to higher inflation in the longer term, due to increased money supply),or not being effective enough if banks do not lend out the

additional reserves. According to the IMF and various other economists, quantitative easing undertaken since the global financial crisis of 2007–08 has mitigated some of the adverse effects of the crisis. Therefore, Quantitative easing is used for expand investment, injecting money supply for declining recession, rotating bussiness cycle, and expanding aggreggate economy activity. But Quantitative easing could make inflation and risk like uncertainty of distribution the reserve on banks or nonbank account, because excessing banks or nonbanks reserve doesn't mean that banks or nonbanks will distribution the money for excessing the money supply. The money supply only will increase if the financial institution distributing it to economy (Wikipedia.com).

According to Mishkin (2013), the Monetary Policy Committee's recent decision to expand the money supply through large-scale asset purchases (or 'quantitative easing') shifted the focus of monetary policy towards the quantity of money as well as the price of money. With Bank Rate close to zero, asset purchases should provide an additional stimulus to nominal spending and so help meet the inflation target. This should come about through their impact on asset prices, expectations and the availability of credit. However, there is considerable uncertainty about the strength and pace with which these effects will feed through. That will depend in part on what sellers do with the money they receive in exchange for the assets they sell to the Bank of England and the response of banks to the additional liquidity they obtain. The MPC will be monitoring a range of indicators in order to assess the impact of its asset purchases and therefore judge the appropriate stance of monetary policy.

Therefore, the quantitative easing program in U.S. will cause the yield on bond or financial asset decline, then according to Mishkin (2009) and his theory the of asset demand, the capital will flow to another country which have a higher yield on financial asset than U.S. The large scale asset purchasing in order to excess money supply with extremely will cause the interest rate decline and massive capital outflow from U.S. to another country occurs.

2.1.6.2 Open Market Policy

According to Mishkin (2009), Open Market Operation is the primary way in which the Fed causes changes in the monetary base is through it's open market operations. A purchase of bonds by the Fed is calles an open market purchase, and a sale of bonds by the Fed is called open market sale. The analysis reveals that the effect of an open market purchase on reserve depends on wheter the seller of the bonds keep proceeds from the sale in currency or in deposits. If the proceeds are keept in currency, the open market purchase has no effect on reserves, if the proceeds are kept as deposits, reserve increase by the amount of the open market purchase. The effect of an open market purchase on the monetary base, however is always the same wheter the seller of bonds keeps the proceeds in deposits or in currency. The impact of an open market purchase on reserves is much more uncertain than it's impact on monetary base. The open market purchase causes the federal funds rate to fall, whereas an open market sale causes the federal funds rate to rise.Open Market operations have several advantages over the other tools of monetary policy.

1. Open market operations occur at the initiative of the Fed, which has complete control over their volume. This control is not found, for example, in discount operation , in which the Fed can encourage or discourage banks to borrow reserves by altering the discount rate but cannot directly control the volume of borrowed reserves.
2. Open Market operations are flexible and precise,they can be used to any extent. No matter how small a change in reserves or the monetary base is desired, open market operations can achieve it with a small purchase or sale of securities. Conversely, if the desired change in reserves or the base is very large, the open market operations tool is strong enough to do the job through a very large purchase or sale of securities.
3. Open market operations are easily reserved. If a mistake made in conducting an open market operation, the Fed can immediately reverse it. If the trading desk decides that the federal fund rate is too low because it has made too many open market purchase, it can immediately make a correction by conducting open market sales.
4. Open market operations can be implemented quickly, they involve no administrative delays. When the trading desk decides that it wants to change the monetary base or reserves, it just places orders with securities dealers, and the trades are executed immediately.

2.1.6.3 Quantitative Easing and Money Supply

According to Sheriff (2013), Quantitative Easing (QE) is a monetary policy tool used by central banks to rejuvenate the national economy when standard monetary policy becomes ineffective. It is where a central bank buys specified amounts of financial assets from commercial banks, in order to increase the monetary base of the country. The United States first began its QE Programme late 2008 during the financial crisis during which it purchased Treasury Bonds and Mortgage Backed Securities (MBS) through open market operations. The main reason for the U.S. Federal Reserve (FED) to introduce QE was in order to revive its economy during the financial crisis, where unemployment and private sector credit growth, were at their worst levels. In an attempt to revitalise the economy, the FED through its QE programme began purchasing assets with long term maturities, in order to reduce longer-term interest rates in the economy thereby making borrowing cheaper for individuals and corporates. With The goal of attaining unemployment levels close to the pre-recessionary period as well as maintain mild-inflation in the economy. It could be concluded that if the quantitative easing is used in order to excess the monetary base, then the money supply will increase too.

2.1.7. Economy Theory

2.1.7.1 Scarcity

Consider a world without scarcity. If infinite quantities of every good could be produced or if human desires were fully satisfied, what would be the

consequences?. People would not worry about stretching out their limited incomes because they could have everything they wanted. Bussines would not need to fret over the costof labor or health care, government would not need to struggle over the taxes or spending or pullution because nobody would care. Moreover, since all of us could have as much as we pleased, no one would be concerned about the distribution of incomes among different people or classes.In such and Eden of affluence, all goods would be free, like sand in desert or seawater at beach. All price would be zero, and markets would be unnecessary. Indeed, economics would no longer be useful subject. But no society has reached a utopia of limitless possibilities (Samuelson & Nordhaus, 2010).

Ours is a world of scarcity, full of economic goods. A situation of scarcity is one which goods are limited relative to desires. An objective observer would have to agree that, even after two centuries of rapid economic growth, production in the United States is simply not high enough to meet everyone's desires. If you add up all the wants, you quickly find that there are simply not enough goods and services o satisfy even a asmall fraction of everyone's consumption desires. Our national output would have to be many times larger before the average America could live at the average doctor or major league baseball player. Moreover, outside the United States, particularly in Africa, hundreds of millions people suffer from hunger and material deprivation (Samuelson & Nordhaus, 2010).

2.1.8 Monetary Theory

2.1.8.1 The Quantity Theory of Prices

To understand the quantity theory of money, it is essential to recall that money differs fundamentally from ordinary goods such as bread and cars. We want bread to eat and cars to drive. But we want money only because ot buys us bread and cars. If prices in Zimbabwe today are 100 million times what they were a few years ago, it is natural that people will need about 100 million times as much money to buy things as they did before. Here lies the core of the quantity theory of money : demand for money rises proportionally with the price level as long as other things are held constant(Samuelson and Nordhaus, 2010).

The quantity theory of money and prices holds that the price move proportionally with the supply of money. Although the quantity theory is only a rough appromaxtion, it does help to explain why countries with low money growth have moderate inflation while those with rapid money growth find their prices galoping along (Samuelson and Nordhaus, 2010).

2.1.8.2 Theory of Asset Demand

According to Mishkin (2009), wheter to buy one asset rather than another, an individual must consider the following factors :

1. Wealth, when we find that our wealth has increased, we have more resources available with which to purchase assets, and so, not suprisingly, the quantity of assets we demand increases. Therefore, the

effect of changes in wealth on the quantity demanded of an asset can be summarized as follows : Holding everything else constant, an increase in wealth raises the quantity demanded of asser.

2. Expected Return, return on asset measures how much we gain from holding that asset. When we make a decision to buy asset, we are influenced by what we expect the return on that asset to be. To summarize, an increase in an asset's expected return relative to that of an alternative asset, holding everything else constant, raises the quantity demanded of the asset.
3. Risk, the degree of risk or uncertainty of an asset's returns also affects the demand for the asset. Most people are risk-averse, especially in their financial decisions : Everything else being equal, they prefer to hold the less risky asset. Hence, holding everything is constant, if an asset's risk rises relative to that of alternative assets, it's quantity demanded will fall.
4. Liquidity, another factor that affects the demand for asset is how quickly it can be converted into cash at low cost. An asset is liquid if the market in which it is traded has depth and breadth, that is, if the market has many buyers and sellers. The more liquid an asset is relative to other assets, holding everything else unchanged, the more desirable it is, and the greater will be quantity demanded.

According to this theory, the excess money supply of U.S. will decline U.S. interest rate and its yield, so if the extreme U.S. money supply during

quantitative easing program causes the interest rate or yield on financial asset U.S. decline, so investors will seek another county with higher yield or return. If Indonesia has higher expected return, so the capital will flow from U.S. to Indonesia. In quantitative easing program, the money supply was increased tremendously, and the U.S. is near zero, so it could be seen that the quantitative easing program in order to excess money supply extremely caused the capital flow from U.S. to another country with higher interest rate or expected return.

2.1.8.3 Monetary Aggregates

The narrowest measure of money that central banks report is M1 and it is more or less the same for most countries. M1 consists of currency in circulation as well as demand deposits and other checkable deposits held in depository institutions. Demand deposits include all deposits in depository institutions that can be withdrawn without prior notice, most of these are non-interest bearing. Checkable deposits may be either interest-bearing, or non-interest bearing.

On the other hand, monetary aggregates broader than M1 is considerably differ from one country to another. Even so, we generally find that savings deposits and most time deposits are usually included in M2. Savings deposits are interest-bearing non-transaction accounts that can be drawn upon demand at no costs. Time deposits are also interest-bearing deposits or certificates of deposits (CDs) held for given period of time and can be drawn with prior written notice, usually at very low costs. Small-denomination time deposits have a value of less than $ 100,000. Only the US includes money market mutual funds (MMMF) in

M2. MMMF shares are retail accounts issued by banks, on which households can issue checks. M3 is the broadest definition of money and is calculated by many central banks such as ECB. M3 includes Repurchase agreements and debt securities up to 2 years.

2.1.8.4 Money, Interest Rates, and Exchange Rates

2.1.8.4.1 Interest Rate and Money Supply

After money supply is increased by central bank, there is initially an excess real supply of money at old equilibrium interest rate, which previously balanced the market. since people are holding more money than they desire, they use their surplus funds to bid for asset that pay interest. The economy as a whole cannot reduce it money holdings, so interest rate are drive down as unwilling money holders compete their lend their excess cash balances. Interest rate has fallen sufficiently to induce an increase in real money demand equal to these increase money supply (Krugman and Obstfeld, 2009).

A fall in money supply causes an excess demand for money at the interestrate that previously balanced supply and demand. People attempt tp sell interest bearing asset-that is, to borrow-to rebuild their depleted real money holdings. Since they cannot all be successful when there is excess money demand, the interest rate is pushed upward until everyone is content to hold the smaller rela money stock. The conclusion is an increase in the money supply lowers interest

rate and a fall in money supply raises the interest rate (Krugman and Obstfeld, 2009).

According to this theorem, the excess money supply in U.S. will cause the interest rate decline and the decrease in money supply will cause interest rate hike. So, during quantitative easing program in order to excess money supply extremely the interest rate will have an extreme decline too.

2.1.8.4.2 Money Supply and Exchange Rate in the Short Run

At the initial interest rate, there is an excess supply of money in the money market, so the interest rate falls as the money market reach is equilibrium position. Lower interest rate on domestic currency, the expected return on the foreign currency is greater than the assets that are denominated domestic currency. Holder of domestic assets therefore try to sell them for foreign assets which are momentarily attractive, the domestic currency depreciates as holders of domestic assets bid for foreign assets. The conclusion is an increase in a country's money supply causes its currency to depreciate in the foreign exchange market. In reverse, reduction in a country's money supply causes its currency to appreciate in the foreign exchange market (Krugman and Obstfeld, 2009).

According to this theorem, the excess money supply in U.S. will cause the dollar depreciate and the decrease in money supply will cause U.S. dollar appreciate. So, during quantitative easing program in order to excess money supply extremely the U.S. dollar will have an extreme depreciate againts another currency.

2.1.8.4.3 Money Supply and Exchange Rate in the Long Run

The domestis currency is one of the many prices in the economy that rise in the long run after a permanent increase in the money supply. If you think again about the effects if a currency reform, you will see how the exchange rate moves in the long run. For example, that the U.S. government replaced every pair of "old" dollars with one "new" dollar. Then if the dollar/euro exchange rate had been 1,20 old dollars per euro before the reform, it would change to 0,60 new dollars per euro immediately after the reform.In much the same way, a halving of the U.S. money supply would eventually lead the dollar appreciatie from an exchange rate of 1,20 dollar/euro to one of 0,60 dollar/euro. Since dollar prices of all the U.S. goods and services would also decrease by half, this 50 percent appreciation of dollar leaves the relative price of all U.S. and foreign goods and services unchangerd. The conclusion is a permanent increase in a country's money supply causes a proportional long-run depreciation of its currency againts foreign currencies. Similiarly, a permanent decrease in a country's money supply causes a proportional long-run appreciation of its currency againts foreign currencies (Krugman and Obstfeld, 2009).

2.1.9 Threshold Generalized AutoRegressive Conditional Heteroscedasticity (TGARCH)

GARCH model have a characteritic respon of volatility which symetric towards shock. In other words, along as the same of its intensity then the respons of volatility towards a shock is same too. The development of the next GARCH

model acomodates the posibility of any asymetric volatility respons. There are two technique of asymetric GARCH, those are TGARCH (Threshold GARCH) and EGARCH (Exponential GARCH) (Ariefianto, 2012). The TGACRH approach could be given by this formulation :

$$\theta^2 = \alpha_0 + \alpha_t u_{t-1}^2 + \beta \theta^2_{t-1} + \gamma \theta^2_{t-1} I_{t-1} \quad \text{..... (6)}$$

Whereas :

$I_{t-1} = 1$

$u_{t-1} < 0$

2.2 Empirical Evidence

Some of researcher have did some reseacrh about the effect of USD as world currency on the economic and finance. Liu (2013) argues the impact of USD supply on the China's macroeconomic condition. He have found that positive shock to US money supply, China will have higher inflation rate and lower GDP level.He has used global VAR (GVAR) model, and it shows that when there is a positive shock to US money supply, China will have higher inflation rate and lower GDP level.Siklos and Anusiewicz(1998) argues that unexpected high growth M1 USD led to higher Canadian stocks price. And low growth in M1 US led to lower Canadian stocks price.

Srikanth and Kishor (2012) have found the effect of the USD money supply on India Rupe Exchange Rata againts USD, they used data from January 1999 to March 2011 by using multiple regression. Independent variable that was used in their research are *IRD* (Interest Rate Differential between MIBOR and

USD LIBOR of 3 months tenor), *IFD* (Inflation Differential between WPI of India and CPI of the US),*CAC*(Current Account Balance in BoP),*CAPAC (*Capital Account Balance in BoP)*RBI's Net Intervention (RBINI) (*Purchases – Sales of USD by RBI), *FxTo* = (Turnover in Indian foreign exchange market), *FR* (Foreign currency reserves of India), *RIIP* (Relative output, i.e., differential between Indian IIP and IIP of the US), *RMS* (Relative Money Supply, M3 of India – M2 of US) and *FP* (3-month forward premia of USD/INR in %). They conclude that the lagged value of dependent variable (*USD/INR*), *CAC (Current Account Balance in BoP), RMSRelative Money Supply (M3 of India – M2 of US), IIP* and *IRD* are the mostsignificant variables in determining the USD/INR exchange rate.

And the impact of US dollar supply on gold price was investigated by Artigas, et al(2010), by using multiple regression, they found 1% change in money supply in the US dollar, the European Union and United Kingdom, India,and Turkey tend to correlate to an increment in the price of gold by 0.9%, 0.5%,0.7%, and 0.05%, respectively.They have analysed the effect money supply has in performance of gold, as measured by year-over-year percentage changes in the spot price of gold (US$/oz), at 5PMin New York, as well as year-over-year percentage changes in money supplymeasures in the following countries: the United States, Europe (represented bythe Euro-zone and the United Kingdom), India, and Turkey. For each country, they considered two measures of money supply: broad and narrow. Given that notall countries use the same definitions, or do not calculate, all of the traditionalmeasures of money supply (M0, M1, M2, etc.), they used the individual M1 datain each country as a measure of narrow

money, when available, and M0 for the UK. Similarly, they chose the country's M3 measure as a measure of broadmoney supply, except for the UK for which they use M4.

In the side of quantitative easing program, Panyasombat (2012) concluded that Quantitative Easing programs one and two had an effect on major financial markets. They generated abnormal returns for many financial markets during the event window periods. They also indicate that most of the abnormal returns were generated one or two days before the event. However, in some markets, the abnormal returns were generated after the date of the event.

His research looks at the effects from the two Quantitative Easing programs separately since there is a large gap between the periods during which Quantitative Easing one and two were implemented. This process may also entail looking at other significant events related to the samples considered.His research aims to study eight major financial markets which the researcher views as good representatives of major financial markets. They include: the MSCI index; the S&P 500; the FTSE 100; the DAX; the Stock Exchange of Thailand; the 10 Year Treasury Yield; the JP Morgan EMBI Spread; and the Gold Commodity. These financial markets include both traditional and alternative investments. All these markets have large trading volumes and the United States Quantitative Easing programs are likely to affect these samples. The researcher believes that the final outcome will be a good representation of "major" financial markets.

Techarongrojwong (2013) on his paper found that the Q.E. announcement in the U.S. provides the negative effect on the stock return of the SET in the full sample and two individual announcement subsamples. The mean abnormal return is statistically significant and negative on Day -1 through Day 1. Results support the preannouncement effect since the stock price adjusts to the news one day prior to the announcement day and supports the post earnings announcement drift since the stock price drifts over time in the same direction as the initial surprise (Vega, 2006).

In other hand, the reseacrh which did by Ahmed & Zlate (2012)not find statistically significant effects of unconventional U.S. monetary policy expansion on total net inflows of capital into EMEs. The evidence suggests that such policies have affected only the composition of flows toward portfolio flows. Moreover, theinclusion of variables related to unconventional U.S. monetary policies does not drive out ordetract from the importance of other determinants of EME flows. Thus, even looking at just portfolio flows, unconventional U.S. monetary policy appears to be only one among severalimportant factors.

Phavaskar et al (2012) found that when the Fed in May this year announced the possibility of initiating an end to its purchases of distressed assets in the coming months, distraught markets all over the world reacted pessimistically. Currencies depreciated, stock markets crashed, and investors panicked. With the U.S. market now turning more attractive, capital that had taken off to emerging economies flew back into the country.

Fernandes (2012) found that the relationship between Fed QE1 and particular commodities like Gold and Crude Oil by using multiple regression. Crude Oil includes both Brent and WTI data. Figure following represents the Gold Price's movement since Quantitative easing program was started. Using a95% Confidence level sheestablish that there is a significant relationship between QE1 and Crude Oil. The Correlation between the Fed's QE1 and Gold is moderate at 20% while for Crude Oil, both Brent and WTI is above 50% which is moderately strong. Thus, countries which are dependent on Oil and other commodities may have experienced a rise in inflation as a result of QE.

The this following table shows the empirical studies about money supply and quantitative easing program effect on the stock markets, exchange rates, and gold price.

Table 2.3

Empirical Studies

No.	Researcher and Title	Variable	Analysis Model	Result
1	Panyasombat (2012) "*A Study of The Impact of two U.S. Quantitative Easing Programs On Major Financial Market"*	Dependent : the MSCI index; the S&P 500; the FTSE 100; the DAX; the Stock Exchange of Thailand; the 10Year Treasury Yield; the JP Morgan EMBI Spread; and the Gold Commodity Independent : Capital outflow from Quantitative Easing program	Event Studies	Quantitative Easing have an impact to all these Markets
2	Techarongrojwong (2013) *"The Stock Market Reaction to the U.S. Quantitative Easing Announcement: Evidence of the*	Dependent : SET Independent : Quantitative Easing Announcement	Event Studies	Tapering off Quantitative Easing have a negative impact towards SET index

	Emerging Stock Market"			
3	Ahmed & Zlate (2012) *"Capital Flows to Emerging Market Economies: A Brave New World?"*	Dependent : Stock market Independent : Quantitative Easing stimulus, GDP of Emerging country, Monetary policy rate differential.	Multiple Regression	Quantitative easing have a small impact towards stock market.
4	Liu (2013) *"US Money Supply and China's Economic Fluctuation*"	Dependent : China's inflation rate and GDP Independent : M1 USD	GVAR	M1 USD dollar have positive relationship to inflation and negative relationship to GDP
5	Srikanth and Kishor (2012) *"Exchange Rate Dynamics in Indian Foreign Exchange Market: An Empirical Investigation on the Movement of USD/INR"*	Dependent : Exchange Rates,USD/INR Independent : Interest Rate Differential between MIBOR and USD LIBOR of 3 months tenor, Inflation Differential between WPI of India and CPI of the US, Current Account Balance in BoP, Capital Account Balance in BoP,*RBI's Net*	Multiple Regression	(*USD/INR*), *CAC (Current Account Balance in BoP), RMSRelative Money Supply (M3 of India – M2 of US), IIP* and *IRD* are the mostsignificant variables in determining the USD/INR exchange rate.

		*Intervention (*Purchases – Sales of USD by RBI), Turnover in Indian foreign exchange market, Foreign currency reserves of India, Relative output, i.e., differential between Indian IIP and IIP of the US, Relative Money Supply, M3 of India – M2 of US and 3-month forward premia of USD/INR in %		
6	Phavaskar et al (2012) "Reverberation of QE Tapering: A Global Assessment"	Dependent : Emerging countries' currency Independent : Quantitative Easing announcement	Event Studies	Tapering off Quantitative Easing Annuncement have an positive impact toward Exchange Rate depreciation in these all emerging countries.
7	Fernandes (2012) "*Quantitative easing: A blessing or a curse "*	Dependent : Oil Price, Gold Price, Capital Flow Independent : Percentage change in monthly assets held by Fed	Event studies and Multiple Regression.	Quantitative easing have an impact to Oil Price, Gold price, Capital flow.

8	Artigas, et al(2010) *"Linking global money supply to gold and to future inflation"*	Dependent : World's Gold Price Independent : money supply in the US dollar, the European Union and United Kingdom, India,and Turkey	Multiple Regression	Money supply in these countries positively affect the world's gold price.
9.	Siklos and Anusiewicz(1998) *"The Effect of Canadian and U.S. M1 Announcement on Canadian Financial Market"*	Dependent : Canadian Stock Market Price Independent : M1 announcement of USD and Canadian dollar	Multiple Regression	Unexpected higher M1 USD growth positively affect Canadian stock market price and unexpected higher M1 Canadian dollar growth negatively affect Canadian stock market price

2.3 Framework of Theory and Hypotesis Conceptual

2.3.1 USD money supply Effect On IHSG Volatility

High money supply because the monetary policy from the Fed such as open market purchase and decrease reserve requirement will cause federal fund rate is lower. According to Mishkin (2009) in his theory of asset demand,according to this theorem, the demand for Indonesian stock or bond will

be higher if the interest rate in U.S below the Indonesia Interest rate. And according to Salvatore (2011), the capital will flow to a country with higher retuns than another country, Then the capital will outflow from U.S. to Indonesia because the lower interest rate in the U.S. because huge excess of money supply. For rigorous thought, if the interest rate on U.S. below the BI Rate, according to CAPM theory, the risk free rate will decline and global minimum variance (zero beta) will decline too. If it so, then the equilibrium return will decline too, interest rate is the rate for determines the rate of lending and borrowing. If the rate of lending and borrwoing decline so the return for risk premia is decline, and furthermore, because the BI Rate is higher than federal fund rates so the capital will flow to other country like Europe and Emerging country like Indonesia. If capital flow to Indonesia market, then the price of the stock will be higher.

Before the quantitative easing periods, the capital flow to emerging markets was extremely high, because the return and potency in the emerging markets is on going to high. In Modern Portfolio Theory, Elton, et al(2007) said there is must be a higher return for assets when the risk is higher. Return is compensation of the high risk. In developing country and emerging market, political risk and other risk still high, so the compensation for the risk is high yield return. Capital flight is a common phenomenon right now, in the world that the globalization and liberalization is extremely increase, and in the world that financial markets more integrated as the consequences of the rapidly development on technology and communication, the capital flight is just a common phenomenon. Furthermore, because IHSG is financial assets, this value will also

be affected by bad news and good news or asymetric information to this asset (Ariefianto, 2012). So, TGACRH model will be used to find out the asymetric information on this financial asset and the explained of volatility of this asset.

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According to Portfolio Balance Theory, If the USD money supply is exceed it's demand, then it will encourage capital outflow from U.S. to another country. And if the money supply has extreme growth, its value will be depreciate, U.S. Interest rate will decline and Yield on U.S. Financial asset such as bond will decline. So, according to this theory, investors will arranged their portfolio to balance it. During Quantitative Easing program, USD money supply grow extremely, so with the U.S. Interest rate near zero and Indonesia's Interest rate is higher than U.S., investors will arrange their portfolio which it can make the capital outflow from U.S. to Indonesia which has a higher return on its financial asset, and it will rise the Indonesia's Stock Market Index value.

Siklos and Anusiewicz(1998) state that unexpected high growth M1 USD led to higher Canadian stocks price. And low growth in M1 US led to lower Canadian stocks price. And than Panyasombat (2012) said that quantitative easing in order to excess money supply with near zero interest rate causes the capital outflow from U.S. to major financial market includes SET and S&P 500 and causes its price hikes.

H1 :USD money supply have positive impact towards IHSG Volatility

2.3.2 USD money supply Effect On Exchange Rate Volatility

A rise in the money supply leads to a higher domestic price level, which in turn lead to lower expected future exchange rate (Mishkin, 2009). The higher money supply will cause a depreciation in one country's currency. Dollar is an asset and comodity, if there is infinite number of the asset, this asset will be free comodity and have no value. If amount of dollar excess and growth with unproperly and extremely, it will cause dollar value depreciate again Rupiah. Then the value of asset is determined by it scarcity, if the quantitative easing causes the number of dollar hikes then the dollar value will depreciate towards the other currencies. The value of rupiah will appreciate when the U.S. dollar depreciate because the quantative easing program. When the dollar is infinite then that currency will have no value.Furthermore, because exchange rate is financial assets, this value will also be affected by bad news and good news or asymetric information to this asset (Ariefianto, 2012). So, TGACRH model will be used to find out the asymetric information on this financial asset and the explained of volatility of this asset.

According to monetary approach theory, if the U.S. money supply higher than Indonesia, USD will depreciate againts IDR. And During Quantitative Easing Program which is established in order to make extreme growth in USD money supply, IDR will be appreciate towards USD. And according to Balance of Payment theory, if the capital inflow is higher because the higher USD money supply lead to lower interest rate and capital outflow from U.S. then Indonesia's

Balance of Payment will be stronger, therefore, it will cause the appreciation on IDR againts USD.

Srikanth and Kishor (2012) have found the effect of the USD money supply on India Rupe Exchange Rata againts USD, They conclude that the lagged value of dependent variable (USD/INR), CAC (Current Account Balance in BoP), RMSRelative Money Supply (M3 of India – M2 of US), IIP and IRD are the most significant variables in determining the USD/INR exchange rate. Furthermore, Phavaskar, et al (2012) said that the tapering off quantitative easing program which was issued in order to reduce USD money supply has caused the currency of other countries depreciated.

H2 :USD money supply have negative impact towards IDR/USD Exchange Rate Volatility

2.3.3 USD Money Supply Effect On Gold Price Volatility

Gold such as other comodities which its price will hike when money supply excess. The unproperly money growth will cause inflationary effect on other comodities, gold is one of them. Fernandes (2012) has found that there is a significant relationship between QE1 and Crude Oil, using a 95% Confidence level.

According to Portfolio Balance Theory, If the USD money supply is exceed it's demand, then it will encourage capital outflow from U.S. to another country. And if the money supply has extreme growth, its value will be depreciate, U.S. Interest rate will decline and Yield on U.S. Financial asset such

as bond will decline. So, according to this theory, investors will arranged their portfolio to balance it. During Quantitative Easing program, USD money supply grow extremely, so with the U.S. Interest rate near zero and Indonesia's Interest rate is higher than U.S. then the depreciation of USD will cause the investors seek the another asset which has higher return, investors will arrange their portfolio because of these factors and it will rise the Gold price. Furthermore, because gold is including in financial assets, this value will also be affected by bad news and good news or asymetric information to this asset (Ariefianto, 2012). So, TGACRH model will be used to find out the asymetric information on this financial asset and the explained of volatility of this asset.

. Artigas, et al(2010) argue that 1% change in money supply in the US dollar, the European Union and United Kingdom, India,and Turkey tend to correlate to an increment in the price of gold by 0.9%, 0.5%,0.7%, and 0.05%, respectively.

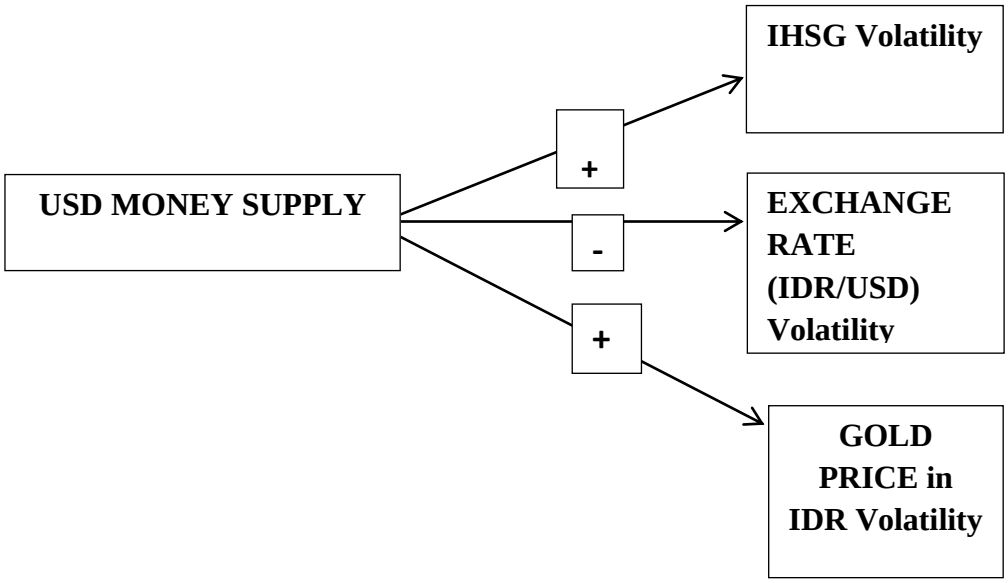
H3 :USD money supply have positive impact towards Gold Price Volatility

2.3.4 Theoritical Framework

Based on the empirical evidence above, then conceptual framework in this research tend to explains what the effect of the USD money supply which established by The Federal Reserve towards financial market index volatiliy or financial market risk which in this research proxied IHSG, United States Dollar and Rupiah Exchange Rate, and Gold Price Index. Theoritical Framework in this research such as following :

Figure 2.4

Theoritical Framework



CHAPTER III

RESEARCH METHOD

3.1. Operational Definition

3.1.1 IHSG

IHSG is stock market index which used by BEI (Indonesia Stock Exchange). First introduced on 1st April 1983 as indicator of stock market volatility in BEJ (Wikipedia.com). And then, Volatility of IHSG is ascendet and descent of IHSG value (Fahmi 2012). This research uses IHSG data to compute the IHSG volatility. The measurement of IHSG and IHSG volatility which is proxied by variance that computed by using TGARCH are such as following

$$IHSG = \frac{\sum p}{d} x\ 100 \quad \text{.....(1)}$$

$$IHSG = \alpha + \theta \quad \text{.....(2)}$$

$$\theta^2_t = \alpha_0 + \alpha_t\, u_{t-1}^2 + \beta\, \theta^2_{t-1} + \gamma \theta^2_{t-1}\, I_{t-1} + \beta_j M1 + \beta_k D + \beta_e M1*D + e \quad \text{.....(3)}$$

Denotes :

α = Constant

θ = Deviation

θ^2_t = Variance at t periods

M1= M1 USD Variable

D = Dummy Variable, 1 : during Quantitative Easing Program,
0 : before Quantitative Easing Program

M1*D = M1 times Dummy Variable

ε_t = error in t-period

u_{t-1}^2 = Squared error term in the previous time

θ^2_{t-1} = Conditional variance in the previous time

$\theta^2_{t-1} I_{t-1}$ = Threshold squared error term in the previous time

3.1.2 IDR/U.S. Dollar Exchange Rate

Exchange Rate is price of one curency in terms of another currency (Mishkin, 2009). Rupiah/U.S Dollar Exchange Rate is price of one rupiah in terms of U.S. Dollar. And then, Volatility of exchange rate is ascendet and descent of exchange rate (Fahmi 2012). This research uses IDR/USD exchange rate data to compute the IDR/USD exchange rate volatility. The measurement of IDR/USD exchange rate and IDR/USD exchange rate volatility which is proxied by variance that computed by using TGARCH are such as following :

$$\frac{Rupia\ h\ Spot\ \ Rate}{U.S.Dollar\ \ Spot\ \ Rate} \quad \text{..... (4)}$$

$$Exchange\ Rate = \alpha + \theta \text{.....(5)}$$

$$\theta^2_t = \alpha_0 + \alpha_t u_{t-1}^2 + \beta\, \theta^2_{t-1} + \gamma\theta^2_{t-1} I_{t-1} + \beta_j M1 + \beta_k D + \beta_e M1*D + e \text{.....(6)}$$

Denotes :

α = Constant

θ = Deviation

θ^2_t = Variance at t periods

M1= M1 USD Variable

D = Dummy Variable, 1 : during Quantitative Easing Program,
0 : before Quantitative Easing Program

M1*D = M1 times Dummy Variable

ε_t = error in t-period

u_{t-1}^2 = Squared error term in the previous time

θ^2_{t-1} = Conditional variance in the previous time

$\theta^2_{t-1} I_{t-1}$ = Threshold squared error term in the previous time

3.1.3 Gold Price Indonesia

Gold price in Indonesia in Rupiah (IDR) is a free daily analysis about the current gold price in Indonesia in IDR (Goldpricefix.com). And then, Volatility of gold price is ascendet and descent of gold price (Fahmi 2012). This research uses gold price in IDR data to compute the gold price volatility. The measurement of gold price and gold price volatility which is proxied by variance that computed by using TGARCH are such as following :

$$\frac{IDR}{Ounce} \quad \text{..... (7)}$$

$$Gold\ Price = \alpha + \theta \quad \text{.....(8)}$$

$$\theta^2_t = \alpha_0 + \alpha_t u_{t-1}^2 + \beta \theta^2_{t-1} + \gamma\theta^2_{t-1} I_{t-1} + \beta_j M1 + \beta_k D + \beta_e M1*D + e \quad \text{.....(9)}$$

Denotes :

α = Constant

θ = Deviation

θ^2_t = Variance at t periods

M1= M1 USD Variable

D = Dummy Variable, 1 : during Quantitative Easing Program,
0 : before Quantitative Easing Program

M1*D = M1 times Dummy Variable

ε_t = error in t-period

u_{t-1}^2 = Squared error term in the previous time

θ^2_{t-1} = Conditional variance in the previous time

$\theta^2_{t-1} I_{t-1}$ = Threshold squared error term in the previous time

3.1.4 M1 of U.S. Dollar

The narrowest definition of the U.S. money supply iscalled ***M*** **1** **.**It consists of two components: Currency (coins and paper money) in the hands of the public and all checkable deposits (all deposits in commercialbanks and “thrift” or savings institutions on whichchecks of any size can be drawn). Quantitative easing program has purpose to excess money supply, So the M1 of USD is used to measure the quantitative easing program effect on financial market volatility. The measurement of M1 of U.S. Dollar such as this following :

Currency in circulation + Checkable deposits .....(10)

The operational definition that mentioned above could be summarized by this following table :

Table 3.1

Table of Operational Definition

No	Variabel	Definition	Scale	Measurement
1.	*Gold Price IDR*	Price of Gold denominated in IDR	Ratio	$\frac{IDR}{Ounce}$
2.	*Stock Price Index (IHSG)*	Sigma of multiplication each stock which registered	Ratio	$IHSG = \frac{\sum p}{d} x\ 100$ Directory, Bank Indonesia
3.	*M1 of U.S. Dollar*	Monetary Aggregates	Sum	Currency in circulation + Checkable deposits
4.	*Rupiah/Dollar Exchange Rate*	Rupiah which denominated by U.S. Dollar	Ratio	Rupiah Spot Rate/U.S. Dollar Spot Rate
5.	*Variance of Gold Price in IDR*	Variance of Price of Gold denominated in IDR	Ratio	$\theta^2(\frac{IDR}{Ounce})$
6.	*Variance of*	Variance of Sigma of multiplication	Ratio	$\theta^2(\frac{\sum p}{d} x\ 100)$

	IHSG	each stock which registered		
7.	*Variance of IDR/USD Exchange Rate*	Variance of Rupiah which denominated by U.S. Dollar	Ratio	θ^2 (Rupiah Spot Rate/U.S. Dollar Spot Rate)

3.2 Empirical Stage in Econometric

Empiricial stage in econometric could be describe as a five stage scheme. The stage is Problem Spesification, Method Selection, Empirical Scheme, Empirical veification, and the last one is the utility of the research. The empirical stage of this research is such as follow :

1. Problem spesification which be concerned of this reseacrh is the quantitative easing and it's effect on financial market volatility.
2. Determine the variable in this research. The Variable which are involved in this reseacrh is *Stock Price Index (IHSG), M1 of U.S. Dollar, Rupiah/Dollar Exchange Rate, and Gold Price Index Data.*
3. Theoritical basis which give the relationship pattern in this reseacrh is International Monetary and Finance Theory, Macro Economy Theory, and Finance Theory.

4. The analysis method which is used to examine the relationship in this research variables is Statistic Descriptive Test, Unit Root Test, Autocorrelation Test, ARCH-LM test, TGARCH Model, and Hypotesis test.

3.3 Dependent and Independent Variables

3.3.1 Independent Variables

It is that variable which presumable as causal variable in independent variable in this research. Independent Variables in this research is Monetary Aggreggat (M1) of United States Dollar.

3.3.2 Dependent Variables

It is that variable which making of or affected by other variables. Variables which making of by independent variables. Dependent variables in this research are variance of IHSG, variance Rupiah towards U.S. Dollar Exchange Rate, and variance of Gold Price in IDR.

3.4 Data Resource

Data that used in this research are secondary data including *Stock Price Index (IHSG), M1 of U.S. Dollar, Rupiah/Dollar Exchange Rate, and Gold Price Index Data.* Data that used in this research obtained from Statistika Ekonomi dan Keuangan Indonesia, FederalReserve.organd Goldpricefix.com from year periods January 2003 - December 2013.

3.5 Sample and Population

Sample is subset of population, which composed by several member of population. This subset is used because it's impossible for us to research all of the member of population, therefore, we have to shape a delegation which is named sample (Ferdinand, 2006). Population in this reseacrh are M1 of USD, IHSG, Exchange Rate Rupiah againts USD, and Gold Price. The sample in this reseacrh is data of all population from January 2003 until December 2013.

3.6 Data Gathering Method

Data Aggregation process in this research done by non participant observation that is to say by examine books, journals, and papers to get comprehensively theoritical base. Data was obtained by directly cite from Statistika Ekonomi dan Keuangan Indonesia, FederalReserve.org, and Goldpricefix.com from year periods January 2003 - December 2013 and Federal Reserve Bank Data Base.

3.7 Analysis Method

Data analysis have a purpose to extend and bound the research until it to be a well regulated data and be a meaningful data. Data analysis process in this research is quantitative analysis which state by numerical and the calculations are using standart method that auxilared by Eviews-6. Data analysis which are used in this research is TGARCH. TGARCH is used to test the effect of USD money supply before and during quantitative easing program towards volatility on IHSG, Exchange Rate, and Gold Price. The USD money supply is divided by during and before quantitative easing program, the dummy variable is used to divided USD

money supply during and before quantitative easing program. The reason of using TGARCH in this reseacrh is because of the purpose of this research is to examine the volatility and abnormal respons towards volatility which would be seen and explained by variance of each dependent variable, the reason to use TGARCH is to find out the asymetric information effect on the impact of USD money supply to financial market volatility in Indonesia. But before we are doing the analysis by TGARCH, then the data have to be tested for ensure that there is no problem in stationarity and autocorrelation, then the models with lowest AIC and SIC value are preffered (Ariefianto, 2012). If them was fulfilled then the analysis model is suitable for use.

3.7.1 Statistic Descriptive Test

Statistic descriptive is being used to descript the variables in this research. Analysis tool which being used is mean, standart deviation, maximum and minimum.(Ghozali, 2011). Statistic descriptive presents numericals measurement that is very important for sample. Statistical test that mentioned above is execute by Eviews program.

3.7.1 Autocorrelation Function and Partial ACF Test

Autocorrelation test is being used to find out wheter there is a correlation between observations which unity follow along it's time (time series data) or it's space (cross section). This test have a purpose to test wheter there is a correlation between error in t period and error in t-1 period on a regression model. Autocorrelation appears because the observation have a related chronology each

other. Whereas the PACF shows the correlation between a variable at t period with realization in t-k period by controlling all influence among (t-k+1, t-k+2,...,t-I) (Ariefianto, 2012).

3.7.2 Unit Root Test

Stationarity test is the important thing in time series data analysis. The test which isn't suitable will cause inaccuracy in model then the it will cause the conclusion isn't accurate. The essentials of this procedure is to verificate the stationarity of the data generating process (DGP) (Ariefianto, 2012). If data is stationar, then GDP that mentioned above will show average characteristic and constants variance and autocorrelation value is time invariant. The reverse thing will occur if the data isn't stationar.

3.7.3 ARCH-LM Test

In addition ARCH testing in squared residual by correlogram, Engle has developed a test to find out heteroscedasticity in time series data named ARCH test (Widarjono 2013). The main idea from the ARCH test that the residual variance is not only the function of independent variable but it depends to the squared residual from the previous period such as follow :

$$\delta^2 = a_0 + a_1\delta^2_{t-1} + a_2\delta^2_{t-2} + a_p\delta^2_{t-p} \quad (11)$$

The null hypotesis which states there is no ARCH on the equation (11) could be formulated such as follow :

$H_0 = a_0 = a_1 = a_2 = ... = a_p = 0$

With null hypotesis then the variance of residual variable δ^2_t would be constant. If researchers fail to reject null hypotesis then the model doesn't contain ARCH and reversely if researchers reject null hypotesis so the model doesn't contain ARCH.

3.7.4 Threshold Generalized AutoRegressive Conditional Heteroscedasticity (TGARCH)

GARCH model have a characteritic respon of volatility which symetric towards shock. In other words, along as the same of its intensity then the respons of volatility towards a shock is same too. The development of the next GARCH model acomodates the posibility of any asymetric volatility respons. There are two technique of asymetric GARCH, those are TGARCH (Threshold GARCH) and EGARCH (Exponential GARCH) (Ariefianto, 2012). The TGACRH approach could be given by this formulation :

$Y_t = \alpha + \theta_t$.....(12)

$\theta^2_t = \alpha_0 + \alpha_t u_{t-1}^2 + \beta \theta^2_{t-1} + \gamma\theta^2_{t-1} I_{t-1} + \beta_j M1 + \beta_k D + \beta_e M1*D + e$.....(13)

Whereas :

$I_{t-1} = 1$

$u_{t-1} < 0$

θ^2_{1-t} = Variance Rupiah/USD Exchange Rate Variable in t-period
θ^2_{2-t} = Variance IHSG Variable in t-period
θ^2_{3-t} = Variance Gold Price variable in t-period
M1 = M1 USD Variable

D	= Dummy Variable, 1 : during Quantitative Easing Program, 0 : before Quantitative Easing Program
M1*D	= M1 times Dummy Variable
ε_t	= error in t-period
u_{t-1}^2	= Squared error term in the previous time
θ^2_{t-1}	= Conditional variance in the previous time
$\theta^2_{t-1} I_{t-1}$	= Threshold squared error term in the previous time

3.7.4 T-Test Statistic

T-test is used to examine the effect of individual independent variable that is partially used.

The hypotesis if this test is as follow :

a. Ho = b1 = 0, it means that there is any significant impact from independent variable to dependent variable.

b. Ho = b1 ≠ 0, it means that there is no significant impact from independent variable to dependent variable.

c. Determine the significant alpha is 0,10 (10%).

This following formula is used to value t :

$$t = \frac{Regression\ Coefficient}{Standard\ deviation} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (14)$$

The criteria of this test is such as following :

1. Ho is accepted and Ha is rejected if $t_{significant} > t_{tabel}$.It means there is no significant impact from independent variable to dependent variable.

2 Ha is accepted and Ho is rejected if $t_{significant} < t_{tabel}$.It means there is significant impact from independent variable to dependent variable.