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Analysis of Global Economic and Financial Stability Control with Panel Regression Approach

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Abstract*—The global economic crisis is the collapse of all sectors of world market economy affecting other sectors in the world. In the economic dynamics, all countries in the world seem to tend to be universal, when turmoil occurs in a region of a country like in the United States. It will impact the national economic life order of other countries in the world. Financial market disasters are the result of the collapse of financial companies and large banks. It is due to the contagion effect that can form the integration of financial markets so that a balanced model of arbitrage pricing theory multi factor is required to make the price balanced. This research method uses qualitative regression panel which is used as a prediction analysis tool. The secondary data type of time series from 1996-2016 is the target of research of several countries such as Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan. The result of this research concludes that the probability value of interest rate and foreign exchange statistic have the significant influence on the exchange rate. Statistical probability values on stock variables explain that interest rates, foreign exchange reserves, and foreign direct investment have the significant effect on state stocks, Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan. It indicates that the domestic interest rate is closely related to the international interest rate in which domestic financial market access to international financial markets and exchange rate policies are less flexible that can affect one another.*

Keywords— *Crisis and Global Economic*

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I. Introduction

The economic crisis is a situation where the economies of a country experience a decline caused by a financial crisis. The financial crisis in times of economic crisis, the amount of money demand exceeds the amount of money supply; this means that banks and non-bank financial institutions run out of liquidity. If an economic crisis hits a country, a definite result is a decline in Gross Domestic Product (GDP), liquidity drain, and inflated or deflationary prices. An economic crisis may take the form of a recession or depression, also called the real economic crisis [1]. The financial crisis is becoming more frequent than ever. One of the main reasons is the progress in information technology that to some extent, enlarge the wave of crisis and accelerate its spread to other regions or countries. Another reason is the rapid development of the financial sector. One example is the emergence of International Financial Integration (IFI).IFI refers to "the extent to which an economy does not restrict cross-border transactions"[2]. Due to an integrated financial system, the incidence of domestic financial disturbances in one country can lead to a domino effect by disrupting other integrated economies leading to global financial turmoil.

The crisis of ASEAN countries continues with the decline in the value of the currency of the Philippines (Peso), Malaysia (Ringgit), and Indonesia (Rupiah). The monetary crisis in Indonesia then continues to be an economic crisis. Meanwhile, the crisis that hit Asia especially Indonesia due to the combination of external forces and the weakness of the domestic financial and economic structure[3]. The biggest financial crisis took place, the 1997 East Asian Financial Crisis and the 2008 Global Financial Crisis. If the crisis in 1997 was caused by the lack of transparency and credibility of the government that led to structural and policy distortions[4]. The 1997 and 1998 crises caused by massive private debt stocks are the large and short term, many weaknesses in the banking system in Indonesia.This prolonged crisis is the crisis of the sharp decline in the rupiah exchange rate, resulting from a sudden and persistent raid on the US dollar (speculation) and the maturity of large amounts of private overseas debt[12]. Had there been no invasion of the US dollar, despite the many distortions at the microeconomic level, the Indonesian economy would not have experienced a crisis.In other words, although the distortion at the microeconomic level is improved, if there is still an onslaught on the rupiah currency, then the crisis will happen too since the existing foreign exchange reserves are not strong enough to withstand this onslaught.

Securities markets serve to help allocate capital among households, corporations, and governments and provide a wide range of options for investors who want to exchange or trade securities easily, quickly and efficiently. This market provides liquidity in two ways. First, they can get companies to increase their funding by selling securities and helping investors to buy and sell securities with relative ease and speed.

The indicator in this study selected Jakarta Composite Index (JKSE) index representing the Indonesian stock exchange, HSI (Hang Seng Index) representing the Hong Kong stock exchange, DJI (Dow Jones Industrial Average) representing US stock exchange, AORD (All Ordinaries) representing stock exchange Australian shares, BVSP (Bovespa Sao Paolo) represent the Brazilian stock exchange, TSX (Toronto Stock Exchange) representing the Canadian stock exchange and the BSESN (Bombay Stock Exchange) representing the Indian stock exchange.

The reason for choosing JKSE was chosen because it is the country where this research is conducted, HSI is chosen because Hongkong is a country with advanced stock market development and geographical location adjacent to Indonesia, DJI because America is a super power country which becomes the motor of the world economy. AORD was chosen because Australia is one of the most developed countries in the world that has registered high GDP per capita and low poverty rates. Australia is the world's 4th largest wine exporter and contributes $ 5.5 billion annuallyto the national economy.

BVSP was chosen because Brazil became one of the fastest growing major economies in the world, with an average annual GDP growth rate of over 5%, with its 2012 economy shifting the United Kingdom, making Brazil's economy the sixth largest economy in the world. TSX was chosen because Canada is one of the largest countries in the world located on the Continent of North America. Canada is one of the most developed countries with high Nominal Gross Domestic Income, Canada's nominal GDP in 2016 reached USD 1.53 trillion with Perkapitanya Revenue of approximately USD 46,200.

With this high Gross and Per capita domestic income, Canada is among the top 10 as the world's largest economy and the richest country in the world. Canada's rapid economic growth is supported by a wealth of abundant natural resources, especially in the petroleum and natural gas mining sector as well as other technology industries. BSESN was chosen because this country became the main attraction of other developed countries to divert the company's operations and manufacturing production to this country so that it can be more efficient. N225 is chosen since Japan is the world's third largest economy after the United States and China and the Japanese economy is also very efficient and compete in international trade, especially in the field of industry.

II. Theories

2.1 Financial Stability System

The stability of the financial system does not yet have an internationally accepted standard definition. Therefore, some definitions arise that a financial system is entering an unstable stage when the system has been hazardous and hinders economic activity.

A stable financial system can allocate resources and absorb surprises that can prevent disruptions to real sector activities and financial systems. A stable financial system is a strong financial system and resilient to various economic disturbances so that it can perform the intermediary function, conduct payments and spread risk well. Financial system stability is a condition in which economic mechanisms in pricing, allocation of funds and risk management function well and support economic growth[1].

The meaning of financial system stability can be understood by researching the factors that can lead to instability in the financial sector. The volatility of the financial system can be triggered by a variety of causes and turmoil. It is a combination of market failures, both due to structural and behavioral factors. The market failure itself can be sourced internationally and domestically. Risks that often accompany activities in the financial system include credit risk, liquidity risk, market risk and operational risk.

The financial system plays a very important role in the economy of the country. As part of the economic system, the financial system serves to allocate funds from those who experience surplus to the deficit. If the financial system is unstable and does not function efficiently, the allocation of funds will not go well enough to hamper economic growth. Experience shows that an unstable financial system, especially if it leads to a crisis, requires a very high cost for rescue efforts.

The instability of the financial system may result in some unfavorable conditions such as:

- Transmission of monetary policy is not functioning normally and that monetary policy becomes ineffective.
- The intermediation function can not run properly due to inappropriate allocation of funds that hamper economic growth.
- Public distrust of the financial system followed by the panic behavior of investors to attract funds; it encourages the liquidity difficulties.
- The high cost of saving the financial system in the event of a systemic crisis.

2.2 Arbitrage Pricing Theory

Ross formulated a balanced model called Arbitrage Pricing Theory (APT) in 1976. It states that two investment opportunities having identical properties can not be sold at different prices. In this case, the law adopted by APT is the law of one price. An asset that has the same characteristics if sold at various prices, then there will be an opportunity to arbitrage by buying a low-priced asset and at the same time selling it at a higher price to earn the profit without risk [6]. In the economy of a country, there are four known markets, capital markets, money markets, foreign exchange markets and goods markets. Of the four markets that are interrelated and reflect the law of one price, there are three markets, capital markets, money markets, and foreign exchange markets. All three markets are equally balanced and identical so they can not be sold at different prices. In the absence of equilibrium from these markets, there will be arbitrage proceedings from one market to another as outlined above.

The multi factor model assumes that the stock pricing process involves several factors. It means there are several possibilities that more than one pervasive factor in the economy affects stock prices. The economic situation affects almost all companies. So the change of the forecast economy has an enormous impact on the price of most stocks. For example, there are two sources of macroeconomic risk to GDP and an uncertain interest rate on stock prices. According to Bodie, Kane, and Marcus (2006), a simple multi factor model can be expressed as follows:

$$Ri = E(ri) + \beta iGDP + \beta iIR + ei$$

Where:

Ri	=	the random return rate of securities
E (ri)	=	expected return of securities
βiGDP	=	securities sensitivity to GDP factor
βiIR	=	securities sensitivity to IR factor
ei	=	influence of company specific factors

2.3 Contagion Effect Theory

Contagion is defined as a significant increase in cross-market relationships after shock in a country as measured by the asset price ratio or the joint movement of financial flows in the market against co-movement in a stable period. Geographic proximity and characteristic similarity make it possible for countries in Asia to have a very high contagion effect put forward three definitions of Contagion[22][23].

- Contagion can be interpreted as a crisis in a country and the crisis in that country leads to speculative attacks on other countries. An example is the massive attack that caused Brazil to suffer in late 1998 after Russia fell.

- Contagion in the restrictive sense is the transmission of a shock passing across borders or in general there is a significant correlation between countries that occur outside the fundamental relationship between the state and outside the common shocks. This is called excess co-movement and is generally explained by herd behavior.

- Contagion in a very restrictive sense is a phenomenon that occurs when cross-country correlations increase during the crisis period compared to normal economic times.

There are four criteria that can be used to detect the presence or absence of contagion effect, based on asset price correlation, conditional probability of currency crisis, tranmission of volatility change and capital movement movement[12].Contagion theory is a phenomenon of chain change based on geo-strategic principles. The pattern of change is analogous to a mahjong standing upright, if the earliest domino is dropped, it will hit the nearest domino, and this process will continue to the last domino. According to experts, the domino effect occurs because of strong market theory affecting weaker market.The cause of contagion consists of several causes such as fundamentals and investor behavior[23].

III. Related Works

Based on previous research, factors such as interest, GDP, economic fundamentals, investor behavior, exchange rate, and foreign exchange reserves, significantly affect the probability of a financial crisis [16]. There are five significant variables in analyzing the relationships between fundamental economic variables and exchange rate crises are real interest rates, inflation rate, budget balance, real exchange rate, GDP growth, and

M2 ratio to foreign exchange reserves. A decline for the Dow Jones Index, Hang Seng Index, and JCI at the end of 2007 as the impact of the global economic crisis that occurred mid-2007 in the United States[7][21].

Five independent variables significantly affect the probability of banking crisis in Indonesia at α 5%, namely: cash bank ratio, deposit growth, domestic credit growth, exchange rate growth and multiplier M2. There is one significant variable that influences on α 10% that is variable of M2 ratio and foreign exchange reserve[16].

APT is a better model of trade and process behavior in the Indonesian stock market. CAPM is less effective in Indonesia stock market[17]. While APT was able to explain again in three different study periods, the beta was not variable in the estimation activity. The study also sees that two variables, namely exchange rates, and spread between the central bank and commercial bank rates, are consistently significant across all APT test results.

The effect of short-term and long-term changes in exchange rates and interest rates on stock prices using the Error Correction Model (ECM) model[18]. From the analysis, result revealed that there is the long-term relationship between stock price and the independent variable of interest rate and exchange rate. The effect of interest rates on stock prices is negative, both in the long run and in the short term. These findings are entirely different from previous research results stating that to a positive relationship between interest rates and stock prices. It may be explained by the dominant influence of short-term capital flows. The long-term and short-term effects of interest rates on stock prices have a negative sign. The impact of exchange rate changes on stock prices has a negative sign on the short term and has a positive effect in the long term.

A study on the Relationship Level Interest Rate of Bank Indonesia Certificates (SBI), Inflation, and Composite Stock Price Index (IHSG) showed there was a significant reciprocal relationship between inflation with nterest Rate of Bank Indonesia Certificates, a significant reciprocal relationship between inflation and the JCI[19].

The effect of macroeconomic fundamentals and oil prices on LQ45 stock in the short and long term used the Error Correction Model analysis model[20]. From the results of this study found that in the short term economic growth variables and oil prices have a significant influence on LQ45 shares, but not for SBI interest rate variable and the exchange rate is not significant. In the long term, all the free variables used do not have a significant effect on LQ45 stocks.

A crisis is seen as contagious if it spreads from a crisis-ridden country to another country, by changing the condition of the country's fundamental nature, in other words, the transmission of a crisis is called a stability change that occurs under some fundamental economic conditions[8]. Another view is that contagion is an increase in the probability of a speculative attack on the value of the domestic currency [9].

Contagion as an increase in correlation during times of turbulence and differentiate it from cross-market correlations during quiet periods, regarding stock market volatility[10]. The spread of the crisis is divided into three types: the monsoon effect, the spell over condition, and the trigger of the first and most severe state of crisis (jumping sentiment)[8].

A new approach that high-speed contagion defines as an effect spell offer of "ground zero" to other countries regarding stock price declines has been occupied in recent days. The concept of ground zero is a country of origin in which investors are seriously responding to their portfolio revisions, and the direction of home country to other country illustrates the crisis spreading channel used by investors to predict a fall in stock prices in the future[11].

The contagion theory that contagion theory shows that no country in one region can ward off the effects of transmission from an economic crisis and the resulting consequences of currency problems (currency). No country in a region can circumvent the effects of transmission. So that country in Asia such as Japan, Shanghai, China, Singapore, Malaysia and Indonesia have allegations if there is a crisis then the contagion effect in each country can not be avoided[12]13].

It is exacerbated by inaccurate property speculation and credit ratings. In both cases, the development of the crisis spread to other continents and, in a short time, became a global crisis due to the Contagion Theory in the midst of a globally integrated financial system and rapid information dissemination.

In connection with the global crisis, there are macroeconomic variables can be used as factors in Arbitrage Pricing Theory (APT). APT states that various factors influence stock prices. Because macroeconomic variables affect stock prices, macroeconomic variables can be used as factors in APT. The inflation, exchange rate, interest rate, and the amount of money in circulation are macroeconomic variables that affect the stock price[14]. The equilibrium-price model using Arbitrage Pricing Theory (APT) has evolved into one of the modern financial theories.

Several factors affecting the rate of return, i.e., unanticipated inflation changes, unanticipated industrial production changes, unexpected changes in risk premiums (differences between high and low-grade bonds), changes slope of the unexpected yield curve[15]. So it can be concluded that the APT model is a balanced model to measure expected returns that are influenced by macroeconomic factors. APT model is risk and return,

inflation, interest rate, and exchange rate.

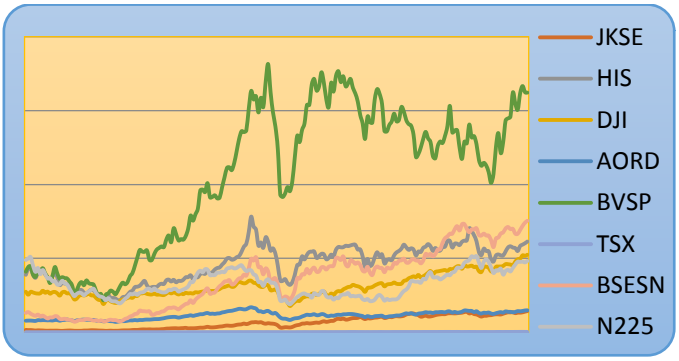

Figure 1. The Development of World Countries' Shares

Based on Figure 1, it is known that the formation of financial market integration, when the economy booms on the global financial crisis of 2008.At the time of the subprime mortgage crisis in the United States (2008), not only Asia is experiencing a decline in the stock price index, but countries in other continents in the world such as Indonesia, Hong Kong, USA, Australia, Brazil, Canada, India, and Japan are also affected. Shown in the picture when the crisis hit the United States (DJI), the other indices are Indonesia (JKSE), Hongkong (HSI), Australia (AORD), Brazil (BVSP), Canada (TSX), India (BSESN) and Japan (N225) partly pushed down. The subprime mortgage crisis in America has had an impact on stock market declines in the United States and followed by stock exchanges in other parts of the world. The sub-prime mortgage crisis has a negative impact on the capital market, especially developing country capital markets[24].

The economies of Asia, particularly the southeast, have been interconnected with each other through trade and investment so that economic conditions reflected in index movements will affect other countries. This study also examines the contagion effects between countries. Contagion as a significant increase in cross-market relationships after shock in a country (or a group of countries), as measured by the asset price comparison or the joint movement of financial flows in the market against co-movement in a stable period. Geographic proximity and characteristic similarity allow countries in Asia and other regions of common characteristic to have a very high contagion effect [22]. Based on several explanations it is known that the contagion effect can form financial market integration. In this case when the financial market is formed, required APT Multifactor balance model be able to make the balance of the law of one price.

While the exchange rate itself is one of the indicators to see whether a country's economic fundamentals are strong or not. The significant exchange rates affect the probability of a financial crisis[16]. There are four mechanisms for determining the exchange rate including fixed exchange rate system be a system where the value of a country's currency fixed against the currency of another country. The exchange rates have a low causal relationship with stock prices[5].Table 1 describes a list of operational definitions that include variables, definitions, measurements and scales.

Table 1. Operational Definition

No.	Variable	Definition	Measure	Scale
1	Interest Rate	The mechanism used to show time value of money from Indonesia, Hongkong, USA, Australia, Brazil, Canada, India and Japan	Percent	Rasio
2	Inflation	The rate of change that occurs when the process of price increase takes place continuously and influence-affect each other in Indonesia, Hongkong, USA, Australia, Brazil, Canada, India and Japan	Percent	Rasio
3	Gross Domestic Bruto (GDP)	Measuring the total value of production produced by all people and companies (both local and foreign) within a country of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India and Japan	Percent	Rasio
4	Current Account	Part of the balance of payments that records payments and receipts arising from the trade in goods and services, including investment returns (capital), and unilateral transfers in Indonesia, Hongkong, USA, Australia, Brazil, Canada, India and Japan	Billion USD	Rasio
5	Reserve Assets	Assets owned by the country's central banks and monetary authorities Indonesia, Hongkong, USA, Australia, Brazil, Canada, India and Japan	Billion USD	Rasio

6	*Foreign Direct Investment* (FDI)	Foreign direct investment in the country of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India and Japan a company from one country invests in the long term to a company in another.	Billion Rupiah	Rasio
7	Exchange Rate	The exchange rate between the currency countries of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India and Japan with the dollar	USD	Rasio
8	Stock Price Index	Stock price movements within a certain period of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India and Japan, with dollars.	Point	Rasio

IV. RESULT AND DISCUSSION

4.1 Latest Global Economic Developments

The world economy is improving in 2017. The condition will be supported by the US and Chinese economies. The improvement in the US economy is driven by increased consumption and rising non-residential investment. Also, the US unemployment rate is at a low level with inflation leading to long-term targets. Meanwhile, he continued, China's economy is experiencing improved growth, reflected in increased retail sales and private investment. Also, in commodity markets, world oil prices are expected in an upward trend. Similarly, Indonesia's export commodity prices are improving, supported by rising coal prices and some metals especially copper and tin.

The Chinese economy will continue its sustained growth as the country is rebalancing from manufacturing to services, despite renewed concerns about the property market. The impact of US fiscal and international trade policies, an increase in Fed Fund Rate (FFR) that could potentially increase cost of borrowing, China's economic and financial adjustment process and various geopolitical risks.

Global economic recovery is still unbalanced with risks in global financial markets are still high. Economic growth is not expected to be as fast as originally expected as lower forecasts for the US and Chinese economic growth. The US economic forecasts are driven by slowing production activity, primarily due to lower external demand in line with the strengthening of the US dollar against world currencies. This development has prompted continued uncertainty over the timing and magnitude of the Fed Fund Rate (FFR) rate increase in the US and the pressure of capital portfolio reversals from emerging markets. The economic slowdown is also experienced by China which is characterized by continued weakening of the housing sector and manufacturing production sector, although various easing policies have been made to withstand the economic slowdown. On the other hand, the European economy is expected to continue to improve, thanks to the easing of monetary and financial conditions and the impact of falling oil prices. The slowing world economy has impacted international commodity prices that are still declining, although world oil prices are starting to increase again.

Japan's economy grew in line with its original forecast. The performance of several indicators of the Japanese economy tends to vary. Sales of durables goods increased, and consumer confidence improved, buoyed by expectations of a salary increase in annual salary negotiations (spring) and the impact of falling oil prices. Meanwhile, real wage growth also began to improve although still negative. In contrast to improved demand-side indicators, production indicators have not shown any signs of improvement, while PMI manufacturing indicators enter the contractive zone. The Bank of Japan (BOJ) is expected to increase its annual quantitative easing (QE) target from 80 trillion yen to 90 trillion yen to support its economy.

Also, the World Bank's Global Economic Prospects report predicts 2.2 percent of US economic growth. This number increased from the previous year 2016 which only reached 1.6 percent. Exporters of commodities in developing countries will experience an economic increase of 2.1 percent in 2017. In the report also said commodity prices in 2017 would also gradually improve. Russia and Brazil will continue their growth after last year's recession. Developing countries will be able to experience an economic increase of 5.6 percent.

4.2 Panel Regression Result

The following figure is the result of calculation using pooled least square estimation method with Fixed Effect Methode, using software eViews 7.

Dependent Variable: KURS?
Method: Pooled Least Squares
Date: 07/04/17 Time: 11:22
Sample: 1996 2016
Included observations: 21
Cross-sections included: 8
Total pool (balanced) observations: 168

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	27.65466	1.104185	25.04531	0.0000
SB?	-0.197326	0.069533	-2.837880	0.0051
INF?	0.050925	0.092072	0.553093	0.5810
TB?	0.001664	0.005910	0.281518	0.7787
CD?	-1.72E-05	2.75E-06	-6.254048	0.0000
Fixed Effects (Cross)				
_INDONESIA--C	-16.05115			
_HONGKONG--C	-15.42592			
_USA--C	-23.85147			
_AUSTRALIA--C	-24.93475			
_BRAZIL--C	-14.99767			
_CANADA--C	-25.17588			
_INDIA--C	25.05009			
_JEPANG--C	95.38675			

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.980530	Mean dependent var	22.36732
Adjusted R-squared	0.979157	S.D. dependent var	36.24853
S.E. of regression	5.233255	Akaike info criterion	6.216693
Sum squared resid	4272.365	Schwarz criterion	6.439833
Log likelihood	-510.2022	Hannan-Quinn criter.	6.307254
F-statistic	714.2028	Durbin-Watson stat	0.494574
Prob(F-statistic)	0.000000		

Figure 2. Panel regression result (Exchange Rate)

Based on the estimation result with Fixed Effect Method obtained the estimation result, Adjusted R-squared to 98,05% during a period of the observation period. It can be concluded that the variation of independent variables in this study is only able to explain as much as 98.05% variation of the dependent variable is Currency, while the rest of 1.95% is explained by other variables not included in the research model.

Dependent Variable: SHM?
Method: Pooled Least Squares
Date: 07/03/17 Time: 10:44
Sample: 1996 2016
Included observations: 21
Cross-sections included: 8
Total pool (balanced) observations: 168

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14837.32	1987.470	7.465434	0.0000
SB?	-738.9405	90.53008	-8.162376	0.0000
INF?	123.2061	134.6009	0.915344	0.3614
GDP?	98.72576	242.0144	0.407933	0.6839
TB?	5.145805	7.867592	0.654051	0.5141
CD?	0.008503	0.003534	2.405634	0.0173
FDI?	0.003963	0.001328	2.983352	0.0033
Fixed Effects (Cross)				
INDONESIA--C	-7630.471			
_HONGKONG--C	2461.252			
USA--C	-8824.676			
_AUSTRALIA--C	-9511.553			
_BRAZIL--C	47293.19			
CANADA--C	-15381.80			
_INDIA--C	-1237.132			
JEPANG--C	-7168.819			

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.788154	Mean dependent var	12370.05
Adjusted R-squared	0.770271	S.D. dependent var	13890.90
S.E. of regression	6657.922	Akaike info criterion	20.52466
Sum squared resid	6.83E+09	Schwarz criterion	20.78499
Log likelihood	-1710.071	Hannan-Quinn criter.	20.63031
F-statistic	44.07250	Durbin-Watson stat	0.904093
Prob(F-statistic)	0.000000		

Figure 3. Panel regression result (Stock Price Index)

Based on the estimation result with Fixed Effect Method obtained the estimation result, Adjusted R-

squared to 78,82% during the period of the observation period. It can be concluded that the variation of independent variables in this study is only able to explain for 78.82% variation of the dependent variable is share, while the rest of 21.18% is explained by other variables not included in the research model.

4.3 The Coefficient of Exchange Rate Regression

4.3.1 Interest Rate Regression Coefficient

The value of the regression coefficient of interest rate is 0.19 this can be interpreted if there is a change in interest rate by 1% it will increase the exchange rate of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan by 0.19% opposite. However, the probability t statistic value 0.0051 <0.05 at the 95% confidence level (α = 5%) so that Interest Rate influence significantly to the Exchange. This is due to changes in interest rates relative to investment in foreign securities, which will further affect the demand and supply of foreign exchange. This will also affect the exchange rate of the currency. The perfect relationship between the relative interest rate and the exchange rate between the two countries is explained by the International Fisher effect (IFE).

4.3.2 Inflation Regression Coefficient

The value of the regression coefficient of inflation is 0.05. It can be interpreted if there is a change in inflation of 1% it will increase the exchange rate of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan by 0.05% same. However, the prob t value of statistic 0.5810> 0.05 at the 95% confidence level (α = 5%) so that the influence of inflation is not significant to the Exchange rate. Therefore, the purchasing power of the currency (indicated by price increases in the related country) will be followed by a proportional depreciation of the currency in the foreign exchange market.Instead, the increase in the purchasing power of the domestic currency (e.g., Rupiah) will result in a currency appreciation.

4.3.3 Current Account Regression Coefficient

The value of Current Account regression coefficient is 0.16 this can be interpreted if there is a change in Current Account amounting to 1 billion USD it will increase the exchange rate of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan by 0.16% the same one. However, the prob t value statistic 0.7787> 0.05 at the 95% confidence level (α = 5%) so that the influence of Current Account is not significant to the Exchange rate. This is because Indonesia has a relatively small scale of production in international trade, so exchange rate policy will only change the value of goods in absolute terms. The impact for the small country, if devaluation is only an increase in export revenues, but also accompanied by increased spending on imports.

4.3.4 Reserve Assets Regression Coefficient

It is 1.72, and it can be interpreted if there is a change in the Reserve Assetsof 1 billion USD it will increase the exchange rate of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan at 1.72% in the opposite direction. However, the probability t statistic value is 0.0000 <0.05 at the 95% confidence level (α = 5%) so that the significant effect of the Reserve Assets is expressed on the Exchange. It is since Indonesia's Reserve Assets are still relatively small, which has resulted in Indonesia unable to make international payments and stabilization of the exchange rate, which ultimately leads to a deficit in the balance of payments and the weakening of the rupiah. This statement is supported by (1) where the causes of the decline in foreign exchange include the use of foreign exchange for repayment of foreign debt in a row, and the Central Bank uses reserve assets to maintain the stability of the rupiah by the fundamentally

4.4 The Coefficient of Stock Price Index Regression

4.4.1 Interest Rate RegressionCoefficient

The value of interest rate regression coefficient is 738.94 this can be interpreted if there is a change in the interest rate of 1% it will increase Stock Price Index of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan by 738.94% the opposite. However, the probability t statistic value is 0.0000 <0.05 at the 95% confidence level (α = 5%) so that the interest rate effect is significant to the Stock Price Index. This is because domestic interest rates in Indonesia are closely linked to international interest rates where domestic financial market access to international financial markets and exchange rate policies are less flexible. In addition to international interest, the discount rate of the Indonesian Interest Rate is also an important factor in determining the interest rate in Indonesia.

4.4.2 Inflation Regression Coefficient

The value of Inflation regression coefficient is 123.20 this can be interpreted if there is a change in the inflation of 1% it will increase the state of shares of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan of 123.20% same. However, the prob t statistic value 0.3614> 0.05 at the 95% confidence level

(α = 5%) so that the influence of inflation is not significant to share. It is due to the unstable level of Indonesia's inflation, so easily shaken external factors from other countries that will affect the psychological investors who are and are willing to invest in Indonesia.

4.4.3 Gross Domestic Bruto Regression Coefficient

The value of the regression coefficient of Gross Domestic Bruto is 98.72 this can be interpreted if there is a change in Gross Domestic Bruto of 1% it will increase the state of Stock Price Index of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan of 98.72% same. However, the prob t statistic value of 0.6839> 0.05 at the 95% confidence level (α = 5%) so that the effect of Gross Domestic Bruto is not significant to the Stock Price Index. This is because the increase of Gross Domestic Bruto in a country indicates an increase in the welfare of the people in the country. Increasing the welfare of the community will encourage people to consume goods and services to broaden the development of investment in the real sector. The development of investment in the real sector is not followed by an increase in investment in capital market. Increasing Gross Domestic Bruto does not necessarily increase individual per capita income so that investment patterns in the capital market are not affected by an increase in Gross Domestic Bruto. This statement is supported by research (Kewal, 2012) that Gross Domestic Bruto has no significant effect on the Stock Price Index. Not influencing Gross Domestic Bruto on the value of this Stock Price Index indicates that the increasing and declining Indonesian gross domestic income is less able to influence investor interest to invest. Increased gross domestic income positively affects consumer income because it can increase demand for the company's products.

4.4.4 Current Account Regression Coefficient

The value of current Current Account regression coefficient is 5.14 this can be interpreted if there is a change in Current Account by 1% it will increase the state of Stock Price Index of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan equal to 5,14% the opposite. However, the prob t value of statistic 0,5141> 0,05 at 95% confidence level (α = 5%) so that the effect of Current Account is not significant to Stock Price Index. This is because the internal condition of Indonesia is also less supportive of stock price movements so that external factors such as foreign investment is very dominant in influencing it.

4.4.5 Reserve Assets Regression Coefficient

The value of the regression coefficient of Reserve Assets amounted to 0.008. This can be interpreted if there is a change in the reserve assets of 1% then it will increase the Stock Price Index of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan by 0,008% in opposite direction. However, the prob t value statistic 0.0173 <0.05 at the 95% confidence level (α = 5%) so that it is stated that the effect of the significant Reserve Assets on Stock Price Index. This statement is supported by research (Marzuki, 2013) that the Reserve Assets have a positive and significant impact on JCI in Indonesia. By the initial hypothesis and research conducted by reserve assets is a measure that can be seen to measure the income level of a country. If a country's Reserve Assets are high, then the income received by the country is also high. Reserve Assets will be closely related to the balance of payments of a country. If a country's Reserve Assets are high, then the balance of payments will be surplus. This balance of payments surplus will keep investors interested in investing in Indonesia and will increase Stock Price Index trading in the domestic capital market.

4.4.6 Foreign Direct Investment Regression Coefficient

The value of the regression coefficient of Foreign Direct Investmentis 0.003. It can be interpreted if there is a change in Foreign Direct Investment of 1% then there will be an increase of State Shares of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan by 0,003% in the opposite direction. However, the probability t statistic value 0.0033 <0.05 at the 95% confidence level (α = 5%) so that the influence of Foreign Direct Investment significant to the Stock Price Index. This is due to Foreign direct investment to Indonesia is one form of global economic liberalization that can contribute positively to the development of the stock market, although indirectly. Indirectly this means that the entry of foreign capital into the real sector will be able to increase economic growth. With growing economic growth will provide a positive signal to investors to Indonesia so that the flow of foreign investment (especially investment to the stock market) will continue to increase, as happened in the last two years.

IV. Conclusion

Based on the results of the analysis and discussion that has been done by using the Fixed Effect Model method can be obtained several conclusions. The result of the statistic prob t value in the first equation describes the Interest Rate and the Reserve Assets having the significant effect on the Exchange Rate of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India, and Japan. These results show that highly efficient variables

support the Arbitrage Pricing Theory multi factor and Contagion Theory models. Based on the result of the statistic prob t value in the second equation, the interest rates, reserve assets, and foreign direct investment have significant effect to the Stock Price Index of Indonesia, Hongkong, USA, Australia, Brazil, Canada, India. These results show that highly efficient variables support the Arbitrage Pricing and Contagion Theory models.

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