

2/8/2012



FACULTY OF  
ECONOMICS  
UNIVERSITY  
OF  
INDONESIA

## DEALING WITH COMMODITY PRICE VOLATILITY IN EAST ASIA

**TEAM LEADER : ARINDRA ZAINAL, PhD**

**LEAD RESEARCHER : DR. TELISA AULIA FALIANTY**

TEAM LEADER :

**ARINDRA ZAINAL, PhD**

LEAD RESEARCHER :

**Dr. TELISA AULIA FALIAN TY**

RESEARCHER:

**DWI SULISTİYORINI, MM**

**RISNA TRIANDARI, MSE**

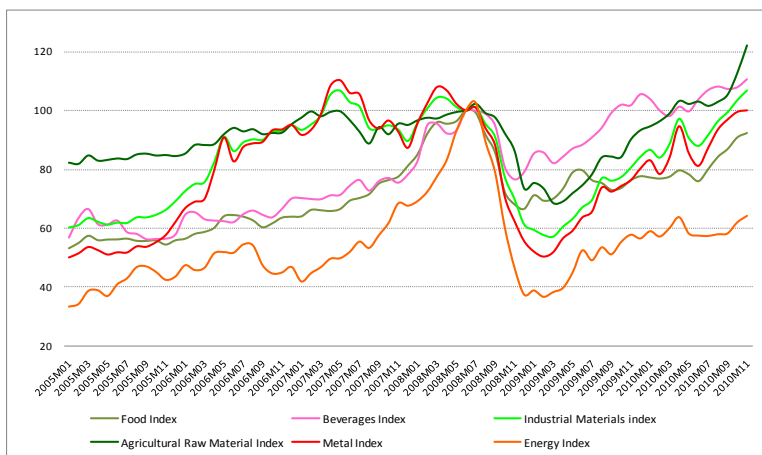
**MEDI NOPIANA, MSE**

**MIRZALDHY ANDHONIE, SE**

## I. BACKGROUND

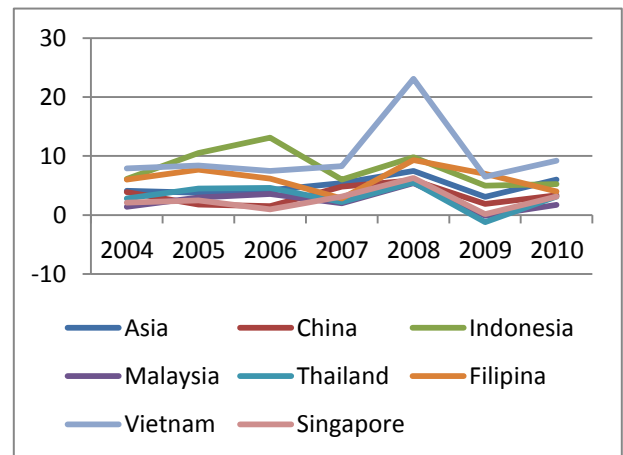
The global challenges as indicated by the global financial and economic crisis that occurred in 2008 have been worsened by the commodity price volatility during the last few years (Figure 1). Increasing volatility is also related with current global imbalances and global climate change. The FAO in January 2011 reported that food and other commodity prices have increased significantly, rivaling levels experienced prior to the global financial crisis. As strong price rises and increased volatility can have negative impacts on economies and individuals, there has been a growing global awareness to tackle this issue. One of the prominent forums that have been putting a great concern on the commodity prices volatility issue is the G20, as proposed by France as the Chair for 2011 meetings..

**Figure 1 : Commodity Price Index (2005-2010)**



Source : International Monetary Fund

**Figure 2 : Inflationary Pressure for East Asia Countries**



Source : CEIC database

Increased commodity price volatility over the last two years since 2008 has put inflationary pressure on emerging market economies including Asian economies (Figure 2). In recent years, inflation has increased to high rate in East Asia region, including Indonesia. Especially in 2008, headline inflation had been increasing, driven not only by energy price but also food price. Based on PBB data, the global food price increased in 2008, especially for wheat, soybean, and corn. The rising of global food price has caused by the rising of oil price. In the fact, the rising of world crude oil price in 2008 caused the rising of cooking oil in Indonesia. It is shown that there was strong linking between global and domestic price. So the higher domestic food price can be driven by global food price.

There are many factor that cause the rising of global food price. **First**, the gap between supply and demand of food. **Second**, the act of speculator and investor has unbalanced the market. The growing presence of financial investors and speculator in commodity markets in case of financialization commodities, possibly cause commodity price

fluctuation. **Third**, the unpredictable of weather has changed the pattern of planting time. It can decrease number of production. **Fourth**, the rising of oil price indirectly encourages the government to make the biofuel energy program. Furthermore, it is not only decrease the area of agriculture but also push the higher energy price. **Fifth**, the increasing number of population. **Six**, the increasing of oil price encourages the higher price of transportation cost and another supporting tools agriculture production, such as fertilizer and pesticide.

On fiscal arena, the rise of commodity prices has created fiscal burdens, particularly for countries that highly dependent on imported commodity products for domestic need, or where prices are subsidized. Increased subsidy costs reduce the fiscal capacity of governments to finance other important public services, including eradication of poverty and hunger programs, which may lead to an increased poverty, and reduced welfare of the people. In some cases, staple foods price hike also created disturbance on social life, leading to protests in several emerging markets.

## **II.OBJECTIVES**

The objectives of the study we proposed are in line with the objectives mentioned in ASEAN Secretariat TOR as follows:

1. To enhance regional coordination in order to respond commodity prices volatility.
2. To reduce countries' risks from commodity volatility and to strengthen national policies in addressing the commodity prices volatility issue.
3. To secure regional food security and the future of regional growth.
4. To strengthen regional research and surveillance system on commodities issue by providing identification of imperative and comparative commodities of the region, and major threat of commodity prices volatility for the region.
5. To give contribution for global effort in dealing with commodity price volatility.

## **III. ISSUES TO BE EXPLORED**

Under this issue, there are several aspects that the region need to further explore to deepening the regional coordination on this issue as follow:

– **Persistent commodity price volatility** reflects changes in fundamental issues since there are real structural changes in global demand and supply. Thus the regional response should be directed on how to close the gap. In addition, it is also important to discuss the relations between commodities sector as they might influence one another, for example the diversion of some food products to be used to produce alternative energy. Another aspect would be the climate change factor, particularly to some key producer of commodities that may also affect the provision of commodity supply.

- **On fiscal policy area**, every country has the instruments to deal with the commodity issue such as through improving productive capacity, pricing policy, and infrastructure facilitation. In relation to that, important issues to be discussed are on how to implement national policy measures without distorting the regional and international markets.
- **Excessive volatility** might reflect imperfections in the current market mechanism. Thus the important issues to be explored would be focused on responses to solve issues on asymmetric information, improving transparency, and strengthen the regulatory framework so as to limit distortions from speculative behavior (that is, where prices for a commodity deviate for a long period away from underlying demand and supply conditions). This includes discussion on how to improve efficiency and capacity of commodities markets, and supervision in the commodity derivative markets.
- It should be kept in mind that millions of people are suffering from the impact of rising commodities price, most notably on food commodities. Thus, it is important to further explore concrete **policy actions to help the most affected people immediately**, in areas such as through setting-up crisis management mechanism, and fiscal policy support.

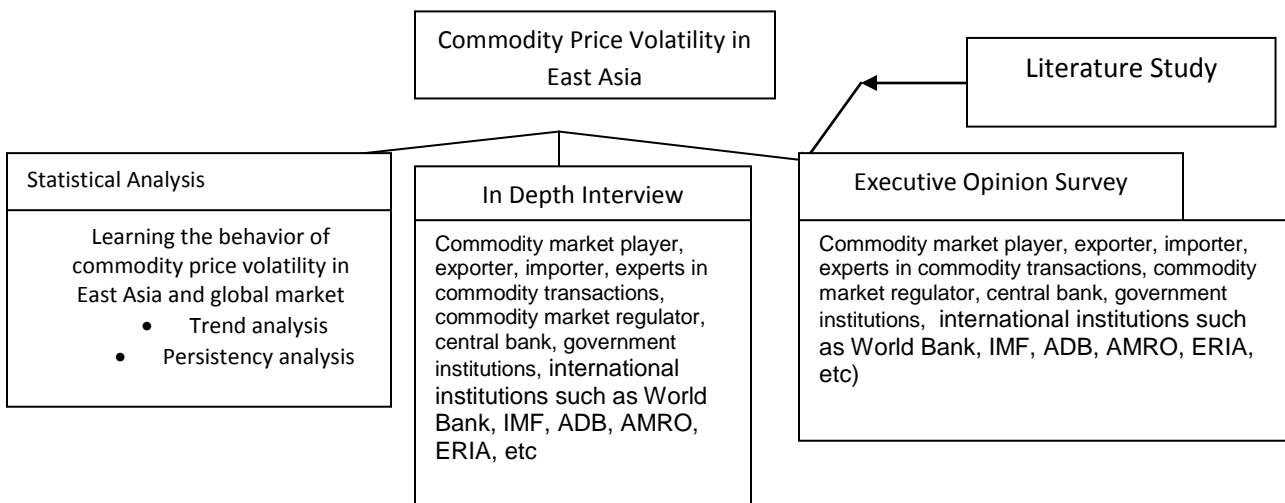
#### IV. RESEARCH METHODOLOGY

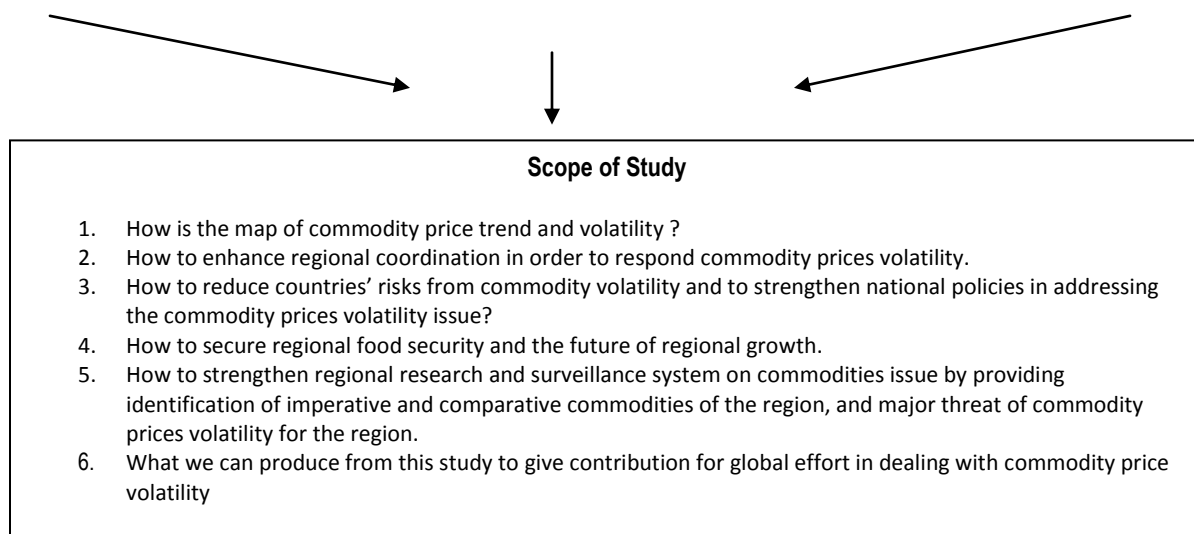
The study will conduct three methods:

- First, statistical analysis to understand and learn the behavior of commodity price. It is very important step for the next step to achieve the objectives. Different behavior needs different policy to tackle.
- Second, literature study to collect previous study and information that will be useful for the topic
- Third, in-depth interview to relevant agents (commodity market player, exporter, importer, experts in commodity transactions, commodity market regulator, central bank, government institutions, international institutions such as World Bank, IMF, ADB, AMRO, ERIA, etc)
- Fourth, executive opinion survey to capture wide perceptions of stakeholder related with commodity price volatility issues.

Those methodologies are chosen with the consideration of the research that mainly focused on commodity price volatility.

**Figure 3: Framework of analysis**





## V. LITERATURE STUDY

### 5.1 Commodity Price Volatility and Economic Growth

It has long been observed that commodity prices exhibit wide ranges of variability. Some prices persistently fluctuate sharply from month to month because of special supply or demand factors (or both) relating to respective commodity markets. Clem divided two kind of measure in price volatility, first is in the context of substantial inflation, prices for most goods will show a persistent upward trend, so the logical measure would be the mean of the absolute values of the monthly percent changes. Because this measure implicitly assumes a flat price level as a reference standard, we call it the "*static volatility index*". The second one is the standard deviation of the monthly percent changes on the variability of the rate of price changes, as opposed to the variability of the price level. We call this measure the "*dynamic volatility index*".

The study by Clem (1985) shows the dynamic and the static indices for the 156 commodity groupings studied for the full 9 years period (1975-1984). Commodities are categorized based on stage of processing group. For the two sub periods 1979-1981 and 1982-1984, only the dynamic indices are shown. The purpose is to answer question whether the volatility persist over time, that is when the period of inflation 1979-1982 and in period when rate of inflation slowed down. For the most part, rankings of commodities according to volatility were similar whether the dynamic or the static indices were used. There are several conclusions could be drawn from this study:

- Prices for crude materials are consistently the most volatile. This was true in all three periods, and in both food and nonfood categories. This result was expected, partly because of the predominance of agricultural products within the crude materials category and partly because demand for basic industrial materials fluctuates relatively sharply in response to real and perceived changes in demand for manufactured goods.
- Prices for finished goods tend to be more stable than those for either intermediate or crude materials. This pattern held for food as well as nonfood categories, and in all periods. Within the finished goods category, prices for capital equipment items were the least volatile. Because purchase orders for most types of machinery are placed several months ahead of delivery, demand does not exhibit as much short-term fluctuation as does demand for consumer goods or materials, therefore prices change less often.

Price volatility of a particular good is likely to be strongly correlated with its level in the production chain while crude goods being the most volatile, finished goods are the least. Another pattern confirmed is that food prices are consistently more volatile than nonfood goods prices at all stages of processing and during each period. This follows from the earlier observation that weather and marketing peculiarities cause agricultural product prices to fluctuate more than industrial products. Clem also estimated that the variation in volatility among commodities in the later period could be explained by relative differences in volatility in the earlier period. In many cases, the change in commodity volatility during the 1979-1981 and 1982-1984 periods was caused by special market conditions such as poor harvest.

Along with Clem (1985), another research by Cavalcanti, Mohadessy, and Raissi (2011) also found that primary products give the most volatility and give further studied about impact of the level and volatility of commodity terms of trade on economic growth. They examined empirically the effects of commodity price booms and terms of trade volatility on GDP per capita growth and its sources using two econometric techniques; GMM dynamic panel estimator and Pooled Mean Group (PMG) estimator. Data used are for 1970-2007 and five-year non-overlapping observations in 118 countries and find that while commodity terms of trade growth enhances real output per capita, volatility showed a negative impact on economic growth through lower accumulation of physical capital. Another hypothesis tested was that the resource curse hypothesis propose a negative effect of resource abundance that proxy by commodity booms on output growth, but the empirical results presented in this paper show the contrary: commodity terms of trade growth seems to have impacted the primary-product exporters positively. Since the negative impact of commodity terms of trade volatility on GDP per capita is larger than the growth from commodity booms, they conclude that volatility most likely drives the resource curse paradox rather than abundance.

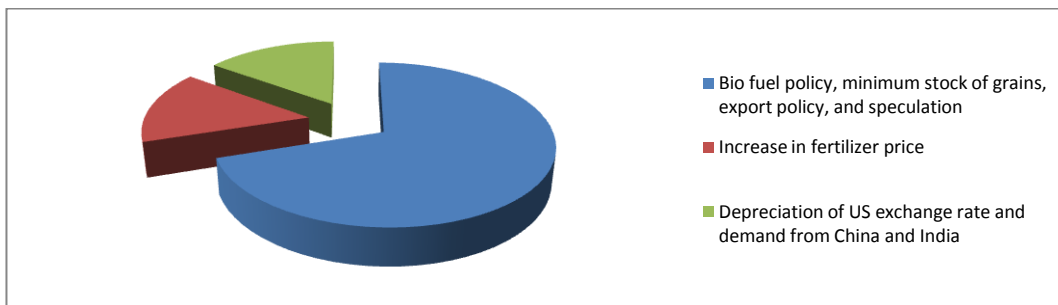
Calcevanti et.al (2011) also found that the group of countries with more diversified exports structure, were better able to against price volatility than the sample of primary product exporters. There are also some empirical evidence that export diversification enhanced growth, especially for countries whose GDP is highly dependent on revenues from just a handful of primary products. The empirical results presented have strong policy implications. Improvements in the conduct of macroeconomic policy, better management of resource income volatility through Sovereign Wealth Funds (SWF) as well as stabilization funds, a suitable exchange rate regime, and export diversification

can all have beneficial growth effects. Moreover, Calcavanti et.al. (2011) proposed that there should be emphasized on institutional reform. By setting up the right institutions, countries can ensure the proper conduct of macroeconomic policy and better use of resource income revenues, thereby increasing the potential for economic growth.

## 5.2 Research of Commodity Price by World Bank (2011)

Most recent research is conducted by World Bank Indonesia in March 2011 emphasized the increase in international foods price during 2002 until June 2008. They discovered several reasons of price increase such as, a. Increase in the production volume of bio-fuel (seeds oil); b. Increase in fertilizer price; c. Depreciation of US exchange rate; d. Demand from China and India. Proportions of each factors describes in the pie chart below.

**Figure 4: Foods Stuff Inflation Factors**



Source: World Bank, 2011

Based on World Bank Indonesia report in 2011, price volatility especially for primary products and foods is not a result from failed production (bad weather), but most likely from government policy in international trade. For the record, rice is the most tradable food stuffs in Asian since it is the main calories consumption. Some Asian regional countries, such as Japan, Thailand and China had been reducing rice export. Therefore the rice stock will be limited for certain time and this export quota policy will affect the price volatility in other countries.

World Bank also found that level of volatility will be difference in each region in Indonesia because there are different integration levels. Region that closest to international channel such as capital cities will able to adjust towards international price volatility faster. In Jakarta, almost half of divergent had been corrected in just 5 months, while in West Kalimantan it took time about 25 months (based on WB simulation without any trade policies).

All in all, we can conclude that price volatility occurred from inside and outside production activities. While inside production activity, crude materials proven to be the most volatile in price, finished good is the least. Whereas



outside production activities including market factors such as trade policies, exchange rate, bio fuel policy, and speculation.

According to Worldbank research (2010), both commodity demand and supply are generally highly inelastic, at least in the short-term. This means large price movements will follow relatively small disturbances to supply (poor growing conditions, disruption to key supply chains) and demand (unexpected acceleration or slumps in economic activity in key consuming markets, changes in other financial asset prices, particularly the USD, or financial market participants' investment preferences).

### **5.3 Monetary Policy, Commodity Prices and Inflation**

**Verheyen (2010)** tries to study the linkage of commodity price, inflation and monetary policy in United States. He wants to know whether commodity price indicate the future CPI inflation and if they can be used as indicator variables for central banks or not. With econometric method such as Granger causality tests and SVAR models to US data, he found that there was a strong link between commodity prices and CPI inflation in the 1970s and the beginning of the 1980s, the relationship has weakened, respectively diminished over time. They also find no significant change in the GDP growth rate to shocks in both the consumer and commodity price level. There are many reasons that tell why commodity prices and the CPI showing the weakened relationship. First, it can be seen in low interest rates today comparing with high interest rates during the 1970s and 1980s. Now, producers face lower interest rate costs and therefore are able to cope with higher commodity prices more easily. Second, productivity gains are able to mitigate the effects of commodity price increases. So, he concludes that commodity prices can not be a good indicator variables for monetary policy. Furthermore, he found that commodity prices could not be used as an indicator variable for monetary policy. It is because changes in commodity prices no longer dominate the evolution of the Federal Funds Rate. So, the monetary policy should not take commodity price changes as signals for future CPI inflation. A more restrictive monetary policy in face of rising commodity prices could depress economic activity. This is problematic especially for the Fed as he has to focus on price stability and the support of the economic performance of the American economy. Nevertheless, central banks should monitor if commodity prices will influence inflation expectations.

**Bloomberg and Harris (1995)** give another reason about the lower relationship between Inflation and commodity price in Us. They conclude that the final and probably most important factor in the diminished commodity CPI connection is the sharp decline in the commodity composition of U.S. output.

**Zoli (2009)** tries to study the role of international commodity prices, cyclical fluctuations, and convergence in driving inflation in 18 European emerging economies. She use VARs and panel econometric method to estimate her study. Furthermore, with VARs method, she found that international commodity price shocks (food and oil/energy) have a significant impact on domestic inflation, but the inflation response is asymmetric for positive and negative shocks. On average, in the long run, a 1 percentage point surge in oil price inflation leads to an increase in headline inflation by 0.02

percentage points, whereas a decline in oil price inflation by the same amount results in a drop in headline inflation by 0.04. On the other hand, 1 percentage point hike in food price inflation generates a 0.06 percentage point increase in inflation, but falls in food price inflation do not appear to have a significant impact on headline inflation. The pass-through effect from food price shocks is higher than from energy price shocks. The empirical analysis suggests that inflation will fall in emerging Europe in the wake of the ongoing sharp reduction in world fuel prices. In addition, he also found that Inflation inertia, changes in consumption tax rates, nominal effective exchange rates movements, interest rates and price convergence are also significant determinants of inflation. He also shows that cyclical fluctuations (described GDP gap) have a significant impact on inflation, but in a relative small share of inflation variability. The inflation response is seem to be asymmetric during cyclical upturns and downturns, as the coefficient on positive output gaps is positive and significant, while that on negative output gap is not significant. Related with the price convergence, the empirical analysis using panel estimation shows that price convergence (described by price level relative to EU-15 countries) is estimated to add nearly 3 percentage points to annual headline inflation, for a country whose price level is about 50 percent relative to the EU-15 average. It indicates that inflation rates tend to be higher in countries with low price levels relative to EU-15 countries

Refers to a strikingly uniform pattern in all countries of the Middle East, North Africa, and Central Asia during the period 1996-2009, falling until about 2000 and then rising, **Crowley (2010)** tries to study the economic variable that can help explain this pattern. His study's finds that for region as a whole, the variables such as : past inflation, the strength of the US dollar, US inflation, and monetary and exchange rate policies and nonfuel commodity prices can explain the pattern of inflation. Furthermore, this study's finds that no relation or in some cases a negative relationship between inflation and changes in fuel prices. The prevalence of price controls and subsidies on petroleum products may make this result. In contrast, nonfuel prices (such as food) has positive correlation with inflation. Besides, this study also found the different result by region. The variable such as exchange rate regime and money growth can result the difference effect and signification to inflation when that variable is be separately by region. In FSU / Former Soviet Union countries (Armenia, Azerbaijan, Georgia, Kazakhstan, Krygystan and Tajikistan) and countries with fixed exchange rates, changes in exchange rates were found to have larger coefficients to inflation, while the coefficients on changes in the money supply were found to be larger for non-FSU countries (Original sample with FSU countries excluded).

With descriptive data analysis, **Tang (2008)** tries to elaborate the linkage of monetary policy and the high inflation, when the rising inflation become the recent problem in emerging East Asian Central Bank (Hong Kong, China, Brunei, Cambodia, Vietnam, Indonesia, Philippines, Singapore, Thailand, Korea, Malaysia, People's Rep of China ). He argues that the recent inflationary pressures were not caused by temporary supply problems alone, instead monetary policy is one of a major source to high inflation environment. The failure of monetary policy to respond preemptively risked repeating the mistakes developed countries made in the Great Inflation of 1970s, where the same excuse of temporary supply problem was vaunted and central bankers were ignorant that rising inflation expectations could trigger a price and wage spiral. True, weather disruptions or unanticipated supply hiccups can cause prices to spike; in

such situations, monetary policy should not respond. If it did, it would exacerbate economic volatility even more. Based on empirical work by Jongwanich and Park (2008), he explain that domestic demand in individual economies also facilitated by accommodative monetary policy can explain why monetary policy also a major source of inflation. Furthermore, central banks in the region faced a major dilemma in rising consumer prices (inflation) and slowing output growth. The rise in headline inflation in emerging East Asia is closely associated with the real GDP growth. On the other hand, higher interest rates would restrain rising inflation by lowering domestic demand, but also hurt output growth. Related with commodity price and inflation, he concludes that for the region in Emerging East Asia as a whole, food and energy price were the primary driver of the high inflation. Their causes, however, were a confluence of factors—whether cyclical or structural, domestic or global, supply or demand all reinforcing each other and contributing to widespread price escalations in all classes of commodities. In his papers, he also compares the macroeconomic condition in some country in emerging East Asian and shows the challenges and constraints of monetary policy in each country until 2008. There are some point that can be counted : the first, Hong Kong, China, Brunei, Cambodia and Lao PDR, where there is little or no direct control over monetary policy. The second comprises most other countries that tightened policy but with varying degree, such as among the economies that tightened, PRC and Vietnam were most aggressive and Korea that major constraint the central bank had in tightening monetary policy was that it contradicted the goal of the newly elected government. The third, Malaysia, the only country that kept interest rates steady throughout the period. The fourth, some countries faced the problem of institutional credibility such as in Indonesia and Philippines especially in 1993. Monetary policy can be used to face the inflation pressure, especially from central bank. Credibility is an indispensable attribute that keeps inflation expectations well-anchored and prevents the higher inflation. Central bank autonomy, fiscal discipline, openness and transparency are key prerequisites for greater credibility. At the end, close co-ordination of monetary and fiscal policies is the key to sound macroeconomic management to face this problem.

**Boughton, Branson, Muttardy (1989)** try to examine the relationships between movements in primary commodity prices and changes in inflation in the large industrial countries (Canada, France, Germany, Italy, Japan, United States and United Kingdom). For a whole, they divide these relationship to be monetary shocks and non-monetary shock. They found that if monetary shock dominate (such as an unanticipated expansion in the money supply), then commodity prices should lead general price movements, and the level of commodity prices should be correlated with the general inflation rate. In other hand, non- monetary shock weaken these relationship. Non monetary shock are real disturbance that can be happen from fiscal expansion or an innovation in commodity production. When non-monetary shocks conditions, one price rises and the other falls to keep the weighted CPI in GCU constant.

Thus a stochastic series of aggregate real shocks would produce stochastic behavior of the commodity price with no general inflation. To get monetary shock dominate, offsetting negative and positive disturbances at the individual commodity level would minimize the contribution of supply shocks to the variance of the commodity price index. This condition happen when they use an index of a variety of commodity prices, real supply shocks would come from

differing sources, depending on the commodity. The contribution of real supply shocks to the variance of the index would be minimized to the extent that they are uncorrelated.

Then, they build new country-specific commodity price indexes that developed for the major industrial countries. This index is useful to isolate the effects of global developments on individual countries. To build this index, they divide this task into two dimensions: determining the weights that each commodity should have in a country's index, and denominating the index in that country's currency. The result is the distribution of weights assigned to different commodities vary substantially across countries. Nonetheless, when the indexes are expressed in a common currency or the Group Currency Unit (an implicit weighted average of currencies for the general multi-country case which is determined in a world market), they tend to be highly correlated over time and the variation in their intertemporal movements is limited in each country, except when sharp movements occur in certain commodity prices. The major source of contrast across countries in the behavior of the indexes derives from exchange rate movements. Then, they try to evaluate the relationships between commodity price index and general inflation rate in the large industrial countries. And the result, first, low inflation in industrial countries are associated with low levels of commodity prices, and conversely, commodity-price levels are cointegrated with consumer-price inflation rates. Second, there has been some tendency for movements in commodity prices to precede changes in general inflation rates by a few months. Third, commodity prices are useful to predict the turning points in inflation and inflation rates. And the last empirical evidence, they try to study the relationship between commodity prices and output deflators. They find no evidence to support the hypothesis that the linkages with output deflators are stronger in countries that have a relatively large share of output attributed to primary commodities.

**Charles and Jonas (2011)** try to study the influence of a credible inflation-fighting central bank by comparing responses of core inflation and the monetary policy instrument in the pre- and post-Volcker periods. They conduct a statistical analysis of quarterly data on commodity prices, inflation, and monetary policy since 1959. They consider three distinct hypotheses: *Weak central bank credibility hypothesis*: If commodity prices have a substantial effect on actual inflation and the policy response is inadequate, we should see an increase in inflation following a commodity price increase. Presumably, this evidence would be most apparent during the pre-Volcker period (1959–79). *Strong central bank credibility hypothesis*: If commodity prices have a substantial effect on inflation and the policy response is adequate, we should see no significant increase in inflation following a commodity price increase. This might be apparent in the post-Volcker sample period (1982–2008). *A generally uninformative indicator hypothesis*: If commodity prices were truly uninformative for inflation, they would generate insignificant responses of both inflation and the policy instrument. They estimate these hypotheses with the vector autoregressive (VAR) model to study monetary policy and the effect of oil price shocks. They use quarterly data for core PCE inflation (personal consumption expenditures without food and energy), growth in real gross domestic product (GDP), growth of the Commodity Research Bureau's (CRB) Commodity Price Index (which consists of commodities other than oil), growth of the Producer Price Index (PPI) for crude petroleum, and the federal funds rate (FFR). With some assumption the Fed (via the FFR) is able to respond contemporaneously to

all the other variables in the model, but the other variables are affected by the funds rate only with a lag of one quarter. Inflation is assumed to depend on lags only. Under these assumptions, they examine how unanticipated changes in commodity prices influence inflation and monetary policy. They identify two commodity price shocks, the CRB shock and oil price shock. In the CRB shock and oil price shock they find that there is some evidence for the “weak central bank credibility” hypothesis during the pre Volcker period. On the other hand, in the post-Volcker era, neither core inflation nor monetary policy has been very sensitive to surprises in commodity prices, consistent with the “uninformative indicator” hypothesis. In recent monetary policy and commodity prices, it is important to note that the policy rule depends on growth rates and contains no GDP or inflation gap variables. The most important point is that the difference between the policy rules with and without commodity prices is quite small, averaging only. Estimated policy rules from the post-Volcker period do not suggest a large response of policy. They find that there is modest dependence of policy on energy and other commodity prices. It is because, the shares of firm costs accounted for by energy and commodities are not large and in fact have fallen over time. Moreover, at least in the case of oil, price increases tend to slow the economy even without any policy rate increases. Of course, if commodity and energy prices were to lead to a general expectation of a broader increase in inflation, more substantial policy rate increases would be justified. But assuming there is a generally high degree of central-bank credibility, there is no reason for such expectations to develop—in fact, in the post-Volcker period, there have been no signs that they typically do. They find that since the mid-1980s, after the big oil shocks and the tenure of Paul Volcker as chairman of the Federal Open Market Committee (FOMC), the reactions of both core inflation and the federal funds rate (the monetary policy instrument) to shocks in oil and other commodity prices have been extremely modest.

**Sadiq Ahmed (2008)** tries to give the outlook of economic outlook of Global Food Price Inflation in South Asia. Furthermore, by explanatory analysis, he also studies how the commodity prices especially food and fuel affect South Asia. The sharp increase in commodity cause the large loss of income from the terms of trade shock, external and internal imbalance, adverse economic (hurt growth or inflation), and social impact on the poor.

**For the first**, Severe terms of trade loss. All countries in South Asia have lost. Much of the loss has come from petroleum,. In the food sector, Maldives, Nepal, Bangladesh and Sri Lanka lost out quite a bit from the global price hike. The loss from oil and food price crisis is likely to be substantial for Afghanistan. **The second**, deterioration in fiscal and external balance. From the data, Pakistan suffered the most rapid deterioration in the current account balance, which turned from a surplus of around 4 percent of GDP in 2003 to a deficit of over 8 percent of GDP in 2008. Sri Lanka similarly experienced a substantial increase in the current account deficit. Even in India, the current account widened sharply from surplus of more than 2 percent of GDP in 2004 to a deficit of over 3 percent in 2008. The current balance in Nepal that was in surplus for a fairly long period finally turned into a deficit in 2008. Concerning fiscal balance, all countries except Sri Lanka registered large deterioration. **The third**, impact on inflation. Rising food and fuel prices have been a major source of inflationary pressure in South Asian countries. In Afghanistan, Sri Lanka, Pakistan, Bangladesh and Nepal, food prices made a bigger impact on inflation than fuel prices. In India, however, the main surge to inflation

came from fuel price increases. **The fourth**, poverty impacts. This studies finds that the food price is the part of commodity price that causes the poverty. This is because of some factors. First, South Asian poor on average spend between 25-60 percent of their total income on staple food. Second, there are many more poor household who are net buyers of staple food than net sellers. Third, availability and access to official safety net programs is hugely limited by inadequate fiscal space and weak institutions.

For the policy, this paper is focus to the response to the food price. The adverse consequences of the food price hike for the poor are large; the global financial crisis could further worsen the situation due to falling economic opportunities and government revenues. Governments in South Asia have responded by stabilizing domestic food prices through a range of short-term measures, tightened monetary policy to reduce inflation, and increased spending on a range of safety net programs for the poor.

**Browne and Crowning** (2007) try to show that long run and short run relationships should exist between commodity prices, consumer prices and money and that the influence of commodity prices on consumer prices occurs through a money-driven overshooting of commodity prices being corrected over time. For the model, they use a simple two good and two-period model by distinguish between commodities, whose prices are flexible, on the one hand, and consumer goods, whose prices are sticky.

With a cointegrating VAR framework and United States data, they find the relationships of the short run and long run between commodity prices, consumer prices and money. Both commodity and consumer prices are proportional determined by the money supply in the long run. Furthermore, commodity and consumer prices are each shown to be cointegrated with the money stock and to move proportionally to it in the long run. In addition, Commodity prices initially overshooting their new equilibrium values in response to a money supply shock, while consumer prices adjust more slowly and do not overshoot. The deviation of commodity prices from their long-run equilibrium values having explanatory power for subsequent consumer price inflation. They also find that the influence of commodity prices on consumer prices is a monetary phenomenon. In conclusion, their studies indicate that monetary aggregates have to be brought into studies of the commodity price-consumer price relationship

The paper form ADB “Managing Commodity Price Volatility in Asia” tried to explain that managing commodity price volatility is important especially in Emerging East Asia. Since 2009, headline inflation has been edging up in emerging East Asia. From mid-2010, as prices of commodities accelerated, headline inflation (overall inflation rate) rose much faster than core inflation (excludes volatile food and energy prices). On average, headline inflation tends to be above core inflation in most of the region’s economies. Food and energy inflation is generally more volatile than core inflation. But the difference is not very large on average. Volatility of food and energy inflation has been somewhat higher since 2000 than in the 1990s. In many case, it is more difficult to determine the appropriate monetary policy response because the higher inflation came from commodity prices. Furthermore, the authorities may worry that tightening monetary policy to response the higher commodity prices. Because, it can reduce aggregate demand in net commodity-importing countries and can weaken growth. There are a reason why many central banks did not

aggressively tighten monetary policy. The fact during 2008 and in 2011, when commodity prices contributed to sharp increases in headline inflation, it did not impact core inflation.

In general, central banks have been reluctant to tighten monetary policy when inflation results mainly from commodity prices (focusing core inflation rather than head inflation). Although many countries concluded to not respond the commodity price, the condition in emerging Asia is exceptional. It is caused by the sharp increases in commodity prices, especially food and energy account for most of the rising inflation in the region. There are other five arguments about the contradiction between the traditional condition and the condition in emerging Asia related to core inflation and headline inflation. **First**, core inflation has traditionally been the better and more reliable predictor of future price movements over the time horizons that matter for monetary policy. But, in emerging East Asia, core inflation predicts future price trends only slightly better than headline inflation. The ability of lagged values of core and headline inflation to predict future inflation tends to improve in some economies as the forecast time horizon is extended from 12 months up to 36 months, but declines in other cases

**Second**, traditionally, commodity price changes are largely random and have low persistence. But, autocorrelation testing was found that food and energy inflation is clearly persistent in most emerging East Asian economies and food and energy inflation affects inflation trends. **Third**, in traditional view, commodities are only a small part of the consumption basket and do not have a quantitatively significant impact on headline inflation. So, leaving commodity price movements out does not imply much loss of information. But, in emerging East Asia, food and energy account for a significant portion of consumer baskets. In many of these economies, food and energy can account for more than 20%–30% of the consumption basket with weights in some cases being close to the 40%–50% range. So, excluding food and energy in the measures of core inflation can provide a misleading indicator of future inflation trends. **Fourth**, monetary policy is ineffective against commodity price inflation and if it used, its instruments could become unstable. A systematic policy response could lead to instability in monetary policy instruments such as short term policy interest rates. But, besides the negative effect to instability, monetary policy can be effective when it is related to anchor inflationary expectations and reduces the impact of higher commodity prices through currency appreciation. In response to inflation from commodity, tightening monetary policy could help anchor inflationary expectations and reduce the risks of spillovers from headline inflation into core inflation. And that relates to the role exchange rates play in reducing the pass-through effect of increases in commodity prices. Allowing exchange rates to appreciate can reduce the impact of global commodity price increases on food and energy inflation measured in local currency terms. **The last**, commodity prices are driven by supply shocks. So, using monetary policy here can be counterproductive because the policy becomes contractions. But, in emerging East Asia, strong demand rather than supply shock appears largely behind recent commodity price inflation.

Under demand driven commodity price increases, tighter monetary policy is needed. Tighten monetary policy can help assure that growth in aggregate demand is in line with its sustainable rate. Because the globalization and

increasing of financialization of commodities indicate monetary policy may have a limited role in managing commodity price volatility. So, monetary policy needs to consider the effects of commodity price inflation and requires other policies to reduce their economic impact.

The conventional view is that, commodity prices tend to decline in real terms. But, in the short term, commodity prices could continue to rise with increased volatility. But, real commodity prices may now be following a sustained upward trend. So, the monetary and other policies have to manage commodity price volatility and inflation to reduce their impact in economy. A pragmatic approach to a range of policies may help policymakers manage the inflation impact of persistent and volatile changes in commodity prices. For the future, by using trends in global food and energy prices to project headline inflation may help define monetary policy in headline terms making it easier to communicate inflation targets or objectives to the public. Beside that, the flexible monetary policy may be needed in response to potentially persistent and volatile commodity driven inflation, such as specifying inflation targets or objectives as 2–3 year averages so as to allow more flexibility when dealing with inflation. For the last, another policy that can help to manage the commodity price volatility and inflation are greater exchange rate flexibility and greater cooperation to ensure adequate trade in food and energy and effective commodity market regulation

#### SUMMARY OF LITERATURE STUDY

| No | Author                      | Title  | Methodology   | Output   |
|----|-----------------------------|--|---|--|
| 1  | Verheyen (2010)             | Monetary Policy, Commodity Prices and Inflation – Empirical Evidence from the US | Econometric method such as Granger causality tests and SVAR models to US data | There was a strong link between commodity prices and CPI inflation in the 1970s and the beginning of the 1980s, but the relationship has weakened, respectively diminished over time. There are many reasons that tell why commodity prices and the CPI showing the weakened relationship. First, it can be seen in low interest rates today comparing with high interest rates during the 1970s and 1980s. Now, producers face lower interest rate costs and therefore are able to cope with higher commodity prices more easily. Second, productivity gains are able to mitigate the effects of commodity price increases. Furthermore, he found that commodity prices could not be used as an indicator variable for monetary policy. It is because changes in commodity prices no longer dominate the evolution of the Federal Funds Rate. |
| 2  | Bloomberg and Harris (1995) | The Commodity–Consumer Price Connection: Fact or Fable?                          | VARs model  | There is no long run link between the level of commodity prices and the level of consumer prices. The final and probably most important factor in the diminished commodity CPI connection is the sharp decline in the commodity composition of U.S. output. In addition, some inflation signals from commodities are being obscured by offsetting changes in exchange rates and monetary policy  |



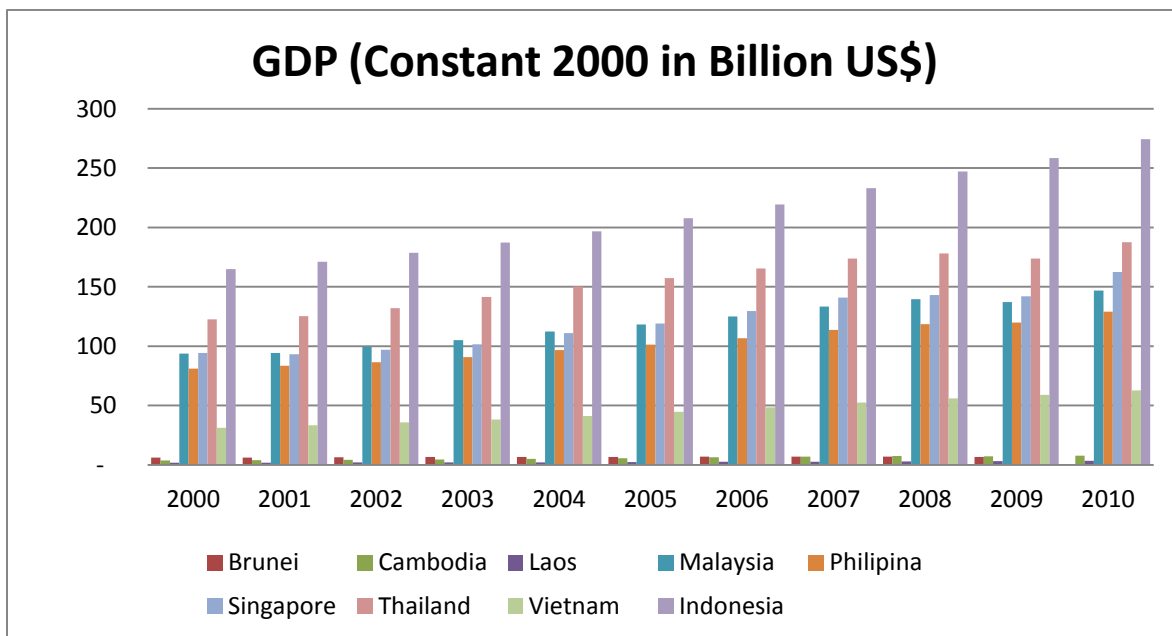
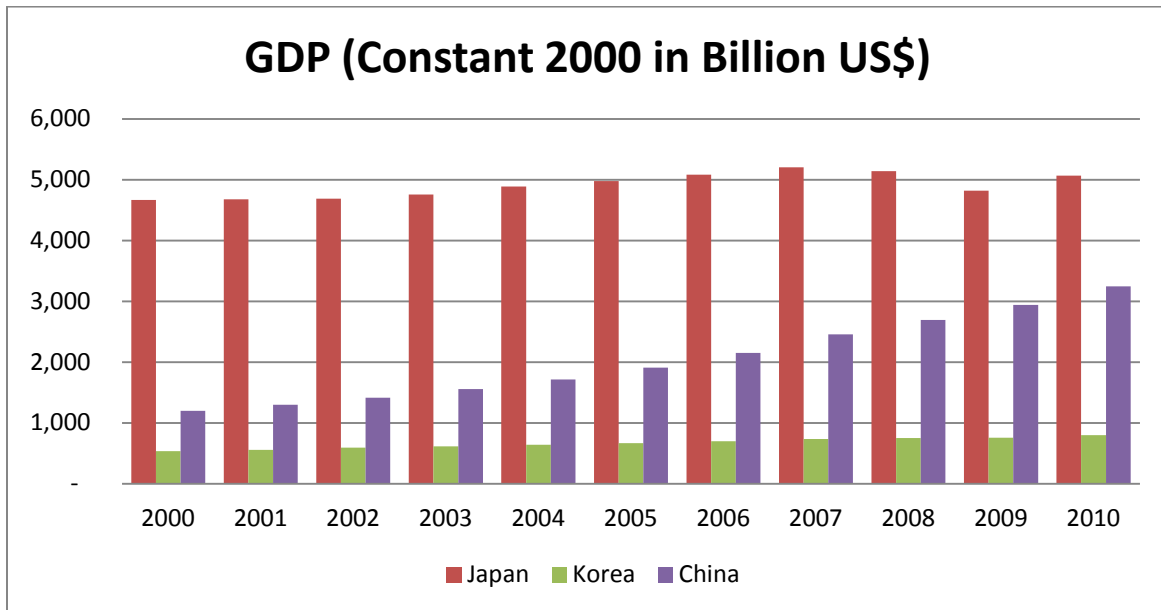
|   |                                    |   |  |   |
|---|------------------------------------|---|--|---|
| 3 | Zoli (2009)                        | Commodity Price Volatility, Cyclical Fluctuations, and Convergence: What is Ahead for Inflation in Emerging Europe? | VARs and panel econometric method  | International commodity price shocks (food and oil/energy) have a significant impact on domestic inflation, but the inflation response is asymmetric for positive and negative shocks. The pass-through effect from food price shocks is higher than from energy price shocks. He also shows that cyclical fluctuations (described GDP gap) have a significant impact on inflation, but in a relative small share of inflation variability. The inflation response is seem to be asymmetric during cyclical upturns and downturns, as the coefficient on positive output gaps is positive and significant, while that on negative output gap is not significant. Related to price convergence, his study shows that price convergence (described by price level relative to EU-15 countries) is estimated to add nearly 3 percentage points to annual headline inflation, for a country whose price level is about 50 percent relative to the EU-15 average. It indicates that inflation rates tend to be higher in countries with low price levels relative to EU-15 countries |
| 4 | Crowley (2010)                     | Commodity Prices and Inflation in the Middle East, North Africa, and Central Asia                                   | Fixed Effect Method with Panel data  | The variables such as : past inflation, the strength of the US dollar, US inflation, and monetary and exchange rate policies and nonfuel commodity prices can explain the pattern of inflation ( for region as a whole). this study's founds that no relation or in some cases a negative relationship between inflation and changes in fuel prices. The prevalence of price controls and subsidies on petroleum products may make this result. In addition, Besides, this study also found the different result by region. The variable such as exchange rate regime and money growth can result the difference effect and signification to inflation when that variable is be separately by region (between Former Soviet Union countries and non-Former Soviet Union countries)  |
| 5 | Tang (2008)                        | Commodity Prices and Monetary Policy in Emerging East Asia  | Descriptive Analysis   | Related with commodity price and inflation, for the region in Emerging East Asia as a whole, food and energy price were the primary driver of the high inflation. Their causes, however, were a confluence of factors whether cyclical or structural, domestic or global, supply or demand all reinforcing each other and contributing to widespread price escalations in all classes of commodities. The recent inflationary pressures were not caused by temporary supply problems alone, instead monetary policy is one of a major source to high inflation environment. For example, domestic demand in individual economies that facilitated by accommodative monetary policy can explain why monetary policy also a major source of inflation. In response, credibility of monetary policy is needed.   |
| 6 | Boughton, Branson, Muttardy (1989) | Commodity Prices and Inflation : Evidence From Seven Large Industrial Countries.                                    | Developed Economic model, such as : a two-country model and country specific commodity price indexes | For a whole, they examined the relationship between movements in primary commodity prices and changes in inflation in two shock. They are monetary shocks and non-monetary shock. They found that if monetary shock dominate (such as an unanticipated expansion in the money supply), then commodity prices should lead general price movements, and the level of commodity prices should be correlated with the general inflation rate. In other hand, non- monetary shock weaken these relationship. Non monetary shock are real disturbance that can be happen from fiscal expansion or an innovation in commodity production. In addition, the empirical test shown that low inflation in industrial countries are associated with low levels of commodity prices  |

|    |                            |  |                                    |  |
|----|----------------------------|--|------------------------------------|--|
| 7  | Evans and Fisher (2011)    | What are The Implications of Rising Commodity Prices for Inflation and Monetary Policy?          | Vector autoregressive (VARs) model | There are comparison comparing responses of core inflation and the monetary policy instrument in the pre- and post-Volcker (chairman of the Federal Open Market Committee (FOMC)) periods. It shows that in oil price shock, there is some evidence for the "weak central bank credibility" hypothesis during the pre Volcker period. On the other hand, in the post-Volcker era, neither core inflation nor monetary policy has been very sensitive to surprises in commodity prices. They also find that since the mid-1980s, after the big oil shocks and the tenure of Paul Volcker as chairman of the Federal Open Market Committee (FOMC), the reactions of both core inflation and the federal funds rate (the monetary policy instrument) to shocks in oil and other commodity prices have been extremely modest, but the reaction is large in pre-Volcker that period.  |
| 8  | Ahmed (2008)               | Global Food Price Inflation Implications for South Asia, Policy Reactions, and Future Challenges | Descriptive Analysis               | The surge in global commodity prices of the past few years has presented a tremendous development challenge for South Asian countries. The large loss of income from the terms of trade shock has worsened macroeconomic balances, fueled rapid inflation and hurt growth. Governments in South Asia have responded by stabilizing domestic food prices through a range of short-term measures, tightened monetary policy to reduce inflation, and increased spending on a range of safety net programs for the poor.  |
| 9  | Browne and Crowning (2007) | Commodity Price, Money and Inflation   | A cointegrating VAR framework      | There are relationships of the short run and long run between commodity prices, consumer prices and money. Both commodity and consumer prices are proportional determined by the money supply in the long run. Furthermore, commodity and consumer prices are each shown to be cointegrated with the money stock and to move proportionally to it in the long run. This study also shows that influence of commodity prices on consumer prices is a monetary phenomenon.   |
| 10 | ADB                        | Managing Commodity Price Volatility and Inflation in Emerging East Asia                          | Descriptive Analysis               | From mid-2010, as prices of commodities accelerated, headline inflation rose much faster than core inflation. In traditional view, central banks have been. They reluctant to tighten monetary policy when inflation results mainly from commodity prices (focusing core inflation rather than head inflation). But, managing commodity price volatility is important especially in Emerging East Asia. It is supported by five arguments about the contradiction between the traditional condition and the condition in emerging Asia related to core inflation and headline inflation. First, in emerging East Asia, core inflation predicts future price trends only slightly better than headline inflation. Second, autocorrelation testing was found that food and energy inflation is clearly persistent in most emerging East Asian economies and food and energy inflation affects inflation trends. Third, in emerging East Asia, food and energy account for a significant portion of consumer baskets. Fourth, monetary policy can be effective against commodity price inflation when it is related to anchor inflationary expectations and reduces the impact of higher commodity prices through currency appreciation. Fifth, in emerging East Asia, strong demand rather than supply shock appears largely behind recent commodity price inflation |

## VI.ASEAN+3 MACRO ECONOMY PROFILE

The macroeconomic characteristic can be seen from the profile of population, exchange rate, inflation, interest rate, GDP, money supply and unemployment rate. In general, all of that profile can describe the pattern of each countries condition.

**Figure 5: GDP of East Asia Countries (Constant 2000)**

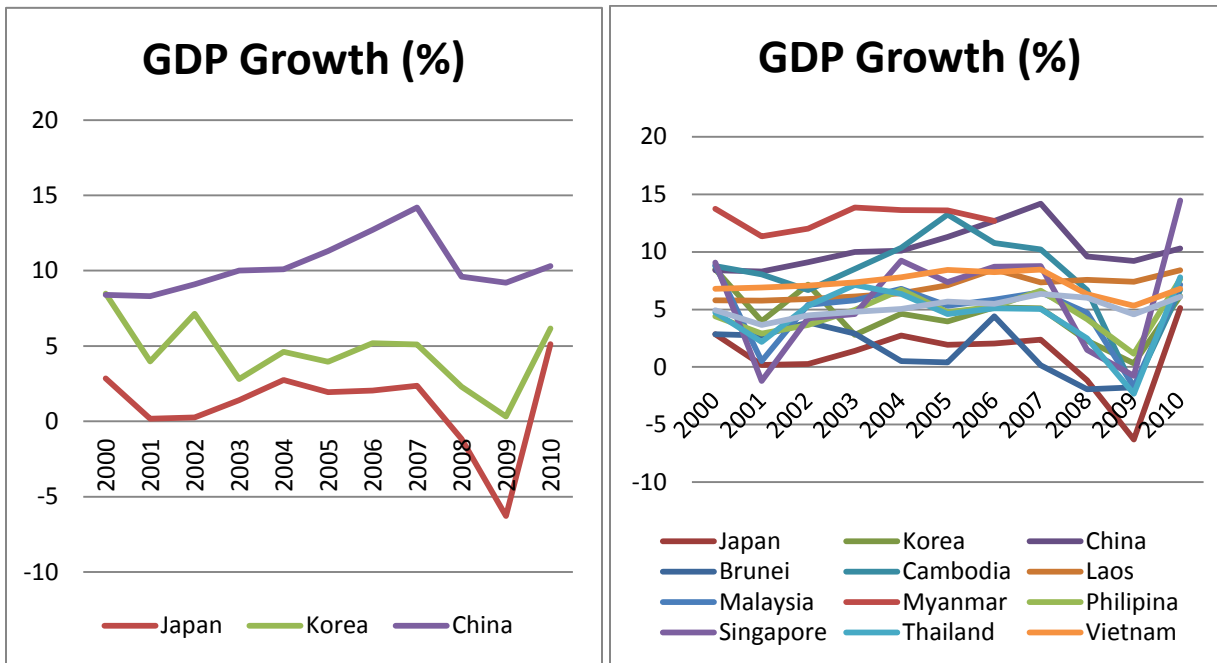


Source : World Bank

For the first is GDP. This indicator is important because it describes the economic performance in each country. From the graph, the highest GDP constant is Japan and the lowest is Laos. For the concern is GDP constant in

China. It is shown that GDP in China has the increasing pattern and maybe in the future it catch up the GDP constant in Japan. Related with commodity price volatility issues, increasing GDP in emerging East Asia countries is one factor that could drive higher demand for commodity and also higher volatility of commodity price.

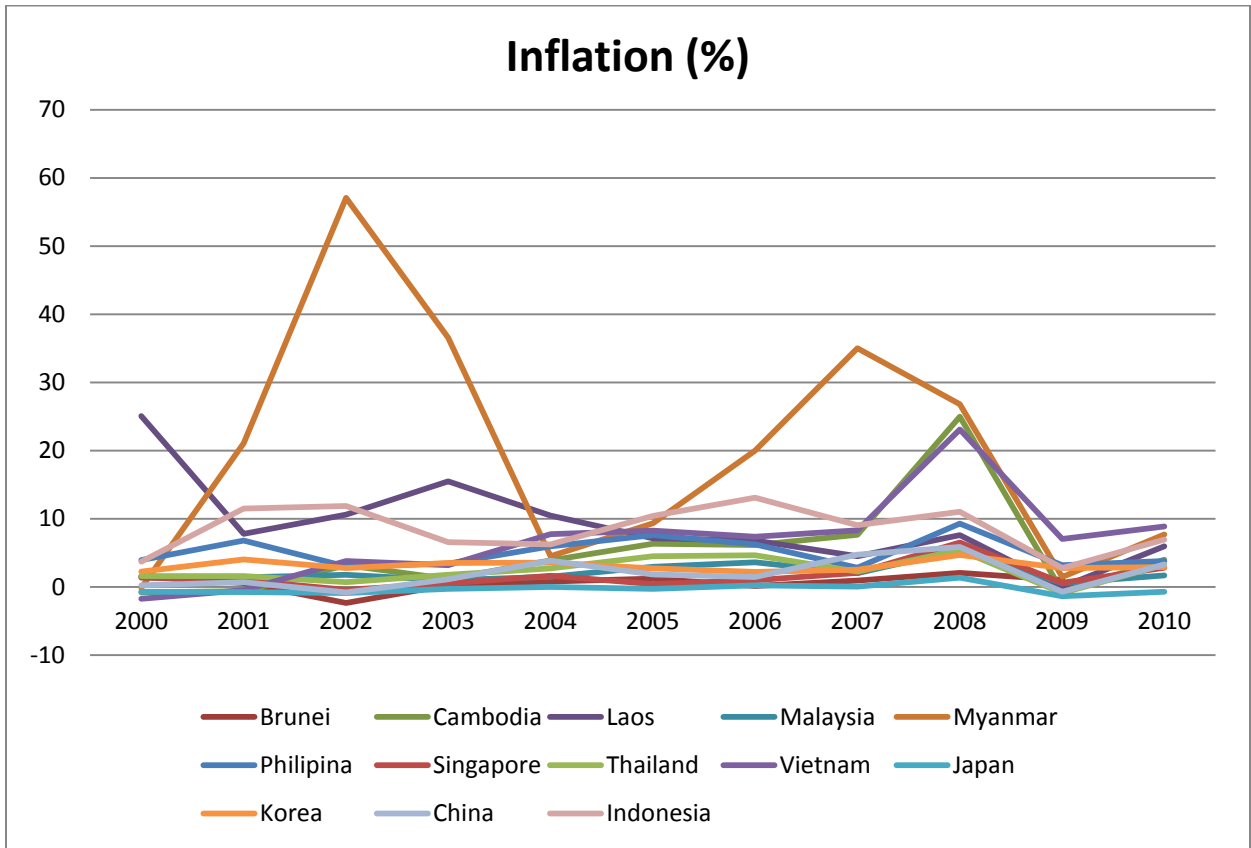
**Figure 6 : GDP Growth of East Asia Countries**



Source : World Bank

From the figure above, GDP growth in every country is not stable. It is potential to drive the higher volatility in commodity price. Higher GDP growth means the increasing in income and conversely. Higher income relates to higher demand and increases the price. It also happens in opposite direction. So, instability in GDP growth can lead the higher volatility of commodity price.

Figure 7 : Inflation Rate in East Asia Countries

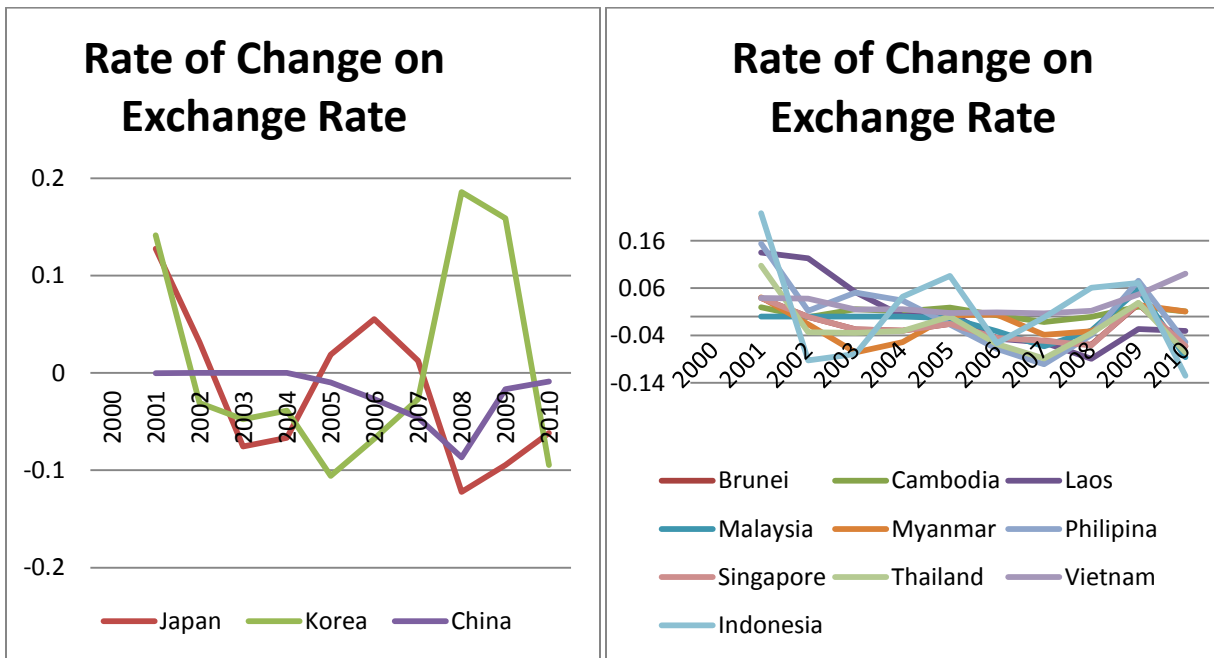


Source : World Bank

For the second issues is inflation. Each countries shows the volatile pattern on inflation. Starting in 2000 until 2008, the countries such as Myanmar, Indonesia, Laos, and Kamboja has the relatively high in inflation rate compare to other countries. But the opposite condition happen in Japan. This countries is in the seriously condition to face deflation. But, generally in 2010, all of these countries show the same direction to the inflation, in the range of inflation between - 1% - 10%. This is will be the challenge to these region to maintain the stabilization of the inflation.

To maintain the stabilization of the inflation, the government must control the volatility of commodity price. Higher volatility of commodity price can lead the higher in inflation rate. Based on the result in many literatures especially in East Asia Countries, volatility price is one of the major factor that causes higher inflation.

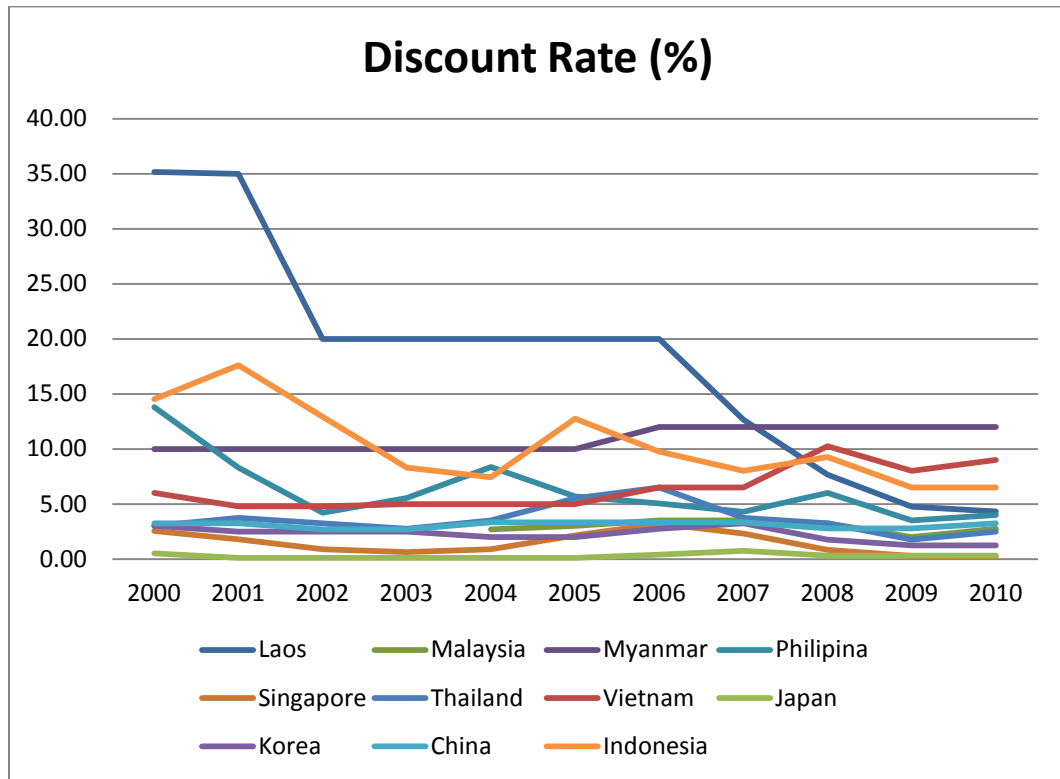
Figure 8 : Rate of Change on Exchange Rate in East Asia Countries



Source : CEIC, note : + means depreciation, - means appreciation

Beside inflation and GDP, exchange rate also becomes a major concern in macro economic policy. From the graph, it can be seen the variation pattern of the exchange rate in each country. Each country shows the volatile pattern. The major concern is the condition pre and post American crisis. For general, almost all countries always shows the depreciation trend in post the American crisis that happen in the end of 2008. It shows that the exchange rate condition is worse . The more impact of American crisis happened in Korea and Indonesia. For other countries, such as China, Laos, and Japan have a small effect to exchange rate. For countries like Indonesia which depend on commodities, the movement of currencies is also related with the movement of price of commodity. This is called "commodity currencies". The trend of higher commodity prices translated into appreciation of rupiah during the period 2008-2010.

**Figure 9 : Discount Rate in East Asia Countries**

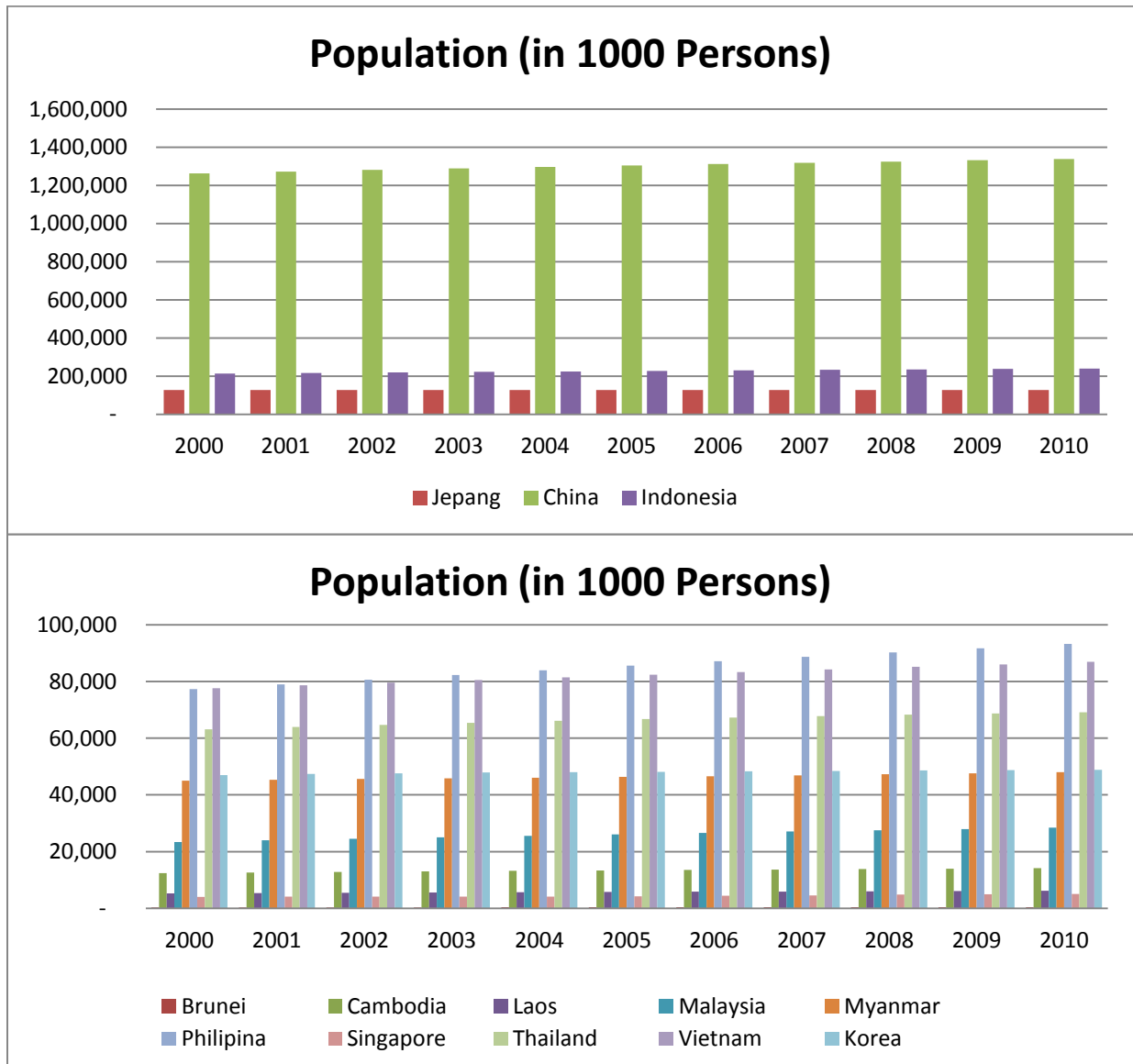


Source : CEIC.

Other important variable is interest rate. It can be represented by discount rate because it usually become a policy rate. From the grap, it show that in 2010, the interest rate among these countries is between 0%-15%. The highest in 2010 is Myanmar and the lowest is Japan. The major concern in this indicator is Laos and Japan. Laos can decrease the interest rate from 35.17% in 2000 to be 4.33% in 2010. Wherease Japan always hold the interest rate around 0%. Japan choose to hold 0% because it tries to encourage the real sector. When the interest rate is low,they hope that investment will increase. For general, each countries also tries to hold the low interest rate to support the economic growth.

Discount rate has strong relationship with volatility of commodity price. When, the volatility of commodity price leads the higher inflation, for monetary policy, the right policy is rising interest rate. For the conclusion, the volatility of commodity price can be a serious problem when most of these countries try to hold the low interest rate.

Figure 10 : Number of Population in East Asia Countries

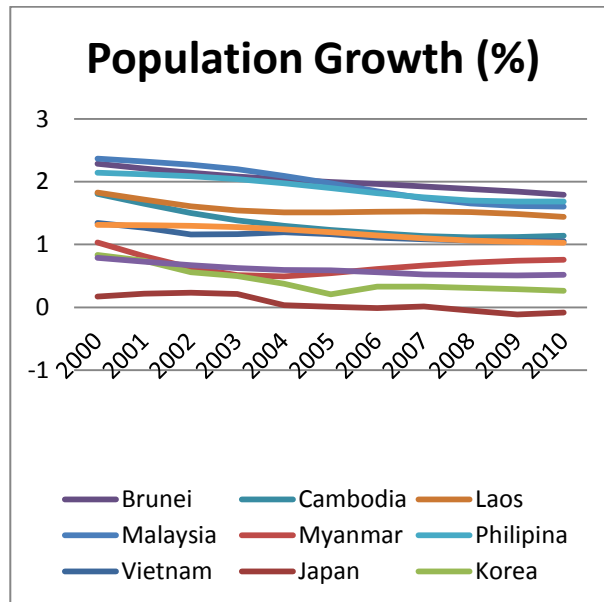


Source : World Bank

The next variable is population. It can be seen that the population of China is the highest among the other countries and the population of Singapore is the lowest. But, the major concern is the increasing pattern of the population in each country. It can create a problem in the future not only to each country but also to the region area. The number and trend of population is much related with commodity price. So population trend and needs should be monitored regularly to stabilize commodity price.



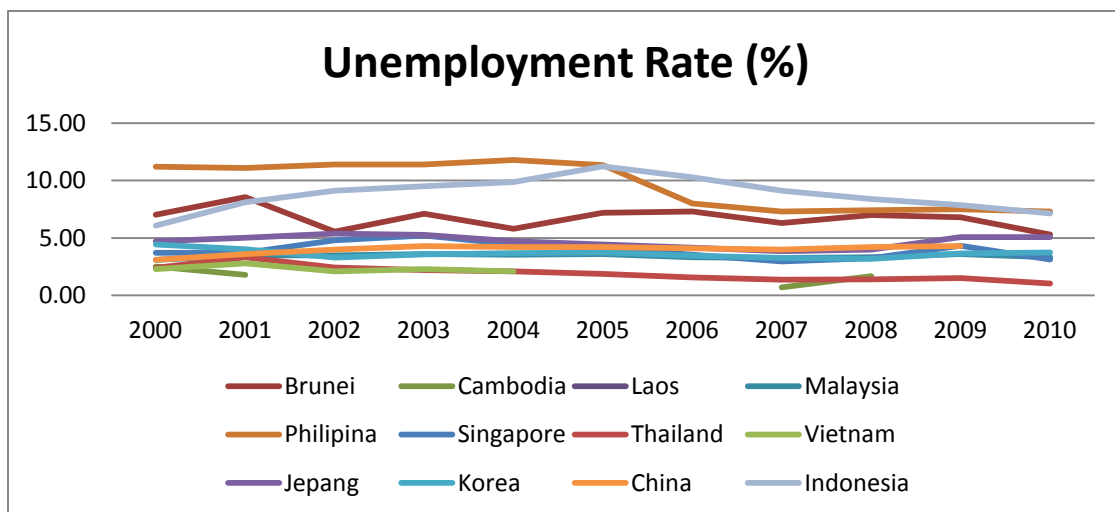
**Figure11: Population Growth in East Asia Countries**



Source : World Bank

The major concern not only in number of population but also in population growth. Increasing trend can lead the more serious problem in commodity price. Although Singapore and Thailand have relatively small in number of population, the population growth in these countries is high. It is potential to lead the higher commodity price volatility.

**Figure 12 : Unemployment Rate in East Asia Countries**



Source : CEIC.

The last variable presented is unemployment. Beside income percapita, unemployment also become a major concern to the public prosperity indicator. From the graph, it can be shown that the unempolment is decreasing year on year in general. For Philipina, there is significant movement in unemployment rate from 2000 until 2010. It also

happen in Indonesia, at the time until 2005 unemployment rate is increases, but it is decreasing after that period. For general, the member in these region area have to use this opportunity by labor movement to face the unemployment rate. From the graph, although the unemployment rate is remain between 0 - 10%, labor movement is still important to facing this problem.

In case of the unemployment, volatility of commodity price indirectly relates to real sector. When the volatility of commodity price lead the higher price, it can hurt the real sector. It will increase the cost of production. In some condition, cutting the number of employment can be a solution to reduce the cost. In conclusion, the volatility of commodity price influences the unemployment rate.

#### VII.CROSS COUNTRIES STUDIES : POLICY RESPONSES IN EAST ASIA COUNTRIES REGARDING COMMODITY PRICE

The table below summarized the responses of East Asia Countries regarding commodity price. We summarized both fiscal policy and monetary policy responses.

| Country   | Variables That Affected   | Commodity Prices That Affected   | Fiscal Policy Responses  | Monetary Policy Responses  |
|-----------|---|--|--|--|
| Thailand  | <ul style="list-style-type: none"> <li>- Inflation pressures, on the other hand, were projected to rise.</li> <li>- Strong domestic and external demand.</li> </ul> | <ul style="list-style-type: none"> <li>- Raw food prices.</li> <li>- Oil prices.</li> </ul>        | <p>The government responded by using subsidies and a cut in excise taxes to cap the price of diesel oil, which affects the prices of a number of goods through its role in transportation. Subsidies to electricity and transportation were also maintained.</p>   | <ul style="list-style-type: none"> <li>- Raise the policy interest rate by 25 basis points from 2.25 to 2.50 percent on March 9, 2011.</li> <li>- raise the policy interest rate by 25 basis points from 2.50 to 2.75 percent April 20, 2011</li> </ul>  |
| Malaysia  | <ul style="list-style-type: none"> <li>- Supply factors to be the key determinant affecting consumer prices with global commodity and energy prices.</li> </ul>     | <ul style="list-style-type: none"> <li>- Food and fuel prices.</li> </ul>                          | <p>Effort to rein in subsidy expenditure started in 2009 when fuel prices were adjusted upward and sugar price increased by 20 sen in January 2010. A more comprehensive subsidy rationalization programmers was announced on 15 July 2010 :</p> <ul style="list-style-type: none"> <li>- Subsidy for RON95 and diesel was reduced by 5 sen per liter.</li> <li>- RON97 is no longer subsidized and determined by the automatic pricing mechanism.</li> <li>- Liquefied petroleum gas (LPG) subsidy was reduced by 10 sen per Kg.</li> <li>- The Price of sugar was adjusted upward by 25 sen per Kg.</li> </ul> | <ul style="list-style-type: none"> <li>- Bank Negara Malaysia decided to maintain the Overnight Policy Rate (OPR) at 3.00 percent on 8 September 2011</li> </ul>   |
| Singapore | <ul style="list-style-type: none"> <li>- The Singapore economy recovered strongly in 2010 to grow by 14.5.</li> <li>- The labour force</li> </ul>                   | <ul style="list-style-type: none"> <li>- Increases in car prices and global oil prices.</li> </ul> | <ul style="list-style-type: none"> <li>- The government responded with a \$20.5 billion Resilience Package in Budget 2009, shifted from a focus on economic stimulus towards supporting longer-term economic competitiveness and social resilience.</li> </ul>   | <ul style="list-style-type: none"> <li>- MAS tightened monetary policy in April 2010 by re-centering the S\$NEER policy band upwards and restoring its modest and gradual appreciation path. In October 2010, MAS tightened further by shifting to a slightly steeper appreciation of the S\$NEER policy band without altering the level at</li> </ul> |

|                   |   |   |  |  |
|-------------------|---|---|--|--|
|                   | participation rate reaching a record high.  |   |  | which the band was centered.   |
| Philippine        | <ul style="list-style-type: none"> <li>- A preemptive move to counter any additional inflationary pressures from excess liquidity.</li> <li>- Expectations of continued strong capital inflows.</li> <li>- Inflation expectations could be susceptible to commodity price volatility.</li> </ul>  | <ul style="list-style-type: none"> <li>- Higher rice prices due to crop damages wrought by Typhoon Chedeng.</li> <li>- Higher inflation outturns for fuel and transportation and communication services, which tracked the rise in international oil prices.</li> </ul> | <ul style="list-style-type: none"> <li>- The National Government (NG) contained the deficit at the level of P314.4 billion, P10.6 billion lower than the revised program of P325.0 billion. The deficit from July to December only stood at P117.7 billion. Total deficit is equivalent to 3.7 percent of GDP, lower than the 3.9 percent program.</li> </ul>  | <ul style="list-style-type: none"> <li>- The Monetary Board (MB) decided on 16 June 2011 to raise the regular reserve requirement by 1 percentage point effective 24 June 2011.</li> <li>- Maintain the BSP's policy interest rates at 4.50 percent for the overnight RRP (borrowing) rate and 6.50 percent for the overnight RP (lending) rate.</li> <li>- Maintain the current interest rates on term RRRs, RPs and SDAs.</li> </ul>   |
| Brunei Darussalam | <ul style="list-style-type: none"> <li>- The lower oil and gas prices coupled with reduction in oil production have resulted in lower Government revenue.</li> </ul>  | <ul style="list-style-type: none"> <li>- oil and gas prices.</li> </ul>   | <ul style="list-style-type: none"> <li>- Fiscal and monetary policy responses take the action by minister of finance.</li> </ul>   | <ul style="list-style-type: none"> <li>- Collective efforts by governments to take their economies out of recession by injecting fiscal stimuli and easing the monetary policy, the second half of the year paved a path to recovery.</li> </ul>   |
| Cambodia          | <ul style="list-style-type: none"> <li>- Inflation pressures.</li> </ul>  | The prices of food, fuel and transport and combined.  | <ul style="list-style-type: none"> <li>- In the year 2010, totally-implemented expenditure about 17.9% of GDP or increased by 14.4%, compared to the previous year of 2009. The budget deficit 5.3% of GDP is lower than the year 2009 with 6.3% of GDP.</li> </ul>  | <ul style="list-style-type: none"> <li>- The monetary policy of the NBC aimed at maintaining price stability through conducting a managed floating exchange rate regime, accumulating international reserves in a very prudent manner and strengthening the confidence of the public.</li> <li>- Efforts continue to be made to control the superfluous expansion of money in circulation and maintain stability in the exchange rate of the Riel.</li> </ul>  |
| Lao PDR           | <ul style="list-style-type: none"> <li>- Fall of oil price in the market, pushing CPI in transport constantly down.</li> <li>- The Kip (local currency) gained strength against the US dollar and Baht, leading to decreasing import goods prices expressed in Kip and sufficient supply of goods to meet the market demand. In addition, foreign inflation rate was down; pushing low imported price.</li> </ul> | <ul style="list-style-type: none"> <li>- Fuel Prices</li> <li>- Other nonfood prices</li> </ul>   | <ul style="list-style-type: none"> <li>- Higher copper and gold prices, combined with the withdrawal of quasi fiscal spending are pushing the fiscal deficit down this year. The budget deficit is expected to drop to 2.8 percent in FY10/11 from 5.7 percent of GDP in FY09/10 due to slow expansion of expenditure (for both current and capital spending) and projected higher revenue (especially resource tax revenues) as well as strong GDP growth.</li> </ul> | <ul style="list-style-type: none"> <li>- Lowered short-term policy interest rate (BOL rate) four times from 7 percent to 4 percent.</li> <li>- Adjusted reserve requirement ratio (RRR) for only cash in Kip and foreign currencies and converted cash and eligible securities (Bonds) into reserve requirement ratio (RR).</li> <li>- Injected money into the economic system by providing large amount of credit to economic sector and financial institutions for liquidity.</li> <li>- Encouraged commercial banks to extend their widespread service networks.</li> </ul> |
| Japan             | <ul style="list-style-type: none"> <li>- Decline in real purchasing power and deterioration</li> </ul>  | <ul style="list-style-type: none"> <li>- Crude oil prices</li> </ul>  | <ul style="list-style-type: none"> <li>- These policies will be promoted through measures such as the early implementation of the FY2011 first supplementary budget and prompt revisions to the</li> </ul>   | <ul style="list-style-type: none"> <li>- Monetary easing by increasing the amount of the Asset Purchase Program, by about 5 trillion yen.</li> </ul>   |

|             |  |   |   |   |
|-------------|--|---|---|---|
|             | in corporate profits resulting from a further deterioration in the terms of trade could act to reduce private domestic demand in Japan.  |   | regulation and institutionalism.<br>- Primary balance expenditure will be 70,862.5 billion yen, a decrease of 69.4 billion yen compared to the previous year's initial budget. The general-account budget including a National Debt Service of 21,549.1 billion yen will total 92,411.6 billion yen, an increase of 112.4 billion yen from the previous year's initial budget.  |   |
| Indonesia   | <ul style="list-style-type: none"> <li>- On the external side, the higher inflation in Indonesia was in line with global inflation, especially in emerging markets due to the effects of resurgent economic growth and international commodity prices. Even so, appreciation in the rupiah during the year mitigated the impact of burgeoning prices for globally-traded commodities.</li> <li>- From domestic side, developments in inflation expectations, demand and supply conditions and price adjustment for government-regulated commodities did not result in excessive inflation. Inflationary pressures emerged mainly as a result of disruptions in the supply of foodstuff, which were strongly influenced by adverse weather conditions.</li> </ul> | <ul style="list-style-type: none"> <li>- Rising global food prices Crude palm oil (CPO), wheat and corn.</li> <li>- Supply shocks for some domestic staple foods, including rice, seasonings and vegetables.</li> </ul> | <ul style="list-style-type: none"> <li>- The Government's plan in 2011 not to raise administered prices, such as the basic electricity tariff, liquefied petroleum gas (LPG), subsidized fuels, and transportation fare.</li> <li>- the Government raised a number of tariffs and reduced subsidies. The tariffs raised in 2010 included excise duty on tobacco and alcoholic beverages, as well as the basic electricity tariff and the maximum retail price of fertilizer.</li> </ul>   | <ul style="list-style-type: none"> <li>- In 2010 Bank Indonesia instituted a policy mix to ensure internal and external stability. The mix of instruments used for internal stability aimed at stabilizing prices and managing domestic demand, while external stability aimed at the management of foreign capital inflows and exchange rate stability.</li> <li>- Referring to interest rate policy, in 2010 Bank Indonesia held its BI Rate at a level of 6.5%. Meanwhile, in addition to the interest rate policy, in the middle of 2010 Bank Indonesia issued macroprudential policy for managing domestic liquidity and the surge in foreign capital inflows. This policy mix was further supported by other policies to maintain financial system stability as well as government policies.</li> </ul> |
| China       | <ul style="list-style-type: none"> <li>- Inflation effect</li> <li>- Increase in oil prices cause the increase in transportation cost</li> </ul>   | <ul style="list-style-type: none"> <li>- Oil price</li> <li>- Food price</li> </ul>   | <ul style="list-style-type: none"> <li>- In 2010, macro policy stance of China's government took some measures to boost food supply and reduce the cost of production and logistics. Including : <ul style="list-style-type: none"> <li>- Releasing grain from China's large reserves.</li> <li>- Increasing subsidies to farmers.</li> <li>- Exempting transport of vegetables from road toll, Boosting food imports.</li> </ul> </li> <li>- For furthermore, limiting the increase in domestic fuel prices arising from higher oil prices and applying moral suasion on manufacturers of food and consumer products.</li> </ul> | <ul style="list-style-type: none"> <li>- Since October 2010 the government has raised benchmark interest rates 4 times and RRRs 7 times.</li> <li>- Most importantly, quantitative guidance on bank credit, traditionally the backbone of monetary policy tightening, began to be reinforced, especially in early 2011</li> </ul>   |
| Republic of | <ul style="list-style-type: none"> <li>- Inflation pressures</li> </ul>  | <ul style="list-style-type: none"> <li>- The prices of</li> </ul>   | <ul style="list-style-type: none"> <li>- Minimize the budget spending and control of liquidity.</li> </ul>  | <ul style="list-style-type: none"> <li>- In the first half, the Bank of Korea</li> </ul>  |

|         |  |   |  |   |
|---------|--|---|--|---|
| Korea   | <p>on consumer prices are expected to be fiercer on both the demand and supply sides, influenced by the economic upturn, the higher rate of wage growth, the continuation of the upward trend of house rents, the knock-on effects of Chinese price instability, and a surge in international raw material prices.</p> <ul style="list-style-type: none"> <li>- material prices.</li> </ul>  | <p>agricultural, livestock and marine products and petroleum.</p>   | <ul style="list-style-type: none"> <li>- Secure fresh food supplies through expanded tariff quotas and contract farming.</li> <li>- Promote fair competition by tightening fair trade related regulations.</li> <li>- Improve distribution systems.</li> <li>- Extend tax incentives for working classes, such as tax deduction for credit card spending and lower VAT rates for agricultural and fishing devices. *)</li> </ul> | <p>kept the Base Rate at 2.0 percent a year.</p> <ul style="list-style-type: none"> <li>- In the latter half, the Bank of Korea raised the Base Rate by 0.25 percentage point in July and again in November as the necessity of normalizing monetary policy stance increased and inflationary pressures were expected to mount amid the continued economic upturn.</li> </ul>   |
| Vietnam | <ul style="list-style-type: none"> <li>- In the first three months of 2009, inflation rate declined because of the demand side factors (growth rates of both investment and consumption were low), the lower cost due to the impacts of the global economic recession, and the declining inflation expectation.</li> <li>- Since April 2009, inflation trended to increase because of on the demand side: higher investment and consumption thanks to the positive impacts of the Government's stimulus measures, the increase in minimum salary of state employees and state budget – subsidized persons since May 2009, the recovery of property markets, and the increasing inflation expectation.</li> <li>- on the supply side: raised prices of some of the state-managed commodities (electricity, coal and clean water) in consistent with the movement of the market prices, and</li> </ul> | <ul style="list-style-type: none"> <li>- Electricity, coal and clean water.</li> <li>- Domestic petroleum price.</li> </ul> | <ul style="list-style-type: none"> <li>- The overall budget deficit in 2009 reached 8.4 percent of GDP, an unusually high figure compared to both previous deficits in Vietnam and the deficits observed in other countries adopting aggressive stimulus policies.</li> </ul>  | <ul style="list-style-type: none"> <li>- Management of monetary policy in 2009, the SBV managed the monetary policy in the direction of prudent easing, supporting liquidity and creating favorable environment for credit institutions to enhance credit quality, thus contributing to the realization of the National Assembly's and the Government's resolution on preventing economic recession, stabilizing macro-economy, stimulating investment and consumptions, promoting export, actively preventing inflation and ensuring the safety of the whole system.</li> <li>- Open market operations in 2009, were managed in a flexible manner and in conformity with the demand for and supply of capital of credit institutions.</li> <li>- Interest rate management In 2009, the SBV continued to use the base interest rate mechanism, according to which, deposit and lending interest rates set by credit institution would not exceed 150% of the base interest rate.</li> </ul> |

|  |   |  |  |  |
|--|---|--|--|--|
|  | the increasing prices of global essential goods, making domestic cost and price base increased (for example, domestic petroleum price was raised 9 times with the growth level of 45%). |  |  |  |
|--|---|--|--|--|

### Summary of Government Intervention (Media Track)

| Country                          | Government Interventions/Policies  | Sources  |
|----------------------------------|--|--|
| Thailand                         | The cabinet approved a policy framework in March 2008 to address rising energy prices and included oil tax reduction; a price subsidy for diesel used in fishing; and promotion of automotive compressed natural gas (CNG), LPG, and biofuels.   | USDA (U.S. Department of Agriculture). 2008. "Thailand Biofuels: New Policy Framework Promoting Biofuel Use." GAIN Report TH8058. Washington, DC. <a href="http://www.fas.usda.gov/gainfiles/200804/146294234.pdf">www.fas.usda.gov/gainfiles/200804/146294234.pdf</a> .   |
|                                  | Effective July 25, 2008, excise taxes of several refined products—two containing biofuels—were reduced to zero from 34 or 42 percent, and specific taxes were also reduced.  | Thai News Service. 2008e. "Thailand: Excise Tax Reduction—Oil Refinery Products." Aug. 6.  |
| Indonesia                        | In 2008, fuel subsidy allocation of Rp 127 trillion (\$13.7 billion as of January 2008) was based on a subsidized fuel sales quota of about 35.5 billion liters and an average Indonesian crude basket price of \$95 a barrel for the year. The crude basket price averaged \$107 during the first nine months of 2008, and the country's subsidy reached Rp 131 trillion (\$13 billion) by October. | <i>Platts Commodity News</i> . 2008. "Indonesia Reviewing Fuel Subsidies, but Not on Kerosene: Minister." Oct. 28.   |
|                                  | The consumption of subsidized fuel in 2008 was 39.4 billion liters, exceeding the quota by more than 3 billion liters.   | <i>Global Insight Daily Analysis</i> . 2009. "Indonesia Exceeds Subsidised Fuel Quota for 2008." Jan. 5.   |
| Malaysia                         | The government reported in February 2009 that it had spent RM 40.5 billion (\$11.1 billion) on fuel price subsidies between 2005 and 2008. In 2008, Malaysia restructured the automatic pricing mechanism in force since 1983 to reduce growing subsidies.   | <i>New Straits Times</i> . 2009. "Setting the Retail Price for Petrol and Diesel." Feb. 15.  |
| China                            | The government paid partial compensation to China Petroleum and Chemical Corporation (Sinopec) and to the China National Petroleum Corporation between 2005 and 2008; the largest compensation was paid in the latter year. Nevertheless, these two refiners still suffered a combined loss of more than \$20 billion.   | Kojima, Masami. 2009. <i>Government Response to Oil Price Volatility: A Comparison of 48 Countries</i> . Extractive Industries for Development Series #10 July, World Bank. Available at <a href="http://siteresources.worldbank.org/INTOGMC/Resources/10-govt_response-hyperlinked.pdf">http://siteresources.worldbank.org/INTOGMC/Resources/10-govt_response-hyperlinked.pdf</a> . Downloaded on November 7, 2011. |
|                                  | China moved to market-based pricing in December 2008, although in May 2009 the government announced that it would continue to set prices to protect consumers when world oil prices exceed \$80 a barrel.  |  |
|                                  | The government in December 2008 announced that it would raise taxes on gasoline and diesel as much as ninefold beginning in 2009.  |  |
| Lao People's Democratic Republic | Although the government controls fuel prices, it has been adjusting these generally in line with world oil price movements. Even so, the government in May 2008 placed ceilings on the dutiable price of petroleum imports, effectively providing tax relief on gasoline, diesel, and kerosene in June and July when international prices rose above those in May.                                   | IMF (International Monetary Fund). 2008. "Lao People's Democratic Republic: 2008 Article IV Consultation—Staff Report; Staff Supplement; Staff Statement; and Public Information Notice on the Executive Board Discussion." Country Report No. 08/350. Washington, DC: IMF.  |
| Cambodia                         | The government did not change the tax rates, but it froze the reference prices on which petroleum product taxes are based in 2004, significantly reducing tax collection. The finance minister said in May 2008 that the government expected to lose \$300 million that year in uncollected tax revenue from fuel imports.   | Phnom Penh Post. 2008. "PM Warns of More Gas Price Hikes." May 30.   |

|             |  |  |
|-------------|--|--|
| Vietnam     | The government was to move to a market-based mechanism in April 2007 but postponed against the backdrop of rising oil prices. According to statistics from its Ministry of Finance, fuel importers recorded a total loss of about D 14.5 trillion (\$879 million) in the first half of 2008. In 2007, the total loss was reportedly D 22 trillion. In July 2008, the Vietnam National Petroleum Corporation reported that the country's fuel marketers were forecast to lose D 100 billion (\$6 million) a day even after the sharp price increase earlier in the month. The Ministry of Finance announced in September 2008 that it would give fuel importers the right to set retail prices independently, noting that falling oil prices provided a timely opportunity to move to market-based pricing. A newly established committee would monitor oil product prices and approve requests for price changes submitted by importers. | Afx Asia. 2008. "Vietnam Allows Importers to Set Retail Fuel Prices." Sept. 16.<br><br>Thai News Service. 2008. "Vietnam: Government Dealers Fumble with Oil Prices." Aug. 28.<br><br>Vietnam News Service. 2008. "Petrol Firms Still Lose \$6.06 Mln a Day Despite Recent Price Hike." July 25. |
| Philippines | The government forged an agreement in 2003 with oil companies to offer a discount on the price of diesel sold to public transport companies. The government does not provide a subsidy for this purpose. The discount program has continued to this day, with the discount varying over time. For example, oil companies agreed to a discount of =1 per liter in February 2008.  | PIA (Philippine Information Agency). 2008. "Gov't Mulls P2 Subsidy for Transport Sector." May 7.   |

To have comprehensive mapping of policy response in East Asia we take a note from Worldbank resources that assesses near term policy responses to rising food for several East Asia countries as follows.

| No. | Country           | Economy wide policies |                                |                         |                                   |                              | Existing social protection programs |               |                   |                |
|-----|-------------------|-----------------------|--------------------------------|-------------------------|-----------------------------------|------------------------------|-------------------------------------|---------------|-------------------|----------------|
|     |                   | Reduce import tariffs | Export restrictions/export tax | Reduce food grain taxes | Price controls/consumer subsidies | Increase supply using stocks | Cash transfer                       | Food for work | Food ration/stamp | School feeding |
| 1   | Cambodia          |                       | X                              | X                       |                                   | X                            |                                     | X             |                   | X              |
| 2   | China             | X                     | X                              | X                       | X                                 | X                            | X                                   |               |                   | X              |
| 3   | Indonesia         | X                     | X                              | X                       | X                                 | X                            |                                     |               | X                 |                |
| 4   | Lao PDR           |                       |                                |                         |                                   |                              |                                     |               |                   |                |
| 5   | Malaysia          |                       |                                |                         | X                                 | X                            |                                     |               |                   |                |
| 6   | Philippines       |                       |                                |                         | X                                 | X                            |                                     |               |                   | X              |
| 7   | Thailand          |                       |                                |                         | X                                 |                              |                                     |               |                   |                |
| 8   | Vietnam           |                       | X                              |                         |                                   |                              |                                     |               |                   |                |
| 9   | Singapore         | Not Observed          |                                |                         |                                   |                              |                                     |               |                   |                |
| 10  | Myanmar           | Not Observed          |                                |                         |                                   |                              |                                     |               |                   |                |
| 11  | Republic of Korea | Not Observed          |                                |                         |                                   |                              |                                     |               |                   |                |
| 12  | Japan             | Not Observed          |                                |                         |                                   |                              |                                     |               |                   |                |
| 13  | Brunei Darussalam | Not Observed          |                                |                         |                                   |                              |                                     |               |                   |                |

Source: World Bank staff assessments.

**VIII.COMMODITY PRICE VOLATILITY IN INDONESIA**

**8.1 Research from Worldbank (2010)**

Commodities are very important for Indonesia’s economy. Their production makes up a significant share of the economy’s value added and exports, and of the stock market’s capitalization. Taxes and charges on this production provide a sizable share of the government’s revenue, and it is the source of much private wealth. And most consumers’ – especially poorer consumers’ – spending is on commodity-related products. (Worldbank, 2010)

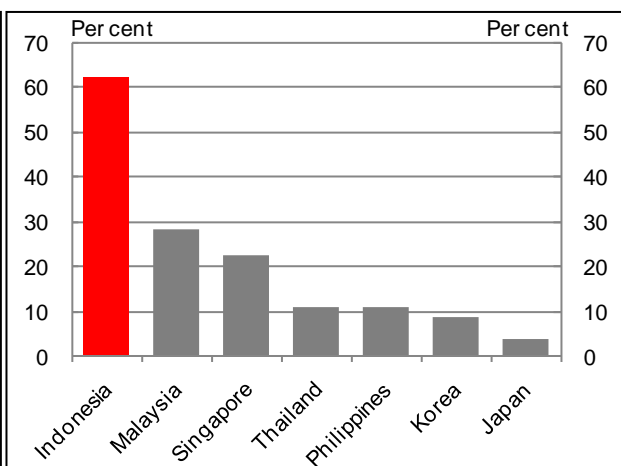
This importance, and commodities’ inherently tradable nature, exposes Indonesia’s economy to swings in global commodity prices. These swings are often large. Commodity prices are considered to be one of the most volatile prices on international markets, with movements greater than in key floating exchange rates or overall stock market indices. In one-third of 12 month periods between 1990 and early 2010 non-energy commodity prices moved by at least 15 percent, and energy commodity prices rose or fell at least 31 percent (standard deviations of the percentage change in the year average price were only a little smaller). (Worldbank, 2010).

Ten reasons why commodities matter for Indonesia’s economy

| Reasons   | Annual |
|---|--------|
| 1. Share of aggregate value added                     | 26%    |
| 2. Share of total exports                             | 63%    |
| 3. Share of GDP                                       | 14%    |
| 4. Share of total imports                             | 34%    |
| 5. Share of GDP                                       | 6%     |
| 6. CPI weight (raw foods, h/hold energy)              | 48%    |
| 7. Poverty Basket CPI                                 | 74%    |
| 8. Share of total Government revenues                 | 23%    |
| 9. Share of tax revenues                              | 8%     |
| 10. Market capitilisation of Commodity shares on IDX* | 18%    |

Source: Worldbank (2010)

Commodities’ share of exports in 2009 for several East Asia Countries



Source : Worldbank (2010)

Worldbank (2010) has made simulation about commodity price shocks to real economic activity. Commodity



price shocks has the largest impact on economy-wide prices, hence the level of nominal activity and government revenues, and on consumer prices. The impact on government spending is smaller than the impact on revenues. There is a generally positive response in real activity, even in the short timeframe of this analysis, and this response appears to be enough to more than offset the increase in the cost of living for poorer households, so reducing the poverty rate.

#### Commodity price shock Impacts on key economic and poverty indicators

|                       | 2010 |             |      |      | 2011 |             |      |      |
|-----------------------|------|-------------|------|------|------|-------------|------|------|
|                       | -15% | Baseline    | 15%  | 30%  | -15% | Baseline    | 15%  | 30%  |
| <b>Exports</b>        | 14.3 | <b>15.0</b> | 15.6 | 16.2 | 10.5 | <b>11.1</b> | 11.7 | 12.3 |
| <b>Imports</b>        | 18.7 | <b>18.3</b> | 17.9 | 17.5 | 11.9 | <b>11.6</b> | 11.4 | 11.1 |
| <b>Trade Balance</b>  | 14.3 | <b>14.2</b> | 13.6 | 13.2 | 16.7 | <b>13.2</b> | 9.1  | 5.2  |
| <b>GDP</b>            | 5.8  | <b>5.9</b>  | 6.0  | 6.1  | 6.1  | <b>6.2</b>  | 6.4  | 6.5  |
| <b>GDP Deflator</b>   | 9.3  | <b>9.3</b>  | 9.9  | 10.2 | 11.5 | <b>12.2</b> | 13.2 | 13.5 |
| <b>Nominal GDP</b>    | 15.7 | <b>15.9</b> | 16.5 | 16.9 | 18.3 | <b>19.2</b> | 20.4 | 21.0 |
| <b>CPI</b>            | 5.0  | <b>5.1</b>  | 5.3  | 5.5  | 6.0  | <b>6.3</b>  | 6.5  | 6.7  |
| <b>Core inflation</b> | 4.2  | <b>4.3</b>  | 4.5  | 4.7  | 5.8  | <b>6.0</b>  | 6.1  | 6.3  |
| <b>Poverty CPI</b>    | 6.5  | <b>6.8</b>  | 7.1  | 7.4  | 6.8  | <b>7.2</b>  | 7.5  | 7.8  |
| <b>Poverty rate</b>   | 13.2 | <b>13.0</b> | 12.9 | 12.8 | 12.4 | <b>12.2</b> | 12.0 | 11.8 |

Source: World Bank (2010)

GDP can be affected from movements in commodity prices directly and indirectly. The direct channels are through changes in production or investment owing to the changes in expected profits by firms. If the prices of commodities increase, this could induce higher productions and higher investment by commodity producing firms in order to capitalize on the higher prices. However, if commodities make up a high proportion of a firm's input costs, then an increase in commodity prices may raise the final price of the product and reduce demand, leading to a reduction value added. Industries that are mining-related increase production and exports, whereas industries with high commodity inputs, such as construction, may reduce production with the higher input costs. Overall even a full standard-deviation ('high' shock scenario) movement in commodity prices leads to a modest immediate increase in GDP growth, of 0.2 percentage points in the near term, and a little more in 2011, once production has had longer to respond to the new prices.

Indonesia's exports and imports are affected by changes in global commodity prices somewhat differently. Commodity exporters respond to an increase in prices by lifting production, increasing

the volume and value of exports. Some importers respond to higher commodity prices by reducing demand, resulting in lower volumes; others demand more inputs for the commodity-producing sectors and to supply the increase in consumer demand. Further, higher commodity prices drive up the overall value of Indonesia's imports.

A general increase across both energy and non-energy commodity prices, given the greater volatility of energy prices than non-energy prices, reduces Indonesia's terms of trade (the price of Indonesia's exports relative to the price of its imports), leading to a narrowing in the trade surplus. This is due to differing composition of Indonesia's exports and imports, and the impact of the greater movement in energy than non-energy prices under the scenarios. While commodities represent around two-thirds of Indonesia's exports, in the second half of the 2000s oil and gas exports made up less than 20 percent of the total. Meanwhile, non-energy commodities are a smaller share of total imports, but oil and gas imports are over 26 percent. Thus Indonesia's import prices are more sensitive to energy price volatility.

Consumer prices are affected by movements in commodity prices through several channels. Most directly, global food costs impact the 50 percent of the average household budget spent on food (two-thirds of poor households' budgets). Indonesian consumers are largely sheltered from price movements of energy prices because of the system of regulated retail energy prices. Deregulated industrial fuel prices, plus the indirect impacts of energy prices on substitutes, means they have a larger impact on the economy as measured by the GDP deflator. A full standard deviation commodity price shock would increase GDP deflator growth by 1 percentage point after a year.

A generalized shock to commodity prices has a range of offsetting consequences for poor households. Higher food prices reduce real incomes, except for the few poor households who are net producers. But wages may increase by more than the increase in living costs, especially for workers in sectors that benefit from the rise in commodity prices, particularly many agricultural industries. A half-standard deviation generalized increase in global commodity prices gives a small improvement in the poverty rate of 0.1 percentage points in 2010 and 0.2 percentage points in 2011, consistent with computable general equilibrium (CGE) analysis of the short-run effects of the

commodity price increases that occurred between 2005 and 2008.<sup>1</sup>

Overall, there is likely to be a substantive improvement to the budget balance given a positive shock to commodity prices. The gains to total government revenues are estimated to be greater than the increase in total government expenditure. The 15 or 30 percent positive shock to non-energy/energy commodity prices will likely contribute to a reduction of the budget deficit of around 0.2 percentage points in 2010 and 0.3 percentage points in 2011. *Thus positive shocks to commodity prices create fiscal space.*

**Changes to budget estimates** (budget deficit is expressed as a percentage of GDP)

|                           | 2010 |          |      |      | 2011  |          |      |      |
|---------------------------|------|----------|------|------|-------|----------|------|------|
|                           | -15  | Baseline | +15  | +30  | -15   | Baseline | +15  | +30  |
| Total revenue             | -2.8 | 0.0      | 3.3  | 6.7  | -4.1  | 0.0      | 5.2  | 9.9  |
| - Tax revenue             | -1.1 | 0.0      | 1.4  | 2.9  | -1.8  | 0.0      | 3.0  | 5.4  |
| - Non-tax revenue         | -7.5 | 0.0      | 8.9  | 17.5 | -11.1 | 0.0      | 12.0 | 23.7 |
| Expenditure               | -2.1 | 0.0      | 2.3  | 4.7  | -2.7  | 0.0      | 2.9  | 6.1  |
| Budget deficit (per cent) | -1.1 | -1.0     | -0.8 | -0.7 | -0.6  | -0.4     | -0.1 | 0.1  |

Source: World Bank estimates (2010)

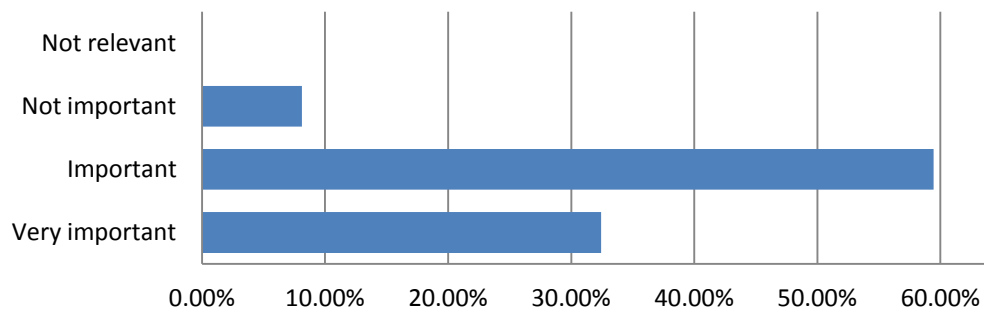
## 8.2 The Result of In Depth Interview

We have done in-depth interview with relevant stakeholder (government institutions, academics, expert, business sector, and also market player). We summarized the results as follows.

### The Importance of Commodity Price Volatility Issues

<sup>1</sup> World Bank (2010) "Boom, Bust and Up Again? Evolution, Drivers and Impact of Commodity Prices: Implications for Indonesia" Chapter 5 by Peter Warr, Rina Oktaviani, Enrique Aldaz-Carroll and Leonardo Iacovone.

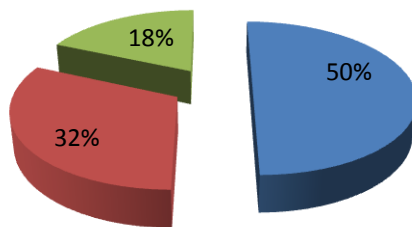
## The Opinion about International Commodity Price Issues



## The Factor that Caused International Commodity Price Volatility

### The main Causes International Commodity Price Volatility

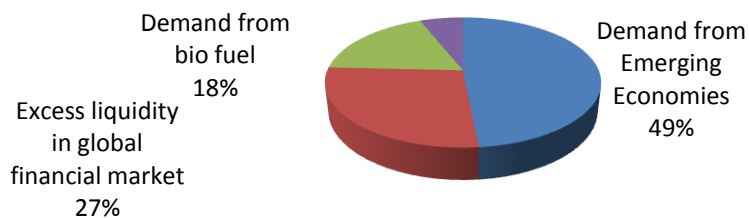
■ Demand Side ■ Supply Side ■ Speculation



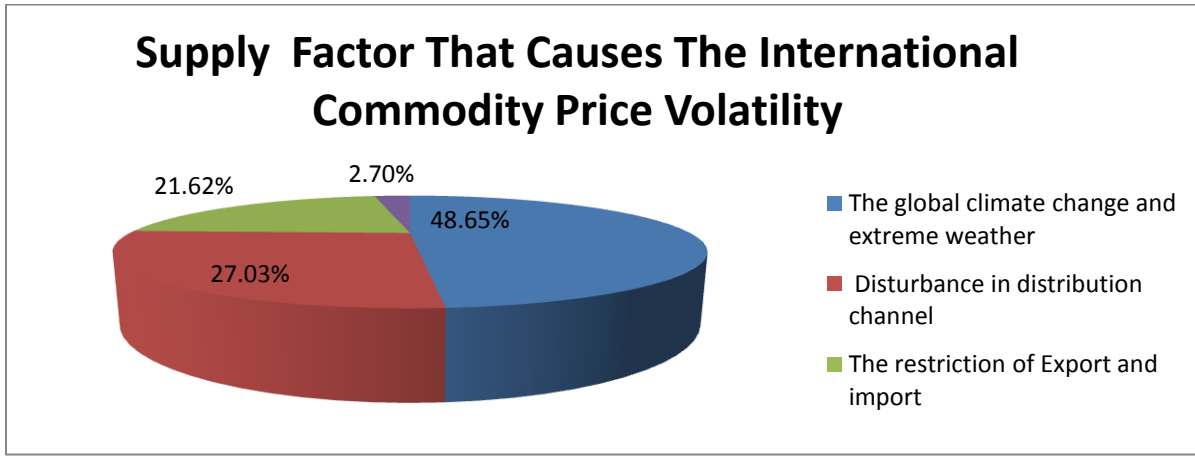
## Demand Factor

### Demand factor which is the most relevant factor that caused the movement of international commodity price volatility

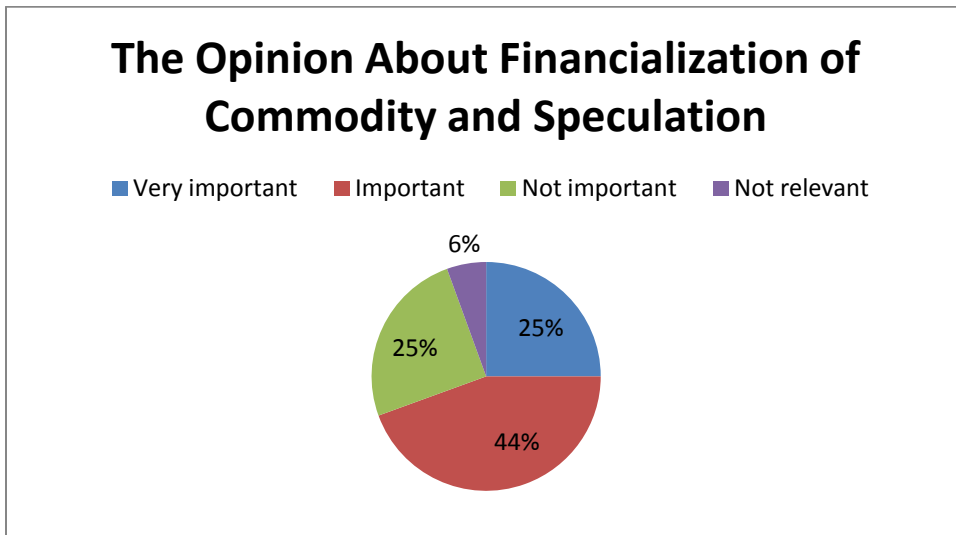
Other  
6%



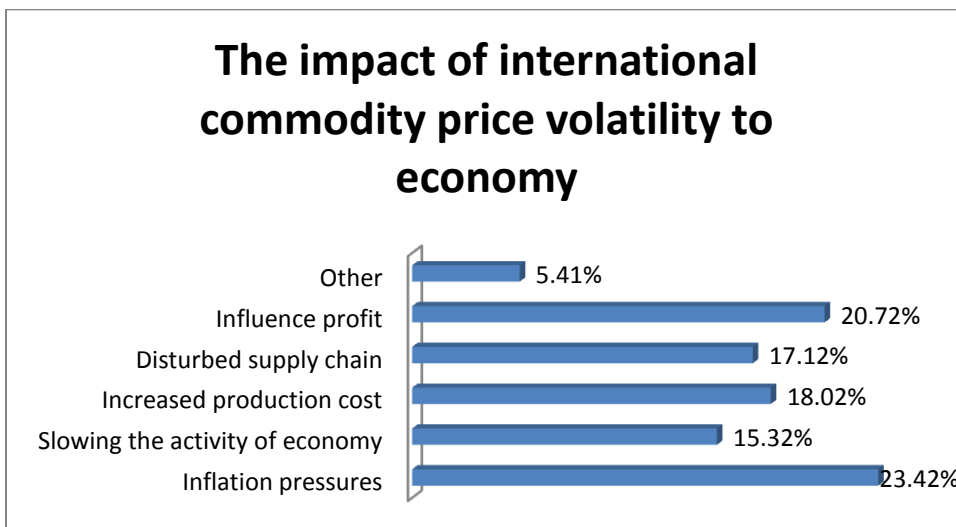
Supply Factor



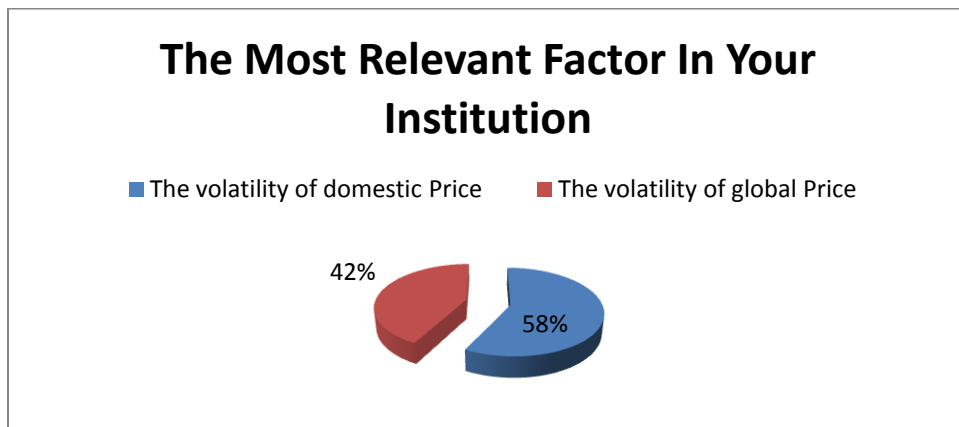
The Importance of Financialization of Commodity and Speculation



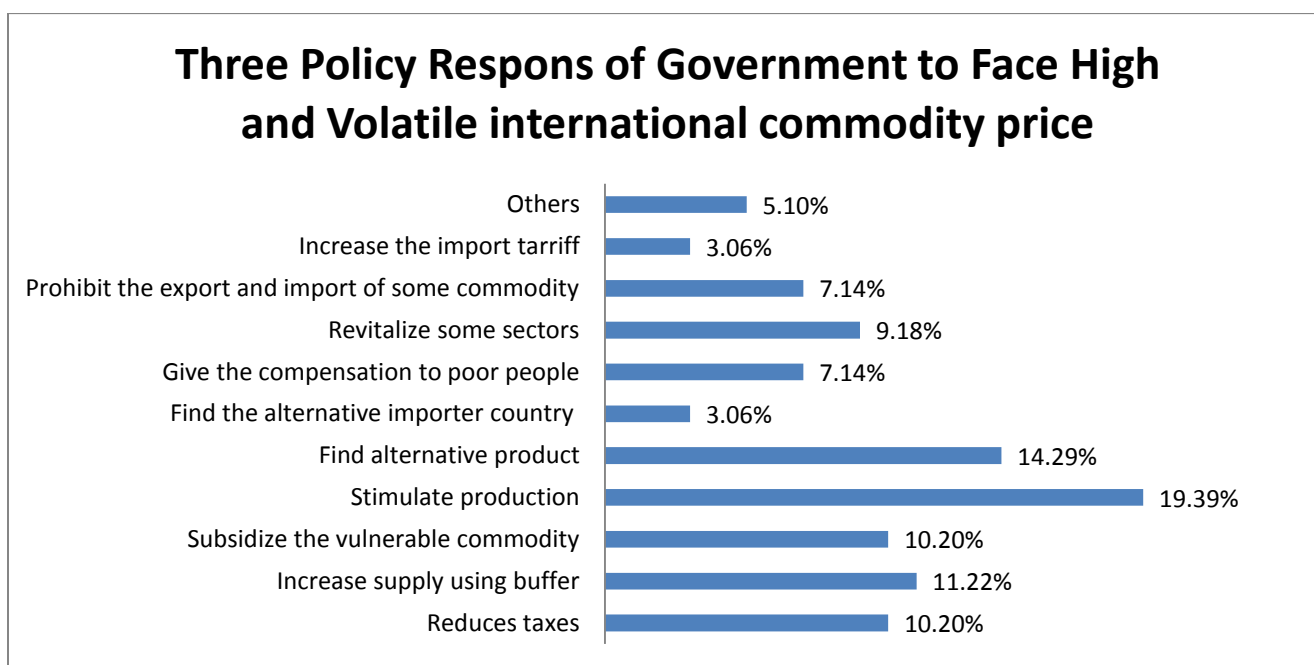
Impact of International Commodity Price Volatility to Economy



## Relative Importance of Local Price and Global Price



## Policy Response



The summary of in depth interview:

- Around sixty percent of respondents have the opinion that international commodity price issues are *important*, and around 30% of respondents said that it *is very important*.
- Fifty percent of respondents have the opinion that *demand side* is the main cause of international commodity price volatility. On the other hand, 32% of respondents said that supply side is the main cause. The remaining (18%), caused by speculation.
- Majority of respondents who choose demand factor that caused international commodity price volatility believe that it caused by demand from emerging markets (China and India). On the other hand, majority of respondents who choose supply factor believes that global climate change is a main cause of international commodity price volatility.
- Majority of respondents (65% of them), said that commodity financialization is *very important* and *important*.

## Recommendation summary from in-depth interview Results

There are several recommendations suggested from in-depth interview results. The recommendations are as follows:

1. East Asia needs to share information about commodity price
2. East Asia must tighten trade coordination and guarantee in price stabilization
3. East Asia suggested to have regional marketing coordination on several commodities that possible to cooperate
4. East Asia should cooperate in control supply chain and demand for commodities
5. East Asia should increase the stock of commodity that vulnerable to shocks
6. East Asia suggested to establish institutions that monitor the continuity and availability of commodity stocks
7. East Asia should actively engaged in handling the global warming problem

## **The summary result of Focus Group Discussion**

| Main Topic                       | Explanation  |
|----------------------------------|--|
| Agriculture                      | <ul style="list-style-type: none"> <li>- Since 1989, investment and research and development in agriculture fell in Indonesia. Even many of the damaged irrigation networks, approximately 46% and 26-27% slightly damaged severely damaged</li> <li>- During the last 20 years, there relegation soil fertility decline in Java</li> <li>- In 1982, ITB professors have established the basics of food diversification, but the execution fails, because               <ol style="list-style-type: none"> <li>1. Incorrect assessment of the success of the performance of the Department of Agriculture (which was assessed by the production of rice)</li> <li>2. Conditions five years, more profitable than land-for-food plantations</li> </ol> </li> </ul>  |
| Supply and Demand food commodity | <ul style="list-style-type: none"> <li>- There was a rise in demand of food commodities, caused by               <ol style="list-style-type: none"> <li>1. Population growth</li> <li>2. Tremendous economic growth in China and India</li> <li>3. In general there is added per capita income in some developing countries</li> </ol> </li> <li>- The increase in demand is not matched with supply. There are two things that become the bottleneck of supply               <ol style="list-style-type: none"> <li>1. The slow development of food production technologies that can improve productivity</li> <li>2. Conversion of paddy land but not followed by his successor clearing the same level of fertility</li> <li>3. Expansion of agricultural land not only for food commodities but also to find energy substitutes (biodiesel)</li> <li>4. Disturbances in the extreme weather changes that disrupt the production</li> </ol> </li> </ul> |
| Commodity Financialization       | <ul style="list-style-type: none"> <li>- In commodity futures trading, the trade object is not “a commodity” but “a commodity price index”.</li> <li>- A lot of speculators who play the futures trading and it is very difficult to perform the control of speculators is even a country cannot perform any control</li> <li>- Because many speculators who play the futures trading, causing people more concerned with futures prices rather than spot prices.</li> <li>- In the real sector, we need to concern about expectations of price not the</li> </ul>   |

|                       |   |
|-----------------------|---|
|                       | price itself, because the expectations will affect the price<br>- Since 2003, commodity traded as a financial asset<br>-  |
| Macroeconomics Issues | - Each country has different interests of the commodity, because it's very difficult to make cross-country policy<br>- The rupiah exchange rate has a correlation with oil prices, therefore it must be observed volatility in world oil prices<br>- Each country should mapping whether they are net consumer or net producer of commodity, so they could measure the impact of commodity price increase/commodity price volatility<br>- |

### IX.INDONESIAN LOCAL PRICE INTEGRATION WITH THE WORLD MARKET

To find the answer for the question of how integrated between Indonesia local price and world price we did co-integration test for some commodities. We use simple Engle and Granger co-integration test . The result is summarized in the table below.

| Commodity                  | t-stat value | Probability Value |
|----------------------------|--------------|-------------------|
| 1. Rubber                  |              |                   |
| 1.1 Indonesia and Malaysia | -26.79690*   | 0.00              |
| 1.2 Indonesia and Thailand | -23.68616*   | 0.00              |
| 1.3 Indonesia and India    | -29.78847*   | 0.00              |
|                            |              |                   |
| 2. Oil                     |              |                   |
| ICP and WTI                | -12.39468*   | 0.00              |
|                            |              |                   |
| 3. Rice                    |              |                   |
| Indonesia and Thailand     | -6.636807*   | 0.00              |

The test showed that probability values for all commodities tested are less than 5%. It is means that there is co-integration between Indonesian local price and world price. In other words, there was strong linkage between global and domestic price in the long run .



## X.IMPACT OF COMMODITY PRICE TO INFLATION AND ECONOMIC GROWTH IN EAST ASIA COUNTRIES

### Panel Regression Results on Impact of Commodity Price to Economic Growth

Dependent Variable: LOG(GDP?)

Method: Pooled Least Squares

Date: 03/13/12 Time: 20:56

Sample (adjusted): 2000 2009

Included observations: 10 after adjustments

Cross-sections included: 9

Total pool (unbalanced) observations: 88

| Variable              | Coefficient | Std. Error | t-Statistic | Prob.  |
|-----------------------|-------------|------------|-------------|--------|
| C                     | 8.434487    | 2.850044   | 2.959423    | 0.0041 |
| LOG(WPIALL?)          | 0.146336    | 0.025394   | 5.762613    | 0.0000 |
| LOG(LABORFORCE?)      | 0.244429    | 0.186576   | 1.310076    | 0.1941 |
| LOG(GCFC?)            | 0.523919    | 0.048128   | 10.88604    | 0.0000 |
| Fixed Effects (Cross) |             |            |             |        |
| _IND--C               | -0.414769   |            |             |        |
| _MALYS--C             | -0.159934   |            |             |        |
| _PHILL--C             | -0.444395   |            |             |        |
| _THAI--C              | -0.347391   |            |             |        |
| _SING--C              | 0.163770    |            |             |        |
| _BRUN--C              | -0.275843   |            |             |        |
| _JAP--C               | 1.184352    |            |             |        |
| _CHIN--C              | -0.129705   |            |             |        |
| _KOR--C               | 0.368746    |            |             |        |

Effects Specification

Cross-section fixed (dummy variables)

|                    |          |                       |           |
|--------------------|----------|-----------------------|-----------|
| R-squared          | 0.999265 | Mean dependent var    | 26.22488  |
| Adjusted R-squared | 0.999158 | S.D. dependent var    | 1.759969  |
| S.E. of regression | 0.051061 | Akaike info criterion | -2.985472 |
| Sum squared resid  | 0.198148 | Schwarz criterion     | -2.647654 |
| Log likelihood     | 143.3608 | Hannan-Quinn criter.  | -2.849374 |
| F-statistic        | 9389.456 | Durbin-Watson stat    | 0.859513  |
| Prob(F-statistic)  | 0.000000 |                       |           |

This chapter contains the results of econometric analysis of Panel Data Method. The analysis will explain some factor which is significant to be determined in the model. The length of yearly data is from 2000 until 2010. The sample of countries are Indonesia, Malaysia, Philippine, Singapore, Thailand, Brunei, Japan, China and Korea. There are two main dependent variable on the model, such as : GDP Growth and inflation.

#### A. Model of GDP Growth

In this model, dependent variable is GDP and independent variables are WPI index (world price index), labor force, and gross fixed capital formation. The chosen independent variable comes from some alternative independent variable. The sources of data are from World Bank and CEIC.

#### Analysis of Model

Based on the econometric method above, WPI in log form ( world price index) or commodity price index in log form and gross fixed capital formation are statistically significant to GDP growth. Both variables have positive sign.

For WPI index, the positive sign shows that higher WPI results higher GDP. WPI index has correlation with inflation. Because it is panel regression, the result measures average impact for observed countries.

For gross fixed capital formation, the positive sign shows that higher GFCF results higher GDP Growth. On the theory, higher labor force encourages higher economic activity. So, it can increase GDP Growth. On the other hand, the coefficient of labor force shows statistically insignificance result.

The coefficient of each country is generally positive coefficient of intercept. The Highest intercept of GDP Growth is in Thailand and the lowest intercept of GDP growth is in Japan. Surprisingly, coefficient in China shows negative sign.

#### Panel Regression Results on Impact of Commodity Price to Inflation

Dependent Variable: INFL?  
Method: Pooled Least Squares

Date: 03/13/12 Time: 20:38  
Sample (adjusted): 2001 2010  
Included observations: 10 after adjustments  
Cross-sections included: 9  
Total pool (unbalanced) observations: 89

| Variable              | Coefficient | Std. Error | t-Statistic | Prob.  |
|-----------------------|-------------|------------|-------------|--------|
| C                     | 2.021934    | 0.389526   | 5.190755    | 0.0000 |
| MONEYGROWTH?          | 0.038686    | 0.035956   | 1.075925    | 0.2853 |
| RATECHNGEEXCHRATE?    | 0.091202    | 0.049495   | 1.842648    | 0.0692 |
| GROWTHWPIALL?         | 0.057551    | 0.011282   | 5.101279    | 0.0000 |
| Fixed Effects (Cross) |             |            |             |        |
| _IND--C               | 5.732339    |            |             |        |
| _MALYS--C             | -0.728856   |            |             |        |
| _PHILL--C             | 2.130162    |            |             |        |
| _THAI--C              | -0.227450   |            |             |        |
| _SING--C              | -1.269670   |            |             |        |
| _BRUN--C              | -2.064368   |            |             |        |
| _JAP--C               | -2.802202   |            |             |        |
| _CHIN--C              | -1.137902   |            |             |        |
| _KOR--C               | 0.161510    |            |             |        |

#### Effects Specification

Cross-section fixed (dummy variables)

|                    |           |                       |          |
|--------------------|-----------|-----------------------|----------|
| R-squared          | 0.759657  | Mean dependent var    | 2.945404 |
| Adjusted R-squared | 0.725322  | S.D. dependent var    | 3.187108 |
| S.E. of regression | 1.670355  | Akaike info criterion | 3.988781 |
| Sum squared resid  | 214.8365  | Schwarz criterion     | 4.324327 |
| Log likelihood     | -165.5007 | Hannan-Quinn criter.  | 4.124030 |
| F-statistic        | 22.12502  | Durbin-Watson stat    | 1.767871 |
| Prob(F-statistic)  | 0.000000  |                       |          |

## B. Model of Inflation

In this model, dependent variable is inflation and independent variables are WPI index (world price index) in rate of change, money growth and exchange rate in rate of change. Just like the chosen independent variable before, these variable comes from some alternative independent variable. The sources of data are from World Bank and CEIC.

## **Analysis of Model**

Based on econometric method above, WPI (world price index) or commodity price index in rate of change and rate of exchange rate change are two factors that statistically significant. WPI index (in rate of change) shows positive impact to inflation. The sign shows the right path of economic theory.

For WPI index, the positive sign shows that higher WPI results higher inflation. When WPI is high, it can push price to the higher level. At the end, it results higher inflation.

For the coefficient of each countries/individual intercept, there are variation sign coefficients of intercept in each country. The positive sign are in Indonesia, Philippine and Korea and the negative sign are in Malaysia, Thailand, Singapore, Brunei, Japan and China. For the positive sign, Indonesia is the highest and for negative sign, Japan is the lowest.

## **XI.COMMODITY FINANCIALIZATION**

### **The History of International Commodity Futures Trading**

Commodity Futures Trading has been recognized in the end of the 11th century with the development of commerce in Europe. And in the early 12th century, there were two largest trade centres in Europe which grown rapidly and became a role model for other areas namely several cities in the northern region of Italy which are Venice, Florence, Genoa, Pisa and Milan, as well as the Northern European region or Flanders (Netherlands and Belgium).

Since the era when Roman Empire still in power, both of the trade centres already existed and well known as a clothing trade centre that had trade connections/relations with the United Kingdom who was a yarn wool producers in Europe at that time. Goods traded at that time were natural silk, spices, precious metals and fragrances. The increasing number of trading also occurred between those two trading centres, besides the trading that conducted by Asians who came in and joined the trade with the two cities.

Trading also took place between Italian merchants from the cities of Northern Italy with merchants in Flanders that transported overland and passed through a fairly crowded town in Northern France named Champagne. Since the distance for overland journeys between the Italian cities and Vlaanderen were far enough back then, merchants from both cities often rested, deposited and kept their merchandises in Champagne before being taken to destination cities in Italy and Flanders.

Looking at this situation, a Prince from Champagne took initiative to build a new commercial centre in Champagne by providing varieties of means including the storage. Then in 1114, The Duke (Prince of Champagne) inaugurated a trading

centre in Champagne that accommodates a wide range of trading activity and charges a fee or tax or commission based on means and infrastructure used by traders. Once widely known, commerce in Champagne evolved into one of the major trading centre in Europe, where traffickers not only came from Italy and Flanders but also came from the Scandinavian countries, United Kingdom, even from Russia. Rapid development of commerce in Champagne is inseparable from the tight regulation protection by the authorities, not only a mean of secure exchange tools but also the availability of the warehouse for goods storage.

Trading centre in Champagne took place every year; it began with the supply and demand of some raw materials and processed goods already well known among traders. Regularly, traders used the last few days of this occasion to pay receipt notes and exchange them with desired goods. The growing trading centre also attracted the traders' attention from various regions; different cultures frequently triggered the conflicts among traders. To manage or mitigate the disputes, a deal was made between the traders and assisted by the authorities, poured in commercial law rules which is called Merchant Law. Explanation about the contract, the settlement period, determination of how to do the goods sampling, supervision, list of questions about the goods quality, and places for goods delivery had been arranged in the Merchant Law. Trading centre in Champagne already used trading contract and delivery of goods is done later. The contract is known as *lettre de faire*. Publication of *lettre de faire* associated with buying and selling commodities in cash based on certain quality specifications and the delivery date that has been set at the time of publication.

The use of *lettre de faire* was very satisfying because traders did not have to carry all of their merchandise; however they required to bring the samples to be offered in the Champagne trading centre. The success of this trading centre is followed by other regions such as Brussels and Amsterdam. In 1570, London England also opened a trading centre named Royal Exchange or better known as London Commodity Exchange. Follow the times and civilization, in the early 19th century, commodity exchange changed into a more orderly and efficient. For the first time, Modern Futures Exchange was born in Chicago in 1848 named Chicago Board of Trade (CBOT), founded by 82 commodity traders. Trading on the Chicago Board of Trade (CBOT) has a standard control system and quality test that determined by the Exchange. Modern Futures Contract firstly traded in 1851 exactly three years after the founding of Chicago Board of Trade (CBOT). Rapid development of trading on the Chicago Board of Trade (CBOT) triggered the emergence of exchanges in other cities. New York Produce Exchange and New York Cotton Exchange were founded in 1870, followed by New Orleans Cotton Exchange and many more in America. After the Second World War with more advanced technology, various futures exchange also sprung up in the world.

### **The Development of The Commodity Exchange of Crude Palm Oil (CPO)**

Since CPO is used as raw material of biodiesel, the development of CPO price is determined by many factors including the crude oil price. The price is more difficult to predict, uncertainty of producers income including palm oil farmers is

increasing. Price uncertainty pushed the producers and consumers seek a way to ensure future prices. The common way is a forward contract or agreement to sell (buy) a specified quantity and price in the future. Forward contract is one of futures transaction (futures trading) instruments with the contract terms (price, quantity, time and place of delivery) that determined bilaterally (sellers and buyers) at a price that is known only to the parties involved. Each contract describes the volume and delivery requirements specifically and generally closed with physical delivery. Cancellation of the contract can be made through direct agreement between the parties involved.

CPO futures transaction can also be done with futures contracts, options and swaps. However, options and swaps are rarely used in CPO transaction. Essentially, futures contract is a forward contract with a standard specification. Volume of CPO per contract, quality and place of delivery are the same. For example, the volume of CPO futures contract on Bursa Malaysia is 25 metric tons per contract with a specific quality and place of delivery. These futures contract can be traded on commodity exchange since it is in standard form. On Bursa Malaysia for example, CPO futures contract (FCPO) has been traded since 1980.

Market price in Rotterdam is often chosen by market participants as a reference in the transaction because Rotterdam is considered as the world's largest CPO spot market. The price in Rotterdam harbour spot market can be used as a benchmark for estimating the fairness of CPO transaction price.

### **The Development of Commodity Exchange of Coal**

Coal is the cheapest energy sources and environmentally friendly. In addition, coal is the substitute energy after petroleum. In international trade, Indonesia is the second exporting countries after China. But in terms of production, Indonesia comes out fifth after United States, India and Australia.

As with CPO, coal is also traded through futures contracts in standard contract form to buy or sell the coal with the quality, type, place, and time of delivery at a later date that has been set. The main benefit of coal futures market is as a solution to determine price when delivery in the future. Some of the futures exchanges that trade coal in foreign countries are New York Mercantile Exchange (NYMEX), Central Appalachian Coal Futures (2001), European Energy Exchange (EEX), ARA Coal Futures and Richards Bay Coal Futures (2006), ICE: European Coal Futures (AP12-based), South African Coal Futures (based AP14) (2006), Newcastle futures (2008), Australian Securities Exchange (ASX) and Newcastle futures (2009).

The emergence of coal futures markets in United States stimulated by the electric producers' tendency in the short-term contracts at a price that is more flexible to reduce inventory levels. While in Europe, increasing credit risk and counter

party at the time of crisis in 2008 caused many of trading outside the exchange without clearing house to guarantee transaction experienced failures. On the other hand, the liberalization and deregulation of electricity markets were happened. In Australia, it was due to the existence futures contract with delivery settlement and to attract traders from Japan.

Uncertainty faced by the coal producers are price and profit margin. While the uncertainty faced by coal consumers is the supply continuity in accordance with the expected quality and quantity. Sustainability of the production process of coal purchase contract is a business to business contract; long term relationship value is higher than the short-term relationship involving investments specifically in the relation between buyers and sellers. Transportation is an important aspect in determining price and availability.

### **The Development of Rubber Commodity Exchange**

Indonesia and the other two countries namely Malaysia and Thailand have agreed to form regional rubber commodity market. The idea of a regional rubber commodity market is that the three countries control 70% of world rubber production. However, the size of total production did not make their market as a benchmark of rubber trading price. All this time, rubber price information refers to Japan futures price.

For the purpose of creating a regional rubber market, International Tripartite Rubber Council (ITRC) has conducted the discussion twice. The first meeting was in July, then in Thailand and last August in Malaysia. Indonesia will be the host of next meeting and it will be held in Bali in December 2011.

The two previous meeting concluded the ideas of two forms regional rubber market. The first idea is to form the rubber commodity futures market in each country by trading rubber futures contract with the same specification and using dollar currency. The second idea is the physical commodity rubber market.

However, the rubber futures market is more likely chosen by Indonesia because it is more efficient and effective; compared to the physical market which requires an adequate warehouse infrastructure. But if through futures exchange, buyers only need to decide the place of delivery from those three countries.

Resistance from world trade zone have not showed any reaction about this plan and probably will not do any boycott. The establishment of three rubber commodity futures market in the country can not be accused of cartel because the physic is not controlled but only the price information is traded. Currently, the agency that controls the price and rubber

supply in the three countries is IRCO. If there is a rubber commodity futures trading in these countries, then the agency shall be dissolved.

### **The Development Of Petroleum Commodity Exchange**

Brent crude oil where produced in the United Kingdom North Sea and West Texas Intermediate (WTI) in the desert of the United States became a reference in the global oil sales for several years. Ironically, even though the production level of both companies has declined, most of the world's oil producers prefer to use this pattern instead of setting their own prices. Companies could buy oil in several ways; on the basis of long term contracts with oil producing countries on the spot market (cash), or place a physical order by purchasing contract at a major securities market named New York Mercantile Exchange.

By far the most active oil market in the world is Nymex and Brothers which are based in London and smaller markets named International Petroleum Exchange (IPE). A futures contract allows the company to buy or sell oil at a special price for delivery in the future. WTI is one of the sellers of light crude oil. While Nymex is the market for sweet crude (mix of various levels of light, medium and heavy) this also receives futures contract for gasoline, heating oil and natural gas. Combination of these commodities are called petroleum complex. Brent crude oil, gasoil (used to warm the house) and natural gas traded on IPE. As an open market with many potential buyers and sellers are competing for the best price, these exchanges effectively find and set a competitive price.

### **The Development Of Gold Commodity Exchange**

The London Bullion Market Association (LBMA) is a wholesale market for the trading of gold and its derivatives (Gold Investment, Gold Bars, Gold Certification, Gold Price Trends, International Gold Market, etc.). LBMA indirectly refers to the international gold market located in London. London Gold Market is the global market reference in determining benchmark of gold market price almost in every country (including the Islamic Dinar Dirham price). In addition, there is a number of other gold trading exchanges such as New York (COMEX), Zurich, Hong Kong (ACCESS), including Indonesia.

The origin idea of determining London gold market price as a global reference of gold transaction initiated by five members of gold market in London who agreed a fixed price of gold is in the morning when the market opens. They estimate today's supply and demand of gold. They also set a benchmark price which they believe would be in accordance with the purchases and sales that continuously happened that day between mining companies, dealers and traders of gold bullion, central banks, commercial banks that are internationally based, and commercial brokerage.



London market represents the trade and settlement basis of international gold and silver in London. The implementation of this market is under the auspices of London Bullion Market Association (LBMA). In London, gold and silver are traded by members of the London Bullion Market Association (LBMA), supervised by Bank of England. Most of its members are international banks or bullion dealers and a number of giant refiners.

The world's largest physical gold markets (spot gold) are London and Zurich, but London is the most prominent. London grew and dominated the gold market when gold became the major currencies. Mid 19th century was a defining moment for Britain to dominate the world trade and finances as a source of capital for gold mining, and became the gold standard of local currency, British pound. Therefore London became the centre of world gold trading and settlement.

In today's global financial markets, gold trading in London held almost all the time around the world. Bid and ask prices set continuously in the financial market information systems that could be accessed from Reuters for example. Apart from London, other major trading centre for gold as already mentioned above is New York, Zurich, Tokyo, Sydney and Hong Kong, where Hong Kong is a trading centre in Asia.

Price setting at the time (on spot) or future sales (forward) is determined by the 'Team Five' which represents the gold dealers, the most influential and largest banks in the world. They are NM Rothschild (as head of the team), Societe General, Hong Kong Shanghai Bank - HSBC, Scotia Mocatta, and Deutsche Bank, who set the two prices everyday. The first price is called AM (morning at 10.30 London time) and the second price PM is set during the day. The team meet in the NM Rothschild office where all the dealers are doing transactions under the direction of the London Code.

### **11.1 History of Commodity Market in Indonesia**

The long journey begins with the founding of the Futures Exchange facilitation to meet the need for hedging, but it also encouraged efforts to prevent similar guise Futures Exchange, which is actually a disguised gambling (casinos). For that, beginning in 1977, the government took some measures, namely:

1. Prohibit channeling overseas mandate (instruksi Memperdag No. 03/M/INS/VI/77) dan
2. Establish BAPPEBTI (Badan Pengawas Perdagangan Berjangka Komoditi) serta PT Kliring dan Jaminan Bursa Komoditi (PP No. 35 tahun 1982).

In 1991, the government started throwing the idea by offering commodity trading on exchanges in various associations. There are three associations that are willing, that is AEKI, GAMMI and GAPKI. This step is followed by the formation of small team based decision No. BAPPEBTI. 07/BAPPEBTI/KP/X/1991 who started work in August 1991. Team

members are representatives of FAMNI (AIMMI and GAPKI) and GAPKI) and AEKI that collect money for the financing of feasibility studies, business plans and market discipline design by consultants from Australia and Malaysia.

Undang-undang No. 32 tahun 1997 concerning the Commodity Futures finally out in the middle of the economic crisis that was peaked. The Act clearly states:

1. Did not rule out the existence of more than 1 (one) stock (no monopoly).
2. Prohibiting affiliated founder
3. Prohibit shareholder owns or controls more than 1 (one) share.
4. New shareholders (other than the founders) should be a broker.
5. Require independent directors and professionals.
6. Require at least 1 (one) commissioner representing the public.

Once there is no any developments during 1998 and the controversy about the government's ban on oil exports, finally out PP. 9 in 1999 on the Implementation of the Commodity Futures Trading on January 27, 1999. Through the work quickly and recruitment of prospective founders, then on August 19, 1999, the Association of Indonesian Coffee Exporters (AEKI) and the Federation of Vegetable Oils and Fats Association of Indonesia (FAMNI) has gathered 29 companies unaffiliated with diverse industries (coffee, oil, finance , and trade).

Finally on July 11, 2000, PT Jakarta Futures Exchange handed the letter requesting a business license to BAPPEBTI Futures Exchange. Stock futures business license administration finally officially released by BAPPEBTI to PT Jakarta Futures Exchange on November 21, 2000 through Decree Number 02/BAPPEBTI/SI/XI/2000. Prime trading at PT Jakarta Futures Exchange began on December 15, 2000 with two commodities, namely coffee Robusta and Olein.

### Mechanism

Manufacturers, processors, traders, exporters and consumers use futures contracts as a means to protect themselves from the risk of price fluctuations due to its seasonality (seasonal) and easily damaged (perishable). Each of the turmoil in the supply / demand for agricultural commodities is quickly affect commodity prices. For Indonesia's business world, including both large manufacturers or small groups of farmers, must be able to find, explore, and improve risk management activities to protect them from risks that can harm them.

Promising futures markets income stability for producers because commodity prices are predictable and the "key" as well. In addition to the "Hedger", ie that use futures contracts to reduce the risk, otherwise there is the part of the so-called "investors / speculators" are those who want to make a profit from price fluctuations. Investors or speculators usually buy a futures contract at a low price and sell it when prices go up, or otherwise sell the futures

contract at the price expected to be down and buy it back at lower prices.

In Futures Trading systems of the speculator can be viewed as participants are willing to accept risk is transferred from the Hedger. They traded commodity futures purely for speculation profit only.

### Perpetrators

The involvement of actors in the trading of commodity futures exchanges include manufacturers; processors; merchants and consumers. In addition there is the term "Hedger" ie that use futures contracts to reduce risk, and "investors / speculators" are those who want to make a profit from price fluctuations. There are two kinds of speculators, namely:

1. Institutional investor, such as Bank
2. Investor ritel, yakni perorangan pada umumnya.

### The Barriers

The long journey for 12 years since the enactment of Law Number 32 Year 1997 on December 15, 1997, has made the industry grow Commodity Futures Trading in Indonesia.

However, we must realize that the primary commodities futures trading in Indonesia has not developed properly in accordance with the objectives expected from the existence of Law Number 32 of 1997. This can be seen from the still at least a primary commodity contracts traded on the Futures Exchange, where currently there are only two (2) commodities namely Gold Olein and its derivatives with the development of concern because only donate 2 (two) percent of the total transaction volume of futures trading.

Therefore, in order to support the liquidity of primary commodities futures trading in the Futures Exchange and Futures Exchange's role as a means of hedging and price formation, Indonesia must continue to learn from the success of other overseas exchanges in shaping a fair and transparent prices and simultaneously able to predict prices in the future. As a major world producer and exporter for primary commodities such as palm oil, Coffee, Cocoa, Rubber, and Coal, Indonesia should be able to become a country of reference in setting commodity prices in international markets.

### The advantages and disadvantages

According to the sources mentioned that the benefits Bappebti Indonesian Commodity Exchange formed by the government since 1986:

1. Managing Risk

One characteristic of the goods traded commodity is the commodity price volatility is often experienced. Coffee is one of the agricultural commodities that have these properties, so as to maintain continuity of effort it would require price risk management instruments that efficiently is by using the instruments of forward contracts, futures contracts, options, swaps and bond markets in the scheme. The instrument is commonly used futures contracts. Futures contract is a legally binding agreement the two parties to buy and sell commodities in quantity, quality, type, and certain places that have been set. While the time of delivery at a later date. Fluctuations in commodity prices due to changes in economic conditions make the perpetrators of these exchanges do hedging mechanisms with the aim of protecting the assets and / or obligations so that their positions remain in the condition of Break Event Point (BEP).

## 2. Facilities Establishment of Prices

During the Indonesian Commodity Exchange has not formed, the selling price of goods refers to the coffee commodity exchanges that exist abroad. But once formed Commodity Exchange Indonesia Indonesia is expected to be price makers in the global commodity trade coffee. Determination of coffee prices in the stock market information must also consider the physical trade.

## 3. Market Efficient

Size of market efficiency in commodity exchange is the small difference between bid and offer prices of the commodity coffee traded on the stock. In addition to this, fast and easy execution of transactions in the stock market is also a measure of efficiency.

## 4. Market Information

Market information needed commodity futures traders, among others, information about pricing, production, consumption, trade volume and also estimate (expectation) of the coffee market exchange-traded commodity, so it can make the exchanges more transparent and competitive. The more information known to man, will make them able to anticipate the establishment of coffee prices in the market.

## 5. Hedge

Basically, the primary commodity prices often fluctuate due to its dependence on factors difficult to control such disorders seasons, natural disasters, and others. With hedging activity using futures contracts, they can reduce the smallest possible impact (risk) resulting from these price fluctuations.

Agricultural commodities including coffee became one of the subject of futures contract traded on the Exchange. Any commodity contract traded on the Stock Exchange, the specifications are clearly defined; regarding the amount, quality, and delivery time. Thus, the users / Exchange users can easily perform the transaction, so it will manifest an active and liquid market. The producers and consumers use futures contracts as a means to protect themselves from the risk of price fluctuations. Promising futures markets income stability for producers, because commodity prices are predictable and the "key" as well.

By utilizing the Futures, a coffee producer can sell the new coffee will they harvest a few months later, at a price that has been confirmed or "locked" now (before harvest). As such, they can gain assurance that the price is not affected by the increase / decrease in coffee prices in the physical market (cash). Benefits of the coffee commodity exchanges can also be obtained by other parties such as the exporters who have to purchase the commodity coffee in the future, when fulfilling contracts with overseas buyers. Or processing which must make the purchase of coffee on an ongoing basis.

## 6. Formation Price

As a means of forming a transparent and reasonable prices, which reflect the actual supply and demand of the commodities traded coffee. It is possible, because the transaction is only done by / through the exchange members, representing the client or himself. That is, between buyers and sellers of futures contracts do not know each other / direct knowledge. Stock prices that occurred in the generally used as the reference price (reference price) by the business community, including farmers and producers / small entrepreneurs, to make transaction in the physical market.

The margin has been determined valid for a period of time, and can be changed according to circumstances and conditions. In addition there is a commission fee charged by the Broker, which set the minimum amount of Stock on the approval of the Commodity Futures Trading Supervisory Agency (BAPPEBTI).

## Forward and Future Contracts

The behavior of commodity prices, an issue that has received considerable attention from academics, is also a major concern for producers and consumers. Indeed, many producer countries depend on revenue from commodity exports to support their industrialization, whereas consumer countries depend on imports of raw materials to fuel their growth.

Commodities in the commodity exchanges have characteristics different from other financial assets, because the commodity is produced and consumed always continue, so interesting asset classification for commodities (within the scope of production and consumption) do not have to "match" each other in the same period as the commodity can stored as inventory.

Commodity markets is a dynamic market, because prices there will always change associated with the

influence that reflected by changes in supply demand. Success in futures market hedging depends on the ability to anticipate and analyze the basis of relations (futures price - cash price), the identification and understanding of the mechanisms that influence this relationship will help the market players in deciding the marketing strategy and production. A better understanding in understanding the basis of relations would help decision-makers (policy makers) in evaluating the performance of the market by identifying the movement of prices is not worth / need.

Basically the market participant in the commodity futures exchanges, such as manufacturers, distributors and speculators, have a high risk consequences in predicting future prices of commodities (futures market), because the profits from the market price is formed in the future will be determined by the ability to predict price spot on a certain date in the future. Any deviation that occurs from prediction at the right price will allow the player to take a short or long position in order to take advantage of any mispricing happened.

Forward contract is an agreement between two parties to sell and buy a commodity to be transmitted at any given time in the future at prices agreed upon at the moment. Forward contracts are not standardized and not traded on the exchange organization.

In principle, the futures contract is not much different from the forward contracts, especially in relation to hedging risk, but the fundamental difference that occurs is a forward contract is a bilateral agreement between two business entities or individuals named counterparties to the contract, whereas futures contracts are contracts that have a standardized containing information the quality, quantity, delivery time and location for each commodity and are traded in futures exchange or clearing house which is the counterparty for buyers and sellers as well as providing performance guarantees in a contract made.

There are three types of traders participating in the futures contract are hedgers, speculators and arbitrageurs. Hedgers try to protect themselves against the risks it will face and do not try to increase profits in the future potential. Speculators are attracted to the expected price level overtime, where they do not use or intend to have a commodity result of a deal. Motivation there is to make profit in the future. Arbitrageurs are in business to profit from price discrepancies that occur between the two different markets. They try to minimize the risk by entering into two or more different market

Futures are standardized financial contracts traded in a futures exchange. A futures contract is an agreement to buy or sell a certain quantity of an underlying asset at a certain time in the future at a predetermined price.

When futures contracts are traded, there isn't necessarily an actual delivery of goods. The trader only speculates on the future direction of the price of the underlying asset, which may be a commodity, foreign exchange, bonds, money market instruments, equity or any other item. The terms "buy" and "sell" only indicate the direction the trader expects future prices to take, i.e. he would buy it if he expects the price of the underlying asset to rise in the future and sell if he expects it to fall. Futures contracts are usually closed

by making an opposite transaction, i.e. the buyer of the contract sells it before the expiration date.

The price at which the contract is traded in the futures market is called the futures price. Futures contracts have one-month, two-month and three-month expiry cycles, and they usually expire on the last Thursday of the respective month. There are two systems that may be followed in the settlement of futures contracts:

- **Futures Rolling Settlement:** At the end of each day, all outstanding trades are settled, i.e. the buyer makes payments for securities purchased and the seller delivers the securities sold. In India, futures exchanges function on the T+5 settlement cycle, wherein transactions are settled after 5 working days from the date on which the transaction has been entered.
- **Weekly Settlement Cycle:** This system provides the traders a longer time frame to speculate because the settlement is made at the end of each week.

Over the past two decades, food prices have been more volatile than the prices of manufactured goods. The uncertainty of commodity prices leaves a farmer open to the risk of receiving a price lower than the expected price for his yield. At times, the crop prices fall so low that the farmer is unable to repay the loan. Inadequate price risk management is one of the most important reasons for poor farmer remaining poor.

Price risk management refers to minimizing the risk involved in commodities trading. Through futures contracts, the risk may be shifted to speculators or traders who are willing to assume the risk. A hedger would try to minimize risk by taking opposite positions in the futures and cash markets. Since the two markets usually move in the same direction, the profits of one market will cover the losses in the other. In the case of a commodity seller, like a farmer or a merchant, futures contracts offer protection from declining prices.

Price discovery refers to the process of determining the price level of a commodity based on demand and supply factors. Every trader in the trading pit of a commodities exchange has specific market information like demand, supply and inflation rates. When trades between buyers and sellers are executed, the market price of a commodity is discovered.

Apart from the basic functions of price discovery and price risk management, futures contracts have a number of other benefits like providing liquidity, bringing transparency and controlling black marketing.

Futures contracts can easily be converted into cash, i.e. they are liquid. By buying or selling the contract in

order to make profits, speculators provide the capital required for ensuring liquidity in the market. They provide certainty of future revenues or expenditures, hence ensuring concrete cash flows for the user.

Futures markets allow speculative trade in a more controlled environment where monitoring and surveillance of the participants is possible. Hence, futures ensure transparency. The transparency benefits the farmers as well by spreading awareness about prices in the open market.

Futures also help in standardization of quality, quantity and time of delivery, since these variables are agreed upon by the participants and specified in the futures contract.

### The Study on Relationship Between Spot and Future Prices

The study attempts to identifying the direction of information flows between spot and futures prices, by using recent price data of corn, two varieties of wheat, and soybeans to examine causal links between spot and futures markets. The study address the following specific questions: Do changes in futures prices lead changes in spot prices? Or do price changes in spot markets lead price changes in futures markets?

The sample period is from January 1994 to June 2009 for corn and soybeans and from January 1998 to June 2009 for the two varieties of wheat. The volatility in the spot and futures markets analyzed also appears to be highly correlated. The volatility measure is the standard deviation of prices for each month in the sample period. As can be seen, the spot and futures volatility rise and fall in a similar manner, with peaks during the price spikes observed. However, in this case, it is less clear whether changes in volatility in the spot market echo changes in the futures market. Besides, spot prices are generally more volatile than futures prices, probably due to the higher transparency of the latter.

The results indicate that spot prices are generally discovered in futures markets. In particular, we find that changes in futures prices lead changes in spot prices more often than the reverse. These findings also contribute to the debate on alternative instruments to address excessive volatility in grain markets.

### **Examining The Relationship Between Spot and Future Prices of Agricultural Commodities: Indonesian Case**

#### **Introduction**

Futures Market is a market in which participants can buy and sell commodities and their future delivery contracts. Futures markets are generally considered to perform a risk-transfer; a major role in commodity market which provides medium complementary activities of hedging and speculation, necessary for dampening wild fluctuations in the prices caused by gluts and shortages. The risk-transfer role results from the fact that producers as hedgers, who have an



underlying exposure to price risk, use the market to transfer such risk exposure inherent in their productive activity to speculators who assume the same risk in hope for trading profits.

Futures prices also transmit information to all economic agents, especially to uninformed producers who, in turn, may base their supply decisions on the futures price. It can also be argued that physical traders use futures prices as a reference to price their commodities due to the greater transparency and (often) greater liquidity of commodity futures over physical commodities<sup>2</sup>. So then, Futures Markets in particular also perform an informative or price discovery role to the producers who because of lack of price information are still not able to get the right price for commodity they produce at a given quality, quantity and at a given time and place. We might be tempted to assume that futures markets dominate spot markets. However, as sustained by Garbade and Silber (1983), the price discovery function of futures markets hinges on whether new information is actually reflected first in changes in futures prices or in spot prices.

### Theoretical Background

In theory, since both futures and spot prices “reflect” the same aggregate value of the underlying asset and considering that instantaneous arbitrage is possible, futures should neither lead nor lag the spot price.

The relationship between spot and futures prices can be derived from the spot-future parity, which implies that spot and futures prices should move together across time to avoid constant arbitrage opportunities based on the spot-futures relationship (Hull, 1997).

The theoretical equilibrium relationship between spot and future prices is a long-run, rather than a short-run, connection, and can be tested by examining whether spot and futures prices are cointegrated.

Considering that the futures price is the price specified in an agreement (futures contract) to deliver a specified quantity of a commodity at a specific future date, whereas the spot price is the cash price for immediate purchase and sale of the commodity, we should expect a close relationship between the prices of futures contracts and spot prices. In particular, an explicit relationship between spot and futures prices can be derived from the non-arbitrage theory.

Following Pindyck (2001), let  $Y_{t,T}$  denote the capitalized flow of marginal convenience yield over the period  $t$  to  $t+T$ . Then, to avoid arbitrage opportunities, the following condition must hold:

$$F_{t,T} = (1 + r_T)P_t - (\gamma_{t,T} - k_T) \dots \dots \dots (1)$$

Where  $F_{t,T}$  is the futures price of a (agricultural) commodity at time  $t$  for delivery at  $t+T$ ,  $P_t$  is the spot price at  $t$ ,  $r_t$  is the risk-free  $T$ -period interest rate, and  $k_t$  is the per-unit cost of physical storage.

---

<sup>2</sup> The informative role of futures markets could also have a stabilizing effect on spot prices, as sustained by Danthine (1978).

To see why equation (1) must be satisfied, note that the stochastic return of holding a unit of the agricultural commodity from  $t$  to  $t+T$  is equal to  $(P_{t+T} - P_t) + \gamma_{t,T} - k_T$ . If a farmer also sells a futures contract at  $t$  (that is, takes a short position), the return of this future contract is  $F_{t,T} - P_{t+T}$ . So the farmer's total non-stochastic return at  $T$  is equal to  $F_{t,T} - P_t + \gamma_{t,T} - k_T$ . Then, the non-arbitrage condition requires this total return to equal the risk-free rate times the price of the commodity at  $t$ , that is,  $r_T P_t$ , from which equation (1) follows.

Two implications can be derived from equation (1). First, the futures price could be greater or less than the spot price, depending on the net (of storage costs) marginal convenience yield  $\gamma_{t,T} - k_T$ . If the net marginal convenience yield is positive and large, the spot price will exceed the futures price (futures market exhibits strong backwardation); however, if the net marginal convenience yield is negative, the spot price will be less than the futures price (the futures market is in co tango). Second, spot and futures prices should move together across time to avoid arbitrage opportunities. That is, we expect price movements in spot and futures markets to be correlated.

From the asset pricing theory, we can also establish a relationship between the futures price and the expected future spot price. Assume that at time  $t$ , a farmer buys one unit of a commodity at price  $P_t$ , which he plans to hold until  $t+T$  and then sell it for  $P_{t+T}$ . The expected return of this investment is given by  $E_t(P_{t+T}) - P_t + \gamma_{t,T} - k_T$ . Because  $P_{t+T}$  is unknown at  $t$ , this return is risky and must equal the risk-adjusted discount rate times the price of the commodity at  $t$ , that is,  $\rho_T P_t$ . Hence,

$$E_t(P_{t+T}) - P_t + \gamma_{t,T} - k_T = \rho_T P_t \dots \dots \dots (2)$$

Substituting (1) into (2), we obtain

$$F_{t,T} = E_t(P_{t+T}) - (\rho_T - r_T)P_t \dots \dots \dots (3)$$

It follows that the futures price is a biased estimate of the future spot price because of the risk premium  $\rho_T - r_T$ . More specifically, the futures price should typically be lower than the expected future spot price due to the positive risk premium (that is,  $\rho_T > r_T$ ). As pointed out by Pindyck (2001), holding the commodity alone entails risk, and as a reward for that risk, we expect the spot price at  $t+T$  to be above the current futures price. But besides these explicit relationships between spot, futures, and expected future spot prices, described in (1) and (3).

Provided that futures markets are generally considered to perform two major roles in commodity markets—a risk-transfer role and, in particular, an informative or price discovery role—we might be tempted to assume that futures markets dominate spot markets. The risk-transfer role results from the fact that a futures market is a place where risks are reallocated between hedgers (producers) and speculators. Producers are then willing to compensate speculators for sharing the risks inherent in their productive activity. Futures prices also transmit information to all economic agents, especially to uninformed producers who, in turn, may base their supply decisions on the futures price. It can also be

argued that physical traders use futures prices as a reference to price their commodities due to the greater transparency and (often) greater liquidity of commodity futures over physical commodities.

### Data

Commodities analyzed are crude palm oil (CPO), gold, rubber and rice.

**Table 1**

| No | Commodity            | Year (monthly) | Source    |
|----|----------------------|----------------|-----------|
| 1  | Crude Palm Oil (CPO) | 2000 – 2011    | Bloomberg |
| 2  | Gold                 | 2000 – 2011    | Bloomberg |
| 3  | Rubber               | 2000 – 2011    | Bloomberg |
| 4  | Rice                 | 2000 – 2011    | Bloomberg |

### Causality Test

To formally analyze the dynamic relationship between spot and futures prices, Granger causality tests were conducted. These tests allow us to examine whether changes in the price of futures contracts lead changes in spot prices, whether changes in spot prices lead changes in futures prices, or both. The idea is to make some inferences about the direction of information flows between spot and futures markets.

The Granger causality test examines whether past values of one variable can help explain current values of a second variable, conditional on past values of the second variable. Intuitively, it determines whether past values of the first variable contain additional information on the current value of the second variable that is not contained in past values of the latter. If so, the first variable is said to Granger-cause the second variable. In this case, we evaluate whether futures price Granger-cause spot price (that is, whether the price in the spot market at time  $t$  is related to past in the futures market, conditional on past spot price), whether spot price Granger-cause futures prices, or both.

The test results for spot and futures returns for all four commodities and for period 2000 – 2011 are presented in Table 2. The upper section of the table reports the F-statistic for the null hypothesis that spot prices does not Granger-cause future prices; the lower section reports the F-statistic for the null hypothesis that future prices does not Granger-cause spot prices. The test results for different lag structures are included (1–10 lags). As can be seen, the null hypothesis that the prices in spot markets does not Granger-cause the prices in future markets is uniformly rejected at the 1 percent significance level in three cases (CPO, Rubber, Gold) and for all lags, with the F-statistic decreasing as the number of lags increases. In contrast, only in the case of rice future prices does not Granger-cause spot prices, significance at 1 percent for all lags, with the F-statistic decreasing as the number of lags increase.

**Table 2****H0 : Spot does not Granger cause future**

|     | <b>CPO</b> | <b>Rubber</b> | <b>Rice</b> | <b>Gold</b> |
|-----|------------|---------------|-------------|-------------|
| Lag |            |               |             |             |
| 1   | 63.8347*   | 120.449*      | 8.19E-01    | 78.7913*    |
| 2   | 33.8796*   | 75.21*        | 0.61244     | 44.3993*    |
| 3   | 22.0588*   | 49.3998*      | 0.6138      | 30.7026*    |
| 4   | 14.8689*   | 36.6553*      | 0.63514     | 24.5834*    |
| 5   | 11.6116*   | 31.0668*      | 0.57058     | 18.7825*    |
| 6   | 10.115*    | 24.7592*      | 0.82221     | 17.0777*    |
| 7   | 9.37666*   | 20.6768*      | 0.7783      | 14.5562*    |
| 8   | 7.52843*   | 17.7192*      | 0.7903      | 12.6627*    |
| 9   | 7.34758*   | 15.1395*      | 0.76698     | 11.8798*    |
| 10  | 6.45346*   | 13.3821*      | 0.60987     | 10.2836*    |

\*significance 1% , \*\* significance 5% and \*\*\*significance 10%

**H0 : Future does not Granger cause Spot**

|     | <b>CPO</b> | <b>Rubber</b> | <b>Rice</b> | <b>Gold</b> |
|-----|------------|---------------|-------------|-------------|
| Lag |            |               |             |             |
| 1   | 0.80602    | 0.2395        | 23.9441*    | 3.20412***  |
| 2   | 0.12166    | 0.03488       | 18.4253*    | 0.29892     |
| 3   | 1.99025*** | 0.05757       | 12.9151*    | 0.46985     |
| 4   | 0.89463    | 0.73577       | 12.1855*    | 0.2857      |
| 5   | 2.44273**  | 1.77053       | 11.0549*    | 0.53052     |
| 6   | 1.77062*** | 1.45798       | 9.51968*    | 0.49426     |
| 7   | 3.02914*   | 0.80249       | 8.11464*    | 0.49183     |
| 8   | 2.26596**  | 0.71096       | 6.73683*    | 0.44443     |
| 9   | 2.39093*   | 0.97212       | 6.93122*    | 0.54499     |
| 10  | 2.16469**  | 0.99369       | 6.01369*    | 0.78612     |

\*significance 1% , \*\* significance 5% and \*\*\*significance  
10%

The causality tests performed indicate that the spot markets analyzed generally dominate the future markets for three commodities (CPO, Rubber, Gold) and the futures markets analyzed generally dominate the spot markets for rice commodity. Price changes in spot markets lead price changes in future markets more often than the reverse for three commodities and price changes in future market lead price changes in the sport market for rice commodity.

Intuitively, since spot and futures prices for any commodity are driven by the same underlying information, they should be closely related; the exact nature of this relationship depends on many factors, among which seasonal effects, the nature of the commodity (storable or non-storable) and market expectations.

However, the empirical evidence is diverse, although the majority of studies indicate that futures influence spot prices but not vice versa. The usual rationalization of this result is that the futures prices respond to new information more quickly than spot prices, due to lower transaction costs and flexibility of short selling.

There is also convincing evidence that many of the candidate variables have an impact on volatility. In monthly series, oil price volatility had a positive impact on commodity price volatility. Thus, from the evidence available, the recent coincidental high volatility in oil and commodity prices is symptomatic of a connection between commodity price volatility and oil price volatility. As discussed earlier. The link between oil prices and agricultural commodity prices is likely to arise through the impact of energy prices on the costs of production, along with the alternative use of some crops for biofuel production. Therefore, we would expect the link between oil price volatility and agricultural prices to continue or strengthen as the biofuels sector grows. Likewise, exchange rate volatility was found to influence the volatility of agricultural prices. Thus, perhaps unsurprisingly, if the global economy is experiencing high levels of volatility these will also be reflected in agricultural prices. On the other hand, if factors such as oil prices continue to be volatile, then agricultural prices may continue to be volatile or become increasingly volatile.<sup>3</sup>

The current food crisis has several causes - rising demand for food and feed, biofuels, high oil prices, climate change, stagnant agricultural productivity growth - but there is increasing evidence that the crisis is being made worse by the malfunctioning of world grain markets. Given the thinness of major markets for cereals, the restrictions on grain exports imposed by dozens of countries have resulted in additional price increases.<sup>4</sup>

---

<sup>3</sup> Balcombe, Kelvin, **The Nature and Determinants of Volatility in Agricultural Prices: An empirical Study from 1962 – 2008**, Commodity Market Review 2009 – 2010, Food and Agricultural Organization of the United Nations, Rome, 2010

<sup>4</sup> Braun, Joachim von and Torero, Maximo, **Physical and Virtual Global Food Reserves to Protect the Poor and Prevent Market Failure**, IFPRI Policy Brief 4, June 2008

Rising expectations, speculation, and hoarding have also contributed to the increasing level and volatility of food prices. The flow of speculative capital from financial investors into agricultural commodity markets has increased drastically. Speculative bubbles have built up, and the gap between cash and futures prices has risen, as shown by the rise in the number of traded futures contracts in recent years. Excessive speculation in the commodity futures market can, in principle, push up not only futures prices but also spot prices above levels justified by supply and demand. Despite the fact that still more research is needed to clearly identify the causal links between speculation and cash prices, it is apparent that some activity in the futures market reflects a genuine concern about future supply and demand and a desire by consumers to hedge against risks.<sup>5</sup>

All futures prices lead cash prices with proportional information shares greater than 50%. However, there is a range of price discovery among the futures contracts, where the differences are caused by the different nature of the futures contract. We find that agricultural contracts and contracts with lower liquidity have lower information shares of the futures market<sup>6</sup>

## **X.RECOMMENDATION**

1.In general, conclusion and recommendation for dealing with commodity price volatility are as follow:

- Commodity price volatility is very important for East Asia
- We need to increase the surveillance of commodity variables in East Asia as a complement of existing macroeconomic surveillance. The first step to realize the surveillance we should collecting and sharing the database related with commodity, such as stock of commodity, trend of demand, projections on export and import commodity, gap between supply and demand, mapping of commodity comparative in the region, etc).
- Because commodity financialization and speculation is also important behind the stories, we should take some regional action to propose the regulation and supervision of commodity market. We should also enhancing the function of regional market in commodity trading.

---

<sup>5</sup> Ibid

<sup>6</sup> Ivanov, Stoyu I. and Cho, Jang Hyung, **A Study of the Factors Affecting Price Discovery in Commodity Markets**

- Commodity price affect East Asia significantly (both to growth and inflation) as resulted from panel regression. In average it has positive effect on GDP growth (increase GDP if WPI increase), but negative effect on inflation, in terms of increase inflation.

2. We also explore about the relationship between future prices and spot prices in commodity market. Futures prices provide better information than the spot price, because futures market not require substantial funds (leverage financing function) compared with the spot market to be immediately executed. These differences are also influenced by market conditions (both spot and futures) of each commodity, where: (1) the non-durable nature of a commodity the more volatile the price, (2) the more volatile factors that affect both spot and futures markets then will be increasingly volatile prices. Included in this is information asymmetry in the spot market and futures market.

In Indonesian case: (1) agricultural products have higher volatility compared to the products of mining, (2) the price of commodity products is influenced by many factors more than the products of mining: land, seasons, prices of production (seeds, fertilizers, human resources to gasoline), (3) the formation of prices in the spot market is more asymmetric between traders and regions compared with the spot price on the mining industry, where the benchmark spot prices for agricultural commodities is more localized as the producer a lot of different spots of the world and while the minerals more evenly throughout world because the manufacturer in the world a little more.

**3. Commodity price volatility could be related with commodity financialization. The speculation motive tend to be greater than hedging motives . It caused volatility. We should encourage transparency and supervision in international commodity market. We also propose regional commodity market in which commodities that East Asia has been dominant producers**

4. Because monetary policy also have the impact to international commodity price volatility, each countries in East Asia should keep their monetary policy in line with the stabilization of commodity price.

5. Having the facts that commodity price volatility is important for East Asia economy, we should monitor the commodity price intensively and coordinate between countries in terms of supply and demand of commodity. It is recommended that besides macro surveillance we can cooperate in commodity surveillance. ASEAN Macroeconomic Research Office (AMRO) we think can facilitate.

6. There are several recommendations suggested from in-depth interview and Focus Group Discussion results. The recommendations are as follows:

- East Asia needs to share information about commodity price
- East Asia must tightened trade coordination and guarantee in price stabilization

- East Asia suggested to have regional marketing coordination on several commodities that possible to cooperate
- East Asia should cooperate in control supply chain and demand for commodities
- East Asia should increase the stock of commodity that vulnerable to shocks
- East Asia suggested to establish institutions that monitor the continuity and availability of commodity stocks
- East Asia should actively engaged in handling the global warming problems
- East Asia should mapping which commodities that could be cooperated in East Asia



## REFERENCES

- Ahmed, Sidiq, (2008), "Commodity Price, Money and Inflation", Policy Research Working Paper 4796, The World Bank.
- Asian Development Bank, 2011, "Managing Commodity Price Volatility and Inflation in Emerging East Asia", Asia Economic Monitor, ADB.
- Braun, Von Joachim and Maximo Torero. 2008. Physical and Virtual Global Food Reserves to Protect the Poor and Prevent Market Failure. *IFPRI Policy Brief*.
- Boughton, James., Branson, William., Muttardy, Aplhecca., (1989), "Commodity Prices and Inflation : Evidence From Seven Large Industrial Countries", NBER Working Paper Series No. 3158.
- Bloomberg, S.Brock., and Harris, Ethan., (1995), "The Commodity–Consumer Price Connection: Fact or Fable?", FRBNY Economic Policy Review.
- Browne, Frank., and Crowning, David., (2007), "Commodity Price, Money and Inflation", European Central Bank Working Paper Series No 738.
- Cavalcanti, Tiago V. de V., Kamiar Mohaddesy, and Mehdi Raissi. 2011. *Commodity Price Volatility and the Sources of Growth*. Faculty of Economics, University of Cambridge.
- Clem, Andrew. 1985. *Commodity Price Volatility: Trends During 1975-1984*.
- Commodity Market Review 2009-2010. Food and Agricultural Organization of The United States
- Crowley, Joseph, (2010), "Commodity Prices and Inflation in the Middle East, North Africa, and Central Asia", IMF Working Paper WP/10/135.
- .Danthine, J.-P. 1978. Information, futures prices, and stabilizing speculation. *Journal of Economic Theory* 17(1): 79–98.
- Dyrsdale, Peter. *How to Achieve Global Food Security?*, East Asia Forum, May 2, 2011.
- Evans. Charles., and Fisher, Jonas., (2011), "What are The Implications of Rising Commodity Prices for Inflation and Monetary Policy?", The Federal Reserve Bank Of Chicago No 286.
- Hernandez, Manuel and Maximo Torero. 2010. Examining The Dynamics Relationship Between Spot and Future Prices of Agricultural Commodities. *IFPRI Discussion Paper* 0098.
- Indonesian Economic Quarterly. 2010. Worldbank Jakarta.
- Ivanov, Stoyu. I and Jang Hyong Chu. A Study OF The Factors Affecting Price Discovery In Commodity Markets. San Jose State University.
- Pindyck, R. S. 2001. The dynamics of commodity spot and futures markets: A primer. *Energy Journal* 22 (3): 1–29

Tang, Hsiao Chink, (2008), "Commodity Prices and Monetary Policy in Emerging East Asia", ADB Working Papers Series On Regional Economic International No.23.

*Term of Reference, ASEAN+3 Research Groupu*, ASEAN Secretariat, 2011.

World Bank Indonesia. 2011. *Perkembangan, Pemicu, dan Dampak Harga Komoditas dan Implikasinya terhadap Perekonomian Indonesia*. In Trade Sector Development Report 58831 V2.

[www.g20-g8.com](http://www.g20-g8.com)

Verheyen, Florian, (2010), "Monetary Policy, Commodity Prices and Inflation – Empirical Evidence from the US", RUHR Economic Paper #216.

Zoli, Edda, (2009), "Commodity Price Volatility, Cyclical Fluctuations, and Convergence: What is Ahead for Inflation in Emerging Europe", IMF Working Paper WP/09/41.

Bank of Thailand, 2011, Inflation Report: April 2011. Available at <http://www.bot.or.th/English/MonetaryPolicy/Inflation/Pages/index.aspx>. Downloaded on August 8, 2011.

Kiatipong Ariyapruchya, 2011, *Of Inflation Nuts, Oil, Food, and the Value of Money*, Research & Publications Bank of Thailand, Published in The Nation on Monday, March 14, 2011.

Wacharaphan Tanaprakob, 2011, *Soaring Commodity Prices Hitting Asian Inflation*, Research & Publications Bank of Thailand, Published in The Nation on Monday, March 07, 2011.

Thailand's Ministry of Finance, 2011, Monthly Economic Report (March and 1st quarter of 2011). Available at [http://www2.mof.go.th/economic\\_report.php](http://www2.mof.go.th/economic_report.php). Downloaded on October 18, 2011.

\_\_\_\_\_, 2011, Monthly Economic Report (June and 2<sup>nd</sup> quarter of 2011), Thailand's Ministry of Finance. Available at [http://www2.mof.go.th/economic\\_report.php](http://www2.mof.go.th/economic_report.php). Downloaded on October 18, 2011.

Central Bank of Malaysia, 2011, Monetary and Financial Developments in September 2011. Available at <http://www.bnm.gov.my/index.php?ch=8&pg=14&ac=2343>. Downloaded on August 13, 2011.

Ministry of Finance Malaysia, 2011, Economic Report 2010/2011. Available at [http://www.treasury.gov.my/index.php?option=com\\_content&view=category&id=73&Itemid=174&lang=en](http://www.treasury.gov.my/index.php?option=com_content&view=category&id=73&Itemid=174&lang=en). Downloaded on October 18, 2011.

Ministry of Finance Singapore, 2010, Singapore Public Sector Outcomes Review (SPOR). Available at <http://app.mof.gov.sg/spor.aspx>. Downloaded on October 18, 2011.

\_\_\_\_\_, 2010, Economic Strategies Committee (ESC) Recommendations, Ministry of Finance Singapore. Available at <http://app.mof.gov.sg/esc.aspx>. Downloaded on October 18, 2011.

Monetary Authority of Singapore, 2011, Annual Report 2010/2011. Available at [http://www.mas.gov.sg/about\\_us/annual\\_reports/annual20102011/index.html](http://www.mas.gov.sg/about_us/annual_reports/annual20102011/index.html). Downloaded on October 18, 2011.

Bangko Sentral Ng Pilipinas, 2011, Inflation Report Second Quarter 2011. Available at [http://www.bsp.gov.ph/publications/regular\\_inflation.asp](http://www.bsp.gov.ph/publications/regular_inflation.asp). Downloaded on October 18, 2011.

\_\_\_\_\_, 2011, Highlights of the MB Meetings on Monetary Policy, Bangko Sentral Ng Pilipinas. Available at <http://www.bsp.gov.ph/monetary/highlights.asp>. Downloaded on October 18, 2011.

Minister of Finance Philipina, 2011, Annual Report 2010,. Available at [http://www.dof.gov.ph/wp-content/uploads/2011/09/DOF\\_AR\\_2010.pdf](http://www.dof.gov.ph/wp-content/uploads/2011/09/DOF_AR_2010.pdf). Downloaded on October 18, 2011.

Research and International Division, 2010, **Fiscal and Monetary Review Issue Quarter 2 Year 2010**, Minister of Finance Brunei Darussalam. Available at <http://www.mof.gov.bn/English/ResearchInternational/GeneralInformation/PublicationList/Pages/default.aspx>. Downloaded on October 18, 2011.

National Bank of Cambodia, 2011, Annual Report 2010. Available at <http://www.nbc.org.kh/publications.asp?tp=a>. Downloaded on October 18, 2011.

Ministry of Economy and Finance of Cambodia, 2011, **Report for July 2011**,. Available at <http://www.mef.gov.kh/data.php?cid=8&p=1/> Downloaded on October 18, 2011.

\_\_\_\_\_, 2010, Annual Economic Report 2009, Ministry of Economy and Finance of Cambodia. Available at <http://www.mef.gov.kh/data.php?cid=8&p=1/> Downloaded on October 18, 2011.

Bank of The Lao PDR, 2011, Annual Report 2010,. Available at [http://www.bol.gov.la/together\\_use/Annual%20Report%202010%20final-revised20.10.pdf](http://www.bol.gov.la/together_use/Annual%20Report%202010%20final-revised20.10.pdf). Downloaded on October 18, 2011.

The World Bank Lao PDR Country Office, 2011, *Robust Growth Amidst Inflationary Concerns: Lao PDR Economic Monitor May 2011 - Update*, Vientiane, Lao PDR.

Bank of Japan, 2011, Outlook for Economic Activity and Prices. Available at <http://www.boj.or.jp/en/mopo/outlook/index.htm/>. Downloaded on October 18, 2011.

\_\_\_\_\_, 2011, Monthly Report of Recent Economic and Financial Developments, Bank of Japan. Available at [http://www.boj.or.jp/en/mopo/gp\\_2011/index.htm/](http://www.boj.or.jp/en/mopo/gp_2011/index.htm/). Downloaded on October 18, 2011.

Ministry of Finance Japan, 2011, Summary of the Fiscal Loan Fund Management Report. Available at [http://www.mof.go.jp/english/filp/management\\_report/index.html](http://www.mof.go.jp/english/filp/management_report/index.html). Downloaded on October 18, 2011.

The World Bank, 2010, Taking Stock: An Update on Vietnam's Recent Economic Developments, Prepared by The World Bank For the Mid-year Consultative Group Meeting for Vietnam, Rach Gia, June 9-10, 2010.

State Bank of Vietnam, 2010, Annual Report 2009 - State Bank of Vietnam. Available at [http://www.sbv.gov.vn/wps/portal/!ut/p/c5/hY3JCslwAES\\_SDLRbB7T2qSpojSCTR2UHEQCtvUgfr9VwYO4zBzfLKQho\\_twjcdwiUMfTqQjWixYHNpOAPKJYPbsJnz2Y4qIUdeiza1OmdyBdiiTOFssVUsoQDkn\\_b-vcjwZ\\_8tQ9MDZyinnrDk8y-8w\\_j\\_0v0iDrfOgO5NxViG6ibw2sjl0!/dl3/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfMEQ0OTdGNTQwMFFLNDBJTzQzSVJFVjE4MTU!/](http://www.sbv.gov.vn/wps/portal/!ut/p/c5/hY3JCslwAES_SDLRbB7T2qSpojSCTR2UHEQCtvUgfr9VwYO4zBzfLKQho_twjcdwiUMfTqQjWixYHNpOAPKJYPbsJnz2Y4qIUdeiza1OmdyBdiiTOFssVUsoQDkn_b-vcjwZ_8tQ9MDZyinnrDk8y-8w_j_0v0iDrfOgO5NxViG6ibw2sjl0!/dl3/d3/L2dJQSEvUUt3QS9ZQnZ3LzZfMEQ0OTdGNTQwMFFLNDBJTzQzSVJFVjE4MTU!/). Downloaded on October 18, 2011.

Bank of Korea, 2011, Annual Report 2010. Available at [http://www.dof.gov.ph/wp-content/uploads/2011/09/DOF\\_AR\\_2010.pdf](http://www.dof.gov.ph/wp-content/uploads/2011/09/DOF_AR_2010.pdf). Downloaded on October 18, 2011.

Minister of Strategy and Finance Republic of Korea, 2011, Economic Policy Directions for Second Half of 2011. Available at <http://english.mosf.go.kr/eco/view.do?bcd=E0009&seq=27&bPage=1>. Downloaded on October 18, 2011.

Central Bank of Indonesia, 2011, 2010 Economic Report on Indonesia. Available at <http://www.bi.go.id/web/en/Publikasi/Laporan+Tahunan/Laporan+Perekonomian+Indonesia>. Downloaded on October 18, 2011.

<http://pustaka.litbang.deptan.go.id/publikasi/wr326109.pdf>

Departemen Perindustrian dan Perdagangan, Badan Pengawas Perdagangan Berjangka Komoditi, *Sejarah & Peraturan*, Seri Training Kit, Jakarta, 1999.

<http://ekonomi.kompasiana.com/bisnis/2010/06/11/mendeteksi-pelanggaran-pajak-pada-transaksi-forward-cpo/>

<http://www.bappebti.go.id/administrator/pdf/BJK%200911%20LO%20cetak%20fiks.pdf>

[http://caspianrevenuewatch.org/news/publications/RWI\\_coveringoil\\_bin.pdf](http://caspianrevenuewatch.org/news/publications/RWI_coveringoil_bin.pdf)

<http://www.worldbank.org/research/2011/04/14123985/china-quarterly-update-april-2011>

[http://www.pbc.gov.cn/publish/english/955/2011/20111014083035497266739/20111014083035497266739\\_.html](http://www.pbc.gov.cn/publish/english/955/2011/20111014083035497266739/20111014083035497266739_.html)