Selected Economic Indicators to Monitor Global Economic and Financial Impacts on Indonesia Economy

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I. Introduction

The impact of global economic and financial crisis on Indonesian economy started in effect in October 2008. It was shown by decreasing in exports value mainly from the main international trading partners such as USA, Japan, China, ASEAN and European countries. For the first time in the last 2 years, in October 2008 Indonesia export value was back at 2006 level meaning downed by 30%. Since then export continuously declined for next 5 months. Similar situation was also happened to imports of industry raw materials, machinery and other consumption goods. At the same time, price of gasoline sky rocketed in international market along with highly rate of inflation that soared up until double digit followed by rising in commercial interest rate. The situation making the real sector production going down particularly of manufacturing industry, trade and tourism that worsening the domestic economy in fourth quarter of 2008 recorded 3.6 % negative growth.

Indonesia, however, is one of the few countries in Asia Region, among of them are China and India, that booked positive economic growth. First quarter 2009 the economy grows at 1.62% *(q-to-q)* and 4.37% *(y-on-y)*. The economic structure that predominantly built by domestic sectors such agriculture, mining, small scale and home industry, and large domestic market is a reasonable answer to the question as to why Indonesia economy is still survive from negative impact of the global crisis. In addition, domestic demand for consumption from both private and government (accounted for 60% of GDP) were stronger before general election for Parliament in April and President election in July 2009. Responding to the crisis, the government also launched stimulus fiscal policy almost Rp.72 trillion consisting of IDR 40 trillion in terms of tax cut and IDR.12 trillion in cash for building infrastructure, subsidized agriculture production and other economic strategic sectors.

Several economic and financial sectors that are vulnerable from the global crisis and affect Indonesia economy directly or indirectly are international trade, capital flow in capital market and services. Share of exports to GDP ranged from 24 to 30% and grew at average 9 to 12 %. During the crisis prices of Indonesia commodities export particularly agricultural products such palm oil, rubber and mining product such as gasoline, coal, nickel and tin has been very good in international market. This helped

value of export was not down drastically as weakening international demand to avoid deficit trade balance. In contrast, capital inflow was negative as foreign investors withdrew their money from the capital market. Domestic currency depreciated almost 30% against US$ in the foreign exchange market for 3 months squeezing foreign currency liquidity in most bank and financial institutions but gradually improved.

All the economic and financial phenomena above transmit into Indonesia economy in unpredictable fashion and unsystematic way making it difficult to identify sources, cause and effect of the crisis. Policy makers and business executives need simple, integrated, coherent, accurate and timely indicator that explains what is really going on in the economy and precisely able to predict its consequences in the future. Such indicator has been urgently needed, especially during the crisis, since the existing economic and financial statistics data available are still fragmented and inconsistent depending on the sources of data. This paper does not to be meant to discuss concept, methodology of constructing such an indicator for Indonesia economy, but explores possibility to construct it. This International Seminar on Timeliness, Methodology, and Comparability of Rapid Estimates of Economics Trend is a right forum to discuss and study on how improve quality of time series data available and construct it become an ideal indicator for Indonesia economy in particular and global economy in general.

II. Need for Fit and Fast Indicators

Prediction of main economic indicators is absolutely needed by government and parliament in making yearly state budget decision. Some information used as an assumption in the state budget planning are estimates of: economic growth, rate of inflation, interest rate, oil production and others. Estimate on GDP growth is vital to be used for estimating tax revenue and budget deficit and other targeted state development program. The estimate is usually made Ministry of Finance by considering all current relevant information and using interpolating or simple regression method. The estimation process is done by un-rigorous statistical techniques that result in an efficient and optimal estimate so that its accuracy is unknown. No wonder the agreed budget often to be revised several time on the way before it become a final state budget.

The fast and accurate indicators describing current social economic situation are also needed by the government in the policy decision process to deal with problems caused by global economic and financial crisis. There also other institutions such central bank, research agencies, and private business which making data estimation for their own specific purposes and goals. Each estimate is done based on different series data their have and by different method. In this case it does not matter who suppose to do this work provided that it results in single estimates that are valid and accurate and can be used by all. Just like in USA where Department of Commerce produces Index of Coincident Economic Indicators and other National Statistical Offices in some countries with similar indicators. Unfortunately, that is not the case so that the ideal economic indicator for Indonesia is urgently needed.

BPS-Statistics Indonesia, as the only statistical institution in the country that has authority in majority of economic and financial statistical data, does not officially produce the ideal indicator estimating GDP and other economic parameter. The indicators (Economic Indicator or Welfare Indicators) that BPS produce are mostly consists of survey based time series data and administrated records from other sources. Some of the information in the indicators lagged one or two periods. Off course such indicators does not meet the need of policy makers and other consumers data especially in time of crisis who need fast and accurate information describing what is actually happen in the economy and its consequences in the near future.

There is institutional restriction that, although is not stipulated by law, BPS-Statistics Indonesia produces statistical facts only through census and surveys. If BPS producing both statistical facts and indicator estimates and predictions, some parties argue that it is going to be mix between facts and estimates (model based information) challenging its credibility as statistical authority. Time, however, has been changed since this restriction “applied”. The need and vacancy of ideal indicators that really fit with Indonesia economy will erase this restriction.

III. Data Availability

There are various of data available produced by BPS-Statistics Indonesia through regular surveys and data compilation covering majority components of GDP by

production and expenditures. The other components are coming from various secondary sources of data such as government agencies, central bank and private business associations. There are 5 criteria that have to be considered for series of data is selected to become good indicators. The criteria are basically relates closely with macroeconomic theory that GDP is a measure of aggregate state of an economy and uses statistical techniques to result in accuracy. The 5 criteria of selection are as follow:

1. Time consistent with the GDP movement as the target variable
2. Conformity with the general business cycle
3. Contribute significantly to the target variables
4. Statistical reliability of the data in term of accuracy and representative
5. Prompt availability and ready to be used without any revision

After considering these criteria, there are 6 promising single indicators selected, the type of the criteria to be met and their proximate share to GDP:

Indicators	Meet Criteria #	Shares to GDP
1. Agricultural / Rice Production (Growth)	1, 2, 3, 4, 5	14.4%
2. Industrial Production Index	1, 2, 3, 4, 5	11.2%
3. Exports Value Index	1, 2, 3, 4, 5	30.0%
4. Business & Consumers Tendency Index	1, 2, 3, 4, 5	24.3%
5. Wages/Income of Industrial Labor (growth)	1, 2, 3, 4, 5	17.1%
6. Hotel and Tourisms (**growth**)	1, 2, 3, 4, 5	13.0%

The first two and sixth variables directly relate to the GDP sector of production, while the other three variables exports are gross proxy for other sectors in the GDP. Ideally these variables should be test statistically in order to get an composite index that

conforms with the estimated target variable GDP. Due to data availability and other practical consideration, such a requirement can be ignored temporarily.

IV. Data Sources and Methodology

1. Growth in Agricultural/Rice Production

Agricultural production statistics, rice in particular, has long been an important indicator since majority of the Indonesian life depends on it. No wonder that comparing to other statistics, agricultural statistics is the complete statistics covering all information regarding: production, cost structure, prices and labor wage. Estimation of rice production is calculated quarterly during harvest season and dry season. Rate of production is multiplication of estimated average of productivity per hectare and estimated area of rice plantation. The average rate of productivity is estimated by number sample plot each with 1 meter square and area of plantation is estimated by experience and eye estimate.

2. Industrial Production Index (IPI)

Industrial Production Index (IPI) has been a very important macro-economic indicator to monitor progress and fluctuation of industrial sector production in particular and to predict the state economy in general. This index is produced and published monthly with a month lag. A sample size of 600 establishments are selected with mainly medium and large in size and 2 digit ISIC revision 2 1990, representing 56,38% of the population production.

Samples are chosen in two steps; first by using Cut Off Point and second Probability Proportional to Size (PPS). By Cut Off Point, we take 116 establishments from a group of company having value output more than IDR 750 billion. Another 156 sample establishments are selected based on top 1 percent of output per worker. The rest of the 328 sample establishments, is selected by Probability Proportional to Size (PPS) with output as size. From this 600 sample of establishments, a monthly surveys is conducted to collect

information on production, labor, capacity utilization, cost structure, raw materials, product markets and others.

Industrial Production Index (PPI) is computed by Discrete Divisia Index Formula based on ratios between months as follow:

i. Compute ratio of the company value production for consecutive months within SITC.
ii. Calculate ratio of production value on the SITC
iii. Compute ratio of total value production
iv. Calculate SITC Index and Total Index

3. Exports Value Index

Exports statistics is one of the main macroeconomic indicators that show how the Indonesia economy relates to global markets. Its share to GDP is fluctuating from time to time according to prices and demand for commodities in international markets and domestic production. Together with statistics imports, the country trade balance position against outside world can be monitor. Statistics exports and imports are compiled from administrative records of Indonesia Custom Office. It is through these international trade activities, among other things such direct foreign and portfolio investment that impact of global economy and finance is transmitted to domestic economy.

4. Business and Consumers Indices

Index of Business Tendency is one of some important macroeconomics indicators to show dynamic situation in general business at particular period. The index consists of 9 business sectors that are: agriculture, mining, manufacturing, utility, construction, trade hotel and restaurant, transportation and communication, finance and services. A quarterly survey is conducted to collect information on production, sales, quantity of product booked and business prospect from sample establishments representing sectors. Since the survey contain and business category are parallel with GDP information and sectors so that it is useful to predict the GDP growth.

The Business index is computed based on 1700 sample of establishments of medium and large in size representing all line of business except agricultural business. A sample of 300 establishments is selected with purposive sampling from Jakarta Metropolitan area, while the others are taken from other big cities in the country.

Index of Consumers Tendency is mean to be an indicator for monitoring consumers demand. The index is computed based on quarterly survey data of 1000 sample households from medium and upper class. Each respondent to be asked his/her opinion about: economic situation, prices, income and purchasing power, plan to purchase and invest. The index, is therefore, useful for prediction of GDP growth of expenditure side.

5. Wages of Labor

Data on wages is collected through quarterly survey by asking how much money the company pay for their labor services. The wage rate depends on the labor productivity. For this purpose, a number of sample corporate industries are regularly surveyed.

6. Hotels and Tourisms

Data on arrival of foreign visitor either for business or vacation is compiled from administrative records of Immigration Offices. Based on experiences number tourists fluctuated according to seasons. In period of July through September are considered peak seasons for visitors coming from western countries, while the domestic tourists depends on school and national holiday. Data on length of stay for tourists in hotels is collected directly from monthly surveys.

V. Composite Coincidence Index (CCI)

As a matter of facts there are a lot choice in calculating Composite Coincidence Index (CCI) from traditional and simple methods to more sophisticated techniques. For Indonesia particularly for BPS-Statistics Indonesia, however, this is a new experience for reason explained in above. Based on the six single indicators, experiment of calculating

CCI for estimating GDP can be done by means of traditional method following the US Department of Commerce:

1. Transform all data series from absolute value into growth
2. Compute mean and standard deviation for each the data series by excluding outliers
3. CCI is obtained from weighted average of each means of the single indicators. The weight is proportion of inverse of standard deviation of each indicator.

The results is as shown in the following table:

	Variables/Indicators	Mean	SD
1.	Agriculture/Rice Production	14.81	79.19
2.	Industrial Production	0.39	4.42
3.	Exports	-0.07	16.73
4.	Business Tendency Index	0.16	6.46
5.	Wages of Labor	2.73	3.24
6.	Hotels and Tourism	1.43	10.43

Applying procedure #3 above, the estimated Composite Coincidence Indicator (CCI) 1.49 with standard deviation 0.86. Comparing the CCI to GDP growth in the same quarter was 1.62 %, this traditional CCI results in satisfactory prediction. Smaller average growth sectors that relate to global economy such as industrial production (0.39%), Exports (-0.07%), Business Tendency index (0.16%) and Hotels and Tourism (1.85%) pulling down the economic growth. Negative average exports growth with high standard deviation shows that the global crisis has significant impact on the Indonesia economic slow down. Moreover, it is clear that the impact global economic and financial crisis came into effect in Indonesia economy through those sectors where manufacturing industry and say trade and pessimistic investors experience significant impact.

In contrast traditional and domestic sectors, agricultural in particular, performed quite well. This compensated the negative impact of global economic and financial crisis,

in addition that first quarter period is harvest season of the year. The prediction analysis could be elaborate for estimating next two periods ahead and this experiment could be continued in practice. By using this composite indicator, assuming is accurate, the policy makers and other data users know the GDP growth 1 month in advance before the official number is released.

VI. Conclusion

1. Composite Coincidence Index (CCI) is useful indicator to measure impact of global economy and financial crisis in Indonesia economy. It save time 1 month before official quarterly GDP that was usually released 45 days after the reference period.

2. Data series that meet criteria of good indictors are available without much extra work to smooth and fit it. Off course there should be more effort to get right indicator that closely relate to the targeted GDP.

3. Institutional restriction has to be relaxed for BPS-Statistics Indonesia as the only national statistical agency in the country to actively involve in constructing and developing the composite index.