Staple Food Balance Sheet, Coefficient of Variation, and Price Disparity in Indonesia

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***Abstract*—This study examined the staple food balance sheet, coefficient of variation and price disparity in Indonesia. Analysis of staple food balance sheet is calculated based on production and consumption of staple food in 33 provinces in Indonesia. The calculation of staple food balance sheet in 2011 showed that there were rice surplus in 18 provinces, soybean surplus in 4 provinces, corn surplus in 11 provinces, and sugar surplus in 3 provinces. The calculation of coefficient of variation ratio showed the result is varied between staple foods. The ratio of coefficient of variation for sugar and corn was tending to increase from 2009 to 2013. On the other hand, the coefficient of variation ratio for rice and soybean was stable. Based on this research, there are indications of food shortages and price disparity in certain provinces. Local government that has staple food deficit should coordinate with central government, state owned enterprise and local government to make the staple food affordable and available especially for poor people. Surplus provinces can sell the staple food to the deficit provinces.**

***Index Terms*—staple food balance sheet, coefficient of variation, price disparity, Indonesia**

I. Introduction

Recently, Indonesia's total population was approximately 240 milions people. The poor people according to Statistics Indonesia [1] in 2012 was about 28.59 milion people with poverty line asumption is Rp.259,520. Moreover, according to World Bank, the number of poor people was about 32 million in Indonesia with assumption poverty line US$22 per month.

Various problems may arise on the poor people. One of the difficulties is how to access basic food. Statistics Indonesia data showed that earning per capita in Indonesia in a month about Rp.593,664 in 2011 (with the percentage of food about 49 percent of expenditure to buy food). Moreover, according to Nuryati *et al.* [2] expenditure for food consumption in poor household around 67 percent from the total expenditure.

There are many papers discussing importance of food intakes, one of them is a research from Food and Agriculture Organization (FAO) [3]. Food must satisfy human energy requirements for maintenance of good health. Human needs carbohydrates and fats as the main sources of dietary energy. The recommended intake of energy for adult is about 1,800 kcal (7,500 kj) daily. Lower energy intake can cause malnutrition.

A condition where human is suffering from malnutrition and lacking access to food according to Anderson [4] is called hunger. Poverty and starvation are not just theory in Indonesia, but they are realities that happened in Nusa Tenggara Timur (NTT) Province in 2006 where around twenty thousand of people in 37 villages suffering from hunger [5]. The similar case happened in 2010 where 1.6 million people from 20 districts threatened with starvation because of El Nino that impacts crop failure [6].

A similar condition occurred in Yahukimo region (Papua Province) where there was hunger in September 2009. It can be concluded from the information above that the food commodities are very important to the people especially for the poor society.

II. Overview of Staple Food

A. Staple Food Consumption

On the basis of Indonesian Law No.18 of 2012 on Food, definition of food is anything that comes from biological sources of agricultural products, farm, forestry, fisheries, livestock, water and ocean. Food can be treated or untreated, including additional material food, food raw materials, and other materials used in the preparation, processing, and manufacture of food or drink.

Staple food is the food that should be monitored and required by the poorest populations [7]. According to ZNFBS [8], staple foods are assumed to represent 70% (1,421 kcal / capita / day) of total diet (2,030 kcal / capita / day). In this research, the staple food to be examined are rice, soybean, corn and sugar.

Rice consumption in Indonesia is the highest in the world, which is around 139 kg/capita/year. This number is higher than world's average rice consumption (60 kg/capita/year). Moreover, rice consumptions in another country are as follows: Japan is 60kg/capita/year, Malaysia is 80kg/capita/year, Thailand is 70kg/capita/year, and Brunei Darussalam is 80 kg/capita/year. Nevertheless, these data need to be critized and compared to other data because sometimes an institution that released the data has its own interest.

Table I shows the comparison of staple food consumption between countries in the world. This table is summarized from various sources. Table I also shows that

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staple food consumption in Indonesia for sugar, milk and fish in general is lower than other countries. Staple food consumption in Indonesia for rice and maize or corn in general is higher than other countries. This is a concern because high quality food is needed to increase brain growth. Nutritious food within a certain amount is needed to become productive.

TABLE I. THE COMPARISON OF STAPLE FOOD CONSUMPTION BETWEEN COUNTRIES

Staple food/ Country	Rice (kg)	Soybean (kg)	Maize /Corn (kg)	Sugar (kg)	Milk (kg)	Fish (kg)
Indonesia	**139**	**9**	**35**	**14**	**12**	**23**
Malaysia	80	3.4	7	35	37	54
Thailand	70	2.2	6	31	22	33
Brunei	80	-	8	32	129	32
Singapore	60	7.7	-	62	47	48
Japan	60	9.3	12	17	76	59
China	93	6.9	16	7	29	26
India	77	-	4	17	68	5
Philippines	131	-	5	21	18	33
Cambodia	-	-	12	13	6	31
Viet Nam	-	-	9	10	12	27
Myanmar	-	-	2	-	25	37
Taiwan	50	13.3	-	-	-	-
World	60	-	-	22	108	17

(per capita per year)

World Food Summit in 1996 reaffirm the people's right to have access to nutritious and safe food. This condition consistent with the people's right to be free from starvation. The government and soceity should have a commitment to achieved food security for people around the world. The target is to decrease the number of undernourished people to half the present level before 2016. Production, distribution and consumption process become very important stages to be explored so that the poor people especially in the remote area can access healthy food with affordable price.

Historically, the trade of staple food in Indonesia in 1995 is based on Presidential Decree No.50 about BULOG (National Logistics Agency). BULOG has the authority of controlling and managing inventory price of rice, sugar, wheat, soybean and other foods. The authority of BULOG reduced by Presidential Decree No.45 year 1997. The Decree said that BULOG managed only rice and sugar [9].

BULOG is only responsible for rice price and distribution based on Presidential Decree No.19 year 1998 until recently. This conditions made other staple food price and distribution are released to the market. The effect of this decision can make higher price disparities and price fluctuations of staple food between provinces.

B. Staple Food Balance Sheet

According to FAO [10], Food Balance Sheet (FBS) is a comprehensive picture of the pattern of food supply in one country during a specified reference period including production, import, export, stock and consumption. SCAD [11] similarly defined it as a wide frame food pattern during specified period of time. Thus, this research used terminology of Staple Food Balance Sheet (SFBS) as a calculation of production and consumption of staple food in specific time in certain country or region based on specific assumption.

The calculation of SFBS in this research is focus on 33 provinces in Indonesia. The different between this research and FAO calculation is that this SFBS is a calculation of the production and consumption of each province. This SFBS did not take into account the import, export and stock so this calculation is simpler compare to FAO FBS.

Thus, this paper attempts to contribute to the literature by analysing the Staple Food Balance Sheet (SFBS), Coefficient of Variation (CV) and Price Disparity (PD) in Indonesia especially for rice, soybean, corn and sugar. In that respect, this study brings new insights into literature on the SFBS, CV and PD in specific provinces in Indonesia.

III. STAPLE FOOD BALANCE SHEET ESTIMATION

A. Rice Balance Sheet

TABLE II. ESTIMATION OF RICE BALANCE SHEET DIVIDED BY PROVINCES YEAR 2010-2011 (THOUSAND TON)

No	Provinces	Year 2010			Year 2011		
		Prod.	Cons.	+/-	Prod.	Cons.	+/-
1	South Sulawesi	2,498	1,117	1,381	2,527	1,117	1,410
2	South Sumatera	1,865	1,036	830	1,895	1,036	860
3	Central Java	5,763	4,501	1,262	5,259	4,501	758
4	East Java	6,637	5,209	1,428	5,923	5,209	714
5	South Kalimantan	1,050	504	546	1,141	504	637
S	S	S	S	S	S	S	S
29	NTT	317	651	(334)	331	651	(320)
30	Papua	58	394	(335)	65	394	(329)
31	Banten	1,167	1,478	(310)	1,092	1,478	(386)
32	Riau	328	770	(442)	300	770	(470)
33	Jakarta	6	1.335	(1,329)	5	1,335	(1,330)
Indonesia		**37,888**	**33,032**	**4,855**	**36,824**	**33,032**	**3,792**

Prod=Production, Cons=Consumption, +/- = Surplus/Deficit, S=Summarized (Provinces no 6 to 28 not included in table).

Table II shows the estimation production and consumption of rice in Indonesia. The raw data was retrived from Statistics Indonesia (BPS) for milled rice (GKP/Gabah Kering Giling) and population data for 33 provinces in Indonesia. Rice production data calculation is obtained by assuming the convertion by 57 percent milled rice can be produced into rice based on Bustanul Arifin research [12]. Moreover, this research also assumed that the cosumption of rice per capita per year is to be 139 kg.

The total consumption per province is calculated from the consumption per capita per year multiply by population per province. The positif (+) and negative (-) sign is the difference between rice production and consumption. If the sign is positive (+), it indicates that the provinces already self-sufficiency in rice and the

provinces can help other provices that deficit to distribute the rice.

The result of the rice production and consumption is that there were 17 provinces that is rice surplus in the year 2010 and there were 18 provinces that is rice surplus in the year 2011. The biggest five rice surplus provinces were South Sulawesi, South Sumatera, Central Java, East Java and South Kalimantan. Then, the biggest five rice deficit provinces were NTT, Papua, Banten, Riau and Jakarta. Rice deficit resulted famines in NTT and Papua in 2006, 2009 and 2010. Indonesia needs to have a better Inter-Island Trade, especially from the surplus regions such as East Java or South Sulawesi to Papua and NTT.

B. Soybean Balance Sheet

Beside rice, soybean is also one of the basic food that important to discuss in this research. Soybean is a raw material for tofu and soybean cake which is a good source of vegetable protein for the body and relatively affordable food. In addition to tofu and soybean cake, soybean also the raw material for soy sauce, tauco, soy milk and snacks. Therefore, Indonesian people are generally happy to consume soybean in various forms of processed food.

Table III shows the soybean production and consumption estimation made from Statistics Indonesia (BPS) data for soybean production and population data for 33 provinces in Indonesia. Soybean production calculation is obtained by assuming the convertion from the farmer can be consumed directly (without shrinkage). Moreover, this calculation also assumed that the consumption of soybean per capita per year was 7.68 kg for the year 2010 [13] and 8.13 kg for the year 2011 [14]. The number is multiply by population each province so that the result is consumption for soybean in each province. The positif (+) and negative (-) sign is the difference between soybean production and consumption. If the sign is positive (+) then it indicates that the provinces were self-sufficiency in soybean. The surplus provinces can help other provices that deficit to distribute the soybean.

TABLE III. ESTIMATION OF SOYBEAN BALANCE SHEET DIVIDED BY PROVINCES YEAR 2010-2011 (TON)

No	Provinces	Year 2010			Year 2011		
		Prod.	Cons.	+/-	Prod.	Cons.	+/-
1	NTB	93,122	34,562	58,560	88,099	40,367	47,732
2	East Java	339,491	287,821	51,670	366,999	336,167	30,832
3	Aceh	53,347	34,517	18,830	50,006	40,315	9,691
4	Yogyakarta	38,244	26,554	11,690	32,795	31,014	1,781
5	West Papua	600	5,840	(5,240)	403	6,821	(6,418)
S	S	S	S	S	S	S	S
29	Jakarta	0	73,788	(73,788)	0	86,182	(86,182)
30	Banten	11,662	81,655	(69,993)	5,885	95,371	(89,486)
31	North Sumatera	9,439	99,703	(90,264)	11,426	116,450	(105,024)
32	Central Java	187,992	248,699	(60,707)	112,273	290,472	(178,199)
33	West Java	55,823	330,653	(274,830)	56,166	386,192	(330,026)
	Indonesia	907,031	1,825,085	(918,054)	851,286	2,131,643	(1,280,357)

Prod=Production, Cons=Consumption, +/- = Surplus/Deficit.
S=Summarized (Provinces no 6 to 28 not included in table).

The result of the soybean production and consumption is that in the year 2010 and 2011 there were only 4 provinces that is soybean surplus. So it indicates that there are fundamental problems why 29 provinces cannot fulfil the soybean requirement for their own needs. One of the justification why more than 87 percent of total provinces cannot be self-sufficiency because soybean originally is a subtropical plant. Another reason is that soybean is not a major crop for farmers but only intercropping plants (tumpang sari). There is also findings of new variety that can make better soybean harvest in tropical area. Although, the fact is every year Indonesia has to import soybean in a large quantity.

Four provinces were soybean surplus in the year 2010 and 2011 (NTT, East Java, Aceh and Yogyakarta). Then, the bottom five soybean producers were Jakarta, Banten, North Sumatera, Central Java, and West Java. Indonesia needs a comprehensive policy to support the four provinces to be more productive to increase soybean productivity. Moreover, the process of distribution or trade to other provinces can help the demand pull so the soybean farmers can be more motivated to plant soybean.

C. Corn Balance Sheet

Beside rice and soybean, corn is one of the basic food that is important and strategic. Corn is a main staple food in several regions in Indonesia for example in NTT (Nusa Tenggara Timur) and Madura (part of East Java). Corn can be consumed directly either baked or boiled. Corn is also a raw material for corn flour (maize) which is a good source of carbohydrate, vegetable protein, vitamin and relatively affordable food.

Table IV shows the corn production and consumption estimation based on data from Statistics Indonesia. The data is about corn production and population number in 33 provinces in Indonesia. Corn production calculation is obtained by assuming the convertion by 70 percent corn from the farm to the corn that can be consumed [15].

It is difficult to find good references or reseach about the calculation of Indonesian corn consumption per capita. Some of the researches were about the consumption of corn flour but not the consumption of corn. Therefore, this research made a certain assumptions used by Awika [16] in which the consumtion of grains (including corn) per capita per year is assumed to be 50 kg per capita per year. This number is then multiplied by the population of each province in order to get the number of consumption of corn per province. Sign of positive (+) or negative (-) represents the difference between the total production and consumption of corn. If positive (+) then indicated the provinces self-sufficiency of corn. Then the surplus provinces can help distribute the corn to other provinces that have deficit in corn production.

Table IV also shows there were 10 provinces surplus of corn in 2010. Then, there were 12 provinces surplus of corn in 2011. This is an indication that there were two provinces that able to increase significantly their productivity so that they can become corn self-sufficiency. The provinces were West Sulawesi and NTB (Nusa Tenggara Barat).

In addition, Table IV shows the five provinces that have the highest corn surplus in 2010 and 2011 (East Java, Lampung, South Sulawesi, Gorontalo and Central Java). The five provinces that have the highest corn deficit were East Kalimantan, Riau, South Sumatera, Jakarta and Banten. Indonesia need certain policies to support the corn surplus provinces in order to be more productive. Industrialization of corn can be promoted to enhance the added value of the final product of corn so the corn product can be packaged in a way that is more durable, long lasting and easy distributed by traders. Indonesia could eventually become one of the biggest exporter of corn derived products in general because Indonesia has surplus of corn production in 2010 about 947 thousand ton and in 2011 about 468 thousand ton.

TABLE IV. ESTIMATION OF CORN BALANCE SHEET DIVIDED BY PROVINCES YEAR 2010-2011 (THOUSAND TON)

No	Provinces	Year 2010			Year 2011		
		Prod.	Cons.	+/-	Prod.	Cons.	+/-
1	East Java	3,911	1,874	2,037	3,810	1,874	1,936
2	Lampung	1,489	380	1,109	1,272	380	892
3	South Sulawesi	940	402	538	994	402	592
4	Gorontalo	475	52	423	424	52	372
5	Central Java	2,141	1,619	522	1,941	1,619	322
S	S	S	S	S	S	S	S
29	Riau	29	277	(248)	23	277	(254)
30	South Sumatera	88	372	(284)	88	373	(285)
31	Jakarta	0	480	(480)	0	480	(480)
32	Banten	20	531	(511)	10	531	(521)
33	West Java	647	2,153	(1,506)	662	2,153	(1,491)
Indonesia		**12,829**	**11,882**	**947**	**12,350**	**11,882**	**468**

Prod=Production, Cons=Consumption, +/- = Surplus/Deficit
S=Summarized (Provinces no 6 to 28 not included in table).

Despite the decrease in the production of corn ready for consumption by a total of 479 thousand ton, compared to soybeans, corn prospects would be enormous. In the future, corn will be one of the most valuable food commodities. Indonesia should learn advanced technology of developed countries to produce sugar from corn sugar (High Fructose Corn Syrup) [17] and produce ethanol from corn.

D. Sugar Balance Sheet

Sugar is an important staple food beside rice, soybean, and corn. Sugar is a strategic commodity according to Decree of The Coordinating Minister for the Economy No.11 year 2010 about the Coordination Team Stabilization Staple Food. Another important things is sugar trading system in Indonesia is supervised by the government. According to Decree of the President of the Republic of Indonesia No.57 year 2004 about sugar as goods under supervision, sugar has a strategic value to food security and increase economic growth so it is necessary to do surveillance of sugar trade in Indonesia.

Table V shows the sugar production and consumption in 2010 and 2011. The sugar production estimation based on data from Ministry of Agriculture of Republic of Indonesia for the production of plantation white sugar (GKP/Gula Kristal Putih). The sugar consumption is based on population data in 33 provinces in Indonesia. Sugar production is obtained by assuming the sugar farmers production data is the same with sugar production that consumed directly by the people. Moreover, this calculation also assumed that sugar consumption per capita per year is 14 kg in the year 2010 and 2011. This consumption assumption is multiplied by the population of each province in order to get the number of sugar consumption per province. Positive (+) and negative (-) sign is represent the difference between the total production and consumption of sugar. Positive (+) sign indicates that the provinces already self-sufficiency of sugar.

TABLE V. ESTIMATION OF SUGAR BALANCE SHEET DIVIDED BY PROVINCES YEAR 2010-2011 (THOUSAND TON)

No	Provinces	Year 2010			Year 2011		
		Prod.	Cons.	+/-	Prod.	Cons.	+/-
1	Lampung	760	107	653	678	107	572
2	East Java	1,017	525	492	1,052	525	527
3	Gorontalo	27	15	13	33	15	18
4	West Papua	0	11	(11)	0	11	(11)
5	South Sumatera	66	104	(38)	91	104	(13)
S	S	S	S	S	S	S	S
29	Jakarta	0	135	(135)	0	135	(135)
30	North Sumatera	31	182	(151)	47	182	(135)
31	Banten	0	149	(149)	0	149	(149)
32	Central Java	233	453	(220)	249	453	(204)
33	West Java	111	603	(492)	82	603	(521)
Indonesia		**2,290**	**3,327**	**(1,037)**	**2,268**	**3,327**	**(1,059)**

=Production, Cons=Consumption, +/- = Surplus/Deficit.
S=Summarized (Provinces no 6 to 28 not included in table).

Table V also shows there were 9 provinces produced sugar in the year 2010 and 2011. So this indicates that there is fundamental problems why 24 provinces cannot produce sugar. Moreover, there were just 3 provinces that can be self-suffienciency in sugar, namely Lampung, East Java, and Gorontalo. Remaining 30 provinces deficit of sugar should get sugar from other provinces or import the sugar. One of justification why many sugar deficit areas is that most of the provinces outside Java islands did not have sugar mills. Although actually Indonesia has an area in 33 privinces that are suitable to cultivate sugarcane.

IV. Coefficient of Variation (CV) and Price Disparity (PD) of Staple Food

As supplementary material of staple food, this research also calculated the Coeficient of Variance (CV) and Price Disparity (PD) staple food in Indonesia. The data obtained from Ministry of Trade and the Department of Trade and Industry in Provinces. The Coefficient of Variation and Price Disparity are estimated based on 56 monthly series from January 2009 to August 2013. Formula CV in equation 1 is to determine the Coefficient of Variation in price levels between regions or provinces.

$$CV = \frac{SD}{M} x100\% \qquad (1)$$

Equation (1) shows the definition of the Coefficient of Variation (CV) of the price is Standard Deviation (SD) divided by Mean (M). This calculation provides a useful standardized statistic for comparing variation across time [18]. The value of Coefficient of Variation is usually used as an indicator of price stability. The low value of CV indicates the stability of staple food prices. According to Ministry of Trade of Republic of Indonesia Strategic Plan 2010-2014, the prices of staple food are stable if the coefficient of variation of prices is in the range 5% until 9% or below.

V. Coefficient of Variation and Price Disparity Analysis

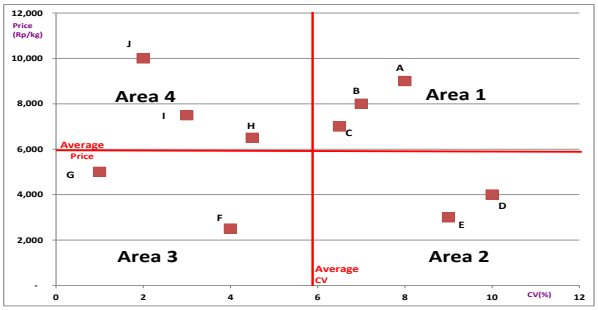
Coefficient of Variation (CV) of price is a diversity value or price deviation seen from its average value. CV is usually used as an indicator of price stability. In this part of analysis, this research was calculating and analysing the CV of provinces in Indonesia.

Definition of price in this research is nominal price of retail staple food. The prices were collected from 33 provinces. Each province has different staple food prices. According to Jati [19], CV of rice (1), sugar (12.1), corn (2.3) and soybean (1.3) were greater than CV of wheat flour (0.4) and milk (0.5) in 2009. That is one of the reasons this research focus on these four of staple food prices.

Food prices in low production provinces usually will be higher compare to the high production provinces. In some cases, interesting things happened. For example, sugar prices in West Kalimantan province in March 2011 is just Rp.9.625,-/kg compare to East Java (the most productive sugar producer) sugar prices in March 2011 is Rp.10.360,-/kg. What is going on with this retail prices? Why sugar price in West Kalimantan was cheaper compare to East Java? Is there any indication of sugar smuggling from Malaysia to Indonesia? Perhaps the demand pull of sugar price in East Java is stronger compare to West Kalimantan. That is why this kind of phenomena is very interesting to see from the CV and PD analysis.

Table VI illustrates that there are four areas in the chart. Area 1 describes when the staple food prices and the coefficient of variation of price are higher than the average. Area 2 describes the staple food prices are lower than the average but the coefficient of variation of prices are higher than the average. Area 3 describes the staple food prices and the coefficient of variation of prices are lower than the average. Area 4 describes the staple food prices are higher than the average but the coefficient of variation of prices are lower than the average.

TABLE VI. CV and PD Model



For example, in chart 1 shows that provinces F and G are in the area 3. So there is nothing to be worried about this condition because this indicates that the volatility of staple food is low and the price of staple food is relatively affordable. The provinces D and E are in the area 2, this indicates that the volatility of staple food is high but the price of staple food is relatively affordable. The provinces H, I and J in the area 4, this indicates that the volatility of staple food is low but the price of staple food is relatively high. The provinces A, B and C are in the area 1, this indicates that the volatility and the price of staple food is relatively high.

A. CV and PD of Rice Analysis

Based on Table VI model, provinces in area 1 are Papua, West Sumatera, and Aceh. In terms of rice harvested area, these three provinces only have 6.7% (901,374 hectare) of total 13,445,524 hectare Indonesian rice harvested area in 2012. The CV of rice prices value gap between of Papua and other provinces is wide. CV of rice prices in Papua is 21.89 but in Aceh only 6.18. The CV value in Papua is bigger than the government target of CV value (below 9). If we compare the Papua population is just 1.19% (2.8 million people) compare to Indonesian population.

So, this high prices and high CV indicates that there is other variables beside demand side that create rice prices fluctuation in Papua. The distribution cost in Papua is higher compare to other provinces. Papua has uneven topography that makes difficult to build road access inter-district (region or city). Airplane is used to distributed things in Papua. This condition is supported by the fact that almost every district (kabupaten/kota) of Papua has a runway [20].

B. CV and PD of Soybean Analysis

Based on Table VI model, province in area 1 is Southeast Sulawesi. In terms of harvested area in Southeast Sulawesi, it was recorded only 0.68% (3,870 hectare) of total 567,624 hectare Indonesian soybean harvested area. The percentage of soybean production in Southeast Sulawesi is also small about 0.44% (3,710

ton/year) of total 843,153 ton Indonesian soybean production in 2012.

C. CV and PD of Soybean Analysis

Based on Table VI model, provinces in area 1 are West Java, Jambi and Papua. In terms of corn harvested area, these three provinces only have 4.01% (158,741 hectare) of total 3,957,595 hectare Indonesian corn harvested area. Also in corn production, these three provinces only have 5.47% (1,060,617 ton) of total 19,387,022 ton Indonesian corn production in 2012.

D. CV and PD of Sugar Analysis

Based on Table VI model, provinces in area 1 are North Maluku, Maluku, NTT, Jakarta, Central Kalimantan, and Southeast Sulawesi. In terms of sugar harvested area, these six provinces have zero of total 2,267,887 ton Indonesian sugar production in 2011.

Related to the CV and PD problems, Government of Indonesia already support with food policy application. There are reference prices for rice and sugar but not for corn and soybean (reference price for soybean implemented in June 2013). Rice reference price is called Government Purchase Price (HPP) and sugar reference price is called Farmer Benchmark Price (HPP). Rice reference price issued by President through Presidential Instruction and sugar reference price recommended by Ministry of Agriculture, issued by Ministry of Trade through Trade Minister's Regulation. According to OECD [21], this domestic policy instrument is called minimum purchase prices. BULOG is required to purchase rice for distribution and stock requirements at guaranteed prices set by government. Sugar millers are required to pay sugar cane growers a HPP as a condition of the preferential licences they hold to import sugar.

Besides that, the reason why the ratio of CV is stable because of government controlled the retail oil price through SOE (Pertamina). According to Serra [22] prices for staple food are cointegrated with crude oil prices. Moreover, according to Jati [23], government also subsidized the retail petrol price with fix price Rp. 4,500/litre (since July 2013 the petrol price increase become Rp. 6,500/litre) compare to international petrol price around Rp. 9,500/litre. This condition makes the ratio of CV of staple food relatively stable.

VI. Conclusion

There is a potential increase in consumption of staple food such as rice, soybean, corn and sugar in the future due to the consumption per capita of food in Indonesia relatively lower than other countries. Besides that, the increase of population and purchasing power could make people increase the quantities and qualities of food to eat. If the rising demand of food is not resolved then it could lead to decreasing the number of provinces that already self-sufficiency of staple food, while the deficit provinces will become food insecure province.

Based on the calculation of SFBS, there were rice surplus in 18 provinces, soybean surplus in 4 provinces, corn surplus in 11 provinces and sugar surplus in 3 provinces in 2011. In national level, rice and corn are already food self-sufficiency, but soybean and sugar are not yet self-sufficiency. Indonesian government target of soybean and sugar self-sufficiency in the year 2014 is difficult to achieve because there are 30 provinces deficit of sugar and 29 provinces deficit of soybean.

In general the staple food prices are stable. The CV is below target (less than 2.5/stable). One of the reasons is there are reference prices for rice and sugar. Rice reference price is called Government Purchase Price and sugar reference price is called Farmer Benchmark Price.

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