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Topic of seminar to which your abstract relates*: [2   ]*

Title of paper: An alternative approach to measure poverty in East Indonesia

Abstract

The first goal of the sustainable development goal (SDG) – ending poverty in all its form everywhere by 2030 – has become a concern of the statistical community. In Indonesia, poverty rate measurement is based on poverty line which divide individuals into poor and non-poor groups. If an individual could fulfill the most basic needs - the cost of 2.100 kilo of calories - that individual surpasses the poverty line and is considered not poor. Currently, poverty line is compiled from the consumption and expenditure module of the National Socioeconomic Survey (SUSENAS). It uses actual price and results from SUSENAS and has not equalized the prices of commodities, basket of goods across states and the real prices or purchasing power parity. This implies that the current estimation methodology somehow ignores the fact that people in eastern Indonesia will likely pay higher price for the same commodity found in western Indonesia. The latter being known to be producer of various commodities. Using the SUSENAS March 2018 data of Maluku Utara Province to represent eastern Indonesia and the consumer price index data, we tried to provide alternative measurement of poverty line and poverty rate. By adjusting the price to account for across space difference in prices and commodity shares, we arrived at poverty line and rates that are lower than the published official data.

Keywords: *SDGs, Poverty Line, Poverty Rate, Price Adjusting*

I. Contents

II. Introduction

The first goal of Sustainable Development Goals (SDG's) is to end poverty in all its form. This goal become so important that many countries including Indonesia give a huge effort to achieve it by 2030.

For measuring the poverty, Indonesia's BPS-Statistics Indonesia use poverty line to divide individuals into poor or not poor category. This poverty line is conduct using basic needs approach. Based on this approach, poverty seen as inability in economic side to fulfill basic needs on food or nonfood commodities.

In food, poverty line counted by minimum expenditure to fulfill food requirements which equal to 2,100 kilocalories per capita per day. On the other side, the non-food poverty line, counted by minimum expenditure for housing, clothing, education, health and any other non-food staple commodities.

To measure poverty line, BPS using household survey data from Survei Sosial Ekonomi Nasional (Susenas). However, this data is not accommodate the purchasing power parity between population in Western Indonesia and Eastern Indonesia. Most of the commodities, either its food or non-food tend to be more expensive on significant amount in Eastern Indonesia than in Western Indonesia.

This price difference happens mostly because of the high transportation cost for the commodities to arrive in eastern Indonesia. The significant cost is produced by long distance that need to go through by commodities, as Indonesia is the largest archipelago country in the world and the industry (food or non-food) development not yet built equally in all regional.

Measurement of poverty line in good approach can be studied through Measurement of Poverty Rate by Adjusting the Commodities Price into Purchasing Parity Price to Achieve Goal number 1 of Agenda 2030 (Case Studied: North Maluku Province, Indonesia 2018). This information is useful to policymakers in terms of designing policies aimed at food price stabilization, particularly the food commodities that become the main source of calories in Indonesia.

The main objective of this study is to measure the poverty line based on equalized price between Eastern Indonesia and Western Indonesia using household survey data from Susenas 2018 in Maluku Utara Province with price index as weights. Furthermore, this study is expected to assist policymaker in actualize poverty alleviation through food price stabilization policies.

III. Methodology

A. Data Resource

This paper use the data of National Socio-Economic Survey (Susenas) of March 2018 in Maluku Utara Province, Indonesia. This survey is one of the most important official survey, uses to measure the poverty rate in Indonesia. The sample size of the survey is 300,000 household spread over 34 Province in Indonesia. But for this paper we use Susenas data from Maluku Utara Province. Beside that, this paper use data of Consumer Price Index (CPI) of Ternate City as represent of North Maluku Province and CPI data of capital Jakarta, condition of March 2018.

B. Poverty Measurement

The first step of measuring the poverty rate in Indonesia is conduct the poverty line (PL). The poverty line are the total of Food Poverty Line (FPL) and non-food poverty line (NFPL). The food poverty line construct from the average expenditure of 54 main food commodities that equal to 2,100 kilo calories requirement, while the non-food poverty line set by the average of expenditure of 55 main non-food commodities.

For this paper, we adjust the equation by adjusting the average consumer price changes with Consumer Price Index (CPI). We assume that, this CPI as the substitution of the real consumer price of commodities and its changing of this index could be influence the pattern of consumption of some commodities. In this paper, we adjust the price by comparing the CPI Jakarta as the major and capital City with CPI Ternate, represent the price in Maluku Utara Province. The FPL can be measure with this equation:

$$FPL_j = \sum_{k=1}^{54} P_{jk}. CPI\ Jakarta/CPI\ Ternate. Q_{jk} = \sum_{k=1}^{54} V_{jk} \ldots\ldots\ldots\ldots\ldots (1)$$

where:

FPL$_j$ = Food Poverty Line regional j (before equalize into 2,100 kilo calories).

P$_{jk}$ = Price of Commodity k in regional j.

CPI = Consumer price index of Capital jakarta and Ternate City (Maluku Utara Province)

Q$_{jkp}$ = Average of quantity of commodity k that consumed in regional j.

V$_{jkp}$ = Expenditure value for commodity k consumption in regional j.

j = regional Urban or Rural

Furthermore the FPL$_j$ equalize with the calorie requirement of 2,100 kilo calorie with the equation :

$$PCj = \frac{\sum_{k=1}^{54} Vjk}{\sum_{k=1}^{54} Kjk} \ldots\ldots\ldots\ldots\ldots (2)$$

where:

C$_{jk}$ = Calorie of commodity k in regional j.

PC $_j$ = Average of calorie price in regional j

.And multiply by:

$$FPL_j = PC_j\ x\ 2,100 \ldots\ldots\ldots\ldots\ldots (3)$$

where:

FPL = minimum needed in regional j, who need the energy that equal to 2,100 kilo calorie per day or Food Poverty Line.

j = Urban or Rural

In the other hand, the equation for measuring non-food poverty line is in equation 4. This equation is also adjusted by the comparison of CPI Jakarta and CPI Ternate:

$$NFPL\,j = \sum_{k=1}^{n} r_k\,V_{kj.}\,CPI\,Jakarta/CPI\,Ternate \ldots\ldots\ldots\ldots\ldots(4)$$

where:

NFPL$_j$ = Non Foof Poverty Line regional j.

V$_{kj}$ = Expenditure value of non-food commodities of regional j.

r$_{kj}$ = The expenditure ratio of non-food commodities by the Survey of SPKKD 2004.

CPI = Consumer price index of Capital jakarta and Ternate City (Maluku Utara Province)

k = The commodities.

J = Urban or Rural

The next step when we found the Poverty Line is measure the poverty rate with this equation:

$$\%PM \quad = \frac{PM}{P} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(5)$$

where :

%PM = Percentage of Poor Population

PM = The number of poor population

P = All province population

IV. Results

A. Poverty Line

As the first step of measurement of poverty in Indonesia, we conduct the poverty line. The poverty line consists of food poverty line and non-food poverty line. As equation 1, the poverty line conducted by measuring of twenty percent of refences population that took from the cutting level. The cut of point we used by inflate previous poverty line or September 2017's poverty line by the consumer price index inflation.

Table 1. Comparison of Poverty Line between Official Data-BPS and Price Adjustment by Author in Maluku Utara Province, March 2018.

Table 1 shows the result of this measurement. The first row show the official data by BPS and the second is the author's measurement. In general, the poverty line on the first row was about 412,266 rupiahs, beside the authors who use the price adjustment reach 403,485 rupiahs. Adjusting the price in East Indonesia means that we equalize the standard of the commodities price with the West Indonesia, so we could see how much the equal expenditure of people in East Indonesia without changing their consumption pattern.

Following the data from table 1, we can see on the table 2 below, the comparison of measurement between the BPS and the Authors who classify onto Urban and Rural regional. The first row shows the Urban regional, measurement of poverty line by the BPS was 428,897 rupiahs and for the rural was 405,558 rupiahs. On the other hand we see that author's price adjustment of measuring the poverty line were quite lower than BPS. The poverty line in urban regional was about 419,762 rupiahs and the rural regional was about 396,918 rupiahs.

Table 2. Comparison of Poverty Line by Official Data-BPS, Price Adjustment and Urban-Rural in North Maluku Province, March 2018

Regional	Official Data-BPS			Price Adjustment		
	FPL-Rp.	NFPL-Rp.	PL-Rp.	FPL-Rp.	NFPL-Rp.	PL-Rp.
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1. Urban	330,654	98,243	428,897	323,612	96,150	419,762

Source	Food Poverty Line (FPL - Rp)		Non Food Poverty Line (NFPL - Rp)		Poverty Line (PL - Rp)	
(1)	(2)		(3)		(4)	
1. Official Data, BPS	323,639		88,628		412,266	
2. Price Adjustment	316,745		86,740		403,485	
2. Rural	320,771	84,786	405,558	313,938	82,980	396,918

B. Poverty Rate/Headcount, Poverty Gap, and Poverty Severity

Furthermore we measure the poverty rate or headcount index (P_0). Basically the poverty rate generate the percentage of population who have per-capita income below the poverty line.

The poverty rate of Maluku Utara Province on March 2018 by adjusting the commodities price was 6.07 percent. This rate was lower than the official data by BPS at 6.64 percent. Beside that, the poverty rate in urban and rural regional was below than Official-BPS's data. The Urban's poverty rate was 3,65 percent (BPS was 3,80 percent) and the rural was 7,03 percent (BPS was 7,78 percent).

This paper also measure the poverty gap index (P_1) and poverty severity indek (P_2) as shown on table 3. The poverty gap index indicates the gap between poverty line and the top per-capita income of the poor. By adjusting the price, the P_1 was about 0.77, lower than BPS's P_1 index was 0,89. In the other hand, the poverty severity index (P_2) indicates the inequality among the poor. The result show that the P_2 index was about 0,16 while the BPS's data was 0,19.

Table 3. Comparison of P_0, P_1, P_2 by Official Data-BPS, Price Adjustment and Urban-Rural in Maluku Utara Province, March 2018

Regional	Official Data-BPS			Price Adjustment		
	P_0	P_1	P_2	P_0	P_1	P_2
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Urban	3.80	0.69	0.18	3.65	0.62	0.17
Rural	7.78	0.97	0.19	7.03	0.83	0.16
Urban+Rural	6.64	0.89	0.19	6.07	0.77	0.16

C. Population of Poor

Due to the result of the measurment of poverty line and poverty rate by adjusting the commodities price, it has implication to the whole poor population in Maluku Utara Province. Since the result has smaller rate than the BPS's data, the poor population are also have the lower number. The poor population according to Official-BPS data of Maluku Utara Province in March 2018 was about 81,46 thousand people. This data

consist 13,34 thousand poor at the Urban regional and 68,12 thousand of poor at the Rural regional. In the other hand, our study's result show that total poor population was 74,41 thousand people, this is smaller than BPS data. The poor poeple at the Urban regional was about 12,81 thousand and 61,59 thousand poor people at the Rural regional.

Table 4. Population of Poor According to BPS and Price Adjusment by Regional in Maluku Utara Province, March 2018 (000 people)

Regional	BPS - Official	Price Adjustment
(1)	(2)	(3)
Urban	13,34	12,81
Rural	68,12	61,59
Urban+Rural	81,46	74,41

V. Conclusion and Recommendation

All the result in this paper shows the differences between the measurement by the Official BPS data and price adjusting data. We use the data from BPS as the main control and the benchmark to evaluate the poverty target on SDGs. The paper was not only made a change on the price data, but it has adjusting the price data approprie with common assume we use. The difference of commodites price between the capital Jakarta and Maluku Utara Province have the impact on the purchasing power of the people. People tend to make more consumption with good price same with capital Jakarta, but the people in Maluku Utara province must think more to make consumption or even change the same commodities with other substitute goods because of expansive price.

The adjustment price is just to compare between two general price that shown by consumer price index (CPI) between capital Jakarta and Maluku Utara Province. We assume that the commodities in Maluku Utara have the same price level as capital Jakarta's price. Following this assumption, as the result of the measurement we found that in the equal level of the price between capital Jakarta and Maluku Utara Province, the poverty line, poverty rate and even poor population were decrease.

Decreasing of the poverty rate in this paper shows us how to do with the poverty. The number was not just the statistically process, but this is could be a light benchmark to overcome the poverty. As the public released of the poverty profile of Maluku Utara

Province, March 2018, BPS said that on of the main factor of the poverty rate because of inflation. Furthermore the inflation has share on the poverty rate in Maluku Utara Province. Since this Province has quitly high on inflation and commodities price, it means that tend to inflate the poverty rate too. We assume the main factor of the highly commodites price in Maluku Utara Province because of the high price of the transportation or expedition of the commodities from Java.

As the simple reccomendation, we suggest to the government to concern about the policy to keep the commodities proce stability. Beside that, the government could set the transportation range price between capital Jakarta and Maluku Utara Province. It's better if the transportation service price will be discount by the government so that the commodities price, expect to quite cheap. We believe that if the government act the stabiltiy of commodities price policy, it could be better for the poverty rate data and the poor population.

For the next studies, we recommend to adjusting the price into sub commodities price, so we may see the changing of the commodities share on Poverty.

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