

ANALYSIS OF FARMERS' TERM OF TRADE IN BONDOWOSO REGENCY IN 2021

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ABSTRACT

The study, titled Analysis of Farmers' Terms of Trade in Bondowoso Regency, aims to Analyze the level of farmer welfare through the FTT approach. Analyzing the success of development in Bondowoso Regency. Respondents to this study were farmers from 5 (five) subsectors, namely the sub-sectors of food crops, horticulture, plantations, livestock and fisheries sub-sectors from 23 sub-districts in Bondowoso Regency. The analysis used in this study is Descriptive Analysis using farmer exchange rate calculations, and agricultural analysis. The results showed that from 2017 - 2021 the FTT of Bondowoso regency and East Java is higher than the National FTT, it means that the level of welfare of farmers in Bondowoso Regency and in east Java is higher than the welfare of farmers nationally. The highest price index received by farmers is in the plantation sub-sector. The price index received by farmers in the agricultural sector in Bondowoso Regency in 2021, showed an increase of 3.06 compared to 2020. While the price index paid by farmers of food crops is highest. The highest FTT in the Food Crops subsector was 106.64, while the lowest FTT occurred in the Horticulture subsector at 100.77. The growth of FTT in the agricultural sector from 2020-2021 amounted to 1.42. All agricultural commodities in Bondowoso Regency are worth working on because they have more than 1 R / C and relatively high NPM.

Keywords: Farmers' Term Trade, Farmer welfare, Agricultural sector.

1. Introduction

Poverty is still a fundamental problem faced in various countries, including in Indonesia. Data from the Central Statistics Agency in 2020 showed that the number of poor people is still quite large (24.79 million people) and most live in rural areas, where in 2019 the percentage of rural poor people is 12.60% and in urban areas 6.56%. Central statistics agency also noted that 49.41% of poor households depended on their lives or had the main livelihood of the agricultural sector.

The agricultural sector is a sector of the local resource-based economy that has a considerable role in the development of a country, especially developing countries such as Indonesia. Agricultural development orientation is the improvement of farmer welfare, therefore it is very relevant to examine the impact of development carried out on improving farmer welfare, so that it can be an input for the implementation of further agricultural development.

One indicator that can be used to see the welfare of farmers is the Farmers' Terms of Trade (FTT). FTT is the relationship between the products sold by farmers and the



goods and services purchased by farmers. The development of FTT is an important indicator for areas that rely on the agricultural sector. Therefore, the Bondowoso Regency government as one of the regions that emphasizes development in the agricultural sector, every year carries out the calculation of the index. By calculating and understanding the essence of FTT, the Bondowoso Regency government not only maintains the existence of the agricultural sector with its traditional characteristics, but is committed to continuously transforming agriculture in a more advanced and modern direction, namely by increasing agricultural industrialization (agroindustry) which is expected to provide added value to the agricultural sector.

To see the success of the development that has been implemented in Bondowoso Regency in addition to data on economic growth is also needed supporting data in the agricultural sector. By the availability of complete and accurate data in the agricultural sector, it will make it easier for local governments to carry out development evaluations that have been implemented and in preparing the next development planning. One of the macro indications used to measure and evaluate the performance of this development agenda is to look at the Farmers' Terms of Trade (FTT).

2. Literature Review.

a. Economic Development.

Regional economic development is a process that includes the establishment of new institutions, the development of alternative industries, the improvement of existing labor capacity to produce better products and services, the identification of new markets, the transfer of science and the development of companies (Arsyad, 1999: 107). Every regional development effort has the main goal of increasing the number and types of job opportunities for regional communities.

Thus the pattern of development policy taken by an area must be adjusted to the conditions and potential of the area concerned. The prosperity of a region in addition to being determined by the amount of added value that occurs in the region is also determined by the amount of transfer payments which are the share of income flowing outside the region or getting a flow of funds from outside the region (Richardson, 1991: 125). According to Sirojuzilam (2008: 26) the main difference between the analysis of national economic growth and the analysis of regional growth lies in the transfer of factors (factors movement).

Improving the welfare of farmers in addition to being one of the main goals of agricultural development is also part of the agricultural development instrument itself. Farmers who are more prosperous, have more capability in carrying out agricultural development, then welfare has intrinsic value and instrumental value. Thus improving well-being can be achieved through efforts to increase income and or increase household consumption needs.

b. Farmers' Terms of Trade Concept.

One of the most commonly used indicators in measuring the level of welfare of farmers is to use the Farmers' Terms of Trade (FTT). The concept of FTT as welfare can be measured from the increased purchasing power of income to meet its expenses. The higher the purchasing power of the farmer's income to the needs of consumption, the higher the exchange rate of the farmer. (Rachmat, 2013).

P_{Ti}

c. Farmers' Terms of Trade (FTT) measurement

FTT is a comparison or ratio between the index received farmers (I_t) and the price index paid by farmers (I_b) expressed in percentages. Conceptually FTT is a measure of the ability to exchange agricultural goods (products) produced by farmers against goods or services needed for household consumption and needs in producing agricultural products. The preparation and calculation of FTT is obtained from two components of the index, namely the Index Received by Farmers (I_t) and the Index Paid by Farmers (I_b), FTT is formulated with :

$$FTT = \frac{I_t}{I_b} \times 100\%$$

Information :

FTT : Index of Farmers' Term of Trade

 I_t : Price Index Received by farmers I_b : Price Index Paid by Farmers

The index is a weighted value against quantity in a given base year. The movement of the exchange rate will be determined by the determination of the base year because the difference in the base year will result in the development of different indexes.

1. Price Received by farmers (HT)

Is the weighted price of the price of each agricultural commodity produced or sold by farmers. The counterweight used is the value of production sold by farmers from each commodity. Price Received by farmers (HT) is formulated by :

$$HT = \sum a_i * P_{Ti}$$

Information:

HT : Price Received by farmers

: Prices of commodity groups in sub-sector i (i = food crops, horticulture, smallholder plantations, livestock and fisheries) a_i : Weighting of each sub-sector

2. Price Paid by Farmers market share(HB).

Is the weighted price of the price or cost of food consumption, non-food consumption, production costs and addition of capital goods. The price mentioned is the retail price of goods and services in the rural market. The Price Paid by farmers (HB) is formulated by :

$$HB = \sum b * PB_i$$

Information :

HB : The price paid by farmers

PB $_i$: Price of the i -th product group purchased by farmers b : Weight of the i -th commodity i : Group of food consumption products, non-food (housing, clothing, various goods and services), and production facilities (factors of production, capital goods).

3. The rules for reading the results of the FTT analysis.

Central Bureau of Statistics defines and explains FTT as follows:

- FTT > 100, This means that farmers have a surplus. The price of its production increases is greater than the increase in consumption prices and production costs. Farmers' incomes rise greater than their expenditures, thus the level of welfare of farmers is better than previous level of farmer welfare.
- FTT = 100, this means that farmers experience break even/ break even. The increase/decrease in production prices is equal to the percentage increase/ decrease in consumption prices and production costs. The level of welfare of farmers has not changed.
- FTT < 100, this means that farmers have a deficit. The price of production increased smaller than the increase in consumption prices and production costs. The level of farmer welfare has decreased compared to the previous level of farmer welfare.

3. Research Method.

The location of the study was determined deliberately in 23 sub-districts in the administrative area of the Bondowoso Regency Government. Respondents of this activity were peasant households divided into 5 (five) subsectors, namely food crops, horticultural crops, people's plantation crops, livestock and fisheries. Based on the Kretjie Table, or based on the Slovin formula, this study determined the number of samples as many as 270 farmers, or an average of 12 farmers from each sub-district, representing 5 subsectors proportionally based on the number of peasant households from each subsector. The data used in this study was in the form of qualitative data and quantitative data derived from primary data and secondary data. While the analysis method used was Descriptive Analysis, which is the analysis of data that is qualitative and quantitative, both primary and secondary data. The results of the analysis were in the form of descriptions of phenomena that answer the purpose of this study. The tools used to conduct the analysis were the method of calculating the Farmers' Terms of Trade, Agricultural Analysis and Farmer Household Expenditure Structure.

To analyze the welfare of farmers in macro using the Farmers' Terms of Trade (FTT) analysis calculated by the ratio or ratio formula between the Price Index Received by farmers (IT_n) and the Price Index Paid by farmers (IB_n) as follows:

$$NTP = \frac{IT_n}{IB_n}$$

Information :

FTT = Farmers' Terms of Trade

IT_n = Price Index Received by Farmers n-th year

IB_n = Price Index Paid by Farmers n-th year

While the calculation of each IT and IB index using the modified Laspeyres method, as follows :

$$IT_n = \frac{\sum_{i=1}^m \frac{P_{ni}}{P_{(n-1)i}} P_{(n-1)i} * Q_{oi}}{\sum_{i=1}^m P_{oi} * Q_{oi}} \cdot 100$$

$$IB_n = \frac{\sum_{i=1}^m \frac{P_{ni}}{P_{(n-1)i}} P_{(n-1)i} * Q_{oi}}{\sum_{i=1}^m P_{oi} * Q_{oi}} * 100$$

P_{ni} = Price of commodity or goods i in year n (Rp/Unit)

$P_{(n-1)}$ = Price of commodity or goods i in the previous year $(n-1)$ (Rp/unit)

Q_{oi} = Quantity of commodity or goods i in base year (units)

P_{oi} = Price of commodity or goods i in base year (Rp/unit)

To find out the welfare of farmers micro using the analysis of agricultural feasibility, namely by looking at the level of profit of farmers (profitability) and the rate of return on agricultural revenue to the cost of production (rentability) of all subsectors. Agricultural profits are calculated by reducing the entire cost of farming (Total Cost) from all agricultural revenues (Total Revenue). Formulated as follows :

$$\pi = TR - TC$$

Information :

π = Agricultural profits

TR = Amount of agricultural revenue (price multiplied by harvest quantity)

TC = Amount of farm costs (price times factor of production)

4. Result

a. The State of Farmers' Terms of Trade in Bondowoso Regency

Calculation of Farmers' Terms of Trade in Bondowoso Regency includes subsectors of food crops (rice and second crops), horticultures (vegetables and fruits), People's Plantation Plants (TPR) (sugar cane, coconut, robusta coffee, cloves and tobacco), livestock including large livestock (cows and buffalo), small livestock (goats, sheep), poultry (chicken, ducks), and livestock products such as cow's milk, eggs, and fisheries subsectors include capture fisheries and aquaculture fisheries.

Overview of the development of FTT nationally, East Java province and Bondowoso regency from 2017 to 2020 in detail can be seen in the table as follows.

Table 1: Farmers' Terms of Trade of Bondowoso Regency, East Java Province and National

Farmers' Terms of Trade (FTT)	2017	2018	2019	2020
Bondowoso	103,73	104,44	104,59	104,59
East Java	103,91	105,42	108,20	100,21
National	100,65	101,99	102,33	101,66

Source : Primary Data Analysis 2021

For 4 consecutive years it can be seen that the FTT of Bondowoso and East Java regencies is higher than the National FTT, this showed that the level of welfare of farmers in Bondowoso Regency and in eastern Java is higher than the welfare of farmers nationally.

b. Price Index Received by farmers (IT)

The price index received by farmers in Bondowoso regency comes from the prices of various agricultural sector commodities. The average price index received by farmers in Bondowoso regency can be seen in the following table :

Table 2 : The average price index received by farmers (IT)
Bondowoso Regency According to Subsectors 2017 - 2021

Types	2017	2018	2019	2020	2021	Rata 2
Sub-sector of food crops	111,52	112,56	110,29	110,29	114,11	112.12
Sub-sector of horticultures	100,19	100,87	102,20	102,20	110,59	103.21
Sub-sector of plantations	109,28	110,00	109,61	109,61	110,20	109.74
Sub-sector of livestock	107,02	107,74	107,45	107,45	108,35	107.60
Sub Sektor fisheries	106,67	107,39	106,90	106,90	112,67	108.10
Agricultural Sector	106.93	107,71	107.29	107.29	111,18	108.08

Source : Data Analysis, 2021

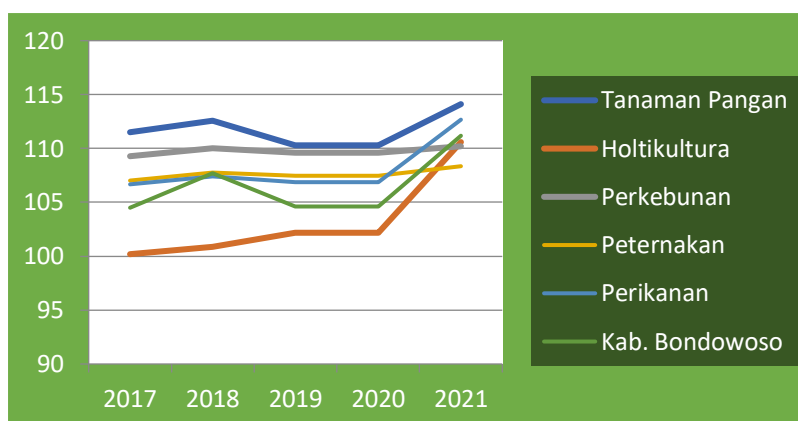


Figure 1: Average Graph Price Index Received by Farmers (IT) of Bondowoso Regency According to Subsector 2017 – 2021

From the table above, it can be seen that the price index received by farmers is highest in the sub-sector of food crops. This showed that the value of food crop commodity production provided higher revenue than other sub-sector commodities. From the table, it can also be seen that in 2021 the price index received by farmers as a whole from the agricultural sector in Bondowoso regency is highest, indicating an increase in the purchasing power of consumers of agricultural products. The price index received by Bondowoso county farmers in 2021 increased by 3.06 percent compared to receipts in 2020. The largest contribution to the increase in the acceptance of Bondowoso Regency farmers came from the increase in commodity prices of the food crop sub-sector.

c. Price Index Paid by Farmers (IB)

It consists of two groups, namely household consumption and groups of production costs and the formation of capital goods (BPPBM). Household consumption groups are divided into food groups and non-food groups. Data of price index paid by farmers in Bondowoso Regency can be seen in the following table :

Table 3: Average Price Index Paid by Farmers (Ib) of Bondowoso Regency
Year 2017-2021.

Types	2017	2018	2019	2020	2021	Rata 2
Sub-Sector of food crops	108,00	108,10	112,59	112,59	104,18	109.092
Sub-Sector of	101,25	101,30	101,90	101,90	107,76	102.822

Types	2017	2018	2019	2020	2021	Rata 2
horticultures						
Sub-Sector of plantations	102,30	102,35	110,12	110,12	105,97	106.172
Sub-Sector of livestock	102,56	102,60	107,82	107,82	104,20	105.00
Sub-Sector of fisheries	102,10	102,14	107,49	107,49	109,51	105.746
Agricultural Sector	103.24	103.30	107.98	107.98	106.32	105.77

Source : Data analysis,2021

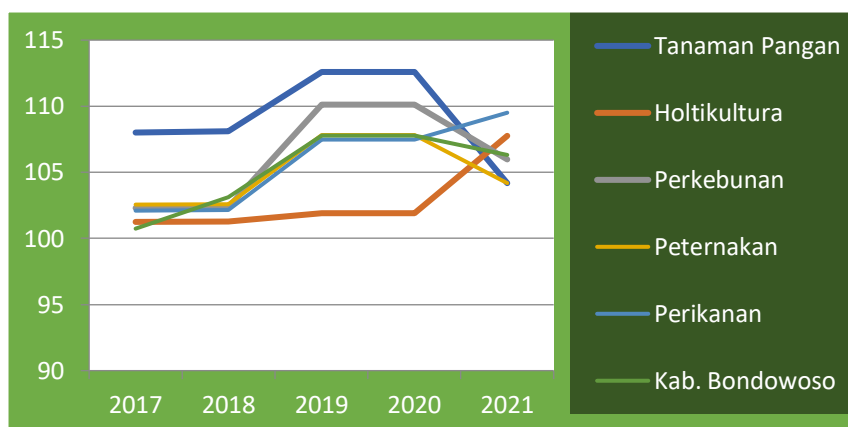


Figure 2: Average Graph of Price Index Paid by Farmers (Ib) of Bondowoso Regency Year 2017-2021.

From table 3, it can be known that the price index paid by food crop farmers is the highest compared to other sub-sector farmers. This indicated an increase in the volume of purchases and an increase in the price of goods consumed and an increase in the cost of production of agricultural products of food crops, as well as an increase in expenditure for the addition of capital goods as a consequence of the application of technology. While overall from the agricultural sector in Bondowoso Regency, the price index paid by farmers is highest in 2020. This is estimated to be the impact of the Covid-19 pandemic which affects the price of food and non-food goods such as health costs.

d. Farmers' Terms of Trade

The Farmers' Terms of Trade in Bondowoso regency in 2021 is the price index received by farmers formed from the price index received by farmers in each sub-sector. The results of the calculation of the Farmers' Terms of Trade in Bondowoso Province can be seen in the following table :

Table 4 : Farm`11ers' Terms of Trade in Bondowoso Regency Year (2017-2021).

Data source : Primary data analysis in 2021

No	Types	2017	2018	2019	2020	2021	Rata 2
1	Sub-sector of food crops	103,26	104,13	108,13	108,13	109,56	106,64
2	Sub-sector of horticultures	98,95	99,58	101,33	101,33	102,66	100,77
3	Sub-sector of plantations	106,82	107,47	102,36	102,36	103,99	104.60
4	Sub-sector of livestocks	104,35	105,01	102,64	102,64	103,99	103,73
5	Sub-sector of fisheries	104,48	105,14	101,44	101,44	102,89	103,08
6	Agricultural Sector	103,73	104,44	103,16	103,16	104,58	103,81

It can be seen that the horticultural subctor in 2017 and 2018 the values of the FTT are still below 100, this showed that in that year the horticultural sub-sector farmers were still not prosperous. But three years later it has increased and in 2021 it has reached 102.66 which means that horticultural farmers in Bondowoso Regency were already prosperous. Looking at the average value of FTT in each sub-sector for the last 5 years (2017-2021) it appeared that each has an average FTT value above 100. This showed that over the past five years farmers from various sub-sectors had been in a prosperous state. It appeared that the highest FTT in the Food Crops subsector is 106.64, while the lowest FTT occured in the Horticulture subsector of 100.77.

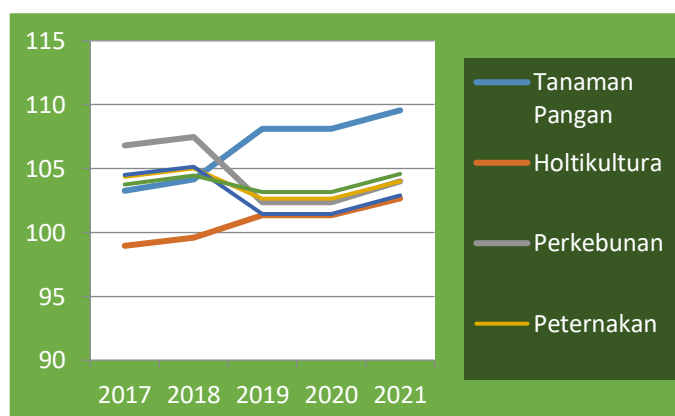


Figure 3 : Chart of Farmers' Terms of Trade in Bondowoso Regency Year 2017 - 2021

e. Economic Feasibility of Entrepreneurship

The feasibility of agricultural economy was carried out through profitability analysis which included return analysis Cost Ratio (R/C) and analysis Net Profit Margin (NPM). Return Cost Ratio analysis is a comparison between total receipts and costs. The greater the value of R/C, the greater the profit from this effort. While the Net Profit Margin (NPM) is the ratio to measure the amount of the remaining percentage of income. This measurement will result in the amount of net profit earned from total revenue minus the entire cost. Although depending on the business structure and type of industry, Net Profit Margin of more than ten percent is considered very good. Net Profit margin can be calculated using the formula of net profit divided by sales then the result is multiplied by one hundred percent. The table of economic feasibility analysis of

agricultural entrepreneurs in Bondowoso Regency in 2021 can be seen in the following table :

It can be seen in the bellow table that all agricultural commodities cultivated in Bondowoso Regency have economic feasibility to be cultivated, because of the value of $R/C > 1$ and the value of the NPM are relatively high. Sugarcane commodities have the highest R/C and NPM and subsequently Tobacco commodities. This showed that both commodities are plantation commodities that provide greater profits than other commodities.

Table 5: Analysis of Economic Feasibility of Agricultural Business
Per Year of Bondowoso Regency in 2021

Commodity	Cost (Rp)	Reception (Rp)	Profit (Rp)	R/C	NPM
Rice	21.480.000	62.400.000	40.920.000	2,91	65,6
Corn	11.300.000	27.300.000	16.000.000	2,42	58,6
Soya bean	4.540.000	9.750.000	5.210.000	2,15	53,4
Cayene pepper	49.100.000	100.000.000	50.900.000	2,04	50,9
Watermelon	18.400.000	38.500.000	20.100.000	2,09	52,2
Sugarcane	24.800.000	688.000.000	663.200.000	27,74	96,3
Arabica coffee	11.100.000	60.900.000	49.800.000	5,49	81,7
Tobacco	19.800.000	241.500.000	221.700.000	12,20	91,8
Dairy cows	103.000.000	180.000.000	77.000.000	1,75	42,7
Parrot Fish	68.700.000	165.000.000	96.300.000	2,40	58,36
Catfish	26.500.000	60.000.000	33.500.000	2,26	55,8

Data Source : Primary data analysis in 2021

Bondowoso Regency is highly calculated for its contribution at the regional level of East Java. Based on the location of the territory, agricultural productivity, and existing human resources capabilities, the government is very feasible to maintain the position of Bondowoso Regency as a food barn (rice and corn), agribusiness area and center of agricultural products trade activities.

From the analysis of business feasibility that produces $R/C > 1$ and NPM above 10% showed that agricultural development in Bondowoso Regency is doing well and provides further profit and development opportunities.

5. Conclusion

From this study it can be concluded that:

- For 4 consecutive years it can be seen that the FTT of Bondowoso and East Java regencies are higher than the National FTT, this shows that the level of welfare of farmers in Bondowoso Regency and in East Java is higher than the welfare of farmers nationally.
- The price index received by farmers is highest in the sub-sector of food crops. This shows that the value of food crop commodity production provides higher acceptance than other sub-sector commodities.
- The price index paid by food crop farmers is highest compared to other sub-sector farmers. This indicates an increase in purchase volume as well as increases in the price of goods consumed as well as increased production costs of food crop

- commodities, as well as increased expenditure for the addition of capital goods as a consequence of the application of technology.
- d. FTT in each sub-sector for the last 5 years (2017-2021) has an average value above 100. This shows that for the past five years farmers from various sub-sectors in Bondowoso Regency are in a prosperous condition. The highest FTT in the Food Crops subsector was 106.64, while the lowest FTT occurred in the Horticulture subsector of 100.77.
 - e. Through the analysis of R / C and NPM, it is known that all agricultural commodities cultivated in Bondowoso Regency have economic feasibility to be cultivated, because the value of R / C > 1 and the NPM value is relatively high. Sugarcane commodities have the highest R/C and NPM, then Tobacco commodities. This shows that both commodities are plantation commodities that provide greater profits than other commodities.

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