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Analysis of the Application for Inflation Monetary Variables on the Income of Corn Farmers in Medan Krio Village

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Abstract

The purpose of this study is to analyze crop production, farmer exchange rate and inflation against the income of corn farmers in Medan Krio Village both partially and simultaneously. The specific target in this study is to analyze crop production and the exchange rate of farmers against the income of corn farmers in Medan Krio Village. So that it can show how much the value of the influence of crop production and the exchange rate of farmers on the income of corn farmers in Medan Krio Village. This study uses primary data and secondary data as support for primary data. The data collection technique carried out on primary data is the distribution of questionnaires carried out on 150 samples of respondents. The data analysis used is Multiple Linear Regression and Descriptive Analysis. The results of this study variable crop production variable has a significant effect on the income of corn farmers in Medan Krio Village, the variable exchange rate of farmers has a significant effect on the income of corn farmers in Medan Krio Village and the variable of crop production and exchange rate of farmers simultaneously affects the income of corn farmers in Medan Krio Village. While the results of the descriptive analysis, the inflation variable affects the income of corn farmers in Medan Krio Village.

Keywords: Inflation, Exchange Rate of Farmers; Income; Crop Production

1. Introduction

Basically, the essence of agricultural development is to improve the welfare of the people in agriculture, where the agricultural sector is one of the vital sectors for Indonesia. Thus, the orientation of agricultural development that supports the improvement of farmers' welfare is an important factor to assess the impact of development that has been running so far and is also related to the future of farming or other food businesses in sustainable production as the staple food of the Indonesian people.

One indicator of farmer welfare is the ability of purchasing power from farmer income to meet farmer household consumption. The higher the purchasing power of farmers' income against their consumption needs, the higher the farmer's exchange rate, which means that farmers are more prosperous (BAPPEDA, 2020).

But on the other hand, inflation is an indicator of the rate of change in prices and is also an important component in order to maintain the level of public welfare.
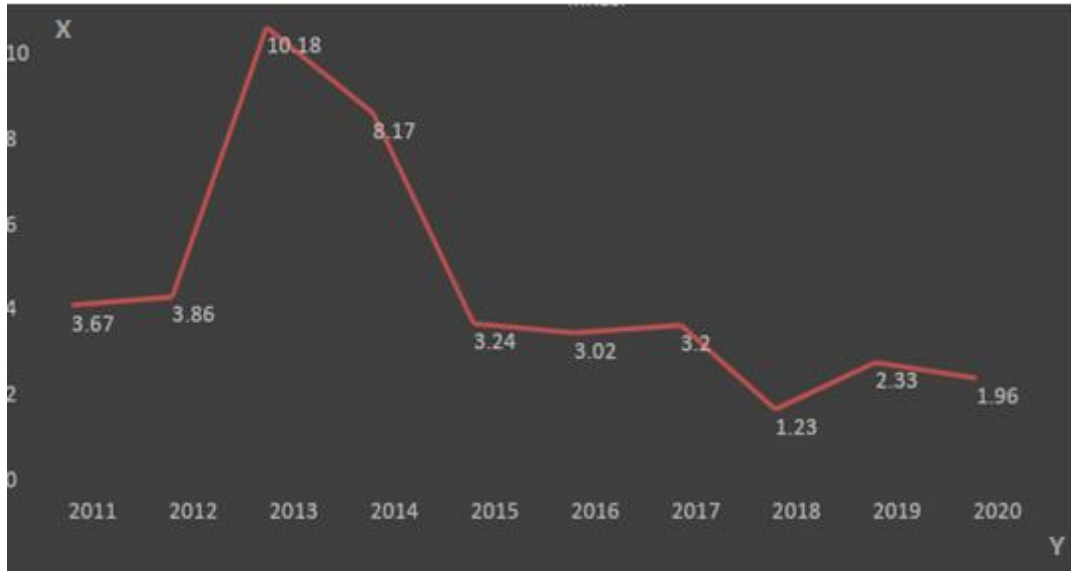
Figure 1 The North Sumatra Inflation from 2011 to 2020 (%)

The information in Figure 1 shows the development of inflation in one of the provinces in Indonesia, namely the province of North Sumatra. North Sumatra is a province in Indonesia located on the island of North Sumatra, directly bordered by Aceh to the North and bordered by West Sumatra and Riau to the South.

When viewed from the inflation chart pattern in 2011 to 2020 experienced fluctuations. But in general, North Sumatra inflation is still classified as low inflation (below 2 digits) except in 2013 with a cap of 10.18%.

Medan Krio Village is one of the villages located in Sunggal District, Deli Serdang Regency, North Sumatra Province. The total population of Medan Krio village is recorded at ± 17,864 people (BPS Deli Serdang, 2021) which has an area of 828.5 Ha. Medan Krio Village has XIII (thirteen) hamlets and ± 4,153 heads of families (KK). Most of the population are farmers for their livelihood, and some are laborers who work in Medan and surrounding areas.

Corn food crops have long been the decision of Medan Krio village farmers to be used as a source of income in rural areas. Therefore, proper management and efficient production factors are needed. The use of inefficient production factors results in low production yields and high costs, which ultimately results in a decrease in the income/welfare of farmers. Government intervention is needed to update farmers' knowledge information in order to be able to develop the agricultural system they are running.

The author feels the need to study and analyze the variables of inflation, crop production and exchange rates of farmers on the income of corn farmers in Medan Krio Village, Sunggal District, Deli Serdang Regency. So that it can be a reference material in making policies in local governments related to community welfare, both through Village Officials, namely Village Heads and Hamlet Heads, as well as through Regents and / or Subdistrict Heads.

2. Material and methods

Data collection techniques used in the form of primary data and secondary data. Primary data were obtained from direct interviews of respondents with the help of questionnaires that had been prepared. In addition to primary data, in this study secondary data was also used as supporting data. Secondary data are obtained from relevant agencies, such as Village and Sub-district Halls and other relevant sources. Data collection techniques in this study are carried out by collecting data through literature review studies that have something to do with research.

The data that has been collected from the questionnaire is then tested for validity and reliability. Here are the tests: (1) Validity Test; (2) Reliability Test

2.1. Classical Assumption Test

Before conducting a regression analysis, it is necessary to test the classical assumptions beforehand. This is done so that the processed sample data can truly represent the population as a whole. Some of the assumption tests in this study are as follows: (1) Normality Test; (2) Multicollinearity Test; (3) Heteroscedasticity Test.

2.2. Multiple Linear Regression

Multiple regression analysis is the study of the dependence of the dependent variable with one or more independent variables, with the aim of estimating the population mean or the average value of the dependent variable based on the known value of the independent variable. The results of regression analysis are coefficients for each independent variable (Purbarany, 2013).

The dependent variable in this study is the purchase decision while the independent variable is the price and quality of the product. The formula of multiple regression analysis is as follows:

$$Y = a + b_1x_1 + b_2x_2 + e$$

where:

Y	: the income of corn farmers Pendapatan Petani Jagung
X1	: the production
X2	: the farmer exchange rate
b1, b2, b3	: the coefficient
a	: constant
e	: error term

2.3. The Description Analysis

According to (Sugiyono, 2017) descriptive analysis is a statistic used to analyze data by describing or describing the data that has been collected as it is without intending to make generalized conclusions or generalizations.

In this study, the inflation variable as a single secondary data will be analyzed separately against the income variable of corn farmers using a descriptive analysis method.

3. Results

Medan Krio Village, Sunggal District, was once a former tobacco plantation area with the names of Sungai Krio plantation and Sei Semayang Garden. From 1939 to 1940 the Dutch no longer used the Sungai Krio Garden because it was considered unproductive because the soil conditions were not suitable for tobacco plants. So since then the krio river garden has been used as a farming area for farmers and migrants from outside the area. The area of Medan Krio Village Kec.Sunggal at that time started from Glugur Rimbun, Hongga and Paya Geli Village.

Maize (Zea mays L.) is the second staple crop after rice and a crop that has long been cultivated by farmers in Indonesia. Residents who are used to consuming corn as a daily staple include: East Nusa Tenggara, East Timor, Madura and some of the people of Maluku and Irian Jaya. Corn grown by residents is generally a local variety with low productivity. Corn is produced for various purposes: namely (1) food products, (2) animal feed, (3) raw materials for 7 industrial purposes, for example for the corn oil and flour industries. In relation to the animal feed industry, the better the economic life of the community, the more animal protein consumption will increase.

Information Figure 2 the development of agricultural food crop production in rice and corn in Deli Serdang district shows fluctuating movements. This is due to changes in the increase or decrease in field area or due to climate change, the influence of pests and plant diseases and price changes that occur in the market that are affected by the amount of production (Lagebada et al., 2017).

Production can be defined as the result of a process or economic activity by utilizing several inputs. Thus, the production activity is a combination of various inputs to produce output (Agung, 1994: 9). Production factor activities are activities that process, process, and change production factors from those that are not / lack of benefits / uses to have more useful value. The factors of production that are generally used are labor, land, and capital. Scarcity of a factor of production will usually cause an increase in the price of that factor of production. The allocation of factors of production is very

important in the economic system as well as choices and policies. The needs of agricultural produce must be provided and hence the allocation of factors of production must be allocated. Therefore, farmers must be able to determine the number of various production factors that must be used in each activity (Hernanto, 1996: 167-168).
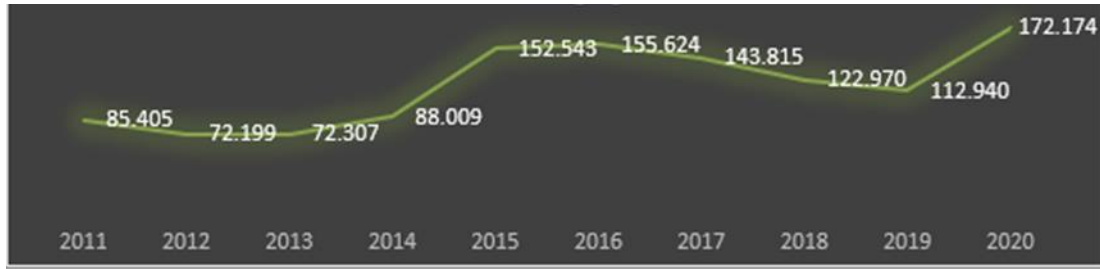

Figure 2 Production of Jangung Agricultural Food Crops, Deli Serdang Regency from 2011 to 2020 (Tons)

3.1. Impact of Inflation

Currently, people feel that the price of goods and services as basic necessities is somewhat more expensive than the price of goods and services a few years ago. Even for some people, the price increase on basic daily necessities has become a very heavy burden of life. Government policies to increase the price of fuel oil (BBM) and basic electricity tariffs (TDL), always have an impact on price increases, especially the prices of basic commodities of the community. The price increase then pushes the inflation rate higher. High inflation will be a burden for all parties. With inflation, the purchasing power of a currency becomes lower or decreases. With the decline in currency purchasing power, the ability of people to meet their living needs, both goods and services, will be lower. The unstable inflation rate will complicate planning for the business world, do not encourage people to save and invest, hinder development planning by the government, change the structure of the state budget and regional budget and various other negative impacts that are not conducive to the economy as a whole.

The uncertainty of the magnitude of the inflation rate poses a significant burden that must be faced by the government and society in general. Fluctuating and erratic inflation rates will result in relative price changes at the general price level, and this is very dangerous because in a market economic system, the price level is a signal to households and businesses about the balance of economic resource allocation in an economy.

3.2. The Results

3.2.1. The Validity test

The validity test is carried out with the aim of measuring the validity or absence of a questionnaire that has been distributed to the respondent. All indicators have a correlation coefficient (r) value of > 0.30 and a Sig value of < 0.05. This means that all questions in the questionnaire used for all targeted respondents are declared valid and feasible.

3.2.2. The Realibility test

The Reliability Test aims to measure the consistency of the questionnaire which is an indicator of the variable. A questionnaire is said to be reliable, if the respondent's answers to the question are consistent or stable over time. Cronbach's Alpha value on each variable in the study was > 0.60. Thus the results of this study are declared reliable.

3.2.3. Classical Assumption Test

In the data normality test, it is produced that the research data is normally distributed. The multicollinearity test showed that the tolerance value was 0.98 (0.98 > 0.10) and the VIF value was 1.040 (1.040 < 10). That is, the data in the study were free from symptoms of multicollinearity. The results on the hetereskedasticity test showed that the scatterplot in this study showed that there was no plot that formed a certain pattern. The plot points spread evenly, above and below the number 0 on the Y-axis. Thus, the data is free from heterokedasticity.

3.2.4. Multiple Linear Regression

Table 1 The results of multiple linear regression

	Unstandardiez Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	3.624	1.731		2.093	0.038
The production	0.502	0.092	0.393	5.488	0.000
The farmer exchange rate	0.275	0.070	0.282	3.938	0.000

Source: SPSS data processed, 2022

The multiple linear regression equation in this study is as follows:

Y = 3.624 + 0.502 X1 + 0.275 X2

If everything on the independent variables is considered constant then the value of the corn farmer's income (Y) is 3.624. If crop production continues to be increased by 1 percent, corn farmers' income will increase by 0.502 percent. If the farmer's exchange rate continues to be increased by 1 percent, the income of corn farmers will increase by 0.502 percent.

The t-value of calculating crop production is 5.486 > 1.655 (n-2=150-2=148 a5%) then the sig value of 0.000 < 0.05%. So that Ha was rejected and Ho was accepted, meaning that crop production had a significant effect on the income of corn farmers. While the t value calculates the farmer's exchange rate of 3.938 > 1.655 (n-2=150-2=148 a5%) then the sig value of 0.000 < 0.05%. So Ha was accepted and Ho was rejected, meaning that crop production had no significant effect on the income of corn farmers.

The results of the ANOVA test with F (Fisher) analysis are known to have a calculated F value of 28.113 < F table of 3.06 (n-k-1 error 5%) so that Ha is rejected and Ho is accepted. This means that crop production and farmers' exchange rates together significantly affect the income of corn farmers.

4. Discussion

4.1. The Effect of Crop Production on the Income of Corn Farmers in Medan Krio Village

Based on the results of multiple linear regression that crop production has a significant effect (0.00 < 0.05) on the income of corn farmers in Medan Krio Village. Farmer income is seen from the amount of production and sales during one harvest minus the costs incurred from the seeding process to harvest. Therefore, production is one of the factors that affect the size of income (Sari, Heny and Dewi, 2017). The level of production will be influenced by the level of capital and labor used during the production process.

According to Sukanto (2000), the notion of production is an activity to determine the addition of benefits or the creation of uses, forms, times and places for production factors that are beneficial to consumer fulfillment. For more details, Soekartawi (2002), stated that the factors affecting production are divided into two groups, namely: (1) Biological factors, such as agricultural land with varying fertility rates, seeds, varieties, fertilizers, medicines. (2) Socioeconomic factors such as production costs, prices, labor, education level, income. If the demand for production is high, prices at the farmer level will also be high, so that at the same cost farmers will get a higher income. Conversely, if farmers have succeeded in increasing production, but prices fall, farmers' income will also decrease (Suratiyah, 2006). Production affects farmers' income because the higher the production, the greater the revenue received by farmers (Asmara &; Nurholifah, 2010). Thus, the high and low level of crop production affects the income of corn farmers in Medan Krio Village, because the entire level of crop production will be multiplied by the selling price at that time so that the higher the level of crop production produced by corn farmers will affect their income.

4.2. The Effect of Farmer Exchange Rate on Corn Farmer Income in Medan Krio Village

One indicator that can be used to measure the welfare level of farmers in Indonesia is by using the Farmer Exchange Rate (NTP) indicator. In addition, the exchange rate of farmers can also show the exchange power of agricultural products consumed as well as for production costs with goods and services. So if the exchange rate of farmers in

Indonesia is high, then relatively the level of purchasing power of farmers will also be stronger. To determine the level of welfare of farmers can be seen in the calculation of the percentage of value paid by farmers. If the percentage of the farmer's exchange rate is more than 100, it means that the farmer's welfare level is good (Aulia et al., 2021).

Conceptually, NTP is to measure the ability to exchange agricultural goods (products) produced by farmers with goods or services needed for farmer household consumption and the need to produce agricultural goods. Therefore, the exchange rate of farmers can be used as an indicator of profits in the agricultural sector and the ability of purchasing power of goods and services from farmers' income. If this government intervention does not exist, then the exchange rate will be determined by market forces (Bapedda Jombang, 2010).

In this study, the Farmer Exchange Rate has a significant effect on the income of corn farmers in Medan Krio Village. The rise and fall of NTP is considered "normal", because it only describes the dynamics of the price received and the price paid by farmers. When the prices of basic necessities have increased, it turns out that the ability / purchasing power of farmers has decreased. Thus, the exchange rate of farmers does not measure the size of farmers' income optimally (Keumala &; Zainuddin, 2018).

4.3. The Effect of Inflation on the Income of Corn Farmers in Medan Krio Village

Generally, inflation is the tendency to increase the price of goods and services in general that lasts continuously. If the price of goods and services in the country increases, then inflation increases. The increase in the price of goods and services causes a decrease in the value of money. Thus, inflation can also be interpreted as a decrease in the value of money against the value of goods and services in general.

Conversely, in times of severe inflation i.e. in times of uncontrolled inflation (hyperinflation) the state of the economy becomes chaotic and the economy feels sluggish, people are not eager to save, invest and produce because prices increase rapidly, the recipients of fixed income.

Thus, the relationship between inflation variables has a positive effect on the income of corn farmers in Medan Krio Village. Because if there is an increase in the selling price of corn farmers' crop production, income will also increase.

5. Conclusion

Based on the analysis stated above, the conclusion as follow:

- Variable crop production has a significant positive effect on the income of corn farmers in Medan Krio Village. The higher the level of crop production obtained by farmers, the higher the income received by corn farmers.
- The variable exchange rate of farmers has a significant positive effect on the income of corn farmers in Medan Krio Village. The high and low exchange rate of farmers will affect the income of corn farmers in Medan Krio Village.
- Inflation variables affect the income of farmers in Medan Krio Village. Because if there is an increase in the selling price of corn farmers' crop production, income will also increase.
- Variable crop production and exchange rates together affect the income of corn farmers in Medan Krio Village.

Based on the conclusions stated above, suggestions can be proposed in the study:

- There needs to be intervention from the government and private sector to increase farmers' crop production. Which then directs farmers in terms of marketing the harvest obtained and how to use technology in the field of production both in quality and quantity.
- Farmers should form farmer groups and cooperatives that can help in obtaining capital loans, helping to market production products and exchange knowledge and information between farmers so that they can be more independent.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

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