

# In North Sumatra Province, an Analysis of Farmer Change Rates and Economic Growth on the Human Growth Index

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## ARTICLE INFO

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## ABSTRACT

*Research urgency: North Sumatra's agricultural economic potential: North Sumatra is one of the provinces in Indonesia with quite large agricultural economic potential. Therefore, understanding how the farmer exchange rate and economic growth impact the human development index in this province is very important to know the extent to which the agricultural sector can influence economic growth and community welfare in the North Sumatra region. The important role of farmers in the economy: Farmers have a very important role in the Indonesian economy and are one of the main sectors that contribute to economic growth and poverty alleviation in rural areas. Therefore, increasing farmers' exchange rates and economic growth which has a positive impact on the human development index in North Sumatra Province can help improve the welfare of farmers and communities in the North Sumatra region. The importance of the human development index: The Human Development Index (HDI) is an indicator used to measure people's welfare, including health, education and income. Therefore, understanding the relationship between farmer exchange rates and economic growth with HDI in North Sumatra Province is very important to improve the welfare of the people in the North Sumatra region. The research objective of the analysis of farmer exchange rates and economic growth on the human development index in North Sumatra Province is to determine the relationship between farmer exchange rates and economic growth and the human development index in North Sumatra Province. To analyze the factors that influence farmer exchange rates and economic growth in North Sumatra Province. To analyze the factors that influence the human development index in North Sumatra Province. To provide policy recommendations that can increase farmers' exchange rates and economic growth as well as increase the human development index in North Sumatra Province. The results of the analysis show that there is a positive relationship between farmer exchange rates and economic growth in North Sumatra Province*

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## 1. INTRODUCTION

Background North Sumatra Province is one of the provinces in Indonesia which has quite diverse and abundant natural resources. One of the mainstay sectors in this province is the agricultural sector, where the majority of farmers there rely on agricultural products as their main source of income.

In increasingly complex economic conditions, farmers' exchange rates can be an important factor in influencing economic growth in a region. If farmers' exchange rates are low, this could result in farmers' incomes decreasing and the impact could cause economic growth in the area to also slow down. In December 2022, the NTP for North Sumatra Province (2018=100) was recorded at 124.56 or an increase of 0.15 percent compared to the NTP for November 2022, which was 124.37. The increase in NTP in December 2022 was caused by an increase in the NTP of three subsectors, namely the NTP in the Horticulture subsector by 4.68 percent, the NTP in the People's

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Plantation Subsector by 0.16 percent, and the NTP in the Fisheries subsector by 1.04 percent. Meanwhile, the NTP of two other subsectors experienced a decline, namely the NTP of the Food Crops subsector by 1.08 percent and the NTP of the Livestock subsector by 0.41 percent [1]. The economy of North Sumatra based on the size of Gross Regional Domestic Product (GRDP) at current prices in 2022 reached IDR 955.19 trillion and GDP per capita reached IDR 63.19 million [2].

Meanwhile, the Human Development Index (HDI) is an indicator used to measure the level of progress of a region or country in three dimensions, namely education, health and income. A high HDI value can indicate that an area has a good level of development. The 2022 Human Development Index (HDI) has increased compared to the previous year. North Sumatra's 2022 HDI is 72.71 or a growth of 0.99 percent (an increase of 0.71 points) compared to the 2021 HDI achievement [3]. The increase in HDI 2022 is supported by improvements in all its constituent components. The HDI component with the highest growth in 2022 is adjusted per capita expenditure. In 2022, adjusted real per capita spending has increased by 3.32 percent compared to 2021 [3].

Therefore, analysis of farmer exchange rates and economic growth on the Human Development Index in North Sumatra Province is very important to carry out. This analysis can provide an idea of how big the impact of the farmer's exchange rate and economic growth is on human development in the North Sumatra area. The results of this analysis can be used to determine appropriate development policies and strategies to improve community welfare in North Sumatra Province.

**The formulation of the problem** is How does the farmer's exchange rate and economic growth affect the human development index in North Sumatra province in 2023, what efforts can be made to increase the farmer's exchange rate, economic growth and the human development index in the province of North Sumatra.

**Problem-solving approaches** that can be used in analyzing farmer exchange rates and economic growth on the human development index in North Sumatra Province include:

1. Identify factors that influence farmers' exchange rates and economic growth in North Sumatra Province, such as political, social and economic factors that influence the production and distribution of agricultural products.
2. Identify the problems faced by farmers in North Sumatra Province, such as low quality infrastructure, lack of access to good markets, and lack of education and training to increase productivity and quality of agricultural products.
3. Evaluation of development programs that have been carried out in North Sumatra Province, such as farmer empowerment programs, infrastructure development programs, and farmer education and training programs, to determine their effectiveness and impact on increasing farmers' exchange rates and economic growth.
4. Make recommendations and strategies to increase farmer exchange rates and economic growth in North Sumatra Province, such as strengthening agricultural infrastructure, developing better markets, training and education for farmers, as well as providing incentives and policy support from regional and national governments.

In the state of the art, it appears that there has never been any research that specializes in NPT + Economic Development versus Human Development Index in North Sumatra.

**The urgency of research :**

1. Agricultural economic potential of North Sumatra: North Sumatra is one of the provinces in Indonesia with quite large agricultural economic potential. Therefore, understanding how farmer exchange rates and economic growth impact the human development index in this province is very important to know the extent to which the agricultural sector can influence economic growth and community welfare in this region.
2. The important role of farmers in the economy: Farmers have a very important role in the Indonesian economy and are one of the main sectors that contribute to economic growth and poverty alleviation in rural areas. Therefore, increasing the exchange rate for farmers and economic growth which has a positive impact on the human development index in North Sumatra Province can help improve the welfare of farmers and communities in the region.
3. The importance of the human development index: The Human Development Index (HDI) is an indicator used to measure people's welfare, including health, education and income. Therefore, understanding the relationship between farmer exchange rates and economic growth with HDI in North Sumatra Province is very important to improve the welfare of the people in the region.

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In this case, analysis of farmer exchange rates and economic growth against the human development index in North Sumatra Province will help to identify factors that influence the welfare of farmers and society in this region and can also help the government in planning more effective and efficient policies in improving community welfare in the North Sumatra region.

**The novelty of** this research is to examine the impact of farmer exchange rates and economic growth on the human development index in North Sumatra Province, as well as providing relevant recommendations and strategies in improving the welfare of farming communities and increasing the human development index in North Sumatra Province.

**The research objective** of analyzing farmer exchange rates and economic growth on the human development index in North Sumatra Province is as follows:

1. Knowing the relationship between farmer exchange rates and economic growth with the human development index in North Sumatra Province.
2. Analyze the factors that influence farmer exchange rates and economic growth in North Sumatra Province.
3. Analyzing the factors that influence the human development index in North Sumatra Province.
4. Provide policy recommendations that can increase farmers' exchange rates and economic growth as well as increase the human development index in North Sumatra Province.

Thus, it is hoped that this research can make a significant contribution to the development of the agricultural and economic sectors in North Sumatra Province and improve the welfare of the people in the region.

## 2. METHODS

### Types of research

This type of research uses explanatory, namely research that explains the causal relationship between variables through hypothesis testing

### Unit of Analysis

The unit of analysis used in this research is the index human development, Farmer Exchange Rate, economic growth in North Sumatra Province from 2019 to 2023.

### Data Types and Sources

The type of data used in this research is secondary data.

The scope of the research is all regencies/cities in North Sumatra Province, namely 33 regencies/cities, with a 5 year data series from 2019 to 2023 with a total of 304 panel data which is a combination of cross section and time series data. The data source obtained comes from the Central Statistics Agency (BPS) and the Directorate General of Financial Balance (DJPK)

### Data collection technique

The data obtained was carried out by adopting previously existing data by visiting the relevant agencies directly or indirectly (via the internet, literature, books, journals and so on). The data obtained comes from the Central Statistics Agency (BPS) and the Directorate General of Financial Balance (DJPK).

## 3. Results and Discussion

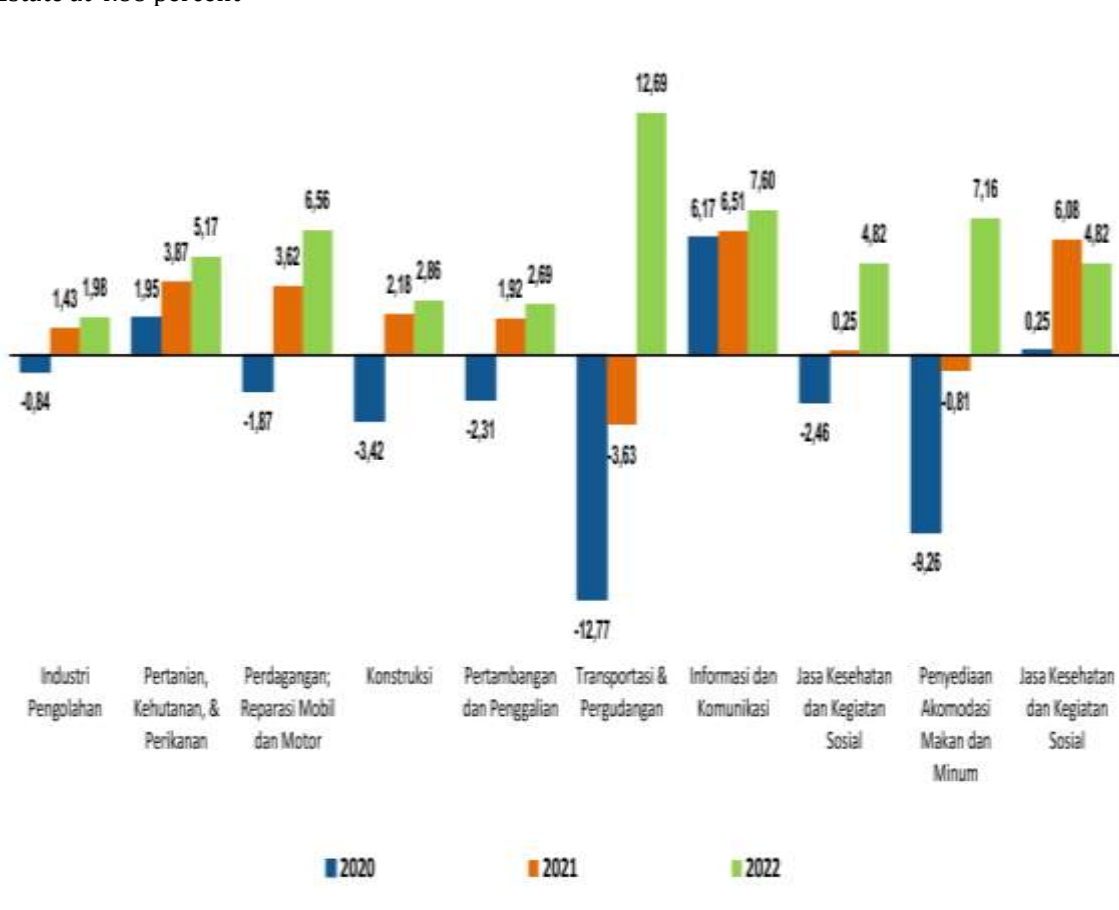
### General description of research objects

#### 1. Gross Regional Domestic Product

North Sumatra's economy based on the Gross Regional Domestic Product (GRDP) at current prices in 2022 will reach IDR 955.19 trillion and GDP per capita will reach IDR 63.19 million.

North Sumatra's economy in 2022 will grow by 4.73 percent, higher than the achievement in 2021 which grew by 2.61 percent. In terms of production, the highest growth occurred in the Transportation and Warehousing Business Field at 12.69 percent. In terms of expenditure, the highest growth was in the Export Component of Goods and Services at 11.44 percent. North Sumatra's economy in Quarter IV-2022 to Quarter IV-2021 experienced growth of 5.26 percent (y-on-y). In terms of production, the Transportation and Warehousing Business Field experienced the highest growth of 16.02 percent. Meanwhile, in terms of expenditure, the Goods and Services Export Component experienced the highest growth of 9.77 percent.

North Sumatra's economy in quarter IV-2022 to quarter III-2022 experienced growth of 0.46 percent (q-to-q). In terms of production, the highest growth was in the Transportation and Warehousing Business Field at 3.89 percent. From the expenditure side, the Government Consumption Expenditure Component was the component with the highest growth at 4.92 percent. The economic structure on the island of Sumatra spatially in 2022 is dominated by several large provinces. The three largest include Riau Province which contributed 23.50 percent, North Sumatra 22.63 percent and South Sumatra which contributed 14.02 percent. Meanwhile, the lowest contribution was Bengkulu with a contribution of 2.14 percent. North Sumatra's economy in 2022 will grow by 4.73 percent. Growth occurred in almost all business fields. The business fields that experienced the highest growth were Transportation and Warehousing 12.69 percent; followed by Corporate Services at 8.77 percent; and Other Services by 8.65 percent. Meanwhile, Agriculture, Forestry and Fisheries, which have a dominant role, grew by 5.17 percent. Meanwhile, the manufacturing industry and wholesale and retail trade, car and motorbike repairs grew by 1.98 percent and 6.56 percent respectively. North Sumatra's economy is still dominated by Agriculture, Forestry and Fisheries which contribute 23.01 percent; followed by the Processing Industry at 19.13 percent; Wholesale and Retail Trade, Car and Motorbike Repairs by 18.99 percent; Construction was 13.22 percent; and Real Estate at 4.88 percent



**Figure 1.** GRDP Growth in Several Expenditure Components (q-to-q) (percent)

Source: BPS 2023 (<https://sumut.bps.go.id/pressrelease/2023/02/06/989/Ekonomi-sumatera-utara-triwulan-iv-2022-tumbuh-0-46-persen--q-to-q.html#:~:text=North Sumatra's economy based on size, reached IDR 63%2C19 million.>)

**Table 1.** GRDP of North Sumatra at Current Prices and Constant Prices 2010 According to Business Fields (billions of rupiah)

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Lapangan Usaha	Atas Dasar Harga Berlaku			Atas Dasar Harga Konstan 2010		
	2020	2021	2022	2020	2021	2022
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Pertanian, Kehutanan dan Perikanan	173.074,95	189.491,36	219.799,22	136.327,03	141.601,18	148.924,62
B. Pertambangan dan Penggalian	10.373,47	10.710,15	11.584,90	6.936,06	7.069,09	7.258,99
C. Industri Pengolahan	156.503,61	167.949,41	182.726,16	96.548,31	97.928,00	99.867,07
D. Pengadaan Listrik dan Gas	932,38	986,94	1.061,12	751,85	788,92	826,87
E. Pengadaan Air, Pengelolaan Sampah, Limbah dan Daur Ulang	831,19	870,54	897,66	535,77	555,17	567,20
F. Konstruksi	110.146,70	115.754,38	126.229,72	66.843,31	68.300,49	70.253,29
G. Perdagangan Besar dan Eceran; Reparasi Mobil dan Sepeda Motor	153.226,38	162.578,56	181.401,59	95.120,46	98.560,07	105.027,98
H. Transportasi dan Pergudangan	36.409,27	35.869,85	43.289,94	22.492,59	21.676,36	24.426,65
I. Penyediaan Akomodasi dan Makan Minum	17.692,13	17.663,47	19.461,58	11.985,59	11.888,96	12.740,17
J. Informasi dan Komunikasi	18.467,11	20.094,28	22.221,50	16.323,91	17.386,19	18.706,74
K. Jasa Keuangan dan Asuransi	23.529,58	25.545,12	28.358,82	15.334,76	16.017,94	16.628,86
L. Real Estat	42.704,93	43.912,94	46.639,19	23.149,98	23.728,14	24.801,42
M,N. Jasa Perusahaan	8.692,10	8.847,57	10.072,91	4.717,73	4.711,10	5.124,48
O. Administrasi Pemerintahan, Pertahanan dan Jaminan Sosial Wajib	30.147,21	30.457,51	30.243,09	17.803,30	18.174,36	18.040,04
P. Jasa Pendidikan	15.489,68	16.017,36	16.879,47	11.091,33	11.429,92	12.015,76
Q. Jasa Kesehatan dan Kegiatan Sosial	8.374,06	8.499,17	9.040,94	5.079,18	5.092,08	5.337,52
R,S,T,U. Jasa Lainnya	4.593,54	4.685,66	5.285,30	2.705,20	2.743,87	2.981,11
<b>PDRB</b>	<b>811.188,31</b>	<b>859.934,26</b>	<b>955.193,09</b>	<b>533.746,36</b>	<b>547.651,82</b>	<b>573.528,77</b>

**Table 2.** Growth Rate and Sources of North Sumatra GRDP Growth According to Business Fields (percent)

Lapangan Usaha	Triwulan III-2022 terhadap Triwulan II-2022 (q-to-q)**	Triwulan IV-2022 terhadap Triwulan III-2022 (q-to-q)**	Triwulan III-2022 terhadap Triwulan III-2021 (y-on-y)**	Triwulan IV-2022 terhadap Triwulan IV-2021 (y-on-y)**	Laju Pertumbuhan 2022	Sumber Pertumbuhan 2022
	(2)	(3)	(4)	(5)	(6)	(7)
A. Pertanian, Kehutanan dan Perikanan	2,53	-1,00	5,08	5,35	5,17	1,34
B. Pertambangan dan Penggalian	2,59	1,37	2,54	3,15	2,69	0,03
C. Industri Pengolahan	1,97	-0,45	2,66	2,53	1,98	0,35
D. Pengadaan Listrik dan Gas	0,89	-1,30	4,53	0,15	4,81	0,01
E. Pengadaan Air, Pengelolaan Sampah, Limbah dan Daur Ulang	0,55	1,52	1,27	3,19	2,17	0,00
F. Konstruksi	3,23	2,01	2,82	3,30	2,86	0,36
G. Perdagangan Besar dan Eceran; Reparasi Mobil dan Sepeda Motor	2,62	-0,14	6,79	6,92	6,56	1,18
H. Transportasi dan Pergudangan	3,02	3,89	16,28	16,02	12,69	0,50
I. Penyediaan Akomodasi dan Makan Minum	1,42	3,80	8,04	9,79	7,16	0,16
J. Informasi dan Komunikasi	2,48	2,63	7,62	7,78	7,60	0,24
K. Jasa Keuangan dan Asuransi	3,65	0,44	1,07	5,43	3,81	0,11
L. Real Estat	1,39	1,51	4,60	5,75	4,52	0,20
M,N. Jasa Perusahaan	2,92	1,74	9,96	10,22	8,77	0,08
O. Administrasi Pemerintahan, Pertahanan dan Jaminan Sosial Wajib	-4,83	2,40	-0,12	-2,22	-0,74	-0,02
P. Jasa Pendidikan	2,15	1,52	5,86	6,20	5,13	0,11
Q. Jasa Kesehatan dan Kegiatan Sosial	0,71	0,63	2,80	1,29	4,82	0,04
R,S,T,U. Jasa Lainnya	2,88	3,18	9,98	11,61	8,65	0,04
<b>PDRB</b>	<b>2,24</b>	<b>0,46</b>	<b>4,97</b>	<b>5,26</b>	<b>4,73</b>	<b>4,73</b>

**Table 3. Growth Rate and Distribution of GRDP by Business Field (percent)**

Lapangan Usaha	Laju Pertumbuhan Atas Dasar Harga Konstan 2010			Distribusi Atas Dasar Harga Berlaku		
	2020	2021	2022	2020	2021	2022
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Pertanian, Kehutanan dan Perikanan	1,95	3,87	5,17	21,34	22,04	23,01
B. Pertambangan dan Penggalian	-2,31	1,92	2,69	1,28	1,25	1,21
C. Industri Pengolahan	-0,84	1,43	1,98	19,29	19,53	19,13
D. Pengadaan Listrik dan Gas	3,16	4,93	-4,81	0,11	0,11	0,11
E. Pengadaan Air, Pengelolaan Sampah, Limbah dan Daur Ulang	3,79	3,62	2,17	0,10	0,10	0,09
F. Konstruksi	-3,42	2,18	2,86	13,58	13,46	13,22
G. Perdagangan Besar dan Eceran; Reparasi Mobil dan Sepeda Motor	-1,87	3,62	6,56	18,89	18,91	18,99
H. Transportasi dan Pergudangan	-12,77	-3,63	12,69	4,49	4,17	4,53
I. Penyediaan Akomodasi dan Makan Minum	-9,26	-0,81	7,16	2,18	2,05	2,04
J. Informasi dan Komunikasi	6,17	6,51	-7,60	2,28	2,34	-2,33
K. Jasa Keuangan dan Asuransi	1,29	4,46	3,81	2,90	2,97	2,97
L. Real Estat	1,57	2,50	-4,52	5,26	5,11	4,88
M,N. Jasa Perusahaan	-4,71	-0,14	8,77	1,07	1,03	1,05
O. Administrasi Pemerintahan, Pertahanan dan Jaminan Sosial Wajib	0,37	2,08	-0,74	3,72	3,54	3,17
P. Jasa Pendidikan	1,52	3,05	5,13	1,91	1,86	1,77
Q. Jasa Kesehatan dan Kegiatan Sosial	-2,46	0,25	4,82	1,03	0,99	0,95
R,S, T,U. Jasa Lainnya	-3,74	1,43	8,65	0,57	0,54	0,55
<b>PDRB</b>	<b>-1,07</b>	<b>2,61</b>	<b>4,73</b>	<b>100,00</b>	<b>100,00</b>	<b>100,00</b>

**Table 4. GRDP Per Capita of North Sumatra**

Komponen	2020	2021	2022
(1)	(2)	(3)	(4)
<b>PDRB Per Kapita Atas Dasar Berlaku</b>			
Nilai (Juta Rupiah)	54,98	57,57	63,19
Nilai (US\$)	3.777,10	4.023,69	4.256,11

## 2. Farmer Exchange Rate

Farmer Exchange Rate (NTP) is an indicator to measure the level of farmer welfare by comparing the index received by farmers (it) or the index paid by farmers (ib). If the index paid by farmers is greater than the index received by farmers, it can be said that farmers are not experiencing prosperity.

Farmer Exchange Rate (NTP) is a comparison of the price index received by farmers (It) to the price index paid by farmers (Ib).

NTP is an indicator to see the level of ability/purchasing power of farmers in rural areas. NTP also shows the exchangeability (terms of trade) of agricultural products for goods and services consumed and for production costs.

In December 2022, the NTP for North Sumatra Province (2018=100) was recorded at 124.56 or an increase of 0.15 percent compared to the NTP for November 2022, which was 124.37.

The increase in NTP in December 2022 was caused by an increase in the NTP of three subsectors, namely the NTP in the Horticulture subsector by 4.68 percent, the NTP in the People's Plantation Subsector by 0.16 percent, and the NTP in the Fisheries subsector by 1.04 percent. Meanwhile, the NTP for two other subsectors experienced a decline, namely the NTP for the Food Crops subsector by 1.08 percent and the NTP for the Livestock subsector by 0.41 percent.

Changes in the Household Consumption Index (IKRT) reflect rural inflation/deflation figures. In December 2022, rural inflation in North Sumatra will be 1.28 percent.

The Agricultural Household Business Exchange Rate (NTUP) for North Sumatra Province in December 2022 was 121.73 or an increase of 1.07 percent compared to the previous month's NTUP.

**Table 5.** Farmer Exchange Rates for North Sumatra Province per Subsector, November - December 2022 (2018=100)

Subsektor	November 2022	Desember 2022	% Perubahan
(1)	(2)	(3)	(4)
Gabungan/Provinsi Sumatera Utara			
a. Nilai Tukar Petani (NTP)	124,37	124,56	0,15
b. Indeks Harga yang Diterima oleh Petani (It)	140,80	142,38	1,12
c. Indeks Harga yang Dibayar oleh Petani (Ib)	113,21	114,30	0,97
- Indeks Konsumsi Rumah Tangga	112,08	113,52	1,28
- Indeks Biaya Produksi dan Penambahan Barang Modal (BPPBM)	116,91	116,97	0,05
Gabungan/Provinsi Sumatera Utara tanpa Perikanan			
a. Nilai Tukar Petani (NTP)	124,96	125,13	0,13
b. Indeks Harga yang Diterima oleh Petani (It)	141,45	143,00	1,10
c. Indeks Harga yang Dibayar oleh Petani (Ib)	113,19	114,29	0,97
- Indeks Konsumsi Rumah Tangga	112,08	113,51	1,28
- Indeks Biaya Produksi dan Penambahan Barang Modal (BPPBM)	116,96	117,01	0,04
1. Tanaman Pangan			
a. Nilai Tukar Petani Tanaman Pangan (NTPP)	95,05	94,02	-1,08
b. Indeks Harga yang Diterima oleh Petani (It)	107,01	106,95	-0,06
- Padi	105,48	106,28	0,76
- Palawija	112,34	109,28	-2,72
c. Indeks Harga yang Dibayar oleh Petani (Ib)	112,59	113,76	1,04
- Indeks Konsumsi Rumah Tangga	112,24	113,68	1,28
- Indeks Biaya Produksi dan Penambahan Barang Modal (BPPBM)	113,82	114,03	0,19
2. Hortikultura			
a. Nilai Tukar Petani Hortikultura (NTPH)	87,54	91,64	4,68
b. Indeks Harga yang Diterima oleh Petani (It)	99,58	104,83	5,27
- Sayur-sayuran	97,23	106,65	9,69
- Buah-buahan	102,99	104,25	1,22
- Tanaman Obat	76,78	78,39	2,09
c. Indeks Harga yang Dibayar oleh Petani (Ib)	113,75	114,39	0,56
- Indeks Konsumsi Rumah Tangga	112,69	113,62	0,83
- Indeks Biaya Produksi dan Penambahan Barang Modal (BPPBM)	115,92	115,96	0,04

Source: BPS North Sumatra 2023 ( <https://sumut.bps.go.id/pressrelease/2023/01/02/953/besar-tukar-petani-provinsi-sumatera-utara-desember-2022-sebesar--124-56> .html)

#### Human Development Index

Human development is a selection process for the population to build a life that is considered valuable. The Human Development Index is a number that represents the condition of the population in accessing development results and obtaining income, education and health and several other aspects.

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According to the United Nation Development Program, the Human Development Index is a driving indicator for a province because the high and low levels of the human development index have an influence on regional economic growth.

City District	Human Development Index (New Method)		
	2020	2021	2022
North Sumatra	71.77	72.00	72.71
Nias	61.93	62.74	63.69
Mandailing Christmas	66.79	67.19	68.05
South Tapanuli	70.12	70.33	70.92
Central Tapanuli	69.23	69.61	70.31
North Tapanuli	73.47	73.76	74.14
Toba Samosir	75.16	75.39	75.96
Batu Labuan	72.01	72.09	72.92
Sharpening	70.29	70.49	71.13
Simalungun	73.25	73.40	73.77
Dairy	71.57	71.84	72.56
Karo	74.43	74.83	75.36
Deli Serdang	75.44	75.53	76.19
Step up	71.00	71.35	71.86
South Nias	61.89	62.35	63.17
Humbang Hasundutan	68.87	69.41	70.32
Pakpak Bharat	67.59	67.94	68.85
Samosir	70.63	70.83	71.67
Serdang Bedagai	70.24	70.56	71.21
Coal	68.36	68.58	69.51
North Padang Lawas	69.85	70.11	70.93
Padang Lawas	68.25	68.64	69.58
South Labuhanbatu	71.40	71.69	72.16
North Labuanbatu	71.61	71.87	72.77
North Nias	62.36	62.82	63.75
West Nias	61.51	61.99	62.93
Sibolga	73.63	73.94	74.74
Tanjung Balai	68.65	68.94	69.86
Pematangsiantar	78.75	79.17	79.70
High cliff	75.17	75.42	76.17
Medan	80.98	81.21	81.76
Binjai	75.89	76.01	76.95

Padangsidempuan	75.22	75.48	76.05
Gunungsitoli	69.31	69.61	70.23
Source Url: <a href="https://sumut.bps.go.id/indicator/26/59/1/index-pembangunan-human-method-baru-.html">https://sumut.bps.go.id/indicator/26/59/1/index-pembangunan-human-method-baru-.html</a>			
Access Time: September 5, 2023, 9:35 pm			

The 2022 Human Development Index (HDI) has increased compared to the previous year. North Sumatra's 2022 HDI is 72.71 or a growth of 0.99 percent (an increase of 0.71 points) compared to the 2021 HDI achievement.

The increase in HDI 2022 is supported by improvements in all its constituent components. The HDI component with the highest growth in 2022 is adjusted per capita expenditure. In 2022, adjusted real per capita spending has increased 3.32 percent compared to 2021.

In terms of education, in 2022 children aged 7 years have the hope of enjoying formal education for 13.31 years or almost the same as the length of time to complete education up to Diploma I level. This figure has increased by 0.04 years compared to 2021 which reached 13.27 years . Apart from that, the average length of schooling for people aged 25 years and over also increased by 0.13 years, from 9.58 years to 9.71 years in 2022.

In terms of health, babies born in 2022 have the hope of living up to 69.61 years, 0.38 years longer than those born in the previous year.

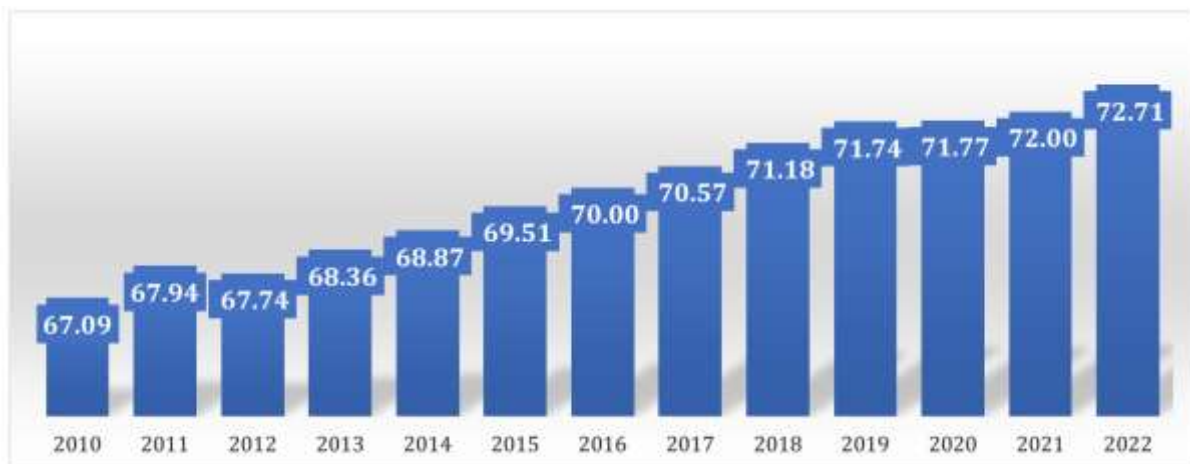


Figure 2 North Sumatra Human Development Index (HDI), 2010-2022

In this decade, human development in North Sumatra has continued to progress. North Sumatra's HDI increased from 67.09 in 2010 to 72.71 in 2022. During this period, Indonesia's HDI grew by an average of 0.67 percent per year and increased from "medium" to "high" levels since 2016. COVID pandemic -19 had little impact on North Sumatra's human development achievements. The 2020 HDI was recorded to have slowed down compared to 2019 or grew 0.04 percent to 71.77. However, after more than a year of the COVID-19 pandemic hitting Indonesia, HDI is starting to accelerate in 2021 to 2022

**Table 7.** North Sumatra Human Development Index (HDI) According to Components, 2010-2022

Komponen	Satuan	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Umur Harapan Hidup saat Lahir (UHH)	Tahun	67,46	67,63	67,81	67,94	68,04	68,29	68,33	68,37	68,61	68,95	69,10	69,23	69,61
Harapan Lama Sekolah (HLS)	Tahun	11,82	11,83	11,97	12,41	12,61	12,82	13,00	13,10	13,14	13,15	13,23	13,27	13,31
Rata-rata Lama Sekolah (RLS)	Tahun	8,51	8,61	8,72	8,79	8,93	9,03	9,12	9,25	9,34	9,45	9,54	9,58	9,71
Pengeluaran Riil per Kapita yang disesuaikan (PPP)	Rp 000	9.196	9.231	9.266	9.309	9.391	9.563	9.744	10.036	10.391	10.649	10.420	10.499	10.848
<b>IPM</b>		<b>67,09</b>	<b>67,34</b>	<b>67,74</b>	<b>68,36</b>	<b>68,87</b>	<b>69,51</b>	<b>70,00</b>	<b>70,57</b>	<b>71,18</b>	<b>71,74</b>	<b>71,77</b>	<b>72,00</b>	<b>72,71</b>

## Research Findings

### 1. Model Specification Test Results

To carry out panel data regression, the researcher tested the model specifications to determine the most appropriate test panel data regression model to use in this research, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). There are model specification tests that will be carried out, including the Chow Test, Hausman Test, and Lagrange Multiplier Test.

#### a. Test Chow

The Chow test aims to find the correct Common Effect Module or Fixed Effect Model to use in estimating the model. If the regression results of the cross-section probability value F are smaller than the alpha significance level of (0.05), then H1 is accepted. The model used is the Fixed Effect Model (FEM) and if the cross-section probability value is greater than the alpha significance level (0.05) then H0 is accepted. The model used is the Common Effect Model (CEM). In this test, the following hypothesis is used:

H 0 : Common Effect Model

H 1: Fixed Effect Model

The following are the results of the Chow Test and the test used is Redundant Fixed Effect-Likelihood Ratio.

UNIANOVA IPM23 BY NTP2023 GRDP

/METHOD= SSTYPE( 3)

/INTERCEPT=INCLUDE

/CRITERIA= ALPHA( 0.05)

/DESIGN=NTP2023 GRDP.

/LMATRIX 'Chow test' group 1 -1; x\*group 1 - 1 .

### Tests of Between-Subjects Effects

Dependent Variable: HDI22

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	15,656 <sup>a</sup>	2	7,828	,398	,675
Intercept	,000	0	.	.	.
dummybtl	6,877	1	6,877	,349	,559
NTP2022	15,537	1	15,537	,789	,381
GRDP	,000	0	.	.	.
Error	610,260	31	19,686		
Total	176001.737	34			
Corrected Total	625,916	33			

a. R Squared = .025 (Adjusted R Squared = -.038)

**Relationship between Farmer Exchange Rate and Economic Growth:**

The results of the analysis show that there is a positive relationship between farmer exchange rates and economic growth in North Sumatra Province. This means that when the exchange rate for farmers increases, economic growth tends to increase. This indicates that the agricultural sector has a significant role in supporting regional economic growth.

**The Effect of Farmer Exchange Rates and Economic Growth on the Human Development Index:**

The results of the analysis also show that the farmer exchange rate and economic growth have a positive influence on the Human Development Index in North Sumatra Province. This means that increasing farmers' exchange rates and economic growth can contribute to improving people's quality of life, including aspects such as health, education and income.

**Discussion:**

**Role of the Agricultural Sector in Economic Growth:** Results showing a positive relationship between farmer exchange rates and economic growth emphasize the importance of the agricultural sector in driving regional economic growth. This illustrates that investment and improvements in the agricultural sector can have a significant positive impact on the economic growth of North Sumatra Province.

**Improving People's Quality of Life:** The positive influence of the farmer's exchange rate and economic growth on the Human Development Index shows that economic development can improve people's quality of life. Therefore, improvements in the agricultural sector and efforts to increase the exchange rate for farmers can be important strategies in efforts to increase the human development index in the region.

**Policy Recommendations:** The results of this research provide a basis for recommending policies that support the agricultural sector and economic growth in North Sumatra Province. Local governments and stakeholders can consider measures such as increasing farmers' access to markets, investment in agricultural infrastructure, and technical support for farmers to increase farmers' exchange rates.

This research provides valuable insight into the dynamics of development in North Sumatra Province and underscores the importance of the agricultural sector in improving economic growth and the quality of life of the community. Policy recommendations resulting from this research can serve as a guide for sustainable development in the region.

#### 4. Conclusion

From the analysis that has been carried out regarding Farmer Exchange Rates and Economic Growth on the Human Development Index, the following conclusions are drawn : Relationship between Farmer Exchange Rates and Economic Growth: A positive relationship was found between farmer exchange rates and economic growth in North Sumatra Province. This means that an increase in the farmer's exchange rate is correlated with economic growth which tends to increase. This shows the important role of the agricultural sector in supporting the region's economic growth. Influence on the Human Development Index: The results of the analysis show that the increase in the farmer's exchange rate and economic growth have a positive effect on the Human Development Index in North Sumatra Province. This indicates that increasing farmers' exchange rates and economic growth can contribute to improving people's quality of life, including in aspects of health, education and income.

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