



Projections of Regional Macroeconomic Conditions using the Univariate Forecasting Method

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Abstract

The developmental planning is crucial to be conducted by regency. Macroeconomic forecasting is often performed to give guidance in policy decision making for the stakeholders especially. The prediction of future macroeconomic conditions is needed by the government to carry out the planning and budgeting. This study predicts macro indicators in Hulu Sungai Utara (HSU) Regency in the period 2017-2022 because HSU Regency had the lowest real GDP and Human Development Index in South Kalimantan within the last five years. The method used is *univariate* forecasting, which includes the ARIMA model, exponential smoothing, and exponential smoothing with trend adjustment. The macroeconomic indicators used in this study are real Gross Domestic Regional Product (GDRP), economic growth, unemployment rate, and income distribution. The results of the analysis show that Brown's model is predicted that the real GDRP value tends to increase, forecasting using a simple model on economic growth and the ARIMA (0.0.0) model on the unemployment rate, had predicted tends to be constant. And, the Holt model predicts the income distribution tends to increase. The forecasting can be a significant feedback and consideration in the developmental planning, particularly in Hulu Sungai Utara Regency.

INTRODUCTION

Regional development is the actualization of government affairs implementation, which has been distributed to the region as an integral part of national development. Law Number 23 of 2014 concerning Regional Government mandates that in administering a government, the Regional Government is required to prepare a development plan which is a unity in the national development planning system. In its implementation, regional development planning is arranged in stages, which includes Regional Long-Term Development Plan (RPJPD) in the twenty-year period, Regional Medium-Term Development Plan (RPJMD) in the five-year period and Regional Government Work Plan (RKPD) for an annual period.

The arrangement of RKPD document needs a regional economic analysis to assess to what extent the realization of regional development can influence the economic performance and observing the achievement of economic indicators corresponding to what is assumed in the medium-term development plan. Besides, the regional economic analysis was used as one of the main inputs in constructing regional finance analysis. The provision of materials for regional economic analysis needs the observation of regional macro-economic analysis. Therefore, the regional government needs to provide the analysis and projection of macro-economic conditions in the effort of constructing regional policy to increase social welfare. This is because sustainable development needs clear and appropriate development planning .

Time series analysis and forecasting are the most used analysis in the business, for example, marketing strategy, planning, investment decision, budgeting, and such. Time series analysis is often applied in the public sector mainly in the aspects of planning and budgeting. Hyndman and Athanasopoulos (2018) assert that generally there are two objectives of forecasting, namely: (1) identifying a natural phenomenon in the future; and (2) estimating value in the future and the past. Macro-economic forecasting is often performed by the global institutions, for

example, World Bank, International Monetary Fund (IMF), and other institutions. In Indonesia, macro-economic forecasting is conducted by Bappenas, Bank Indonesia (BI), Ministry of Finance, and other Ministries. Meanwhile, on the provincial level as well as regency/ city, macro-economic forecasting is conducted by Regional Development Planning Agency, and other Regional Work Unit (SKPD).

The developmental planning is crucial to be conducted by Hulu Sungai Utara (HSU) Regency which is the regency having the lowest real GDP value and Human Development Index value (IPM) in South Kalimantan within the last five years (BPS, 2019). Accordingly, in administering the regional development process, the regional government is expected to make an effort so that the implementation of development can be implemented according to the well-constructed direction and plans in the efforts of improving the quality of development results, which will be done by the HSU Regency. Hence, this process will guarantee the achievement of social welfare with the observable results from the measurement of macroeconomic indicators.

The macroeconomic indicator is the statistic showing the economic status of a region. Several important regional macro economy indicators are Gross Domestic Product (GDP), the level of per capita income, economic growth, income inequality, and the unemployment rate. Concerning the decision making in the economic development planning which is often related to the future forecasting, then this study was conducted to investigate several regional macroeconomic indicator and projecting the value development of the indicators within the next five years so that it can be a significant feedback and consideration in the developmental planning, particularly in Hulu Sungai Utara Regency.

RESEARCH METHODS

The forecasting technique on the economic conditions in the future is often used as the basis of economic development planning of a region. An excellent forecasting result with a

significantly small error rate can be obtained by an appropriate forecasting technique. This study employed a quantitative method in conducting forecasting on a variable since it is considered to be more likely to be conducted with adequate data availability from the Central Bureau of Statistics (BPS) in yearly book "HSU Dalam Angka".

Lind, Marchal, and Wathen (2012) stated that the time series data have 4 (four) components namely trend, seasonality, cycle, and random variation. Generally, the model in the forecasting with the time series method assumes that random variation averaged over time. Forecasting emphasizes on three components namely trend, seasonality, and cycle. The commonly used model in the time series model to predict the value in the future using information or value in the past from economic variable y_t , among them are Naive Method ($y_t = y_{t-1}$), Moving Average/MA ($Y_t = \mu + \alpha_0 e_t + \alpha_1 e_{t-1} + \alpha_2 e_{t-2} + \dots + \alpha_q e_{t-q}$), Weighted Moving Average (WMA), Autoregressive/AR ($y_t = \delta + \theta_1 y_{t-1} + \theta_2 y_{t-2} + \theta_3 y_{t-3} + \dots + \theta_p y_{t-p} + e_t$), Autoregressive Moving Average/ARMA ($y_t = \delta + \theta_1 y_{t-1} + \theta_2 y_{t-2} + \dots + \theta_p y_{t-p} + e_t + \alpha_1 e_{t-1} + \alpha_2 e_{t-2} + \dots + \alpha_q e_{t-q}$), Autoregressive Integrated Moving Average (ARIMA), Exponential Smoothing ($y_t = y_{t-1} + \beta(e_{t-1})$), and Exponential Smoothing with Trend Adjustment.

Weighted Moving Average (WMA) method is an MA method, which has been given weight (Lind, Marchal, and Wathen, 2012)¹. In the WMA method, it is assumed that in a different period, the weight will also be different. Exponentially Weighted Moving Average model is often used in the forecasting method and known as Brown's Simple Exponential Smoothing, which is further known as the Brown model. Exponential Smoothing method uses the difference in the forecasting results with the actual value to forecast the coming period. The simplest exponential smoothing is known as

exponential smoothing (SES) or also known as single exponential smoothing (SES). This method is significantly appropriate to be used as forecasting data, which do not have a trend or seasonal pattern.

Moving average and exponential smoothing forecasting techniques cannot respond to the tendency or trend. And then, Holt in 1957 developed a simple exponential smoothing model to create data forecasting with a trend (Pankratz, 1983), which further is known as Holt Model. Exponential smoothing model added with trend component to obtain a more complex model namely exponential smoothing method with trend adjustment². This method involves forecasting equation and smoothing equation, which is one level equation and one trend equation.

Forecasting equation, namely: $\widehat{y_{t+ht}} = l_t + hb_t$

Level Equation, namely: $l_t = \alpha y_t + (1 - \alpha)(l_{t-1} + b_{t-1})$

Trend Equation, namely: $b_t = \beta^*(l_t - l_{t-1}) + (1 - \beta^*)b_{t-1}$

l_t states series level estimation at t-time, while b_t states that trend estimation (slope) from the series at t-time. Smoothing parameter on the level is stated by α in which ($0 \leq \alpha \leq 1$). Smoothing parameter in trend is stated by β^* in which ($0 \leq \beta^* \leq 1$). Therefore, the forecasting function in Holt method is not flat-shaped but often trending.

The accuracy of forecasting can be observed by comparing the prediction value with the actual data. The higher the deviation value between the actual value and forecasting value then the forecasting is not good. Good forecasting is forecasting having a significantly small deviation value or even nearing and the same as the 0 (zero) value. Widodo (2006) stated that there are criteria of the deviation size of forecasting namely Mean Absolute Error (MAE) and Mean Absolute Percentage Error (MAPE). The best forecasting is the forecasting model having the smallest MAE and MAPE value.

When seeing a time series, the time series data follow the AR(p), MA(q), ARMA (p,q) or ARIMA(p,d,q) processes. The Box-Jenkins approach for time series model is a model to observe the ARIMA model which may be able to represent the data-generation process for certain data sample. Box-Jenkins uses correlation concept to measure the correlation between observations in the series (Pankratz, 1983).

This study conducted forecasting macro variables to identify macroeconomic condition within the next five years by comparing between ARIMA, exponential smoothing, and exponential smoothing methods with trend adjustment using MAPE, and MAE statistics in the three models. This study used secondary data obtained from the central bureau of statistics (BPS) Indonesia in Hulu Sungai Utara Regency and the website of BPS Hulu Sungai Utara Regency. The MAE and MAPE value for this study will be shown in Appendix 1.

Projection or forecasting in the future is needed to observe the number of projection or forecasting in the future needed to find out the projection number of economic variables as an effort of decision making in the economic development planning. This research created projection or forecasting on the GDRP value variable (base year), economic growth rate, unemployment rate, and income distribution as the base in the policy formulation in Hulu Sungai Utara Regency. This research conducted forecasting using the method considered as the best, known from the comparison of MAPE and MAE values. The forecasting results are shown in a figure where two axis, namely horizontal axis showing the research year and vertical axis showing the value of the observed variable. The research year in this study began in 2000 since it is considered to be independent of monetary crisis influence which once occurred in Indonesia in 1998. Therefore, the forecasting was conducted based on the data from 2000 until 2017.

RESULTS AND DISCUSSION

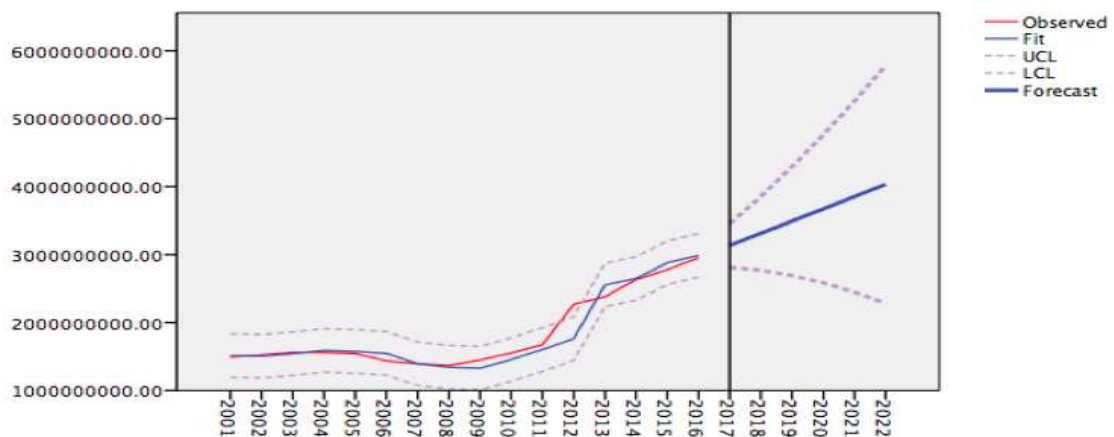


Figure 1. Plotting of Observation Value, Fitted Values, and Real GDRP Value Prediction
 Source: “HSU Dalam Angka”, various edition (processed data)

This research used real GDRP value of Hulu Sungai Utara Regency identified using the base year of 2010 taken from deflator value from World Bank. Based on the data, it can be observed that the real GDRP value in 2001 was IDR 1.488 trillion. Figure 1 shows that the real GDRP value of Hulu Sungai Utara Regency

tended to be constant from 2001 to 2010 in which the change of real GDRP value is not significant from year to year. However, from 2011 until 2016, the real GDRP value significantly increased, the GDRP value of Hulu Sungai Utara Regency reached up to IDR 2.95 trillion.

Table 1. The Forecasting Results of Real GDRP Value (Base=2010)

Year	PDRB (Base=2010), Thousand Rupiahs	Prediction (Brown Model)	Lower Confidence Limit (LCL)	Upper Confidence Limit (UCL)
2001	1,487,633,493.23	1,511,615,980.28	1,191,514,689.23	1,831,717,271.33
2002	1,520,831,823.15	1,501,409,952.09	1,181,308,661.04	1,821,511,243.15
2003	1,558,811,456.41	1,539,425,844.41	1,219,324,553.36	1,859,527,135.46
2004	1,554,267,548.44	1,586,510,765.81	1,266,409,474.76	1,906,612,056.86
2005	1,539,665,481.09	1,571,944,578.30	1,251,843,287.25	1,892,045,869.35
2006	1,435,084,936.34	1,542,190,780.20	1,222,089,489.15	1,862,292,071.26
2007	1,394,011,406.60	1,394,738,171.21	1,074,636,880.15	1,714,839,462.26
2008	1,369,933,120.72	1,342,781,780.84	1,022,680,489.79	1,662,883,071.89
2009	1,448,516,541.41	1,328,688,677.57	1,008,587,386.52	1,648,789,968.62
2010	1,547,046,584.00	1,454,348,425.09	1,134,247,134.03	1,774,449,716.14
2011	1,673,223,299.62	1,599,089,390.75	1,278,988,099.69	1,919,190,681.80
2012	2,265,794,521.42	1,761,912,176.11	1,441,810,885.06	2,082,013,467.16
2013	2,378,777,073.33	2,548,474,125.39	2,228,372,834.34	2,868,575,416.44
2014	2,630,786,726.21	2,648,530,973.10	2,328,429,682.05	2,968,632,264.15
2015	2,778,441,440.96	2,877,151,795.41	2,557,050,504.36	3,197,253,086.46
2016	2,947,868,745.11	2,986,484,573.46	2,666,383,282.40	3,306,585,864.51
2017		3,131,826,377.56	2,811,725,086.51	3,451,927,668.62
2018		3,311,957,373.00	2,768,913,198.53	3,855,001,547.47
2019		3,492,088,368.44	2,690,981,675.27	4,293,195,061.61
2020		3,672,219,363.88	2,582,144,182.09	4,762,294,545.66
2021		3,852,350,359.31	2,445,386,582.28	5,259,314,136.35
2022		4,032,481,354.75	2,282,968,386.00	5,781,994,323.50

Source: "HSU Dalam Angka", various edition (processed data)

The movement model of real GDRP value in 2001-2016, then this research would like to identify the forecast of GDRP value in Hulu Sungai Utara Regency for the coming years until 2022 as the base for regional planning party. Based on the forecast, it can be observed that the

best model can be used as forecasting is Brown Model. Table 1 shows that the forecast results which give a positive trend with Brown Model as the best model in the forecasting compared to ARIMA and other Exponential Smoothing models. The forecast results showed that the real

GDRP value from 2017 until 2022 is predicted to experience an increase. The projection results will be more accurate with the more identified past data. Each projection of real GDRP value in the coming year has an upper and lower threshold, which can be seen in Table 2.

The upper and lower threshold showed an interval from the value of projection results. The upper and lower threshold value will be close to the prediction value with the more identified historical data.

In 2017, it was forecasted that the GDRP value of Hulu Sungai Utara Regency was IDR 3.13 trillion based on the constant price in 2010. Furthermore, in 2018, there would be an increase as much as IDR 3.31 trillion, and in the following years are also predicted to increase until 2022 which is estimated that the GDRP value of Hulu Sungai Utara Regency as much as IDR 4.03 trillion. The plot figure of GDRP data, prediction value, fit value, upper threshold value, and lower threshold value on their forecast value is presented in Figure 1. Figure 1 shows that the forecast results and observation data show smooth and forecast results are fit with the observation data in the previous years.

Based on the prediction results with Brown Model, it can be identified that the real GDRP

value of Hulu Sungai Utara Regency is estimated to continuously experience an increase from year to year until it reaches IDR 4.03 trillion in 2022. The next identification is the forecast of economic growth rate until 2022. Based on Figure 2, the economic growth rate of Hulu Sungai Utara Regency experienced a relatively fluctuating change from year to year. However, the trend of economic growth rate in Hulu Sungai Utara Regency shows that there is a relatively low upward trend. In 2003, the economic growth rate of HSU Regency was 2.5%. However, in 2004-2008, the economic growth rate of HSU Regency has a negative value. Furthermore, in 2009, the economic growth returns to have a positive value and experiences a constant increase until 2011, the economic growth reached 8.16%. Furthermore, in 2012, the economic growth rate experienced a significant increase to 35.41%. However, in the next year, in 2013, the economic growth rate experienced a decrease until 4.99% and re-increased in 2014 as much 10.59%. For the next year, the economic rate increased and decreased relatively constantly, in which the economic growth rate in 2015 was 5.61%, and in 2016 the economic growth rate reached up to 6.10%.

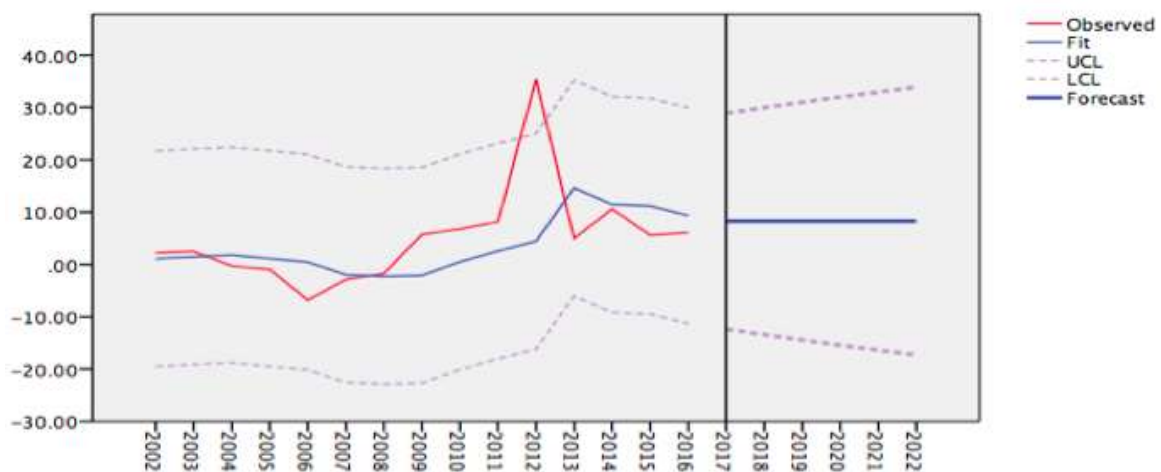


Figure 2. The prediction of Economic Growth Rate

Source: “*HSU Dalam Angka*”, various edition (processed data)

With a relatively fluctuating economic growth, the development planning needs to observe the

optimal economic growth forecast in the coming year. The projection results on the economic

growth trend in the coming year generated the best model, Exponential Smoothing Model namely simple model. The forecasting results on the optimal economic growth rate in the following year with Simple model are displayed in Table 2. Based on the prediction results with the simple model as the best model, the following

period of economic growth rate in HSU Regency in 2017 until 2022 was projected as much as 8.27 percent each year. The value and prediction results of the economic growth, upper threshold, and below the threshold of the prediction value are presented in Figure 2.

Table 2. The Results of Economic Growth Rate Forecast (in percentage)

Year	Economic Growth	Prediction (Simple Model)	Lower Confidence Limit (LCL)	Upper Confidence Limit (UCL)
2002	2.23	1.10	-19.51	21.70
2003	2.50	1.47	-19.13	22.07
2004	-.29	1.81	-18.80	22.41
2005	-.94	1.12	-19.49	21.72
2006	-6.79	.44	-20.16	21.04
2007	-2.86	-1.94	-22.54	18.67
2008	-1.73	-2.24	-22.85	18.36
2009	5.74	-2.07	-22.68	18.53
2010	6.80	.50	-20.11	21.10
2011	8.16	2.57	-18.03	23.17
2012	35.41	4.41	-16.19	25.01
2013	4.99	14.61	-5.99	35.21
2014	10.59	11.44	-9.16	32.05
2015	5.61	11.16	-9.44	31.77
2016	6.10	9.34	-11.27	29.94
2017		8.27	-12.33	28.88
2018		8.27	-13.42	29.96
2019		8.27	-14.45	31.00
2020		8.27	-15.44	31.99
2021		8.27	-16.39	32.94
2022		8.27	-17.31	33.85

Source: “*HSU Dalam Angka*”, various edition (processed data)

The lower and upper threshold values of the forecast result values can be seen in Table 2. The upper and lower thresholds of forecast in 2017 were at the value of -13.13 percent until 24.88 percent. The interval is significantly high due to the fluctuating economic growth rate from

previous years and the lack of historical data amount. The more fluctuating and the less historical data, the bigger interval of the projection estimation value. This means that, with a significantly fluctuating economic growth rate, the less historical data amount then the

upper and lower threshold values have a significantly big gap from the prediction value. Therefore, the forecasting results using the economic growth with a Simple model showed that the economic growth from 2017 until 2022 tends to be constant as much as 8.27% each year. This value experienced an increase from the previous year, in which the economic growth rate in 2016 was 6.10%. The prediction results showed that the economic growth rate in HSU Regency was predicted to be constant and had relatively good value at the growth rate of 8.27%.

Unemployment is the inability of the workforce market in absorbing the available workforce, in which the number of available vacancies is smaller compared to the number of job seekers. Generally, the number of job seekers increases each year along with the increase in the number of populations. The imbalance between demand and fluctuating supply of the workforce can cause the unemployment rate to fluctuate. When the number of workforce demand available is higher than the number of workforces

in the workforce market, then the workforce will have more choices to determine their employment.

However, in reality, HSU Regency has a tendency that the number of workforce demand is lower than the supply of the workforce in the workforce market, which impacted on the unemployment phenomenon. The number of unemployment correlates with the increase in population growth rate each year. As time goes by, the number of unemployed populations will be accumulated if it is not managed immediately. Whereas, the high unemployment rate will cause not only economic problems but also social problems such as poverty and income gap. The unemployment rate value is often used as a benchmark to measure the government success in overcoming the unemployment problems. The lower the unemployment rate value, the less the unemployment number which means that the absorption rate of job vacancy on job seekers is getting better. The unemployment rate is one of the macro indicators in the workforce sector.

Table 3. The Forecast Results of Unemployment Rate (percent)

Year	Unemployment Rate	Prediction [ARIMA (0,0,0)] Model	Lower Confidence Limit (LCL)	Upper Confidence Limit (UCL)
2007	3.9012	3.7888	2.1203	5.4573
2008	4.7859	3.7888	2.1203	5.4573
2009	4.9520	3.7888	2.1203	5.4573
2010	3.1405	3.7888	2.1203	5.4573
2011	4.2335	3.7888	2.1203	5.4573
2012	3.5318	3.7888	2.1203	5.4573
2013	2.7162	3.7888	2.1203	5.4573
2014	3.3729	3.7888	2.1203	5.4573
2015	3.1390	3.7888	2.1203	5.4573
2016	na	3.7888	2.1203	5.4573
2017	4.1148	3.7888	2.1203	5.4573
2018		3.7888	2.1203	5.4573
2019		3.7888	2.1203	5.4573
2020		3.7888	2.1203	5.4573
2021		3.7888	2.1203	5.4573
2022		3.7888	2.1203	5.4573

Source: "HSU Dalam Angka", various edition (processed data)

Table 3 shows the unemployment rate in Hulu Sungai Utara Regency from 2007 until 2017. The prediction of the open unemployment rate in Hulu Sungai Utara Regency is illustrated in Figure 3.

The forecasting results of the open unemployment rate in Hulu Sungai Utara Regency can be seen in Table 3. By using historical data, it was obtained that the best model to predict the unemployment rate in the future is Model ARIMA (0,0,0). Table 3 shows that the unemployment rate in Hulu Sungai Utara Regency in 2018 until 2022 is estimated at around 3.7888% with the time interval between the lower threshold of 2.1203% until the upper threshold of 5.4573%. This unemployment rate can be categorized as moderate rate. Ideally, the unemployment rate can be categorized as a

moderate level. Ideally, the unemployment rate is endeavored to be 0 (zero) percent. However, this is not easy to be fulfilled because a specific policy is needed to minimize the unemployment rate in Hulu Sungai Utara Regency.

The unemployment rate within the next five years namely 2018-2022 is forecasted not to experience a significant change compared to the previous years. This can occur if there is no policy change or economic conditions, in which the applied economic condition and policy are the same as the previous periods. Therefore, the workforce sector needs to be considered more intensively and comprehensively, particularly by the government of Hulu Sungai Utara Regency. The projection figure of the open unemployment rate and its interval value are represented in Figure 3 below.

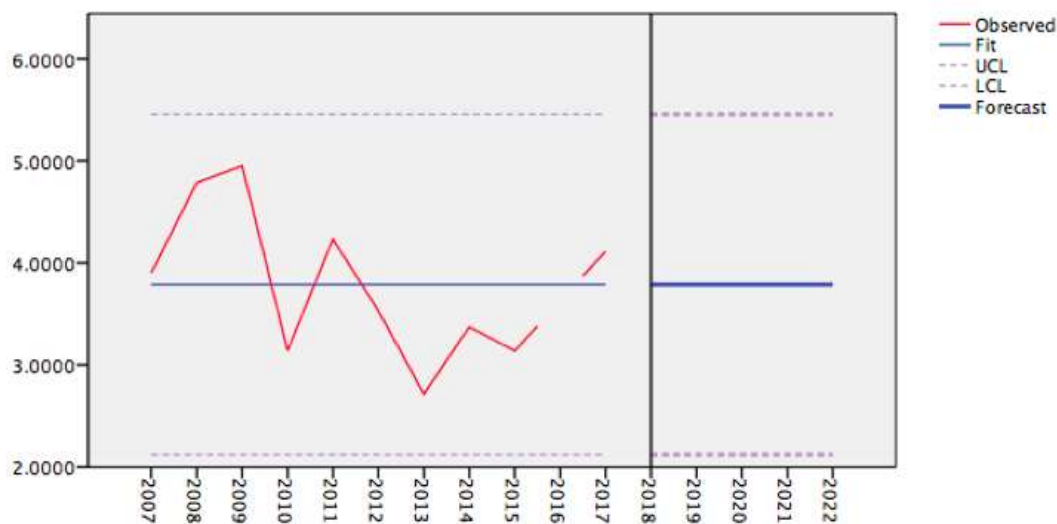


Figure 3. Plots of Observation values, Fitted Values, and Prediction of Unemployment Rate
Source: “HSU Dalam Angka”, various edition (processed data)

The level of income gap in society can be identified through the Gini index. Table 4 and Figure 4 show the development of Gini index value in Hulu Sungai Utara Regency from 2003 until 2017. From year to year, the Gini index value shows an increasing trend. In 2003, the Gini index value of Hulu Sungai Utara Regency was 0.210. Furthermore, in 2004, the Gini index value experienced an increase became 0.240. However, in 2005 the Gini index value experienced a decrease and continuously

constant in the following year until 2007, in which the Gini index value of Hulu Sungai Utara Regency was at the position of 0.230. In 2008, the Gini index value increased significantly compared to the previous years so that it became 0.290 and furthermore fluctuated in the following years. The Gini index value re-increased significantly in 2015 where the Gini index value in 2014 was 0.270 and increased up to 0.360 in 2015.

Table 4. The Forecast Results of Gini Index

<i>Year</i>	<i>Gini Index</i>	<i>Prediction (Holt Model)</i>	<i>Lower Confidence Limit (LCL)</i>	<i>Upper Confidence Limit (UCL)</i>
2003	0.210	0.214	0.159	0.269
2004	0.240	0.221	0.166	0.276
2005	0.230	0.230	0.175	0.285
2006	0.230	0.238	0.183	0.292
2007	0.230	0.244	0.189	0.299
2008	0.290	0.250	0.195	0.305
2009	0.280	0.262	0.207	0.316
2010	0.250	0.271	0.216	0.326
2011	0.280	0.276	0.221	0.331
2012	0.290	0.284	0.229	0.339
2013	0.260	0.292	0.237	0.347
2014	0.270	0.296	0.241	0.351
2015	0.360	0.301	0.246	0.356
2016	0.320	0.314	0.259	0.369
2017	0.310	0.322	0.267	0.377
2018		0.329	0.274	0.383
2019		0.336	0.281	0.391
2020		0.343	0.288	0.399
2021		0.351	0.295	0.407
2022		0.358	0.302	0.414

Source: “*HSU Dalam Angka*”, various edition (processed data)

However, in 2016, the Gini index value experienced a decrease so that it became 0.32 and decreased again in 017 into 0.31. However, the projection value of the Gini index in 2018 until 2022 is projected to increase. The prediction results of the model with the least error are generated by Holt model. The prediction of the Gini index value increase indicated that the level of the income gap in the society of Hulu Sungai Utara Regency would be higher. The prediction results of the Gini index value in 2018-2022 will

continuously increase as shown in Table 4 and Figure 4. Therefore, the anticipation from the policymakers is needed so that the Gini index value is lower than its prediction value. The forecast results in this research can be referred by the policymakers related to the macro condition prediction in the future with a ceteris paribus assumption. The prediction conducted in this research was based on the historical data by involving the presence of timely trend. The estimation using time series data will be excellent

for short term, which is the estimation for less than 5 years. The data, in fact, will correspond to the prediction if the assumption is constant which

is without the change in the policy or others, *ceteris paribus*.

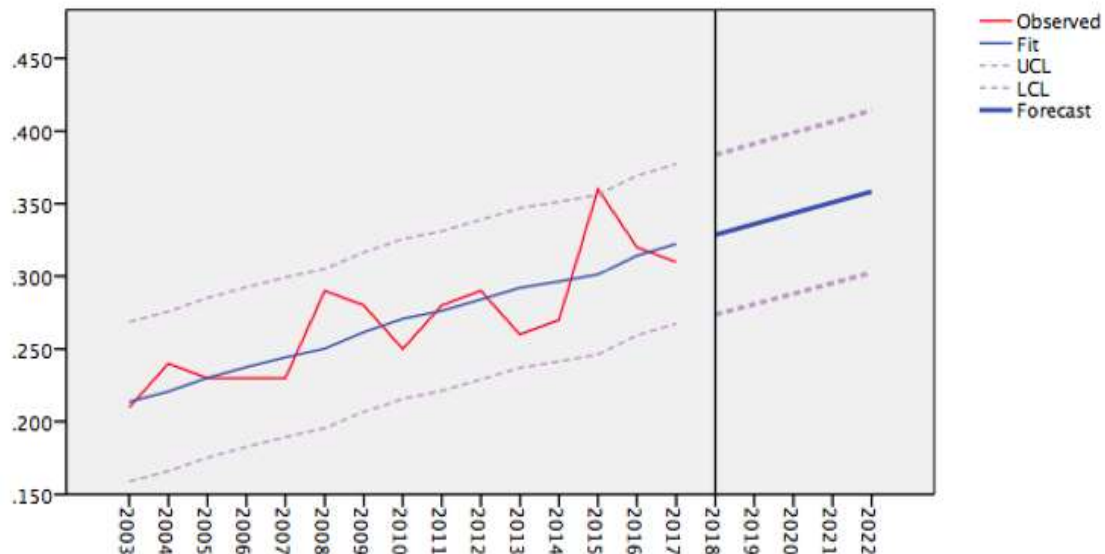


Figure 4. The Plot of Observation Value, Fitted Values, and Prediction of Gini Index
 Source: “*HSU Dalam Angka*”, various edition (processed data)

The forecast results in this research can be concluded that the real GDRP value will continue to increase. Meanwhile, the economic growth rate is projected to be at the point of 8.27%, *ceteris paribus*. This is an excellent indicator of the economic growth rate. From these results, it can be concluded that the achievable economic growth rate by Hulu Sungai Utara Regency is 8.27%, *ceteris paribus*. Hence, this value can be referred to in the evaluation and analysis of policy as well as a fundamental in formulating policies in the future. The government of HSU needs to consider robust variables influencing the economic growth according to Levine and Renelt (1992), namely initial per capita income, investment, and human capital. The changes in this variable can change the prediction value of the economic growth rate. The unemployment rate in HSU Regency is predicted to be constant which is around 3.78% within 2017-2022, *ceteris paribus*. Based on the research by Ehrenberg and Smith (2009), Layard and Nickell (1986), Maqbool, Sattar, and Bhalli

(2013), it can be observed that the unemployment rate can be influenced by salary, worker association, tax on the workers’ salary, the level of work in the public sector, policy on the income, population growth, inflation, GDP, and Foreign Direct Investment (FDI). Therefore, when there is no significant change in the unemployment rate determinant, then the prediction of the unemployment rate in this research will correspond. Hence, the government of HSU Regency needs to pay attention to the significant change in those variables. Identification on the projection of income gap variable projection in Hulu Sungai Utara Regency showed that in 2017-2022, Gini index is projected to increase, which means the level of income gap will be higher over the years. The analysis results showed that the level of economic growth in Hulu Sungai Utara Regency is adequately high. The high economic growth in Hulu Sungai Utara Regency is followed by a high level of the income gap among citizens.

This condition commonly occurs in which economic growth can increase the level of society's income gap (Strassmann, 1956; Scully, 2003). Dwiputri, Arsyad, and Pradiptyo (2018) also showed that the higher income per capita would lead to higher income gap.

CONCLUSION

The projection results of 2017-2022 conducted in this research used univariate-forecasting method, which assumed *ceteris paribus*, meaning that the projection estimation did not involve intervention/ conditional change of other economic variables. Based on the analysis results, it can be concluded that the projection of real GDRP value of Hulu Sungai Utara Regency increases up to IDR 4 trillion in 2022, the projection of economic growth rate is constant as much as 8.27%, and the projection of unemployment rate is also constant as well as 3.79%. The projection gini index had predicted to be increased up to 0.358 in 2022.

In the *ceteris paribus* condition, these projection results indicated that HSU regional government could not decrease the level of the unemployment rate. Accordingly, special efforts are needed to decrease the unemployment rate, among them, are striving to increase investment, job vacancy improvement and human capital improvement through the improvement of human resource quality. The Government of Hulu Sungai Utara Regency needs to maintain the stability of the three main macro indicators namely economic growth, and unemployment rate. The relatively high projection of economic growth rate (8.27%) in the following year can be achieved well through specific attention on the three important variables namely investment, human capital, and the effort in improving per capita income from year to year. The Government of Hulu Sungai Utara Regency needs to pay more attention to the level of society's income gap, both among income group and among regions (districts). Then, in terms of development, it needs to emphasize the spatial and layout by observing more the swamp and rural areas to decrease the level of the income gap.

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APPENDIX

Appendix 1. The Comparison of MAE and MAPE

Variable	Indicator	Simple Model	Holt Model	Brown Model	ARIMA Model
GDRP	MAE	114874754	90234610	86100374.5	275774304
	MAPE	5.546	4.588	4.463	16.607
Growth	MAE	5.093	5.594	6.732	5.664
	MAPE	113.83	112.067	236.463	129.373
Unemployment Rate	MAE	0.635	0.587	0.647	0.558
	MAPE	18.146	16.217	17.669	15.174
Gini Index	MAE	0.020	0.018	0.023	0.018
	MAPE	6.940	6.366	8.336	6.394

Note: It can be concluded the best model for projection of GDRP is Brown Model, Growth is Simple Model, Unemployment Rate is ARIMA Model, Gini Index is Holt Model.