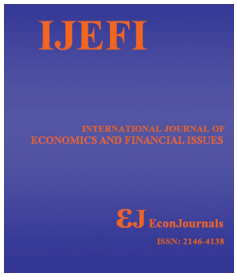

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2018, 8(6), 110-114.

Impact of Government Policy on Fisheries Production, Number of Fleet Fisheries, Investment, Fisheries Household in Batam City

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Received: 01 September 2018 **Accepted:** 29 September 2018 **DOI:** https://doi.org/10.32479/ijefi.7281

ABSTRACT

Batam city is flanked by two countries namely Malaysia and Singapore. The population of Batam is the highest of the cities/regencies in the Riau Islands region. One source of regional income in Batam City is the Fisheries sector. Production The fisheries sector has increased from year to year. This study aims to analyze the Impact of Government Policy on Fisheries Production, Number of Fisheries Fleet, Fisheries Household (2) analyze the Impact of Government Policy on Fisheries Production, Number of Fisheries Fleet, Fisheries Household in Batam City 2000-2017. Simultaneous equation model, using Time Series data with a time span from 2000 to 2017. Parameter is estimated by using 2SLS (two stage least squares) method, and processing data using SAS/ETS version 6.12 computer program. Analysis is carried out to find out economic policies in 2017-2022. Model forecasting simulation is carried out to analyze the impact of Government Policy on Fisheries Production, Number of Fisheries Fleet and Fisheries Household in Batam City. The alleged result shows that the impact of Government policy on fisheries production, number of fishing fleets, number of fishery households in Batam City. The factors that influence fisheries production are fisheries sector investment and fisheries production last year. Fisheries sector technology and number of fisheries houses have a positive and significant effect on fisheries production. Increasing the number of fisheries will increase fisheries production in Batam City and have a positive and significant effect, if the number of fishing fleets in the city of Batam is increased by one unit, it will increase fisheries production by 12.56 units. Government policy by increasing the number of fleet fisher by 20% will result in increasing fisheries production 2.1036%, and increasing fisheries sector investment by 3.8970%. Decreasing interest rates by 5% will have an impact on reducing investment in the fisheries sub-sector by -0.5898 and increasing fisheries production by 2.1038%.

Keywords: Fisheries Production, Fisheries Fleet Fishing Household, Investment
JEL Classifications: K23, E22, G23

1. INTRODUCTION

Riau Islands Province is one of the provinces that has 95% of the oceans and has a huge potential for marine and fisheries, especially the potential of maricultural and marine tourism. Based on Presidential Decree No. 6 of 2017 concerning the management of the smallest islands, the principle of managing the outer islands and small islands by increasing economic growth and regional development. Riau Islands Province is one of the provinces that produce the largest fisheries. The Fisher Sector is one of the sectors that has the largest contribution to the Gross Regional Domestic Product of the Riau Islands Province. Based on data from the Marine and Fisheries Office of the Riau Islands Province, explained that fisheries production increased from 4,226.6 tons in 2013 to 6,154 tons in 2014. The production of freshwater fish also increased from 13,365.6 tons in 2013 to 15,964.2 ton in 2014. The production of capture fisheries rose from 361,942 tons in 2013 to 406,395 tons with a production value of 13.55 trillion rupiah in 2014. The largest production was from Batam City at 36.1% or 146,842 tons with a production value of 4.89 trillion rupiah (Dirhamsyah, 2007).

Fisheries production is fluctuating seasonally, easily damaged, has a relatively large volume besides that the producers of fishery commodities are far from consumers. According to (Harada and Kobayashi, 2012) that the production location of Batam City is spread across 10 districts, including Bulang District for 11159 tons/year or 32% of the production of the city of Batam, then the sub-district of Nongsa amounted to 8870 tons/year or 27%. Increased fisheries production in 2016 was 48%. The number of Fisheries Production in Batam city from 2010 to 2016 has increased. Increased fisheries production cannot be separated from the role of the government in providing training and incentives for fisheries households. one of them is by increasing the number of fishing fleets and the number of fishery households by conducting counseling to fishermen groups spread across 10 districts in Batam City.

2. LITERATURE REVIEW

2.1. Production Function

According to (Moffitt and Cajas-Cano, 2014) that the size of the supply of fishery commodities in the market is very dependent on the amount of production that can be produced by the producer. The fishermen and fish farmers are fishery commodity producers who try to utilize their inputs to become output. The amount of production offered by the market depends on the size of the production business.

Analysis of the Influence of Fleet Amount, Number of Fishermen, GRDP, and Investment in Fisheries Production in Nias Region (Panel Data Analysis) (Carvalho et al., 2011). The results obtained are as follows (1) The number of fleets and the number of fishermen has a positive and significant impact on fisheries production in the Nias Region. 2. GRDP has a negative and significant effect on fisheries production in the Nias Region. While the level of investment has no significant effect on fisheries production in the Nias Region. 3. The results of the difference test between variables indicate that there are differences in the district/municipal fisheries production in the Nias region. 4. The regions that have the highest average value of fisheries production are the Districts of West Nias and North Nias. The region with the lowest average fishery production value is South Nias Regency. 5. The Chow and Haussman Test results show that the most appropriate method used in this study is the FEM method. The purpose of this study was to analyze the effect of previous year's capital stock, government investment, workforce, and human development index on the growth of district/city output in Central Java during 2007-2008. The method used in this study is the panel data method with a fixed effect approach. The results of this study indicate that the previous year's capital stock, workforce, and the Human Development Index have significance at the level of 95% ($\alpha = 95\%$). While the investment and regional dummy variables are not significant at the level of 95%.

(Natsir et al., 2018) conducted an analysis of the Analysis of the Influence of Fleet Amounts, the number of fishermen, GRDP. And Investment in Nias Region Fisheries Production (Pane Data Analysis) where the objectives of this study are (1) GRDP has a negative and significant impact on fisheries production in the Nias Region. While the level of investment has no significant effect on fisheries production in the Nias Region.

(Rani, 2015) conducted research on excess capacity and fisheries development in the Java Sea. The data used are the amount of production, the size of the ship, the number of crew members, working hours and fishing experience of purse seine, mini purse seine and longline taken cross-sectionally. Data envelopment analysis is used to analyze estimates of excess fisheries capacity and the number of fishing fleets to reduce them in the Java Sea. The results of the study conclude that the best policy is to reduce fishing capacity and sustainable management of fisheries development.

According to (Deswati and Muhadjir, 2016), that the production process is a process of changing inputs into outputs that have a theoretical basis called the production function.

2.2. The Role of the Fisheries Subsector

The birth of Law Number 45 of 2009 concerning Fisheries explained that all activities related to the management and utilization of fish resources and the environment ranging from preproduction, production, processing to marketing carried out in a fishery business system, with the strengthening of local regulations. According to (Natsir et al., 2018), with the birth of the Law on regional autonomy, it became the capital for the government to make regional development efforts that were oriented to the interests of the region, one of which was by increasing income from the fisheries sector.

This study identifies, and seeks related answers (1) How to analyze the Impact of Government Policy on Fisheries Production, (2) How to analyze the development of Government Policies on Fisheries Production in Riau Islands Province. In general this article aims to analyze the Impact of Government Policies on Fisheries Production in Riau Islands Province aims to: (1) Analyze the Impact of Government Policy on Fisheries Production, (2) analyze the development of Government Policy on Fisheries Production in Riau Islands Province (Dirhamsyah, 2007).

3. METHODOLOGY

Fisheries Production Response Model in Batam City is built based on economic theory framework and relevant empirical studies are able to show fisheries production in Batam City in a simple and clear manner. The stages of developing the model begin with an understanding of economic phenomena which was hypothesized to occur due to the enactment of various government policies that have an impact on fisheries production, the number of fisheries households, the number of fishing fleets. The model is an explanation of the actual phenomenon as a system or process (Iman and Nagata, 2005).

An econometric model is a special pattern of algebraic models, namely a stochastic element that includes one or more variables (Greene, 2003). The specificity of the econometric model lies in stochastic elements that take into account random elements. This standard is usually ignored in theoretical relationships

or mathematical economic models that generally use exact or deterministic relationships. This econometric model illustrates the relationship of each explanatory variable to the endogenous variable (dependent variable), especially regarding the sign and magnitude of the regression coefficient estimated a priori and economic theories (Naudé, 2013).

4. RESULTS AND DISCUSSION

4.1. Estimation Results

In general, the estimation results of Fisheries Production Model, Number of Fisheries Fleet, Fisheries Household are quite good, with the coefficient of determination (R2) reaching 0.981. This condition shows that in general the ability of explanatory variables to explain the variation of the endogenous variable values is quite high (able to explain the behavior of the model up to 98.10%). The rest is explained by variables outside the model. Of the 4 structural equations, all signs and magnitudes of the presumptive parameters are hypothesized based on economic theory. Statistical t-test shows 75.81% explanatory variables have a significant effect on the test level (which is tested. The expectation coefficient or endogenous lag coefficient (() of each equation, both the mark and the magnitude are also hypothesized (0 <(<1) around 0.0001-0.9170. It means that all expectations of the endogenous variables on each structural equation are desired, affecting the existing economic, technological and institutional changes. Model validation is dynamically-dynamic. Of the 3 endogenous variables, only one variable in the period 2000-2007 and one variable in the period 2008-2016 which has a RMSPE value of >50% and the U-Theil values are relatively small near zero. This indicates that the results of the estimation of the Fisheries Production model, Number of Fisheries Fleet, Fisheries Household in Batam, are representative for describes the phenomenon of Batam City fisheries production, in other words, the model built is valid for the process of simulation of the impact of the policy (Belyaev et al., 2005; Harada and Kobayashi, 2012; Iman and Nagata, 2005; Welcomme et al., 2010).

4.2. Results of Alleged Fishery Production (PRP)

The estimation results on the Fisheries Production equation show the variation of the endogenous variable value around 94.73% can be explained by the t-test used to see the significant level of the influence of each independent variable on the dependent variable individually independent variables do not affect the dependent variable and vice versa (Blankenhorn, 2007; Deswati and Muhadjir, 2016; Welcomme et al., 2010).

Fisheries Production (PDR) is positively related to all explanatory variables, namely the Fisheries sector investment in Batam the previous year (I1), the number of labor in the fisheries sector (TR), Technology (Tech), and Fisheries Production in the previous year (PDR1). All alleged parameter signs are in line with expectations (Blankenhorn, 2007).

The estimation results indicate that if the Fisher sector investment was raised by 10 units in the previous year, it would encourage an increase in Fisher production of 19.91 units/year. An increase in the number of fishery households by 10 units will increase fisheries production by 4.82 units. The increase in the number of fisheries technology by 10 units only increases the amount of fisheries production for the current year by 3.43 units and last year's fisheries production (Blankenhorn, 2007).

The coefficient of determination R2 is 0.9480 meaning 94.80 the variation unit of the endogenous variable can be explained by the explanatory variables included in the equation. The probability value of F is equal to 0.0001, meaning that explanatory variables together can explain fisheries production in the city of Batam The results of the t test showed that all explanatory variables were significantly different from zero at the level (30%. Based on the elasticity value, the endogenous variable response (PDR) for all explanatory variables in the short term was inelastic i.e., it did not respond to changes in the explanatory variables. But in the long run, the variable population is responsive (elastic) to changes in fisheries production variables. Result of Alleged Fisher Sub-Sector Investment (IP) (Carvalho et al., 2011).

Sub-fisheries investment is hypothesized to be influenced by the rate of increase in bank lending rates, number of fishing fleets, and gross domestic product fisher sector in the Fisheries Sector Investment sector last year. The results of the estimation of the investment equation for the Fisheries sub-sector are presented.

The investment magnitude of the fisheries sub-sector (IP) is positively related to the variables explaining the total gross regional domestic product of the fisheries sector (GRDP), and the number of investment in the service sub-sector in the previous year (IJ1) and the Number of Fleet in the Fisheries Sector (JAP). On the contrary, IJ is negatively related to the variable rate of increase in bank lending rates (SBKR The presumed parameter of all explanatory variables is in line with expectations, but the SB variable is not significantly.

The results of the estimation above show that if the number of fisheries fleets is increased by 10 units, it will increase the investment of the fisheries sub-sector by 1.42 units/year. The total increase in gross regional domestic product in the fishery sector by 10 units will increase the investment in the fisheries sub-sector by 1.03 units per year. Last year's increase in investment in fisheries sub-sector by 10 units will increase investment in the fisheries sub-sector by 2.96 units/year.

Variations in GRDP in the fisheries sector contributed significantly to investment formation in the fisheries sub-sector, followed by last year's fisheries sub-sector investment (IJ1). While the variable interest rate on loans is the rate of increase every year does not affect the level of investment invested in the fisheries sub-sector.

The coefficient of determination R2 is 0.7170 meaning 71.70 units of variation of endogenous variables can be explained by the explanatory variables included in the equation. The probability value F is equal to 0.0006, meaning the explanatory variables together can explain the variation of investment in the fisher sub-sector. The results of the t-test show that all explanatory variables in the IP equation are significantly different from zero at the level (20%, except for the SB variable.

The endogenous variable response (IP) to all explanatory variables is inelastic both in the short and long term, except for the variable regional domestic product of the service sub-sector, the variable PDRB responsively (elastic) on the level of investment in the fisher sub-sector, the GDP variable is elastic both in the period short and long term (Ahmad et al., 2003; Immanuel et al., 2003).

4.3. Fisheries Production Model Validation Forecasting, Number of Fisheries Fleet, Fisheries Household in Batam City 2018-2025

Before the simulation is done, the scenarios will be simulated, the scenario below is prepared with the aim of analyzing the extent of changes in fisheries production, the number of fleets perisa, number of fisheries households, interest rates, in Batam City and then a number of policies are taken which are in line with the objectives of the Batam City development and forecasting in 2018-2025 which aims to carry out the policy of the Batam City Government for the purpose of building in Batam City. The policy scenarios stipulated include the following: (1) The policy scenario increases the number of fishing fleets by 20%, (2) the policy scenario for reducing credit interest rates by 5 points (3) The policy scenario of increasing the number of fisheries households by 10%, (4) combined scenarios (1) and (2) with several choices according to the objectives to be seen, (5) combined scenarios (1) and (3) with several choices according to the purpose to be seen (Carvalho et al., 2011; FAO, 2012; Garcia et al., 2012; Merino et al., 2012; Moffitt and Cajas-Cano, 2014).

The simulation aims to analyze the impact of changes in several government policies on fisher production, the number of fishing fleets, labor and gross regional domestic product of the fisher sector. Simulation is done by changing the value of the policy variables. Before the simulation is done, the model is validated to find out if the model is valid for simulation. Some statistical criteria used for validation are MSE, RMSPE RMSE, U-Theil and R2. The expected values of MSE, RMSE, RMSPE and U-Theil are small ie close to zero while R2 approaches one. The results of the validation of the fisher sector labor model (Rani, 2015).

The Result of Forecasting the Impact of an Increase in Fisheries Fleet Number 20%, 2018-2025 Forecasting results The impact of the policy increase in the amount of fleet fisher increased by 20%, will result in increasing fisheries production 2.1036%, and increasing fisheries sector investment (Blankenhorn, 2007).

5. CONCLUSION

Based on the results and discussion above, some conclusions can be drawn according to the purpose of this article are (1) Perikan production is positively related to investment The fisheries sub-sector, number of fishing houses, fisheries sector technology and fisheries production last year, and have a significant effect on fisheries production, Increasing the number of fisheries households will increase fisheries production in Batam City, (2) Investment in the fisheries sector is negatively related to interest rates and positively related to the number of fishing fleets and gross domestic regional products and investment last year if the number of fishing fleets is increased by 10 unit will increase investment in fisheries sub-sector by 1.42 units/year. The total increase in gross regional domestic product in the fishery sector by 10 units will increase the investment in the fisheries sub-sector by 1.03 units/year.

The impact of the policy increase in the amount of fleet fisher increased by 20%, will result in increasing fisheries production 2.1036%, and increasing fisheries sector investment by 3.8970%. The decline in bank lending rates and the decline in SBI and credit interest rates by 5% will have the effect of reducing investment in the fisheries sub-sector by −0.5898 and increasing fisheries production by 2.1038%.

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