Fiscal Policy Scenarios in Enhancing Local Government Revenue and Reducing Unemployment and Poverty

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Abstract: - This study aims to simulate the local fiscal policy and to assess its impact on both the economic performance and the increase in the capacity of an economy in Southeast Sulawesi, in particular, to overcome the unemployment and poverty issue. An econometric model consisting of forty-two equations was developed and applied it to simulate several policy scenarios. Time series 1990-2011 data was used in this study. The results show that the increase of tax sharing revenue by 20% will increase the regional revenue and the economic growth by 0.04% and 0.73%, respectively, and will reduce both the unemployment and the poverty by 0.4% and 0.03%, respectively. If the scenario is to increase the General Allocation Fund (GAF) by 20%, the regional revenue and economic growth will increase by 0.63% and 11.95%, respectively, and the unemployment and poverty will reduce by 6.29% and 0.4%, respectively. If the goal is to increase the regional fiscal revenues from taxes and levies, the local development should be orientated to the output improvement. Accordingly, the increasing revenues will promote the increasing GAF from the central government. Therefore, the local government of Southeast Sulawesi is recommended to look for ways of earning the maximal GAF as it will increase significantly the regional revenues and will reduce the unemployment and poverty in the region

Key-Words: - fiscal policy, regional revenue, unemployment, poverty, simulation

1 Introduction

Decentralized fiscal policy has given opportunities to the local governments to determine which financing priority and to increase the amount of funding managed by local governments. With the increasing regional revenue, local governments have the authority to spend the allocated budget and to increase their regional revenue. Thus, this policy is expected to increase the opportunities of local government in improving effectively public welfare and equitable development, which further gives a positive impact on economic growth in the region.

The implementation of central-regional financial balancing or fiscal decentralization as the consequence of the regional autonomy implementation has put local governments in a difficult condition because they faced several issues such as financial constraints, human resources and economic globalization. There are two important issues in the implementation of the autonomy; (1) how the local government should focus on increasing the regional revenues for the financial independence, and (2) how concern the local government improves the effectiveness of expenditure policy for a better business environment [25]

The economic growth of Southeast Sulawesi needs a great effort for the acceleration due to local conditions such as; 65.1% of the productive age, the decreasing number of job openings and high number of poverty over 400,000 people. The poverty in that region did not change significantly during 2006 to 2007 from 23.37% to 21:33% of the population. Although there was a decreasing number of poor people in the region in year 2013 but the number was still high at 16% of the population. The economy of Southeast Sulawesi is mainly supported by the agricultural sector with
approximately 33% of the regional Gross Domestic Product (GDP). Half of the population works on the agricultural sector in rural areas. According to [18], agriculture sector is a mitigating factor for the unemployment in Nigeria.

Fiscal policy is defined as a government action on budget to support its economy. The instruments of fiscal policy include taxes, government spending and transfer payments [5, 15]. Therefore, if the government does fiscal expansion, the demand of both goods and services will increase, which further improve the output and price. The fiscal authority has experienced the significant changes since 2000 to which the local government is more flexible in managing their own budget, known as the fiscal decentralization. Discipline in budget allocation needs a serious attention so that fiscal decentralization can effectively work both on the regional revenue and expenditure. The effectiveness of both expenditure and revenue decentralization on reducing budget deficits significantly depends on the existence of fiscal rules, particularly the balanced-budget rules [22].

Based on Indonesian Law No 33 article 5 year 2004, the sources of the regional revenue consist of; (1) local revenues which include Regional Taxes, levies, local company revenue, local wealth management revenue, and other local sources, (2) central budgeting including tax and natural resource sharing, GAF, Specific Allocation Funding (SAF), (3) local loan, and (4) other legitimate incomes.

Theoretically, the amount of tax is a function of disposable income. The structure of regional expenditures consists of two groups; the expenditure of local officials and the expenditure of public services. Office budget is the financial expenditure of administrative and public service activities for the local governments. The public service expenditure is to finance the development activities.

The implementation of fiscal decentralization affects on local fiscal revenues and expenditures [29]. There was highly increasing revenue, in particular from the balancing funding and regional revenue, in which the role of balancing funding increase while the role of regional revenue decreases. Regional GDP is the dominant factor that affects regional revenues such as taxes, fees, profit sharing and transfer, while the funding balance is the main factor that affects recurrent and development expenditure. The study shows that the local fiscal policies, in particular the capital expenditure in both agriculture and non-agricultural sectors, could stimulate the private investment [2]. Other studies relating to fiscal policy can be seen in, for example, the study of federal spending on the agricultural sector in Nigeria [3, 33], and the study of the fiscal policy impact on the cost of inputs and agricultural production in Albania [35].

Several studies on poverty and unemployment have been carried out. For example, the fiscal decentralization effect on poverty in the province of Aceh [14], the effect of government expenditure on poverty reduction in Iran [6]. The result of study on poverty in Zimbabwe shows that poverty reduction was a priority for all African countries [19]. Setiyawati and Hamzah [28] applied a path analysis approach to examine the effect of regional revenue, GAF, SAF as well as the expenditure on the development of poverty and unemployment. They found that the economic growth has a significantly positive effect on unemployment poverty whereas it has a significantly negative effect on poverty. Those who concern in the economic growth of the poor should pay more attention on the productive sectors such as agriculture and infrastructure in which the poor depend on for their livelihood. The growth must be focused on sectors where the livelihood of poor people depends on such as agriculture. Sartiyah [26] examined the impact of fiscal decentralization implementation on regional economic development in Aceh Besar and Aceh Utara by using simultaneous analysis. The results show that the fiscal decentralization implementation in these regions could improve the regional revenue. Furthermore, the simulation indicates that the region with a small potential resource was more dependent than those with high potential resources. However, this approach focused only on the expenditure and ignored the efficiency factors in the basic assumptions of decentralization. Sasana [27] shows that in Central Java the fiscal decentralization had a significant positive relationship to the rate of economic growth. Furthermore, the results indicate that the economic growth has a significant positive relationship to labor absorption but negative relationship to poverty. Both the economic growth and labor absorption have a significant positive effect on the local welfare in the district of Central Java. Meanwhile, the number of poor people has significantly a negative effect on the welfare in the city.

Sriyana [30] found that the local revenue in Gunung Kidul, Central Java, contributed relatively small in the total regional revenue and the largest proportion came from the central government. These conditions indicated that the fiscal capacity in
that region was still very low. The local revenues were mostly from regional taxes and levies, local company income, natural resources wealth and other legitimate revenues. The Regional taxes were gained from the industrial and service activities such as hotel, restaurant, entertainment, advertisement, street lighting, mining, and parking, and utilization of water.

Hadi [12] found that the government investment in the fiscal sector, especially the expenditure in dollars for the development, did not have a significant effect on the economic growth. The government was expected to emphasize its capital expenditure in supporting the development of private investment [13]. The investment like foreign investment can play an important role to address the unemployment issue [16]. The study indicated that Foreign Direct Investment (FDI) has a negative relationship to unemployment and fiscal expansion stimulates not only employment but also aggregate output [31]. The study in Nigeria showed that the capital expenditure on the agricultural sector had a positive impact on the economic growth of agriculture sector [8]. The effect of fiscal policy on the performance scores of other interconnected economy have been also studied, see for example [1, 4, 9, 10, 11, 21]. This is essential as the fiscal policy is the economic lifeblood which relates to all sectors, even with activities such as electoral democracy [9].

High economic growth and sustainable process are the main condition for economic development. Economics needs to be continuously improved along with the increasing population each year. This means that it is necessary additional income reflected by an increasing aggregate output both goods and services as well as regional gross domestic product (GDP) in the region. In the long term, economic growth will be determined by the factors of availability and quality production such as human resources, capital and technology. Economic growth can be derived from the growth of aggregate demand and supply. Balancing economics that produces a number of aggregate outputs and a certain price level will increase the national and regional incomes.

Employment or labor demand is defined as the number of people working in various economic sectors such as agriculture, mining, industry, forestry, services and other sectors. Labor curve shows an inclination line which could mean that those companies can choose the optimal amount of labor to maximize their revenues. The optimal labor makes the value of the marginal physical labor (MPL) equal to the wage of the marginal cost for one unit of labor. Therefore, fiscal policy will provide a significant role in absorbing labor.

The main focus of this study is two folds; (1) evaluating fiscal policy on the regional economic performance consisting of local revenue, employment, economic growth, per capita income, unemployment and poverty, (2) formulating alternative policy scenarios which play important role in improving the regional economic performance, in particular in increasing regional revenues and reducing unemployment and poverty.

2 Model Formulation

This study was conducted in the province of Southeast Sulawesi, Indonesia, in 2014. Time series 1990-2011 were obtained from the Central Bureau of Statistics whereas the data associated with the monetary interest and the exchange rates were obtained from the Bank of Indonesia. A quantitative econometric technique was used by applying a simultaneous equation model [15, 32]. The model describes the relationship between explanatory and endogenous variables, in particular those concerning to the sign and magnitude of the estimated parameters as described in the theory.

Figure 1. Blocks interconnection of the economy in the province of Southeast Sulawesi, Indonesia

The sign and magnitude also represent the established hypothesis. Then, a dynamic model consisting of a system of simultaneous equations which integrate the aggregate both supply and demand was introduced to study the fiscal phenomenon and its effect on the economics in Southeast Sulawesi. The model consists of five blocks; (1) local fiscal, (2) the production and labor, (3) aggregate demand, (4) the performance of local
economics and (5) the performance of agricultural sector. The interconnections among the five blocks are depicted in Figure 1.

The relationship of the equations in each block is shown in Figure 2.

Figure 2. The interrelation among equations in each block, 2014

Based on the scheme in Figure 2, a system involving 29 structural equations and 13 identity equations reads as follows.

**Block I. Local Fiscal**

**Regional Revenue**

**Regional Tax**

\[ \text{TXD} = a_0 + a_1 \text{PDRBS} + a_2 \text{LTXD} + \mu_1 \]

**Regional Retribution**

\[ \text{RETD} = b_0 + b_1 \text{PDRBS} + b_2 \text{LRETD} + \mu_2 \]

**Regional Demand**

\[ \text{REG_REV} = \text{TXD} + \text{RETD} + \mu_1 \]

**Sharing Tax Revenue**

\[ \text{BHTX} = d_0 + d_1 \text{PDRBS} + d_2 \text{LBDTX} + \mu_4 \]

**Sharing Non-Tax Revenue**

\[ \text{BHNTX} = e_0 + e_1 \text{PDRBS} + e_2 \text{LBHNTX} + \mu_5 \]

**Total Sharing Revenue**

\[ \text{TBHS} = \text{BHTX} + \text{BHNTX} \]

**Total Central-to-Regional Transfer**

\[ \text{TRNF} = \text{DAU} + \text{DAK} + \text{TBHS} \]

**Total Regional Revenue**

\[ \text{TPD} = \text{REGIONAL REVENUE} + \text{TRNF} \]

**Regional Expenditure**

**Regional Routine Expenditure**

\[ \text{GRTN} = f_0 + f_1 \text{TPD} + f_2 \text{TTKD} + f_3 \text{D} + \mu_6 \]

**Agricultural Development Expenditure**

\[ \text{GPSP} = g_0 + g_1 \text{TPD} + g_2 \text{LGPS} + \mu_7 \]

**Industrial Development Expenditure**

\[ \text{GIND} = h_0 + h_1 \text{TPD} + h_2 \text{TREND} + h_3 \text{LGIND} + \mu_8 \]

**Total Regional Expenditure**

\[ \text{TGD} = \text{GRTN} + \text{GPSP} + \text{GIND} \]

**Description:**

- **BHTX** = Tax Sharing Revenue (Rp/yr)
- **BHNTX** = Non-tax Sharing Revenue (Rp/yr)
- **DAU** = General Allocation Fund (Rp/yr)
- **DAK** = Specific Allocation Fund (Rp/yr)
- **D** = Fiscal Decentralisation Dummy; 0 = before fiscal decentralisation; 1 = after fiscal decentralisation.
- **GRTN** = Regional Expenditure (Rp/yr)
- **GPSP** = Agricultural Expenditure (Rp/yr)
- **GIND** = Industrial Expenditure (Rp/yr)
- **INVE** = Total Regional Investment (Rp/yr)
- **LTXD** = Previous-year Tax (Rp/yr)
- **LRETD** = previous year regional retribution revenue (Rp/yr)
- **LDAU** = General Allocation Fund (Rp/yr)
- **LBHTX** = Non-tax sharing revenue (Rp/yr)
- **LBHNTX** = Previous year non-tax share revenue (Rp/yr)
- **LGRTN** = Previous year regional expenditure (Rp/yr)
- **LGPS** = Previous year agricultural expenditure (Rp/yr)
- **REGIONAL REVENUE** = Regional revenue (Rp/yr)
- **POPP** = Population per capita (people/year)
- **PDRBS** = Regional Gross Domestic Product
- **RETD** = Regional retribution revenue (Rp/yr)
- **TPD** = Total regional revenue (Rp/yr)
- **TGD** = Total government expenditure (Rp/yr)
- **TXD** = Regional tax (Rp/yr)
- **TTKD** = Total regional labor (orang/tahun)
- **TREND** = Trend (th ke 1, 2, ..., n)
- **TBHS** = Total sharing revenue (Rp/yr)
- **TRNF** = Total government transfer (Rp/yr)
- **TQSP** = Total agricultural production (Rp/yr)
- **TQIN** = Total industrial production (Rp/yr)

**Block II. Production and Regional Employment**

**Production**

**Industrial Production**

\[ \text{TQIN} = i_0 + i_1 \text{TGD} + i_2 \text{TREND} + i_3 \text{TTKD} + \mu_9 \]

**Description:**

- **TQIN** = Total industrial production (Rp/yr)
\[
\begin{align*}
\text{Mining Production} & \\
TQTBG = j_0 + j_1TGD + j_2LTQTBG + \mu_{10} & \quad (15) \\
& \quad (+) \quad (+) \\
\text{Tourism Production} & \\
TQWS = k_0 + k_1TGD + k_2D + \mu_{11} & \quad (16) \\
& \quad (+) \quad (+) \\
\text{Service Production} & \\
TQJS = l_0 + l_1TGD + l_2D + l_3LTQJS + \mu_{12} & \quad (17) \\
& \quad (+) \quad (+) \quad (+) \\
\text{Forestry Production} & \\
TQHT = m_0 + m_1TGD + m_2TREND + m_3LTQHT + \mu_{13} & \quad (18) \\
& \quad (+) \quad (+) \quad (+) \\
\text{Gross Regional Domestic Production} & \\
PDRBS = TQSP + TQIN + TQTBG + TQWS + TQJS + TQHT & \quad (19) \\
\text{Block III. Labor} & \\
\text{Agricultural Labor} & \\
TKSP = n_0 + n_1PDRBD + n_2D + n_3LTQSP + \mu_{14} & \quad (20) \\
& \quad (+) \quad (+) \quad (+) \\
\text{Mining Labor} & \\
TKTBG = o_0 + o_1PDRBD + o_2LTQTBG + \mu_{15} & \quad (21) \\
& \quad (+) \quad (+) \\
\text{Industrial Labor} & \\
TKIN = p_0 + p_1PDRBD + p_2D + p_3LTQJS + \mu_{16} & \quad (22) \\
& \quad (+) \quad (+) \quad (+) \\
\text{Tourism Labor} & \\
TKWS = q_0 + q_1PDRBD + q_2D + q_3LTQWS + \mu_{17} & \quad (23) \\
& \quad (+) \quad (+) \quad (+) \\
\text{Service Labor} & \\
TKJS = r_0 + r_1PDRBD + r_2LTQJS + \mu_{18} & \quad (24) \\
& \quad (+) \quad (+) \\
\text{Total Regional Labor} & \\
TTKD = TKSP + TKTBG + TKIN + TKWS + TKJS & \quad (25) \\
\text{Description:} & \\
IR = \text{rate (\%)} & \\
LTQJS = \text{Total revenue of previous tax production sector (Rp/yr)} & \\
LTQSP = \text{Total revenue of previous agriculture production (Rp/yr)} & \\
LTQTBG = \text{Total revenue of previous mining production (Rp/yr)} & \\
LTQWS = \text{Total revenue of previous tourism sector (Rp/yr)} & \\
TQTBG = \text{Total revenue of mining sector (PDRB) (Rp/yr)} & \\
TQWS = \text{Total revenue of tourism production (PDRB) (Rp/yr)} & \\
TQNP = \text{Total revenue of other non-agricultural sector (PDRB) (Rp/yr)} & \\
TQJS = \text{Total revenue of service sector (PDRB) (Rp/yr)} & \\
TQHT = \text{Total revenue of forest production sector (PDRB) (Rp/yr)} & \\
TKSP = \text{Total of agricultural labor (individual/yr)} & \\
TKIN = \text{Total of industrial labor (orang/yr)} & \\
TKTBG = \text{Total of mining labor (individual/yr)} & \\
TKWS = \text{Total of tourism labor (individual/yr)} & \\
TKJS = \text{Total of service labor (individual/yr)} & \\
\text{Block III. Aggregate Demand (AD)} & \\
\text{Consumption} & \\
\text{Food Consumption} & \\
CPN = s_0 + s_1YD + s_2D + s_3LCPN + \mu_{19} & \quad (26) \\
& \quad (+) \quad (+) \quad (+) \\
\text{Non Food Consumption} & \\
CNPN = t_0 + t_1YD + t_2LCNPN + \mu_{20} & \quad (27) \\
& \quad (+) \quad (+) \\
\text{Total Consumption} & \\
CONS = CPN + CNPN & \quad (28) \\
\text{Investment} & \\
\text{Total Investment} & \\
INVE = u_0 + u_1IR + u_2PDRBS + u_3LINVE + \mu_{21} & \quad (29) \\
& \quad (-) \quad (+) \quad (+) \quad (+) \\
\text{Regional Export} & \\
XDRH = v_0 + v_1ER + v_2PDRBS + v_3D + v_4LXDRH + \mu_{22} & \quad (30) \\
& \quad (+) \quad (+) \quad (+) \quad (+) \\
\text{Regional Import} & \\
MDRH = w_0 + w_1ER + w_2PDRBK + w_3LMDRH + \mu_{23} & \quad (31) \\
& \quad (-) \quad (+) \quad (+) \quad (+) \\
\text{Gross Regional Domestic Product Demand} & \\
PDRBD = CONS + INVE + GRTN + GPSP + GIND + XDRH - MDRH (32) & \\
\text{Description:} & \\
CPN = \text{Food consumption (Rp/yr)} & \\
CNPN = \text{Non food consumption (Rp/yr)} & \\
CONS = \text{Total consumption (Rp/yr)} & \\
ER = \text{Exchange rates (Rp/US$)} & \\
IR = \text{Domestic interest rate (\%)} & \\
INVE = \text{Total regionnal investment (Rp/yr)} & \\
PABH = \text{Regional sharig revenue (Rp/yr)} & \\
PDRBD = \text{Product domestic regional bruto supply} & \\
PDRBK = \text{Revenue per capita (Rp/yr)} & \\
MDRH = \text{Regional import (Rp/yr)} & \\
XDRH = \text{Regional export (Rp/yr)} & \\
YD = \text{Disposable revenue} & \\
\text{Block IV. The Regional Economy Performance} & \\
\text{Per capita Income} & \\
PDRBK = \frac{PDRBD}{POPP} & \quad (33) \\
\text{Disposable Income} & \\
YD = PDRBD-TXD & \quad (34) \\
\text{Regional Poverty} & \\
PMD = x_0 + x_1UND + x_2D + x_3LPMD + \mu_{23} & \quad (35) \\
& \quad (+) \quad (-) \quad (-)
Regional Unemployment
UND = y₀ + y₁POPP + y₂TGD + y₃TREND + y₄LUND + μ₂₄ \quad (36)

Regional Economic Growth
GRWT = (PDRBD - LPDRBD)/LPDRBD)x100 \quad (37)

Description:
PDBK = per capita income (Rp/yr)
PMD = poverty (people)/yr
GRWT = regional economic growth (%)

Block V. Agricultural Performance
Crop Production
QPN = z₀ + z₁TGD + z₂D + z₃LQPN + μ₂₅ \quad (38)

Plantation Production
QBUN = aa₀ + aa₁TGD + aa₂D + aa₃LQBUN + μ₂₆ \quad (39)

Husbandary Production
QPT = ab₀ + ab₁TGD + ab₂D + ab₃LQPT + μ₂₇ \quad (40)

Fishery Production
QIKN = ac₀ + ac₁TGD + ac₂D + ac₃LQIKN + μ₂₈ \quad (41)

Total Agricultural Production
TQSP = QPN + QBUN + QPT + QIKN \quad (42)

Description:
QPN = food production (Rp/yr)
QBU = plantation production (Rp/yr)
QPT = husbandary production (Rp/yr)
QIKN = fishery production (Rp/yr)
TQSP = total production of agricultural sector (Rp/yr)

4. Analysis

4.1. Model Identification

The model identification consists of testing the total number of endogenous variables denoted by G, the total number of endogenous and predetermined variables denoted by K and the total number of endogenous and exogenous variables denoted M. All these variables are formulated as follows (Koutsoyiannis, 1977):

\[ K - M \geq G - 1 \]

The condition of equation is defined as follows.
1. If \( K - M < G - 1 \), the equations are called under identified.
2. If \( K - M = G - 1 \), the equations are called just identified.
3. If \( K - M > G - 1 \), the equations are called over identified.

Where \( G \) = the number of equations in the simultaneous system (the number of endogenous variables), \( K \) = the number of total variables in the equations (the endogenous and predetermined variables), \( M \) = the number of endogenous dan eksogenous variables in the simultaneous system.

Based on the criteria, all equations are over identified. Therefore, they can be estimated by using two stage least squares (2SLS) estimation method. In this study, the models were estimated with statistical software SAS 9.1. The simulation was run in a Computer Intel Celleron, 2 GHz.

4.2 Model Validation

Model validation was done via dynamic simulation by using Gauss-Seidel method. Several measurements such as Root Mean Square Error (RMSE), Root Mean Square Percentage Error (RMSPE), simultaneous bias (UM) and coefficient Theils (U), are calculated with the following formula:

\[ \text{RMSE} = \sqrt{\frac{1}{T} \sum (Y_t^a - Y_t^e)^2} \]
\[ \text{RMSPE} = \sqrt{\frac{1}{T} \sum \left(\frac{Y_t^a - Y_t^e}{Y_t^e}\right)^2} \]
\[ \text{U- Theil} = \sqrt{\frac{\sum (Y_t^a - Y_t^e)^2}{\sum (Y_t^e)^2}} \]

Description:
\( T \) = The number of observation in time
\( Y_t^a \) = observation of estimated regional revenue at the period t-th
\( Y_t^e \) = observation of actual regional revenue at the period t-th

Root Mean Square Error (RMSE) and Root Mean Square Percent Error (RMSPE) are used to measure the deviation of estimated endogenous variable values from their actual values (in percentage). The smaller the values of RMSPE and RMSE are, the better the model is. Theil Inequality Coefficients (the value of U) are used to determine the ability of forecasting models for simulation analysis. The U value ranges from 0 to 1 and the model is considered perfect if U = 0 whereas the model is categorized worse if U = 1. The result of model validation for 22 years is presented in Table 1.

Table 1. Model Validation Based on RMS Error, RMSPE and U Theil.

<table>
<thead>
<tr>
<th>Variables</th>
<th>RMSE</th>
<th>RMSPE</th>
<th>U Theil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Tax (TXD)</td>
<td>72248.1</td>
<td>194.4000</td>
<td>0.5724</td>
</tr>
<tr>
<td>Regional Retribution (RETD)</td>
<td>6143.4</td>
<td>86.0964</td>
<td>0.1723</td>
</tr>
<tr>
<td>General Allocation Fund (DAU)</td>
<td>Tax Share Revenue (BHTX)</td>
<td>Non tax Share Revenue (BHNTX)</td>
<td>Regional Routine Expenditure (GRTN)</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------</td>
<td>-------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>125245.0</td>
<td>8018.6</td>
<td>2799.3</td>
<td>117527.0</td>
</tr>
</tbody>
</table>

It can be seen in Table 1 that RMSPE values are mostly less than 50% and overall Theil U values are below 0.2. Thus, it can be stated that the model is valid to be used for simulation.

### 4.3. Simulation

In the simulation process, the dependent variables (endogenous variables) values were estimated by substituting the results from the assessment of the independent variable regression coefficients and the actual value of the independent variable (by observation) into the regression model with dependent variables.

Based on these assumptions, the following scenarios assuming increases in fiscal policy variable by 20% were formulated.

- **Scenario 1 (S1)**: the impact of increased Tax Revenue by 20%
- **Scenario 2 (S2)**: the impact of increased Non-Tax Revenue Sharing by 20%
- **Scenario 3 (S3)**: the impact of increased Regional Revenue by 20%
- **Scenario 4 (S4)**: the impact of increased General Allocation Fund by 20%
- **Scenario 5 (S5)**: the impact of increased Agricultural Sector Development Expenditures by 20%
- **Scenario 6 (S6)**: the impact of increased Tax Revenue by 20%, increased non-tax revenue sharing by 20%, increased Regional revenue by 20%, General Allocation Fund by 20% and Agriculture Sector Development Spending by 20%.
5. Result and Discussion

The time series data of period 1990-2011 was used to evaluate the impact of fiscal decentralization policy on the output and regional economy performance.

In Scenario 1 (S1), the increase of tax revenue share by 20% will increase the regional revenue at 0.04% and the total revenues at 3.31%. The increase of tax revenue share does not go along with the increase of employment. Labor in the agricultural sector is not absorbed and the industrial sector is slightly increasing of 0.03%. Moreover, the employment in mining, tourism and service sectors increased by 0.07%, 0.20% and 0.09%, respectively, which results in the decrease of unemployment at 0.40%. Relatively small decline in the unemployment shows that the labor market sector did not change significantly. The positive effects of the increasing tax revenue sharing at 20% can be seen from the economic growth increase at 0.73% followed the increase of per capita income by 0.15% and the poor people reduction by 0.03%.

In Scenario 2 (S2), the increase of non-tax revenue 20% results in the increase of regional revenue by 0.02% such that the total regional revenues increased by 1.64%. The increase in non-tax sharing has a significant effect on the sectors such as service, tourism and mining with the increase in employment by 0.05%, 0.20%, and 6%, respectively, meanwhile the effect on other sectors is relatively less significant. The high increase of employment in the sectors of service, tourism and mining is due to a small number of people working in these areas compared to that in other sectors. In general, the unemployment reduces relatively small by 0.03% so that the poverty declined by 0.01%, and per capita income increased by 0.08%.

In Scenario 3 (S3), increasing the regional revenue by 20% it will increase the total revenues to 28.82%. The increase of revenue has apparently a large multiplier effect on economic activity, demonstrated by the increasing economic growth at 6.43% and income per capita 1.28%. This is indicated by the increasing regional revenue by 20% and the decreasing unemployment and poverty by 3.47% and 0.22%, respectively.

In Scenario 4 (S4), the increase of the General Allocation Fund by 20% would increase the total revenues at 52.21% and the increase of revenue at 0.63%. The increase of General Allocation Fund can speed up the regional economy which is characterized by the increasing economic growth at 11.95%. This condition results in the increasing per capita income by 2.33% and in the reducing unemployment by 0.29%, and the declining poverty rate at 0.24%. The declining poverty rate was an indication that the government should give a great attention to the increase of the General Allocation Funding as it has a significant effect on the poverty reduction.

In Scenario 5 (S5), the increase of agricultural sector development by 20% appears to have less significant impact on the economy. The increasing expenditure only gives regional revenue by 0.02% and by 0.01% in total revenues. The employment relatively did not change in which the unemployment rate only declined at small rate 0.23% and the poverty declines by 0.01%. The economic growth increases by 0.11% followed by the increase of per capita income by 0.02%. The increase of agricultural expenditure by 20% has a less significant effect on the increase of regional revenue. The decrease of unemployment as well as the poverty indicates that the budget allocated in the agricultural sector is inadequate compared to the large agricultural contribution to the economy in the province of Southeast Sulawesi, which reached 35% of total GDP. In addition, low agricultural productivity makes difficult the fiscal expansion policy to reduce poverty.

A number of poor people were engaged in agriculture sector. Therefore, the increase of agricultural productivity has a significant potential for reducing poverty [23]. According to [34], policy makers should put an intensive effort to increase the agricultural productivity level by improving the expenditure on this sector which will boost the economic growth. The results are in line with that proposed by [24] where it needed a significant increase in the budget allocation for the agriculture sector in order to ensure that the sector played a pivotal role in the national transformation in Nigeria. Agricultural development should be done to improve the quality of rural communities.

The development in agriculture should be done by using the approach to improve the local community. This argument is relevant to [22] who stated that in order to facilitate agricultural development, government should adopt an integrated rural development approach which is a multidimensional strategy for improving the quality of the life of the rural people. This argument according to [22] which states that in order to facilitate agricultural development, government should adopt an integrated rural development approach, the which is a multidimensional strategy for improving the quality of the life of the rural people.

In Scenario 6 (S6), the increase in sharing tax revenue by 20%, non-tax revenue by 20%, regional
revenue by 20% and agricultural expenditure by 20% gives a very good effect on the regional economy. The simulation shows that this scenario will increase the total revenue at 85.69%, the economic growth at 19.37% and per capita income at 3.78%. The employment in the sectors of tourism, service and mining increased by 5.05%, 1.78% and 2.38%, respectively. The unemployment decreased by 10.46% and followed by a poverty decline by 0.66%. It indicates that fiscal policy can stimulate economic growth. As stated in [20] those both monetary and fiscal policies bring a greater impact on the real GDP and inflation in Nigeria. This result was supported also in [31] that fiscal expansion on the real GDP and inflation in Nigeria. This result was supported also in [31] that fiscal expansion stimulates not only employment but also aggregate output.

The simulation results with six scenarios are summarized in Table 2.

**Table 2. Summary of Simulation Results for all scenario Policies.**

<table>
<thead>
<tr>
<th>Endogenous Variables</th>
<th>Scenario</th>
<th>Changing Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S1</td>
<td>S2</td>
</tr>
<tr>
<td>Employment in Agricultural Sector (TKSP)</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Employment in Mining Sector (TKTBG)</td>
<td>0.07</td>
<td>0.00</td>
</tr>
<tr>
<td>Employment in Industrial Sector (TKIN)</td>
<td>0.03</td>
<td>0.01</td>
</tr>
<tr>
<td>Employment in Tourism Sector (TKWS)</td>
<td>0.20</td>
<td>0.10</td>
</tr>
<tr>
<td>Employment in Service Sector (TKJS)</td>
<td>0.09</td>
<td>0.05</td>
</tr>
<tr>
<td>Total Regional Revenue (TPD)</td>
<td>3.31</td>
<td>1.64</td>
</tr>
<tr>
<td>Regional Revenue</td>
<td>0.04</td>
<td>0.02</td>
</tr>
</tbody>
</table>

**Regional Economic Performance; Economic growth, per capita Revenue, Unemployment Level, and poor people**

| Regional Poor People (PMD) | -0.03 | -0.01 | -0.22 | -0.40 | -0.01 | -0.66 |
| Per capita Revenue (PDRBK) | 0.15 | 0.08 | 1.28 | 2.33 | 0.02 | 3.71 |
| Regional Unemployment (UND) | -0.40 | -0.20 | -3.47 | -6.29 | -0.23 | -10.46 |
| Regional Economic growth (GRWT) | 0.73 | 0.40 | 6.43 | 11.95 | 0.11 | 19.37 |

**Description:**

S1 : Impact on the increase of tax Share Revenue by 20%
S2 : Impact on the increase of non tax Share Revenue by 20%

S3 : Impact on the increase of regional revenue by 20%
S4 : Impact on the increase of General Allocation Fund by 20%
S5 : Impact on the increase of agricultural sector expenditure by 20%
S6 : Impact on the increase of tax Share Revenue by 20%, non tax Share Revenue by 20%, regional revenue by 20%, General Allocation Fund by 20% and agricultural development expenditure by 20%

### 6. Conclusion

The numerical results show that the increase of tax share by 20% enhances the regional revenue and economic growth by 0.04% and 0.73%, respectively; and it reduces unemployment and poverty by 0.4% and 0.03%, respectively. On the other hand, the increase of non-tax share by 20% can increase the regional revenue and economic growth by 0.02% and 0.4%, respectively, and reduce the unemployment and poverty by 0.2% and 0.01%, respectively.

The increase of regional revenue by 20% would raise total revenues and economic growth by 28.8% and 6.43%, respectively, and at the same time it decreases unemployment and poverty by 3.47 and by 0.22%, respectively. The increase of GAF at 20% will increase the regional revenue by 0.63% and economic growth by 11.95%, and reduce the unemployment by 6.29% and poverty by 0.4%. The increase of agricultural expenditure by 20% has less significant role in the economic growth at only 0.02% but it increases revenue growth at 12.11% but both the unemployment and poverty were reduced relatively small at 0.23% and 0.01%, respectively.

The increase of tax revenue share by 20%, non-tax revenue share by 20%, regional revenue by 20%, GAF by 20%, and the agricultural expenditure by 20% results in a very good impact on the regional economy; the significant increase of economic growth by 19.37%, the significant unemployment decrease by 10.46% and the poverty reduction by 0.66%. Therefore, there are three recommended policies; (1) regional fiscal revenues from taxes and levies should be increased and (2) the orientation of the development should improve the output, and (3) the increase in revenues should be able to support the GAF.

The local government of Southeast Sulawesi should be able to gain the GAF from the central government as it has an excellent impact on both the increase of revenue and the reduction of unemployment and poverty. Therefore, all factors...
relating to the GAF must be seriously considered with well planning and sustainability. Thus, the policy scenario for the local government is to increase both regional revenue and General Allocation Fund (GAF). The significant increase in GAF can stimulate an increase in revenue. This scenario will be able to maintain the economic growth, to increase the per capita income and to reduce the unemployment and poverty.

References:


