

ANALYSIS OF FUNCTIONAL STABILISATION AND DISTRIBUTION TAX FUNCTIONS (Case Study in Central Java Province)

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Abstract—This research was conducted in Central Java province in 2013. Study aims to analyze: (1) the influence of local tax revenue to the stabilization and distribution functions of taxes as well as the Regional Gross Domestic Product (RGDP), and (2) analyze the impact of an increase in local taxes to the stabilization and distribution functions, and to the RGDP. By using time series data, the model is estimated by Two Stage Least Squares method. The results showed money supply strongly encouraged by government spending, while inflation is ineffective drawn by money supply growth. The number of business units ineffective driven by domestic investment, the rate of money supply and RGDP. Employment is effectively driven by population growth and ineffectively by the job performance. Tax stabilization function has been realized in practice but not for distribution functions.

Keywords—Stabilization and distribution functions, local taxes, money supply, RGDP, Econometric Models

I. INTRODUCTION

According to its function, taxes have a major role in driving development. In addition to the main functions as state funding and as a tool for government policy (regulating functions), taxes also function as stabilization and distribution (Directorate General of Taxes, 2014). While the tax function as a distribution means supporting the government in financing development activities so that it can open employment opportunities, which in turn will be able to increase people's income. The said government expenditure includes routine expenditure and development expenditure. Whereas functions as regular or regulating functions are functions where tax is used as a tool to regulate or implement government policies in the social and economic fields (Watuna, 2013; Walakandou, 2013; Widia, 2009). Furthermore, according to Ismail (2010), taxes play an important role in development because they have two inherent functions, namely the function of the budgetair and the regular function. Surjaningsih, et al. (2012) 's study of the impact of fiscal policy on output and inflation concluded that the shock of an increase

in government spending had a positive impact on GDP while the shock of a tax increase had an impact on reducing GDP. The positive impact of government spending and the negative impact of taxes on GDP is in line with Keynes's theory of the role of government in driving the economy. The results of a similar study by Sitaniapessy (2013) concluded that government spending seen sectorally had a significant influence on Gross Regional Domestic Product (GRDP).

II. RESEARCH METHODS

A. Model

The model explains the realization of the tax function and its effect on the regional economy. The function of the tax budget is specified in the equation of the government budget plan and regional government expenditure. The regular tax function is specified in the investment investment equation (PMA), Domestic investment (PMDN), and total regional investment. The function of tax stabilization is specified in the equation of the money supply and controlling the inflation rate

Model Formulation

$$TAX = \sum_{i=1}^n (TX1 + TX2 + TX3 + \dots + TXn) \quad (1)$$

$$REVGGOV = a_0 + a_1 TAX + a_2 DIMB + a_3 RETR + a_4 LBUMD + a_5 PDRB + u_1 \quad (2)$$

$$EGOV = b_0 + b_1 REVGGOV + b_2 INVG + b_3 ERUT + u_2 \quad (3)$$

$$PMDN = c_0 + c_1 IR + c_2 DAU + c_3 DAK + c_4 DIMB + c_5 EGOV + c_6 EX + u_3 \quad (4)$$

$$PMA = d_0 + d_1 IR + d_2 ER + d_3 EGOV + d_4 EX + d_5 IM + u_4 \quad (5)$$

$$INVD = PMDN + PMA \quad (6)$$

$$MS = e_0 + e_1 IR + e_2 INVD + e_3 EGOV + u_5 \quad (7)$$

$$INF = f_0 + f_1 IHK + f_2 MS + u_6 \quad (8)$$

$$USHA = g_0 + g_1 EGOV + g_2 INVD + g_3 MS + g_4 PDRB + u_7 \quad (9)$$

$$TK = h_0 + h_1 UMR + h_2 USHA + h_3 INVD + h_4 INVG + h_5 POP + u_8 \quad (10)$$

$$PDRB = i_0 + i_1 INVD + i_2 TK + i_3 EX + i_4 EGOV + i_5 USHA + u_9 \quad (11)$$

The expected expected parameter (hypothesis) in the above equations is $a_1, a_2, a_3, a_4, a_5, b_1, b_2, b_3, c_2, c_3, c_4, c_5, c_6, d_1, d_2, d_3, d_4, d_5, e_2, e_3, f_1, f_2, g_1, g_2, g_3, g_4, h_2, h_3, h_4, h_5, i_1, i_2, i_3, i_4, i_5 > 0$; end $c_1, e_1, h_1 < 0$.

REVGGOV = Government budget plan (Rp)

TAX = Local tax revenue (Rp)

DIMB = Regional balance fund (Rp)
 TX1..n = Types of regional tax (Rp)
 LBUMD = BUMD Profit (Rp)
 RETR = Regional Retribution (Rp)
 INVG = Government investment expenditure (Rp)
 EGOV = Government expenditure (Rp)
 ERUT = routine government expenditure (Rp)
 IR = Interest rate (%)
 PMDN = Domestic Investment (Rp)
 DAU = General Allocation Fund (Rp)
 DAK = Special Allocation Fund (Rp)
 EX = Export Value (Rp)
 PMA = Foreign Investment (Rp)
 ER = Exchange rate (Rp. / \$)
 IM = Import value (Rp)
 INVD = Total investment area (Rp)
 MS = Money supply (Rp)
 INF = Inflation (%)
 CPI = Consumer Price Index (index)
 USHA = Number of business units (units)

B. Identification and Estimation Method and Model Validation

The identification results show all the equations in the "overidentified" model so that the estimation method that can be applied is the 2 SLS method (Two Stage Least Squares). For the purpose of simulation analysis, the model is first validated to find out whether the model is good enough or not. The statistical criteria used were Root Mean Squares Error (RMSE), Root Mean Squares Percent Error (RMSPE) and U-Theil (Theil's Inequality Coefficient). The use of statistical criteria aims to compare the actual value with the estimated value of endogenous variables. The smaller the value of RMSE, RMSPE and U-Theil the better the model (Pindyck and Rubinfeld, 2008). Simulation is done using the SIMNLIN technique.

III. RESULTS AND DISCUSSION

The econometric model of the tax function that has been built is then estimated to explain the capacity of each influence variable that shows how strong the tax function is. While the simulation is done to find out how much growth occurs in each tax function and regional economic growth as a result of increasing types of local taxes. According to the title, this paper only presents the results of the estimation of the equations of the stabilization function and the tax distribution function and the equation of the Gross Regional Domestic Product along with its simulation results.

1. Amount of Money Supply

The results of estimating the equality of money supply are presented in Table 1.

Table 1. Results of Estimating Parameters for Changing the Amount of Money Supply (MS)

Variables Explained and Explanatory	Parameter Guess	Prob. T	Level real	Elastisitas	
				Period Short	Period Long
Amount of Money Supply (MS)					
Intercept	3920874.0				
Interest Rate (IR)	-646244.0	0.0516	A	-0.15	-0.48
Government Expenditures (EGOV)	16.4993	0.0038	A	0.50	1.59
Lag of the Money Supply (LMS)	0.6831	0.0001	A	0.58	1.83
Prob. F = 0.0001	R-Sq = 0.9548	Adj R-Sq = 0.9498		DW = 2.502	

Information

A = It has a significant effect on the level $\alpha = 1 - 5\%$.

The results of the elasticity analysis of each variable indicate that the average interest rate variable in the Central Java Region has a value of -0.15 elasticity in the short term and -0.48 in the long term. The value of the elasticity of this interest rate is smaller than one or inelastic which means that changes in interest rates do not have a large capacity (ineffective) to change the money supply in society drastically. Based on value, an increase in average interest rates of up to 10% only causes a decrease in the money supply by 1.5% in the short term, and by 4.5% in the long run. The results of this analysis indicate that the money supply tends to decrease in relatively small amounts when the average interest rate in Central Java tends to move up. This indication explains that changes in the money supply due to changes in interest rates take place in a stable pattern. This means that there is no tendency for large and fluctuating changes. The estimation results have an elasticity value of 0.50 or are inelastic in the short term, and 1.59 or elastic in the long term. An increase in government spending of 10% has a small capacity to change (increase) the money supply by only 5.0% in the short term. This means that in the short term or period per year, an increase in local government spending is not effective in increasing the money supply

2. Consumer Price Index

The results of the estimation of the consumer price index equation (CPI) are presented in Table 2. The results of the elasticity analysis of each variable in Table 2 show that the money supply variable has an elasticity value of 0.13 in the short term and 0.16 in the long run. This elasticity value is inelastic, namely an increase in the money supply by 10% only has a small capacity to increase the consumer price index by 1.3% in the short term and by 1.6% in the long run. This gives an indication that the increase in the money supply does not have large capacity to drive up prices.

Table 2. Results of Estimating Parameters of the Consumer Price Index (CPI) Variable

Variables Explained and Explanatory	Parameter Guess	Prob. T	Level real	Elastisitas	
				Period Short	Period Long
Consumer Price Index (CPI)					
Intercept	165.8316				
Money supply (MS)	0.000000632	0.0052	A	0.13	0.16
Nilai Tukar (ER)	0.0047	0.0623	B	0.09	0.11
Lag Consumer Price Index (LCPI)	0.1951	0.0685	B	0.19	0.23
Prob. F = 0.0001	R-Sq = 0.6466	Adj R-Sq = 0.6074		DW = 1.929	

Information

A = It has a significant effect on the level $\alpha = 1 - 5\%$.

D = It has a significant effect on the level $\alpha = 16 - 20\%$.

The value of the elasticity of the exchange rate variable is 0.09 in the short term, and 0.11 in the long term (inelastic). This gives an indication that in the short and long term there is no tendency for prices to increase dramatically as a result of changes in exchange rates

3. Number of Business Units

The results of estimating the equality of the number of business units are presented in Table 3

Table 3. Results of Estimating Parameters of Change in Number of Business Units (USHA)

Variables Explained and Explanatory	Parameter Guess	Prob. T	Level real	Elastisitas	
				Period Short	Period Long
Number of Business Units (USHA)					
Intercept	-0.0767				
DN Investment (PMDN)	0.000000183	0.1028	C	0.07	0.09
Rate of Circulating Money Amount (RMS)	0.1625	0.0020	A	0.08	0.10
GRDP Rate (RPDRB)	4.4758	0.1541	D	0.68	0.83
Lag of Number of Business Units (LUSHA)	0.1752	0.0723	B	0.17	0.21
Prob. F = 0.0467	R-Sq = 0.3010	Adj R-Sq = 0.1935		DW = 2.465	

Information :

A = It has a significant effect on the level $\alpha = 1 - 5\%$

B = It has a significant effect on the level $\alpha = 6 - 10\%$

C = It has a significant effect on the level $\alpha = 11 - 15\%$

D = It has a significant effect on the level $\alpha = 16 - 20\%$.

The results of the analysis of the elasticity of each variable in Table 3 show that the Domestic Investment variable has a value of elasticity of 0.07 in the short term and 0.09 in the long run. The value of this elasticity is inelastic, which means that the increase in Domestic Investment does not have a strong capacity (effective) to increase the number of business units / economic activities in society drastically. Based on value, a 10% increase in Domestic Investment only has the capacity to increase the number of business units by 0.7% in the short term, and by 0.9% in the long run. The results of this analysis indicate that there is no tendency for a large increase in the number of business units when the amount of domestic investment increases. This means that economic activities in the community or circumstances in which business people begin to

rise and establish new economic activities or expand existing physical economic activities are not too volatile when the value of Domestic Investment increases rapidly.

Another potential aspect of boosting the number of economic activities is the money supply. In accordance with the estimation results in Table 12 the value of the rate of elasticity of the money supply is 0.08 in the short term and 0.10 in the long term or inelastic. The rate of growth of the money supply up to 10% will only have the capacity to increase the number of business units / economic activities of the community by 0.8% in the short term and 1.0% in the long term. This small number shows that in the short and long term, the rate of growth in the money supply is not effective in increasing the number of business units in the community.

4. Employment

The results of the estimation of the equality of labor expectations are presented in Table 4

Table 4. Results of Estimating Parameters of Labor Absorption Variables (TK)

Variables Explained and Explanatory	Parameter Guess	Prob. T	Level real	Elastisitas	
				Period Short	Period Long
Absorption of Labor (TK)					
Intercept	-5118765.0				
Provincial Average Wages (UMP)	-368.9521	0.1325	C	-0.02	-0.04
Number of Business Units (USHA)	13786.0	0.1357	C	0.01	0.02
Total Population (POP)	0.3820	0.0070	A	0.83	1.89
TK Absorption Lag (LTK)	0.5599	0.0004	A	0.55	1.25
Prob. F = 0.0001	R-Sq = 0.9638	Adj R-Sq = 0.9582		DW = 2.410	

Information :

A = It has a significant effect on the level $\alpha = 1 - 5\%$

C = It has a significant effect on the level $\alpha = 11 - 15\%$.

The results of the analysis of the elasticity of each variable in Table 4 show that the provincial average wage variable has a value of elasticity of -0.02 in the short term and -0.04 in the long run. The value of this elasticity is inelastic, which means that the increasing average wage movement of the province is ineffective, encouraging a drastic reduction in employment in Central Java Province. In accordance with the value of elasticity, the average wage movement that increases by 10% only has a small capacity to reduce the amount of employment by 0.2% in the short term and by 0.4% in the long run. These results show that in fact the fact that the decline in employment is very small when the provincial average wages move up. This result is reinforced by data in which this research uses average wage data in various companies and employment where the wage is the level of wages that have been paid in real by various companies and employment for every workforce employed. This average wage rate is far higher than the Regional Minimum Wage (UMR) or Provincial Minimum Wage

(UMP) level imposed by the Government in accordance with applicable regulations. Therefore, if the average wage rate rises and only has a small capacity to reduce labor absorption by 0.2% and 0.4%, it can be said that wage increases do not have the potential to drastically reduce employment in Central Java Province.

Because the causes of fluctuations in labor absorption, namely by changes in average wages and the increase in the number of business units do not have a large capacity, it can be said that Central Java Province does not experience the potential changes in employment, which means that employment takes place in stable or natural conditions. This can be seen from the value of the elasticity of the population size variable which is greater than 0.83 in the short term and 1.89 in the long term. This means that changes in employment are solely more likely to be determined by population growth and not by technical factors such as changes in wages and the number of jobs

5. Simulation Results of the Model Stabilization and Tax Distribution Function

The results of the validation of the model built show that the model does not experience systematic bias because it meets the statistical criteria used, namely RMSPE and U-Theil. Therefore the model is said to be valid and can be used to simulate changes in local tax and its components. Specifically the simulation was carried out on each component of regional tax and total regional tax with a set amount of 20%. This amount is taken based on the general provisions of the target of achieving tax revenues every year is up to 20% or more. The following simulation results will show how much the function of stabilization and distribution of taxes is created or growing in reality and how much growth in the Gross Regional Domestic Product of Central Java Province.

6. Impact of Changes due to Increased Tax Components

Table 5 presents the simulation results of increasing motor vehicle tax value (PKB), motor vehicle name transfer tax / fee, motor vehicle fuel tax (PBBKB), and total regional tax value (TAX) of 20% each. Increasing the value of motor vehicle tax (PKB) by 20% has an impact on increasing the value of local tax revenue (growth) of Rp. 73348 million or 7.97%. The growth in the value of local tax revenues further impacts on increasing government spending by 1.56% (not inputted in the table). Furthermore, through government spending, it has the effect of increasing the money supply by Rp. 440230 million or 0.79%. The impact of the growth in the money supply will cause prices to grow by 0.28 index or by 0.10%. According to the simulation results, the tax stabilization function has grown by 0.89%.

Table 5. Impact Simulation Results of Increased PKB, BBNKB, PBBKB, and TAX 20% each

Simulation and Endogenous Scenario	Growth	
	Nilai	%
1. Increased Value of Motor Vehicle Tax (PKB)		
TAX = Local tax receipts (million IDR)	73348	7.97
MS = Money supply (Rp. Million)	440230	0.79
IHK = Consumer Price Index (index)	0.28	0.10
USHA = Number of business units (million units)	0.02	0.25
TK = Total employment (people)	240	0.0018
PDRB = Gross Regional Domestic Product (million Rp)	26066	0.16
2. Increasing the Value of Transfer of Motor Vehicle Title (BBNKB)		
TAX = Local tax receipts (million IDR)	75006	8.15
MS = Money supply (Rp. Million)	450203	0.80
IHK = Consumer Price Index (index)	0.28	0.10
USHA = Number of business units (million units)	0.02	0.26
TK = Total employment (people)	254	0.0019
PDRB = Gross Regional Domestic Product (million Rp)	26686	0.16
3. Increased Value of Motor Vehicle Fuel Tax (PBBKB)		
TAX = Local tax receipts (million IDR)	35683	3.88
MS = Money supply (Rp. Million)	214145	0.38
IHK = Consumer Price Index (index)	0.14	0.05
USHA = Number of business units (million units)	0.01	0.11
TK = Total employment (people)	104	0.0008
PDRB = Gross Regional Domestic Product (million Rp)	12635	0.08
4. Increased Regional Tax Value (TAX)		
TAX = Local tax receipts (million IDR)	184038	20.00
MS = Money supply (Rp. Million)	1104579	1.97
IHK = Consumer Price Index (index)	0.70	0.25
USHA = Number of business units (million units)	0.04	0.61
TK = Total employment (people)	598	0.00
PDRB = Gross Regional Domestic Product (million Rp)	65387	0.39

In the tax distribution function, namely to create employment opportunities and increase people's income, the subsequent impact of the increase in motor vehicle tax above increases the number of business units by as much as 0.02 million units or 0.25%. Furthermore, an increase in the number of business units with an impact fosters employment of 240 people or 0.0018%. According to the results of this simulation, the tax distribution function has grown by 0.252%. The final impact of an increase in motor vehicle tax by 20% is reflected in regional economic growth as measured by growth indicators for Gross Regional Domestic Product. Gross Regional Domestic Product grew by Rp. 26066 million or 0.16%.

Increasing the value of the motorbike name transfer fee (BBNKB) by 20% has an impact on increasing the value of local tax revenues (growth) by Rp. 75006 million or 8.15%. The subsequent impact was that government spending grew by 1.59% (not inputted in the table) which then increased the money supply by Rp. 450203 million or 0.80%. Growth in the money supply has an impact on increasing prices -

growing by 0.28 index or 0.10%. This result shows that the tax stabilization function grew by 0.90%. The further impact of the increase in transfer fees on motorized vehicles is to increase the number of business units by 0.02 million units or grow by 0.26% and foster employment of 254 people or grow by 0.0019%. According to the simulation results, the tax distribution function grew by 0.262%. The fir of increasing the transfer fee for motorized v Gross Regional Domestic Product which gre 26686 million or 0.6%.

Increasing the value of all components of tax simultaneously (TAX) by 20% has an impact on increasing the value of local tax revenue (growth) of Rp. 184038 million or 20%. Furthermore, the growth in the value of local tax revenues has the effect of growing government spending by 3.90% (not inputted in the table). In the stabilization function, the subsequent impact of the increase in local taxes which is then through government expenditure, has the effect of increasing the money supply by Rp. 1104579 million or 1.97%. The impact of the growth in the money supply will cause prices to grow by 0.70 index or by 0.25%. According to the simulation results, the tax stabilization function grew by 2.22%. In the distribution function, the continued impact of increasing local taxes increases the number of business units by 0.04 million units or 0.61%. Furthermore, the impact on employment was growing by 598 people or 0.0044%. According to the simulation results, the tax distribution function grows by 0.614%. The final impact of an increase in local taxes of 20% is reflected in regional economic growth as measured by the growth indicator of Gross Regional Domestic Product, which is Rp. 65387 million or 0.39%.

IV. CONCLUSIONS

Some conclusions drawn from this study are:

1. The money supply is very strong and effective driven by government spending, while ineffective inflation is drawn by the growth of the money supply.
2. The number of ineffective business units is driven by domestic investment, the money supply rate and GDP. While labor absorption is only effective driven by population growth and ineffective by employment performance.
3. The function of tax stabilization has been manifested in its implementation. Whereas the tax distribution function has not yet materialized so that it has not effectively created employment growth, employment, and Gross Regional Domestic Products.

Policy Recommendations and Implications

To improve the tax distribution function that is still low, the policy that needs to be carried out by the regional government is to explore and develop the potential of local taxes and make effective use of them so that they can encourage job creation,

employment, and growth of Gross Regional Domestic Products.

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