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THE IMPACT OF CAPITAL EXPENDITURE OF AGRICULTURAL SECTOR ON ECONOMIC PERFORMANCE: CASE IN NORTH KALIMANTAN PROVINCE, INDONESIA

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ABSTRACT

The aim of this research is to determine the impact of capital expenditure of agricultural sector on the economic performance in North Kalimantan Province, Indonesia. This research uses panel data which combines time series data of 2004-2013 and cross section data of five regencies/cities in North Kalimantan Province, Indonesia. This research uses econometric model approach namely simultaneous equations models which consist of two identity equations and six structural equations. From the analysis it can be concluded that the capital expenditure of agricultural sector have a positive impact and it is significant on the gross regional domestic product of agricultural sector, where every increase of one percent of capital expenditure of agricultural sector will increase the gross regional domestic product of agricultural sector of 42.86%. The capital expenditure of agricultural sector have a positive impact simultaneously on gross regional domestic product, consumption, investment and export regional.

KEY WORDS

Fiscal policy, government expenditure, economic performance, capital expenditure.

The development of agriculture in the autonomy era is a challenge for local governments, which by Law No. 22 of 1999 then refined into Law No. 32 of 2004 about local government and Government Regulation No. 2 of 2000 has emphasized that agriculture is an area of government that must be implemented by local governments. Saragih in Mayrowani (2012) argues that with decentralization, freedom in taking the initiative to design a local specific policy has been given to the regional agriculture services, in order to enhance regional development. In this era of fiscal decentralization, local governments have flexibility in implementing fiscal policy supported by income sources to drive the development area. This is in line with several studies that conducted by Sumedi (2005), Usman (2006), Haryanto and Ester (2009), Nanga (2006), and Saefudin (2005).

Sumedi (2005) concluded that implementation of fiscal decentralization policies have positive impact on regional revenue, regional expenditure, regional fiscal capacity, and economic performance both on a national scale as well as in West Java Province. Fiscal decentralization also have positive impact on economic performance, equitable distribution of income and poverty reduction (Usman, 2006). While Haryono and Ester (2009) find that fiscal decentralization has a significant influence in the formation of regional financial stability. Furthermore, the regional financial stability proved to affect economic growth in the region.

One form of the government intervention in the development is through fiscal policy which aims to affect the flow of the economy in order not to deviate, with instruments such as taxes, government transfers and government expenditure (Samuelson and Nordhaus, 2005; Mankiw, 2006; Sukirno, 2013; Reksoprayitno, 1981). Meanwhile, according to Romer (2006) fiscal policy can accelerate the increase in aggregate demand. According to Jhingan (2012) fiscal policy means the use tax, loan society, and public expenditure by the government for the purpose of "stabilization or development. It is in line with research conducted by Akhmad (2012), Kuttner and Posen (2002), Ramos and Oriol (2007), and Sabir et al (2015).

North Kalimantan Province, Indonesia is one of the provinces with large potential of natural resources in agricultural, forestry, plantation, fisheries, and mining sectors (coal, oil and gas). As a new autonomous region which is a result of the expansion of East Kalimantan Province, North Kalimantan province is also a "gateway" of Indonesia immediately adjacent to Malaysia (Sabah and Sarawak), expected to be able to become a region with an advanced economic development and equitable, and can be aligned with other regions.

Seeing so much the role of the development of agricultural sector in regional development, specifically in North Kalimantan Province, the fiscal policy of agricultural sector is an effort made by the local government in order to improve the regional economy. This goes along with the views of Arifin (2004) who argued that the agricultural sector is a strategic sector as the economic base of rural people, controls the livelihood of the majority of the population, absorbing a large amount of labour, and even proved to be the backbone of the economic crisis in Indonesia.

From the above background, which creates the problem in this research is how the impact of capital expenditure of agricultural sector on the economic performance in North Kalimantan Province, Indonesia.

MATERIALS AND METHODS OF RESEARCH

This research uses panel data which is a combination of time series data of 2004 - 2013 and the cross section data of the five regencies/cities in North Kalimantan Province. While the data is sourced from various agencies, Statistics of regency/city in North Kalimantan Province, Statistics of Indonesia, Planning and Regional Development Agencies of regency/city and province of North Kalimantan, Ministry of Finance of the Republic of Indonesia, Bank Indonesia (the central bank of the Republic of Indonesia), and the literature or publications related to this research.

In this research the econometric models estimation using 2 SLS method with application of SAS 9.1.3 program. To determine and examine whether the explanatory variables simultaneously have significant effect or not towards endogenous variables, then in each equation used statistical test F. And to examine whether each explanatory variable have significant effect or not towards endogenous variables, then in each equation used statistical test t.

Model specifications used in this research as follows:

$$\begin{aligned} \text{KONS} &= j_0 + j_1 \text{PDRB} + j_2 \text{POP} + j_3 \text{INF} + u_1 & (1) \\ \text{INV} &= k_0 + k_1 \text{PDRB} + k_2 \text{SB} + u_2 & (2) \\ \text{EXPD} &= l_0 + l_1 \text{NTR} + l_2 \text{PDRB} + l_3 \text{LEXP} + u_3 & (3) \\ \text{IMPD} &= m_0 + m_1 \text{POP} + m_2 \text{LIMPD} + u_4 & (4) \\ \text{NETXP} &= \text{EXPD} - \text{IMPD} & (5) \\ \text{PDRBP} &= n_0 + n_1 \text{PTKSP} + n_2 \text{BMSP} + u_5 & (6) \\ \text{PDRBNP} &= o_0 + o_1 \text{PTKNP} + o_2 \text{INV} + o_3 \text{BMSL} + u_6 & (7) \\ \text{PDRB} &= \text{PDRBP} + \text{PDRBNP} & (8) \end{aligned}$$

Description:

BMSP = Capital Expenditure on Agricultural Sector (IDR)
 EXPD = Regional Export (IDR)
 IMPD = Regional Import (IDR)
 INF = Inflation (Percent)
 INV = Investment (IDR)
 JAK = Total Labour Force (People)
 KONS = Consumption (IDR)
 LEXPD = Regional Export in Previous Year (IDR)
 LIMPD = Regional Import in Previous Year (IDR)
 LPTKNP = Non-Agricultural Labour Absorption on Previous Year (People)
 LPTKSP = Agriculture Sector Labour Absorption on Previous Year (People)
 NETXP = Net Export (IDR)

NTR = Indonesian Rupiah Exchange Rate (IDR)
 PDRB = Gross Regional Domestic Product (IDR)
 PDRBNP = Gross Regional Domestic Product of Non Agricultural Sector (IDR)
 PDRBP = Gross Regional Domestic Product of Agricultural Sector (IDR)
 POP = Total population (People)
 SB = Interest Rate (Percent)

Identification of the model determined on the basis of order condition as a necessary condition and rank condition as a sufficient condition. According Koutsoyiannis (1977), the formulation of a structural equation model identification based on the order condition given by $(K - M) > (G - 1)$, where K is the total of variables in the model, that consist of endogenous and predetermined variables, M is the number of endogenous and exogenous variables which included in a specific equations in the model, G is the total equations in the model, which is the number of endogenous variables in the model. Based on the order condition, when the $(K-M) > (G-1)$, then the equation is expressed over identified, and $(K-M) = (G-1)$, the equation is expressed exactly identified, and if the $(K-M) < (G-1)$, the equation is expressed unidentified.

By following the identification procedure which has been described above, then based on the model of the fiscal policy impact on the agricultural sector to the economy of regency/city in North Kalimantan Province can be seen that the equation is expressed over identified, so it can be predicted its parameters.

RESULTS AND DISCUSSION

Parameter estimation results obtained from each structural equation there is only one equation has a coefficient of determination (R^2) less than 50%, but the rest of the coefficient of determination (R^2) ranged from 51.12% to 92.45%. It can be said that the explanatory variable in any equation simultaneously can explain well the fluctuation of endogenous variables in any equation.

From the F test results on all equation models shows that the simultaneous equations used have a significant effect on the level of $\alpha = <0.0001$. Meanwhile significant testing whether or not the explanatory variables on the endogenous variables individually performed at the level of $\alpha = 1\%$, $\alpha = 5\%$ and $\alpha = 10\%$, and all the explanatory variables have the parameters and signs in line with expectations and the existing theory, it can be seen in Table 1.

Table 1 – The Evaluation Results of Model Estimation of Fiscal Policy on Agricultural Sector toward Economic Performance in Regency / City of North Kalimantan Province

No.	Variables	F _{value}	Pr > F	R ²	Descriptions
1	KONS	119.72	<.0001	0.90432	Consumption
2	INV	8.35	<.0001	0.30543	Investment
3	EXPD	12.90	<.0001	0.51122	Regional Export
4	IMPD	96.36	<.0001	0.83169	Regional Import
5	PDRBP	71.92	<.0001	0.78671	GRDP of Agricultural Sector
6	PDRBNP	85.58	<.0001	0.87108	GRDP of Non-Agricultural Sector

Estimation of Consumption Equation Model. From the results of estimating equation model of consumption (KONS) as presented in Table 2 showed that all of the explanatory variables of income per capita (PKAP), the total population (POP) and inflation (INF) simultaneously able to explain 90.43% of the variation endogenous variable of consumption (KONS) and have a significant effect on the level of $\alpha = <.0001$.

The results showed that individually income variable per capita (PKAP) have a positive and significant impact on the level of $\alpha = 1\%$ of the consumption. This means that when per capita income increases, household consumption will also increase, and vice versa if the income is declining, consumption will also decrease. This is in line with Keynes's theory of consumption.

Meanwhile, coefficient value of parameter estimation of total population variable (POP) is equal to 6.416714 and have a significant effect on the level of $\alpha = 1\%$. It indicates that the increase of total population of one percent would increase the amount of consumption by 6.42%. In the context of households addition of a family member will directly increase the consumption, especially for basic needs. This condition is also supported by local government policies both at the provincial and regency/city namely transmigration program. The transmigration program carried out in their local governments has been significant in increasing the total population in the regency and city of North Kalimantan Province, thus the amount of consumption also increase.

While the inflation variable have significant influence on consumption at the level of $\alpha = 10\%$ with a negative sign. This suggests that the decline in the inflation rate would increase consumption and vice versa if inflation increases, indicated by the rising prices of goods, the consumption will decrease. Basically inflation have positive and negative impacts on the economy, it depends on the rate of inflation itself. If inflation is said to be light this will only have a positive impact on the economy, where business actors (producers) will increase production and investment. However, if inflation is said to be uncontrolled (high) it will be bad for the economy, the public will reduce consumption because the price is too high and accompanied by a decline in purchasing power, while the producers will have difficulty to increase production due to high production costs and investment will also decrease.

Therefore governments, especially regencies and cities in the province of North Kalimantan should be able to keep inflation (price stability) in the area, in order that purchasing power of people can be maintained, so that the public consumption for basic needs remain fulfilled. Efforts to maintain price stability can through budget policy, allocated to upgrading infrastructure and productive activities in various sectors including agriculture.

Table 2 – The Result of Consumption Model Estimation

Variables	Estimation Parameters	t _{value}	α	Descriptions
PKAP	0.000266	3.98***	0.0003	Income per capita
POP	6.416714	4.05***	0.0002	Total population
INF	-33024.4	-1.77*	0.0847	Inflation
F _{value} = 119.72; Pr > F = 0.0001 ; R ² = 0.90432				

Estimation of Investment Equation Model. From the results of the estimation equation model of investment in accordance with Table 3 shows that all explanatory variables of gross regional domestic product (PDRB) and interest rates (SB) simultaneously able to explain the variation of the endogenous variables of investment (INV) with R² of 30.54%. While the rest is explained by other factors and have a significant effect on the level of $\alpha = 1\%$.

Individually variable of gross regional domestic product have a positive effect but not significant, this suggests that the economy in North Kalimantan Province indicated by the gross regional domestic product can be an attraction for investors to invest. Each regency and city in the province of North Kalimantan has a good economic potential in various sectors of the mining sector, industry, trade and services as well as agricultural sector. The government is expected to continue to improve the economy, especially the agricultural sector, because the agricultural sector has a greater multiplier effect. Efforts to be made by the local government to improve the agricultural sector as the sector of regional economic driver is the fiscal policy in the agricultural sector.

Fiscal policy in the agricultural sector is manifested in the form of capital expenditure in the agricultural sector for the benefit of improvement of agricultural infrastructure, enhancement of agricultural infrastructure (technology), and improving human resources. If the infrastructure and facilities in agriculture provided with adequate, then by itself investor would courageous to invest in the local area.

Meanwhile, interest rate variable (SB) have a negative and significant effect on the level of $\alpha = 1\%$. This is consistent with existing theory in which the interest rate relationships with investment is inversely proportional. Where if interest rates rise, investment will drop, and the reverse if interest rates go down, the investment will rise.

The interest rate variable is an important determinant of investment level in regencies and cities in the province of North Kalimantan, these variables cannot be controlled by the local government where authority over the interest rate is monetary authority of Bank Indonesia. However, local governments have the authority towards efforts to create a favourable investment climate for investors to be able to invest in local areas with the potential of the region, including in the agricultural sector in the broad sense.

Table 3 – The Results of Investment Model Estimation

Variables	Estimation Parameters	t _{value}	α	Descriptions
Intercept	2.0289E9	4.00***	0.0003	Intercept
PDRB	0.074049	0.96	0.3431	Gross Regional Domestic Product
SB	-1.45E8	-3.07***	0.0039	Interest Rate
F _{value} = 8.35; Pr > F = 0.0001 ; R ² = 0.30543				

Estimation of Regional Export Equation Model. The results of the equation model estimation of regional export are presented in Table 4. It can be seen that all the explanatory variables of Indonesian rupiah exchange rate (NTR), regional gross domestic product (PDRB) and regional export on the previous year (LEXP) simultaneously able to explain 51.12% of the variation of regional export endogenous variable (EXP). While, the rest is explained by other variables and have a significant effect on the level of $\alpha = <.0001$.

Variable of Indonesian rupiah exchange rate have a negative effect on regional export, but not significant. Theoretically, if the Indonesian rupiah exchange rate against foreign currencies strengthen then the regional export value will fall and vice versa. If Indonesian rupiah exchange rate against foreign currencies weakened the value of regional exports will rise. Rise and fall of Indonesian rupiah exchange rate against foreign currencies is determined by various factors, such as political and security factors in the country and abroad, national and international economic conditions and other monetary issues that occur in the world.

From the research results can also be explained that the gross regional domestic product in regency and city in the province of North Kalimantan have positive effect on regional export but not significant. As described above that the gross regional domestic product is a picture of economic conditions in a local area, means increasing the gross regional domestic product shows that the economic potential of the area is quite large. Increased production of goods and services produced in a local area not only consumed by local people, but also can be exported out of the local area and even abroad. Theoretically, if the gross regional domestic product increases, will drive up regional export in a local area.

Therefore, the role of government, especially in the province of North Kalimantan in an effort to increase regional exports is important, and as described above that the sector has a high multiplier effect value is in agricultural sector. For that the government's policy to encourage regional export is through agriculture as an engine for economic growth in the local area. In addition, agricultural sector in the province of North Kalimantan still has high potential and opportunity to develop.

Table 4 also shows that the variable of regional exports in the previous year had a positive and significant impact on the level of $\alpha = 1\%$. This shows that the regional exports in current year runs following the pattern of regional exports of the previous year.

Table 4 – The Results of Regional Export Model Estimation

Variables	Estimation Parameters	t _{value}	α	Descriptions
Intercept	8.6268E8	1.93	0.0616	Intercept
NTR	-80827.0	-1.78**	0.0841	Indonesian Rupiah Exchange Rate
PDRB	0.034616	1.61	0.1160	Gross Regional Domestic Product
LEXP	0.651558	5.73***	<.0001	Regional Export on Previous Year
F _{value} = 12.90; Pr > F = 0.0001 ; R ² = 0.51122				

Estimation of Regional Import Equation Model. The estimation results of the regional import model equation (IMPD) obtained information that the entire explanatory variable of

gross regional domestic product (PDRB) and regional import in the previous year (LIMPD) simultaneously able to explain 83.17% of the variation of the endogenous variable of regional imports (IMPD) and have a significant effect on the level of $\alpha = <.0001$.

Individually variable of total population (POP) have significant effects on regional import variable at level of $\alpha = 1\%$. The increase in the population will increase the consumption of people, needs of people can be met through local production (domestic). But if production in the local area has not been able to fulfil, then all the rest will fulfilled through imports. From the information obtained in Table 5 shows that the increase in population is accompanied by high consumption, it will be followed by higher regional imports. The high population that are not followed by an increase in local production, of course, it will be an opportunity to bring in imported products (from outside the local area and abroad).

Besides, the North Kalimantan Province is a province that borders with Malaysia (Sabah and Sarawak) where in some specific areas such as Nunukan Regency and Malinau Regency the basic needs of the community is imported from neighbour country of Malaysia. Therefore, to overcome this problem, the local government must work hard to increase production in the area to fulfil the needs of local communities.

While the variable of region import in the previous year also have positive and significant effect on the level of $\alpha = 1\%$. This shows that the import pattern in the current year will follow the pattern of previous years, given the total population continues to increase, so that the needs of society are still met by imported products.

Table 5 – The Estimation Results of Regional Import Model

Variables	Estimation Parameters	t _{value}	α	Descriptions
POP	975.0044	3.13***	0.0033	Total Population
LIMPD	0.611523	5.74***	<.0001	Regional Import in Previous Year
F _{value} = 96.36; Pr > F = 0.0001 ; R ² = 0.83169				

The Estimation of Gross Regional Domestic Product Equation Model on Agricultural Sector. The estimation results of the equation model of regional gross domestic product on agricultural sector (PDRBP) are presented in Table 6 shows that all explanatory variables namely the variable of labour absorption on agricultural sector (PTKSP) and the capital expenditure on agricultural sector (BMSP) simultaneously able to explain 78.67% fluctuation of regional gross domestic product on agricultural sector variable and have a significant effect on the level of $\alpha = <.0001$. While the sign and magnitude of its parameters in line with expectations and economic criteria.

In Table 6 it can be seen that individually variable of labour absorption on agricultural sector (PTKSP) have a positive effect but not significant. Although it is not significant, but in accordance with the existing theory, that production in the agricultural sector one of which is influenced by labour, or in other words, labour is an input in agricultural production. Increasing the number of agricultural labourers will increase the output of the agricultural sector (PDRBP). In accordance with the results of the analysis, it appears that labour absorption in the agricultural sector is quite important factor in increasing output or production. But on the other hand it was found that the amount of labour in the agricultural sector progressively reduced, and this contributes to the level of agricultural productivity. Therefore, the local government in the province of North Kalimantan should implement a policy that could encourage an increase in labour absorption in the agricultural sector. According to Statistics of Indonesia (2014) in the period of 2003 to 2013 the total labour in the agricultural sector decreased up to 38% from 50%.

The decline in total employment in the agricultural sector is one of them due the attention of government that have not been in favour of the agricultural sector, agricultural infrastructure is not adequate, nor has maximum effort of human resource development (farmers). This resulted on labour in the agricultural sector move to other more promising sectors. The potential of agricultural sector is still large in the province of North Kalimantan should be used as a major factor in providing employment, where the available land is still

widespread and the government should encourage an increase of investment in agricultural sector.

While the agricultural sector capital expenditure variable (BMSP) have a positive effect and significant at the level $\alpha = <1\%$ towards endogenous variable of regional gross domestic product on agricultural sector with estimation parameter value of 42.86408 indicate that each increase of one percent of the agricultural sector capital expenditure will increase the regional gross domestic product on agricultural sector amounted to 42.86%. This is in line with research Akhmad (2014), Rindayati (2009) and Sabir et al (2015). These results indicate that government intervention through capital expenditure, especially in the agricultural sector has a considerable role in the efforts to increase the output of agricultural sector. Besides, these conditions indicate that the potential of the agricultural sector in regencies and cities in the province of North Kalimantan is still very high. So that the appropriate budget allocation for the agricultural sector should continue to be improved and local governments should shift driving the regional economy based on mining and industry to development based on agriculture sector.

Table 6 – The Results of Regional Gross Domestic Product on Agricultural Sector Model Estimation

Variables	Estimation Parameters	t _{value}	α	Descriptions
PTKSP	5159.193	1.50	0.1424	Labour Absorption on Agricultural Sector
BMSP	42.86408	5.75***	<.0001	Capital Expenditure on Agricultural Product
F _{value} = 71.92; Pr > F = 0.0001 ; R ² = 0.78671				

The Estimation of Gross Regional Domestic Product on Non-Agricultural Sector Equation Model. Meanwhile the estimation results of equation model of regional gross domestic product on non-agricultural sector (PDRBNP) are presented in Table 7 shows that all explanatory variables are non-agricultural labour absorption (PTKNP), investment (INV) and capital expenditure in other sectors (BMSL) simultaneously able to explain 87.10% fluctuation of endogenous variable of regional gross domestic product on non-agricultural sector and have a significant effect on the level of $\alpha = <.0001$.

Table 7 – The Results of Gross Regional Domestic Product on Non-Agricultural Sector Equation Model Estimation

Variables	Estimation Parameters	t _{value}	α	Descriptions
PTKNP	38490.38	6.87***	<.0001	Labour Absorption on Non-Agricultural Sector
INV	0.394139	1.88*	0.0677	Investment
BMSL	0.403098	0.34	0.7352	Capital Expenditure on Other Sector
F _{value} = 85.58; Pr > F = 0.0001 ; R ² = 0.87108				

Individually the variable of non-agricultural labour absorption (PTKNP) have a significant effect on the level of $\alpha = 1\%$. This indicates that the non-agricultural labour as a factor of production is able to encourage an increase output especially non-agricultural sector. While the investment variable is also positive and significant effect on the level of $\alpha=10\%$. Investment is also a crucial factor to the increase in output. The increase in direct investment of course increase labour absorption and will be followed by an increase in output. Meanwhile, capital expenditure variable in other sectors have a positive effect but not significant. This may imply that government spending on other sectors has yet to be used as a driver of an increase in regional gross domestic product on non-agricultural sector.

From the analysis formulated that fiscal policy model on the agricultural sector to economic performance of regency/city in the province of North Kalimantan, as follows:

1. $KONS = 0.000266PKAP^{***} + 6.416714POP^{***} - 33024.4INV^{*}$
2. $INV = 2.0289E9 + 0.074049PDRB - 1.45E8SB^{***}$
3. $EXPD = 8.6268E8 - 80827.0NTR^{**} + 0.034616PDRB + 0.651558EXPD_{t-1}^{***}$
4. $IMPD = 975.0044POP^{***} + 0.611523POP^{***}$
5. $PDRBP = 5159.193PTKSP^{***} + 42.86408BMSP^{***}$
6. $PDRBNP = 38490.38PTKNP^{***} + 0.394139INV^{*} + 0.403098BMSL$

Notes: ***) significant level on $\alpha=1\%$; **) significant level on $\alpha=5\%$; *) significant level on $\alpha=10\%$.

CONCLUSION

From the analysis, it can be concluded that the capital expenditure on agricultural sector have positive and significant impact towards regional gross domestic product on agricultural sector, where every increase of one percent of capital expenditure on agricultural sector will increase the regional gross domestic product on agricultural sector of 42.86%. The capital expenditure on agricultural sector also simultaneously have a positive impact on the gross regional domestic product, consumption, investment and regional export.

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