

The Impact of Palm Oil Plantation Development towards Income Disparity

Abdul Mukti¹, Budi Setiawan², Henny Pramoedyo³, Luthfi Fatah⁴

¹ Agriculture Science Program, Major in Environmental & Natural Resource Management,

^{2,3} Faculty of Agriculture, University of Brawijaya, Malang,

⁴ Faculty of Agriculture, Lambung Mangkurat University, Banjarmasin,
INDONESIA.

¹ abdulmukti.1201@gmail.com

ABSTRACT

West Kotawaringin Regency is development center of palm oil plantation business in Central Kalimantan Province, Indonesia. This business development will have impact on income disparity. The aim of this research is to estimate the impact of palm oil plantations toward income disparity. Social Accounting Matrix (SAM) model constructed from Input-Output Table and other necessary data then continue with Mixed Multiplier analysis. The finding of this research indicates that the business of palm oil plantation have greatest impact towards income disparity from other sector/sub-sector. Based on the above conclusions it is suggested that (1) the entrepreneurs of palm oil shall orient their business on investment of labor intensive than capital intensive, therefore the salary/wages proportions toward value added can be increased, or more labor is absorbed, and (2) the local government in order to take economic decisions noticed that development of palm oil sub-sector gives more impact on capital (owner) than labor (owner), and the ratio is far greater than the other sector/sub-sector.

Keywords: Mixed multiplier, Social accounting matrix, Household income disparity, Disparities between region

INTRODUCTION

Based on the data of Central Kalimantan Province Plantation (2012) note that the West Kotawaringin can be said as development center of palm oil plantation business in Central Kalimantan Province. Therefore, this course provides many sub-sectors role in encouraging economic growth territory. However, increasing economic growth, not necessarily can provide the overall welfare of society in this region.

Based on existing data (Plantation Department of Central Kalimantan Province, 2012), most of the land for palm oil plantations in Central Kalimantan Province are managed by national or foreign private-owned plantations. Local businesses can not afford to invest in palm oil plantations with an average area of 7,500 hectares.

Statistical data of plantation in Central Kalimantan Province inform there is no state-owned enterprise or local government-owned enterprise that manages palm oil plantations business in this region (Plantation Department of Central Kalimantan Province, 2012). Butler (2008) states that although no doubt palm oil plantations provide employment opportunities in Kalimantan, there are doubts about the fairness of the existing system, which seems to sometimes make small plantation owners in a condition which is similar to slavery. In addition, most people assume that the development of palm oil plantations is an obstacle to local communities to access natural resources/forest (Noorsalim, 2009).

This aim of this research is to estimate the role of palm oil plantations toward income disparity. Based on this research, it expected to provide useful information for (1) Private and public efforts to reorganize the management of their palm oil plantations in order to further

enhance equitable economic growth, and (2) local government to produce an optimal policy for an equitable economy.

LITERATURE REVIEW

Theoretical Basis

Boediono (1988) stated that the relationship of economic growth and income distribution can be explained by using Kaldor Theory. Kaldor Model shows us that there is "trade off" or a choice between rapid GDP growths but with unequal distribution of income, or vice versa. Simultaneously the model gives a warning that the GDP growth rate should not be the sole purpose or goal that is placed far above the other goals.

In order to improve income inequality, furthermore Todaro (1978) suggest four policy options: (1) changing the income equalization function through several policies designed to change relative factor prices, (2) fixing the size of the equalization through equalization possession of wealth, (3) reduce the size of the equalization on the upper level classes through the income tax system and progressive property tax, or (4) improve equalization size on lower level classes through direct transfer payments and the provision of goods and services to the public.

Application Model for Estimating the Impact of Palm Oil Plantation Business towards Income Disparity

Allan et al. (2011) stated that if the income distribution as local economic impact from project considered important, the economic impact from project difficultly to quantify using input-output techniques, but it can be more appropriately addressed within Social Accounting Matrix (SAM) framework. Sadoulet & de Janvry (1995), Thorbecke (2000), Bautista (2000), and Madsen et al. (2001) suggested that there are six types of balance sheet in Social Accounting Matrix (SAM) such as: activities, commodities, and factors (labor and capital), domestic institutions (which are divided into households, firms, and government), balance sheet of capital, and balance sheet of Rest of World (ROW). Round (2003) stated that in building a Social Accounting Matrix (SAM) with different levels of significance by disaggregation towards the primary balance sheet (activities, commodities, factors and households) requires the availability of some key data sets.

Review of Previous Research

Dorosh and Niazi (2006) made a paper to explain the structure and construction of SAM for Pakistan during the year 2001 to 2002. Aslan (2004) has conducted research aims to establish social balance sheet (SAM) that detailed for Turkey by using the latest data available. Akkemik (2012) used two SAM Turkey (1996 and 2002) to analyze the contribution of international tourism towards the economy of Turkey. Arita et al. (2013) used SAM to browse the income distribution of fishery firm sector in Hawaii.

Ferrari et al. (2009) stated that recently, Social Accounting Matrix (SAM) has been raised as a tool of policy analysis and, in the last decade, attention has been poured upon SAM multiplier, and SAM application as the benchmark to calculate the general equilibrium model. Zhao and Ge (2013) adopted a multiplier decomposition which to examine the effect of expanding ethanol fuel in China.

By using model of Social Accounting Matrix (SAM) and the previous separately conducts regression analysis of coal production relationship with environmental parameters, Fatah (2007) has been able to capture the environmental impact, in addition to growth and income distribution.

RESEARCH METHOD

This research was conducted at West Kotawaringin Regency. Respondents were selected by *Cluster Proportionate Random Sampling* at each center area, as many as 131 households (0.2%) of total household population, or approximately 40-45 households/center area.

SAM Model which will be built divided into four balance sheets, namely: (1) balance sheet of production factors, (2) balance sheet of institution, (3) balance sheet of production sector, and (4) taxes, subsidies, and Outer Region. The three balance sheet which first-mentioned is the balance sheet of endogenous and last-mentioned is exogenous balance sheet. Balance sheet of production factors consists of labor and capital. Balance sheet of institution consists of 12 groups, divided into four groups of household group in center area of private-owned plantation of palm oil (palm oil farmers, employees/workers of palm oil plantations, other farmers/fishermen, and non- farmers), the four groups at center of smallholder’s palm oil plantations (palm oil farmers, employees/workers of palm oil plantations, other farmers/fishermen, and non- farmers) , and four groups of households in urban areas (palm oil farmers, employees/workers of palm oil plantations, other farmers/fishermen, and non-farmers). While the balance sheet of production sector consists of 14 sectors were obtained from the aggregation IO Table of West Kotawaringin Regency in 2011.

The early of SAM Model formed then iteration process is conducted to equalize between the major revenue and expenditure in each of the production factor, institutions (household, government, and corporate), production sector, and balance sheet of exogenous (balance sheet of capital, indirect taxes, and outer region). This process uses Cross Entropy method, which was first introduced by Golan et al. (1994) in Robinson et al. (2000) to estimate the coefficient matrix on Input-Output Table.

Coefficient matrix A can be obtained by minimizing the entropy distance between the coefficient A in the previous matrix and the new coefficient matrix of estimation result. Mathematically, this can be explained as follows:

$$\min \left[\sum_i \sum_j A_{ij} \ln \frac{A_{ij}}{\bar{A}_{ij}} \right] = \min \left[\sum_i \sum_j A_{ij} \ln A_{ij} \right] - \left[\sum_i \sum_j A_{ij} \ln \bar{A}_{ij} \right] \dots \dots \dots (1)$$

With constrains:

$$\left[\sum_j A_{ij} \quad Y_j^* \right] = Y_i^* \dots \dots \dots (2)$$

$$\sum_j A_{ji} = 1 \dots \dots \dots (3)$$

Where:

\bar{A} = previous coefficient matrix A

A= estimated coefficient matrix A

Y= column vector matrix which taken from each of total balance sheet

To estimate the role of palm oil plantations toward income disparity will be simulated economic impact using Multiplier Mixed following:

$$MM = \begin{bmatrix} I_1 - C_{nc} & O_1 \\ -R & -I_2 \end{bmatrix}^{-1} \begin{bmatrix} I_1 & Q \\ O_2 & -(I_2 - C_c) \end{bmatrix} \dots \dots \dots (4)$$

Where:

I_1 and I_2 = identity matrix

O_1 and O_2 = zero matrix

C_{nc} = the propensity of marginal expenditure among the factors, institutions, and sectors with the supply which not restricted

Q= marginal expenditure sectors with limited supply factors, institutions and sectors with the supply which not restricted

R= the propensity of marginal expenditure factors, institutions, and sectors with the supply which not restricted on sectors with limited supply

The use of these Mixed Multiplier as done by Fatah (2007), Pyatt & Round (1985), Stone (1985), Lewis & Thorbecke (1992), and Rich et al. (1997).

RESULTS AND DISCUSSIONS

Income Disparity between Household Group and Inter-Regional

Based on the results of income survey conducted, it obtained description of income disparity between household group and inter-regional. Based on the center area of research, it turns out the average household income of palm oil farmers in private-owned plantation center area (IDR 129,679,882 per year), and in urban areas (IDR 51,005,798 per year). While the average household income of palm oil farmers in smallholder's palm oil plantation center area (IDR 40,460,300 per year) is quite large, but smaller than the average household income of non-farmers (IDR 90,496,094 per year), details of which can be seen in the following table.

Table 1. Sum of Household and Household Income (IDR/Year) of Palm Oil Farmers and the other in West Kotawaringin Regency, in 2011

No.	Types of Livelihood	Sum of Household	Household Income
1	<i>Private-owned Plantation Center</i>		
	a. Palm oil plantation	226	129,679,882
	b. Employee/labor of palm oil	311	32,598,968
	c. Other farmers	8,530	18,189,758
2	<i>Smallholder Plantation of Palm Oil Center</i>		
	a. Palm oil farmers	3,183	40,460,300
	b. Employee/labor of palm oil	1,420	15,861,682
	c. Other farmers	3,614	17,016,612
	d. Non Farmers	4,623	90,496,094
3	<i>Urban Areas</i>		
	a. Palm oil farmers	370	51,005,798
	b. Employee/labor of palm oil	1,125	41,361,731
	c. Other farmers	8,310	15,485,441
	d. Non Farmers	28,610	42,250,948

Source: Table of SAM West Kotawaringin Regency, in 2011, 2013

Furthermore, the average household income of employees / workers of palm oil plantations which greatest are in urban areas (IDR 41,361,731 per year), central area of private-owned

plantation (IDR 32,598,968 per year), and center area of smallholder's palm oil plantation (IDR 15,861,682 per year) respectively. Generally, employees at the level of leadership live in the Capital Regency, or live on residential of official company.

Details of income source based on the primary livelihood of each center area of research can be seen from the allocation percentage, in the following table.

Table 2. Percentage of Income Allocation Based on Major Livelihood in Each Area in West Kotawaringin Regency, in 2011

No.	Income Source	L	K	HH	C
1	<i>Private-owned Plantation Center</i>				
a.	Palm oil plantation	57.82	0.27	0.00	41.91
b.	Employee/labor of palm oil	31.75	0.56	-	67.68
c.	Other farmers	69.01	17.87	0.05	13.07
2	<i>Smallholder Plantation of Palm Oil Center</i>				
a.	Palm oil farmers	77.72	7.73	0.01	14.54
b.	Employee/labor of palm oil	47.17	1.01	0.00	51.82
c.	Other farmers	62.67	9.28	0.02	28.04
d.	Non Farmers	84.43	10.45	0.05	5.06
3	<i>Urban Areas</i>				
a.	Palm oil farmers	43.14	3.33	0.00	53.54
b.	Employee/labor of palm oil	30.67	33.89	0.03	35.41
c.	Other farmers	54.67	29.62	0.00	15.70
d.	Non Farmers	76.54	21.56	0.03	1.87

Source: Table of SAM West Kotawaringin Regency, in 2011, 2013

Income sources of palm oil farmers on smallholder' palm oil plantation center is most dominant (77.72%) from both the working income of palm oil plantation itself, belongs to someone else, or private-owned plantation. With the program "required plasma", the income source of palm oil farmers in private-owned plantation center from transfer companies is sufficient great (41.91%) and it is almost equal to the income from working of employment/wage palm oil plantations (57.82%). While, more dominant of income source from transfer companies is (53.54%) and from other working (42.24%) for palm oil farmers in urban areas.

In addition it is also interesting to note that the income source of the employees / workers of palm oil plantations are the most dominant of the plantation transfer companies, instead of wages / salaries. Respectively the most dominant from their income source allocations of transfer company is in private-owned plantation area (67.68%), in smallholder's plantation center (51.82%), and in urban areas (35.41%).

Mixed Multiplier Analysis

Based on the results of calculations of Social Accounting Matrix (SAM) Table can be determined Mixed Multiplier value. The details can be seen in the following table.

Table 3. Sectoral Mixed Multiplier Value towards Labor and Capital in West Kotawaringin Regency, in 2011

<i>Code</i>	<i>Sector/Sub-sector</i>	<i>MM Labor</i>	<i>MM Capital</i>
C17	Food Crops	0.2440	0.8694
C19	Other Plantation Crops	0.4173	0.6691
C20	Livestock and products	0.3630	0.8365
C21	Forestry	0.3387	0.8381
C22	Fishery	0.3579	0.6733
C23	Mining and Quarrying	0.2659	0.4639
C24	Non Oil and Gas Industry	0.2973	0.6710
C25	Electricity, Gas, and Clean Water	0.1974	0.4780
C26	Construction	0.3389	0.6884
C27	Trade, Hotels and Restaurants	0.3018	0.7416
C28	Transportation and Communications	0.2321	0.5094
C29	Bank, Financial Institutions, Rent, Service Company	0.4879	0.7112
C30	Government, Community, other services	0.7946	0.5180
C18	Palm Oil Plantations	0.2186	0.8410

Source: Table of SAM West Kotawaringin Regency, in 2011, 2013

Table 4. Ranking and Relative Comparison of Sectoral Multiplier Mixed Value towards Labor in West Kotawaringin Regency, in 2011

<i>Ranking</i>	<i>Sector/Sub-sector</i>	<i>Code</i>	<i>Labor</i>	<i>Capital</i>
<i>I</i>	Government, Community, other services	C30	0.61	0.39
<i>II</i>	Bank, Financial Institutions, Rent, Service Company	C29	0.41	0.59
<i>III</i>	Other Plantation Crops	C19	0.38	0.62
<i>IV</i>	Mining and Quarrying	C23	0.36	0.64
<i>V</i>	Fishery	C22	0.35	0.65
<i>VI</i>	Construction	C26	0.33	0.67
<i>VII</i>	Transportation and Communications	C28	0.31	0.69
<i>VIII</i>	Non Oil and Gas Industry	C24	0.31	0.69
<i>X</i>	Electricity, Gas, and Clean Water	C25	0.29	0.71
<i>XI</i>	Trade, Hotels and Restaurants	C27	0.29	0.71
<i>XII</i>	Forestry	C21	0.29	0.71
<i>XIII</i>	Food Crops	C17	0.22	0.78
<i>XIV</i>	Palm Oil Plantations	C18	0.21	0.79

Source: Table of SAM West Kotawaringin Regency, in 2011, 2013

Apparently, all value of Mixed Multiplier sectors/sub-sectors toward capital is greater than labor unless contrary on government, social, and other services sectors. This means that any stimulation policy of balance of exogenous in each sector will be impact on change of capital

magnitude than value change magnitude for labor, except on the government sector in question.

In addition, the relative proportion of capital value change compared to the labor value in greatest palm oil sub-sector, details of which can be seen in the above table.

This means that the balance of exogenous stimulants in palm oil plantation sub-sector will have the most impact on capital value changes which compared with labor value changes. The impact towards relative labor value changes to capital changes in the palm oil sub-sector is the smallest.

Detailed data regarding Mixed Multiplier for labor in each sector / sub-sector can be seen in the following table.

Table 5. Ranking and Sectoral Mixed Multiplier Value towards Labor in West Kotawaringin Regency, in 2011

<i>Ranking</i>	<i>Sector/Sub-sector</i>	<i>Code</i>	<i>MM Labor</i>
<i>I</i>	Government, Community, other services	C30	0.7946
<i>II</i>	Bank, Financial Institutions, Rent, Service Company	C29	0.4879
<i>III</i>	Other Plantation Crops	C19	0.4173
<i>IV</i>	Livestock and products	C20	0.3630
<i>V</i>	Fishery	C22	0.3579
<i>VI</i>	Construction	C26	0.3389
<i>VII</i>	Forestry	C21	0.3387
<i>VIII</i>	Trade, Hotels and Restaurants	C27	0.3018
<i>IX</i>	Non Oil and Gas Industry	C24	0.2973
<i>X</i>	Mining and Quarrying	C23	0.2659
<i>XI</i>	Food Crops	C17	0.2440
<i>XII</i>	Transportation and Communications	C28	0.2321
<i>XIII</i>	Palm Oil Plantations	C18	0.2186
<i>XIV</i>	Electricity, Gas, and Clean Water	C25	0.1974

Source: Table of SAM West Kotawaringin Regency, in 2011, 2013

Mixed multiplier of government, social and other services sector for labor is equal to 0.7946. So, if the balance sheet of exogenous stimulation performed in this sector amounted to IDR 1 Billion, it will increase the total value of labor (wages/salaries) amounted to IDR 794.6 Million. Mixed multiplier value other sectors / sub-sectors toward the value changes of labor is much smaller (<0.5000), where palm oil plantations are relatively small (0.2186), before electricity, gas, and water sectors (0.1974).

Mixed multiplier of palm oil plantations sub-sector on capital is equal to 0.8410 or second ranking after food crops sector / sub-sector (0.8694). This means that any stimulation of the balance sheet of exogenous will have major impact on capital change in both sectors in accordance with each mixed multiplier value. Mixed multiplier of other sectors / sub-sectors

are relatively slightly smaller, which respectively based on ranking are presented in the following table.

Table 6. Ranking and Sectoral Mixed Multiplier Value towards Capital in West Kotawaringin Regency, in 2011

<i>Ranking</i>	<i>Sector/Sub-sector</i>	<i>Code</i>	<i>MM Capital</i>
<i>I</i>	Food Crops	C17	0.8694
<i>II</i>	Palm Oil Plantations	C18	0.8410
<i>III</i>	Forestry	C21	0.8381
<i>IV</i>	Livestock and products	C20	0.8365
<i>V</i>	Trade, Hotels and Restaurants	C27	0.7416
<i>VI</i>	Bank, Financial Institutions, Rent, Service Company	C29	0.7112
<i>VII</i>	Construction	C26	0.6884
<i>VIII</i>	Fishery	C22	0.6733
<i>IX</i>	Non Oil and Gas Industry	C24	0.6710
<i>X</i>	Other Plantation Crops	C19	0.6691
<i>XI</i>	Government, Community, other services	C30	0.5180
<i>XII</i>	Transportation and Communications	C28	0.5094
<i>XIII</i>	Electricity, Gas, and Clean Water	C25	0.4780
<i>XIV</i>	Mining and Quarrying	C23	0.4639

Source: Table of SAM West Kotawaringin Regency, in 2011, 2013

Furthermore, if there is change of labor and capital values in the palm oil plantation sub-sector, it will affect the change in income distribution household equal to mixed multiplier value respectively.

The impact of policy on palm oil plantations sub-sector were most influence on income distribution changes of non-farmers, especially in urban areas (MM = 0.1950), non-farmers in smallholder plantations center (MM = 0.0624), and non-farmers in center area of private estate (MM = 0.0353).

Furthermore, the policy impact on palm oil plantation sub-sector will have more influence on non-palm oil farmers (MM = 0.0264), then the palm oil farmers (MM = 0.0053), and the smallest towards the employees / workers of palm oil (MM = 0.0022) in the center area of private-owned plantation. The policy impact on palm oil sub-sector plantation will have more influence on palm oil farmers (MM = 0.0203) than non-palm oil farmers (MM = 0.0109), and the smallest towards the employees / workers of palm oil (MM = 0, 0044) in the center area of smallholder plantations.

The policy impact will have more influence on the non- palm oil farmers (MM = 0.0245), then the employee / labor of palm oil (MM = 0.0103), and the smallest towards palm oil farmers in urban areas (MM = 0.0038), as the details can be seen in the following table.

Table 7. Policy Impact on Palm Oil Plantation Sub-sector and Effect Value (share effect) towards the Change of Income Distribution Household in West Kotawaringin Regency, in 2011

No.	Types of Livelihood	MM Value	Ranking per Center
1	<i>Private-owned Plantation Center</i>		
	a. Palm oil plantation	0.0053	III
	b. Employee/labor of palm oil	0.0022	IV
	c. Other farmers	0.0264	II
	d. Non Farmers	0.0353	I
2	<i>Smallholder Plantation of Palm Oil Center</i>		
	a. Palm oil farmers	0.0203	II
	b. Employee/labor of palm oil	0.0044	IV
	c. Other farmers	0.0109	III
	d. Non Farmers	0.0624	I
3	<i>Urban Areas</i>		
	a. Palm oil farmers	0.0038	IV
	b. Employee/labor of palm oil	0.0103	III
	c. Other farmers	0.0245	II
	d. Non Farmers	0.1950	I

Source: Table of SAM West Kotawaringin Regency, in 2011, 2013

CONCLUSION AND SUGGESTION

Conclusion

Palm oil plantation business gives greatest impact towards income disparity than the other sector/sub-sector, because of changes in balance of exogenous from this sub-sector is greater on capital (owner) than labor (owner), and the ratio is far greater than the other sector/subsector. In addition, economic policy impact on palm oil sub-sector turned out the greatest effect on changes in the income distribution of non-farmers compared with farmer or employee/labor of palm oil. So it can be understood that (1) the average household income of palm oil farmer is high compared to the most other household group (employee/worker of palm oil, other farmers and non farmers). Household income of farmer and employee/labor of palm oil from transfer companies value (partnership program including type of plasma cooperation, etc.) is greater than their income from wages' labor, and (2) Average income is greatest in the central area of estate plantations and urban household turns on palm oil farmers, while in the central area of smallholder plantation actually the average household income non-farmers is the most largest.

SUGGESTION

Based on the above conclusions it is suggested that (1) the entrepreneurs of palm oil shall orient their business on investment of labor intensive than capital intensive, therefore the salary/wages proportions toward added value can be increased, or more labor is absorbed, and (2) Local governments in determining economic policy in order to consider that the

development of palm oil sub-sector gives more impact on capital (owner) than labor (owner), and the ratio is far greater than the other sector / subsector.

REFERENCES

- [1] Allan, G. et al., (2011). The Importance of Revenue Sharing for the Local Economic Impacts of a Renewable Energy Project: A Social Accounting Matrix Approach. *Regional Studies*, 45(9), 1171–1186.
- [2] Akkemik, K. A. (2012). Assessing The Importance of International Tourism for The Turkish Economy: A Social Accounting Matrix Analysis. *Tourism Management*, 33(4), 790-801.
- [3] Arita, S. et al., (2013). The Distributive Economic Impacts of Hawaii's Commercial Fishery: A SAM Analysis. *Fisheries Research*, 145, 82-89.
- [4] Aslan, M. (2004). Turkish Social Accounting Matrix for 1996. The first version of this paper is presented at *The Eastern Economic Association Meeting, Washington DC*.
- [5] Bautista, R. (2000). Agriculture-Based Development: A SAM Perspective on Central Vietnam. *The Developing Economies*, 34(1), 112–132.
- [6] Boediono. (1988). *Theory of Economic Growth*. Yogyakarta: BPFE, Gadjah Mada University.
- [7] Butler, R. A. (2008). Social Impact of Palm Oil in Borneo. Retrieved November 16, 2011, from <http://world.mongabay.com/indonesian/borneo-sawit.html>
- [8] Dorosh, P. & Niazi, M. K. (2006). Social Accounting Matrix for Pakistan, 2001-02: Methodology and Results. *Munich Personal RePEc Archive (MPRA)* Paper No. 2242, posted 07. November 2007 / 02:21.
- [9] Fatah, L. (2007). *The Impacts of Coal Mining on The Economy and Environment of South Kalimantan Province*. Singapore: The Economy and Environment Program for Southeast Asia (EEPSEA).
- [10] Ferrari et al., (2009). *Constructing A Social Accounting Matrix for Sardinia*. Contributi di Ricerca Crenos (Centro Ricerche Economiche Nord Sud), Working Papers, 2009/02. Ferrari_G_Working_Paper_2009_Constructing. ISBN: 978-88-8467-505-7
- [11] Lewis, B. D. & Thorbecke, E. (1992). District-Level Economic Linkages in Kenya: Evidence Based on A Small Regional Social Accounting Matrix. *World Development*. 20 (6), 881-897.
- [12] Madsen, B. et al., (2001). *A Social Accounting Matrix for Danish Municipalities (SAM-K)*. AKF Forlaget, sam_k, pdf. 169 p
- [13] Noorsalim, M. (2009). *The Influence of Oil Palm Plantation Development towards Rural Kalimantan Community*.
- [14] <http://www.interseksi.org/publications/essays/articles/pembangunan>
- [15] Plantation Department of Central Kalimantan Province. (2012). *Plantation Statistics of Central Kalimantan Province in 2011*. Palangka Raya.
- [16] Pyatt, G. & Round, J. I. (1985). *Social Accounting Matrices: A Basis for Planning*. Washington D.C: World Bank.

- [17] Rich, K. M. et al., (1997). Political Feasibility of Structural Adjustment in Africa: An Application of SAM Mixed Multiplier. *World Development*, 25(12), 2105-2114.
- [18] Robinson, S. & El-Said, M. (2000). *GAMS Code for Estimating A Social Accounting Matrix Using Cross Entropy Methods*. TMD Discussion Paper (64). Washington DC: Trade and Macroeconomics Division, IFPRI.
- [19] Round, J. (2003). Social Accounting Matrices and SAM-based Multiplier Analysis. Chapter 14, pp. 1-20. Online Available at:
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.201.3553&rep=rep1&type=pdf>
- [20] Sadoulit, E. & de Janvry, A. (1995). *Quantitative Development Policy Analysis*. Baltimore: The John Hopkins University Press.
- [21] Singarimbun, M. & Effendi, S. (1980). *Method of Survey Research*. Yogyakarta: Center for Population Research and Studies, Gadjah Mada University.
- [22] Stone, S. R. (1985). The Disaggregation of The Household Sector in The National Accounts, G. Pyatt, and J. I. Round (Ed.), in *Social Accounting Matrices: A Basis for Planning*. Washington D.C: The World Bank
- [23] Thorbecke, E. (2000). The Use of Social Accounting Matrices in Modelling. *The 26th General Conference Of The International Association for Research in Income and Wealth, 27 August to 2 September 2000*.
- [24] Todaro, M. P. (1978). *Economic Development in the Third World*. New York: Longmen Inc.
- [25] Zhao, L. R. & Ge, J. P. (2013). Evaluating Effects of Expanding Grain-Based Fuel Ethanol and Cassava-Based Fuel Ethanol on Agriculture in China - A Multiplier Decomposition within a Social Accounting Matrix Framework. *Applied Mechanics and Materials*, 291 – 294, 212-220