The Impact of Socioeconomic Factors Againts Land Conversion Plant Cultivation Pattern in Jambi Province

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Abstract. This study aims to analyze the impact of changes in social and economic factors against the land area of some crops cultivation in Jambi Province and identify patterns of land conversion between various crops cultivated in the province of Jambi. To answer the purpose in the study used an econometric model Seemingly Unrelated Regression (SUR) model consists of 12 equations with 11 equations and one equation behavior identity and includes 12 endogenous variables and 23 exogenous variables. The results showed that the changes that occurred in the area of food crops is more influenced by economic factors (commodity prices, share food subsector) and growth as well as population density, with a tendency to decrease each year. Changes in the plantation area was more influenced by the structure of the economy (commodity prices, share the agricultural sector, share plantation subsector, GDP per capita, economic growth) and social factors (labor, density and population growth) with a tendency to increase every year except coconut. The pattern of land conversion of cultivated plants in Jambi Province, namely changes in land use patterns of cultivation of food crops into cash crops, the expansion of oil palm and rubber plantations. The expansion of oil palm plantations and rubber led to the depletion of land available for food crops, especially rice (paddy rice and paddy fields) that interfere with food security.

Keywords: Conversion, land, social and economic factors, crop cultivation.

1. Introduction

Land has important meaning, as a place where the human was doing many activities to keep its existence. The main activity the human did is to utilization the land for farming because the human need to procude the igredients for food. In the Provice of Jambi the land that used to cultivation.has the lanrgest proportion around 54, 71%, about 41, 52 % is forest, and the remaining 3,77% is used for settlement. During 15 years there was increasing of land expansion, mainly in superior plantation commodity. For example palm tree, rubber tree, and areca nut. But the difference ones is appeared in crops which is decreased. Land depreciation crops farming land in Jambi was happened because of land conversion. And if land depreciation is uncontrolled, in the future lt will be danger for food shortage in Jambi Land conversion was happened because of some social economy changing factors in society which cannot be avoid because of logic consequence builing. If the conversion land is happening continuously without control then will be create some food problems, employment, environment, and etc so it need a good land use planning to control the land conversion. The

main thing that should be notice is to understanding the pattern of land conversion and the impact from the social economy changing factors on land conversion plant cultivation in Jambi Province. According to the background above, then the problem will be formulated as; 1) how does the impact to the social economy changing factor to some plant cultivation commodity land area? 2) How does the land conversion pattern among some crops commodity to plantation in Jambi Province?

2. Research Method

This research is conducted in Jambi province on January until March 2016. The field of this research is limited on social factors that consisted on society growth, level of participates of workforce, and Dependency Ration, economy factor that consisted on price commodity, PDRB share, farming, economy growth, and per capitaof GDP. The meaning of land conversion pattern in this research is a pattern or model of land use changing from what kind of land to be what land will be. Plant cultivation is plant that forced to require result. In this research selecting plant cultivation is limited to the necessary commodity and the superior with production process is very depended on the land with the proportion land area with dominant use and it spread eveny in Jambi Province like in plantation area (rubber tree, palm tree, coffe, pinang) and farming (paddy field, paddy lea, corn).

Kind of data that used in this research is secondary data. Secondary data that used is the data which written in sistematicaly (time series). In this research used data from 1990 until 2013. The data collection was managed by Statical Analysis System (SAS). To answer the main purpose of the research, econometrica model that used is seemingly Unrelated Regression model (SUR). The use land changing is happening dynamic which contained time dimension so theyear as trend variable is able to introduction as exogeneous. Similarity in model consisted from 9 similaritied that is 8 behaviour similarities and 1 similarity of identity and included 8 endogenous variables with its model similarity as:

Portion of land Area of Paddy Field
PLAPS = $a_{1.0}$ + $a_{1.1}$lag PBRR + $a_{1.2}$SSPG + $a_{1.3}$SSAG+ $a_{1.4}$GDPK + $a_{1.5}$ECGR + $a_{1.6}$ POPG + $a_{1.7}$ TPAK + $a_{1.8}$ DEPR + $a_{1.9}$ YEAR e_1....................(1)
Parameter dugaan: $a_{1.1}$, $a_{1..2}$,$a_{1.3}$, $a_{1.6}$, $a_{1.7}$> 0 dan $a_{1.4}$, $a_{1.5}$, $a_{1.6}$, $a_{1.8}$, $a_{1.9}$ < 0

Portion of land Area of Paddy Lea
PLAPD = a2.0 + a2.1PBRR + a2.2SSPG + a2.3SSAG+ a2.4GDPK + a2.5ECGR + a2.6 POPG + a2.7 TPAK + a2.8 DEPR + a2.9 YEAR e2........................(2)
Parameter dugaan: a2.1, a2.2 , a2.3, a2.7> 0 dan a2.4, a2.5, a2.6, a2.8 , a2.9< 0

Portion of land Area of Corn (PLAJG)
PLAJG = a3.0 + a3.1PJGR + a3.2SSPG + a3.3SSAG+ a3.4GDPK + a3.5ECGR + a3.6 POPG + a3.7 TPAK + a3.8 DEPR + a3.9 YEAR + e3..........................(3)
Parameter dugaan: a3.1, a3.2 , a3.3, a3.7, a3.11 > 0 dan a3.4, a3.5, a3.6, a3.8, a3.9 < 0

Portion of land Area of Rubber Tree (PLAKR)
PLAKR = b1.0 + b1.1PKRR + b1.2SSKB + b1.3SSAG+ b1.4GDPK + b1.5ECGR + b1.6 POPG + b1.7 TPAK + b1.8 DEPR + b1.9 YEAR+ e4..........................(4)

Parameter dugaan: b1.1, b1.2 , b1..3, b1..4 , b1..5 b1..7 ,b1..9 > 0 dan, b1..6,b.1.8 < 0

Portion of land Area of Palm Tree (PLAKS)

$$PLAKS = b2.0 + b1.1PKSR + b2.2SSKB + b2.3SSAG + b2.4GDPK + b2.5ECGR + b2.6 POPG + b2.7 TPAK + b2.8 DEPR + b2.9 YEAR + e5 \dots\dots\dots\dots(5)$$

Parameter dugaan: b2.1, b2.2, b2.3, b2.4, b2.5 , b2.7, b2.9> 0 dan b2.6, b2.8< 0

Portion of land Area of Coconut (PLAKL)

$$PLAKL = b3.0 + b3.1PKLR + b3.2SSKB + b3.3SSAG + b3.4GDPK + b3.5ECGR + b3.6 POPG + b3.7 TPAK + b3.8 DEPR + b3.9 YEAR + e6 \dots\dots\dots(6)$$

Parameter dugaan: b3.1, b3.2 , b3.3 , b3.4, b3.5, b3.7, b3.9,> 0 dan b3.6 , b3.8 < 0

2.1. Portion of land Area of Coffe Area (PLAKP)

$$PLAKP = b4.0 + b4.1PKPR + b4.2SSKB + b4.3SSAG + b4.4GDPK + b4.5ECGR + b4.6 POPG + b4.7 TPAK + b4.8 DEPR + b4.9 YEAR + e7 \dots\dots\dots(7)$$

Parameter dugaan: b4.1, b4.2 , b4.4, b4.3 , b4.5, b4.7 , b4.9> 0 dan b4.6, b4.8< 0

2.2. Portion of land Area of Areca nut (PLAPN)

$$PLAPN = b5.0 + b5.1PPNR + b5.2SSKB + b5.3SSAG + b5.4GDPK + b5.5ECGR + b5.6 POPG + b5.7 TPAK + b5. DEPR 8 + b5.9 YEAR + e8 \dots\dots(8)$$

Parameter dugaan: b5.1, b5.2, b5.3 ,b5.4, b5.5 , b5.7 , b5.9> 0 dan b5.6 b5.8< 0

2.3. Portion of land Area of the other commodity area

$$PLAOT = 100 - PLAPS - PLAPD - PLAJG - PLAKR - PLAKS - PLAKL - PLAKP - PLAPN \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(12)$$

Where:

PLAPS : Portion of paddy fiend land area (%)
PLAPD : Portion of paddy lea land area (%)
PLAJG : Portion of corn land area (%)
PLAKR : Portion of rubber tree land area (%)
PLAKS : Portion of palm tree land area (%)
PLAKL : Portion of coconut tree land area (%)
PLAKP : Portion of coffee land area (%)
PLAPN : Portion of areca nut land area (%)
PLAOT : Portion of the other commodity land area (%)
PBRR   : Rice price Riel (%)
PJGR   : Corn price Riel (%)
PKRR   : Rubber price Riel (%)
PKSR   : Palm tree price Riel (%)
PKLR   : Coconur price Riel (%)
PKPR   : Coffee price Riel (%)
PPNR   : Areca nut price Riel (%)
SSPG   : Proportion PDRB sub-sector food (%)
SSKB   : Proportion PDRB sub-sector plantation(%)
ECGR   : Rate of economy growth (%)
TPAK   : Rate of workforce participant(%)
DEPR   : Dependency Ratio (%)
POPG   : Rate of society growth (%)
YEAR   : Year

To answer secondary purpose of this research is to identify land conversion pattern among some plant cultivation commodity in Jambi Province using Cross Model Correlation from estimation result using Seemingly Unrelated Regression (Sitepu dan Sinaga, 2006), and it shown below.

Table 1. The example of estimation of SUR in identify the land conversion pattern among some plant cultivation commodity

Seemingly Unrelated Regression Estimation Cross Model Correlation							
Variabel	**PLAPS**	**PLAPL**	**PLAJG**	**PLAKR**	**PLAKS**	**PLAKL**	**PLAKP**	**PLAPN**
PLAPS	1	(+/-)	(+/-)	....	....	....	....	....
PLAPL	(+/-)	1	....	....	....	....	....	....
PLAJG	(+/-)	....	1	....	....	....	....	....
PLAKR	....	....	....	1	....	....	....	....
PLAKS	....	....	....	....	1	....	....	....
PLAKL	....	....	....	....	....	1	....	....
PLAKP	....	....	....	....	....	....	1	....
PLAPN	....	....	....	....	....	....	....	1

According to Cross Model Correlation which can be seen above, the conversion pattern that is the proportion changing of commodity land is amounting to one unit will have an impact on the change (increase or decrease) in the area of another commodity

Estimation method is to Seemingly Unrelated Regression (SUR) pattern. Autocorrelation detection data series used Durbin-Watson (dw) test that meant as (Sitepu dan Sinaga, 2006):

3. Result and Discussion

3.1. Developing plant cultivation land area
3.1.1. Developing Food cultivation land area

Food plant is the most being endeavored in Jambi Province is paddy. In the year 2013 land area for paddy is 153.243 Ha or about 91,26% from the whole food plant in Jambi Province. Paddy that being endeavored consited of paddy field is 129.341 Hectare and paddy lea is 23.902 hectare. The second position is corn with the land area is 6.504 Ha. Meanwhile palawija plant like taro, cassava, sweet potato, peanut, green beans area is about 8.162 hectare. The development of the main food plantation land area during period 1999-2013 can be seen in Fig 1.
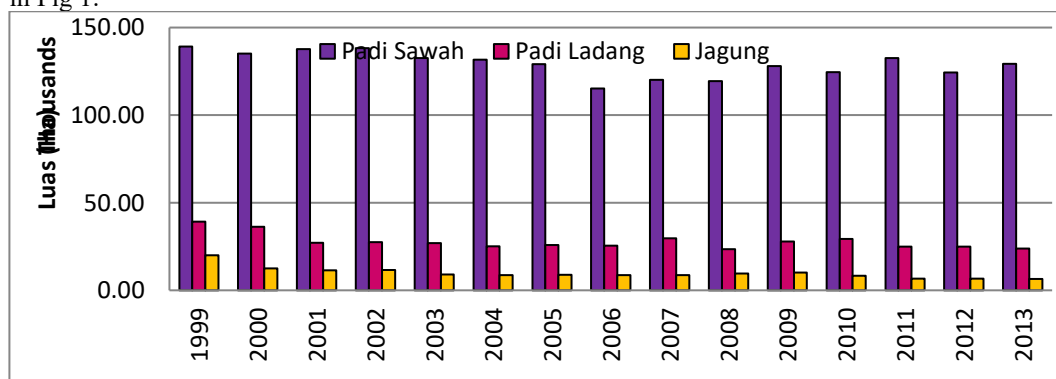
Fig 1. Development of food plant land area (paddy field, paddy lea, and corn Jambi Provice in the year 1999-2013 (Ha)

In comparing the large in year 1999, the land are food plantation in Jambi Province decreased around 56.811 Ha or 25,28% and 224.720 Ha in the year 1999 become 167.909 Ha in 2013, with the rate of growth around -7,69 per-year from 19.940 Ha in 1999 become 5.504 Ha in 2013.

Meanwhile paddy field and paddy lea, decreasing land area on paddy around 25.064 Ha or 14,05% and 178.307 Ha in 1999 become 153,243 Ha in 2013. For paddy land are is deacreasing around 9.775 hectare with the rate 0,52 %. It similar to paddy field, decreasing of paddy lea land area also decreased around 15.289 hectare with the rate 3,47 %. Also happened to greenbeans also decreased, the total of palawija land area which decreased around 5.766Ha or 47,84% from 12.051 Ha in year1999 become 6.285 Ha in year 2013 or 47,84 % with the growth rate -4,54 per year.

Paddy is main ingredients in society in Jambi Province and become the largest food plantation. Decreasing of paddy land area happened in Tanjung Jabung TImur regency about 17.399 Ha, continuously and Bungo regency is 4.800 Ha and Sarolangun is about 1.526 Ha. There were 4 regencies that the area become increased. And the forth is Meragin regency, Muaro Jambi regency, and Tanjab Barat Rejency and Jambi city. Each regency the area is increased arounf 2.799 Ha or 30,52 %, 6.695 Ha or 159,44% and 2,265 Ha or 13,89%, 429 Ha or 34,23%. In the paddy lea area. The decreasing of pay lea happened almost in the whole regency in Jambi except Kerinci, Sarolangun, and Tanjung Jabung Barat. The increading of land area conversion in three regencies contiously is 629 Ha; 2.080. and 2.008 Ha.

3.1.2. Land area for Plantation Development

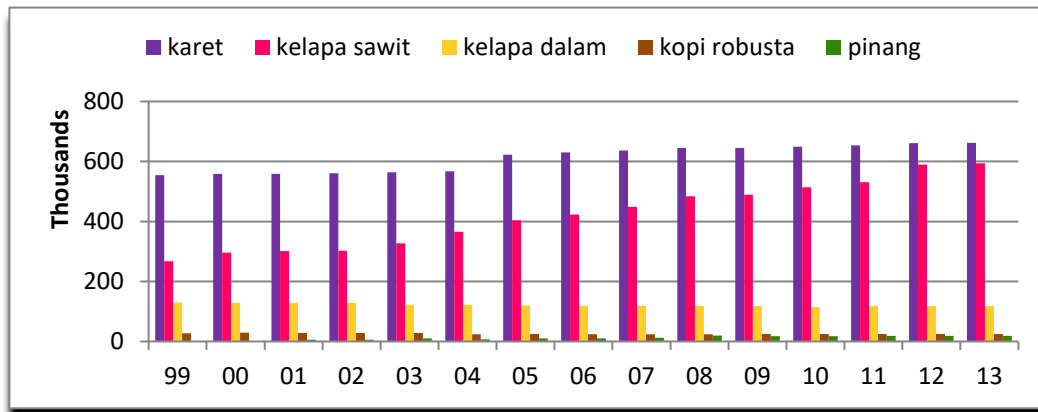Land area superior plantation commodity development in Jambi Province in period 1999-2013 can be see in Fig 2.

Fig 2. Land area for Plantation Development in Jambi Province (Ha). Source: Plantation office in Jambi Province (2014)

Rubber is a commodity where the area is largest in Jambi Province with stable development and often increasingin last15 years, with the rate of growth is 1.27 per-year. Developing of rubber tree land area in Jambi Province has increased at least 107.417 or 19.36% from 554.796 Ha in the year1999become 662.213 Ha in 2013. Then palm tree is in the

second position with the highest rate of growth among the other commodity that is 5.87 per year. Palm tree land are development is large enough if it is comparing to the other commodity, the development is about 326.496 Ha or 122.37% dari 266.797 Ha in year 1999 become 593.293 Ha in 2013. Beside palm tree, areca nut commodity also has land are development around that is very rapid from 1.883 Ha in the year 1999 become 593.293 Ha in 2013.

Different situation is happening to coconut commodity and coffee which the land area is decreased in the last period 15 years. The biggest decreasing land which happened to cocnut commodity is around 11.640 Ha or 8.98% with rate of growth -0.67 per-year, and coffee is 1.255 Ha or 4.62% with the rate of growth is -0,33 per-year. Then the average of whole commodity has increasing during period 1999-2013 about 407.582 Ha or 39.24 % with the rate of growth is 2.39 per year.

3.2. The Impact of Social Economy to the Plant Cultuvation on land area.

According to the result of estimation from econometrics linear model that used in this research showed that the level of validity model that used in this research is very good. This can be proved from the coefficient value determination indicator (R^2) that showed number angka 0.9979. Value R-square = 0,9979 and it can be interpreted that around 99,79% variation of plant cultivation land area can be explained by social and economic variable in this research and the other or arounf 0.21% will be explained by the other variable which did not include in this model. And to make sure that the estimation result is free from autocorrelation problem that appeared because there is correlation between one of observer members with the other observer that systematicly all the time, so in this research is conducted autocorrelation test using Durbin-Watson method. With Table Durbin-Watson in ɑ = 5%, n =23 observation, and k = free variable, the test result showed that DW value from the whole estimation is exsist between dU and 4 –dU, which concluded that there is no autocorrelation problem.

3.2.1. The impact of Social Economy Factors on Food Plantation Land Area

The impact of social economy factors on foog plantation land area can be see from the estimation result on Table 2 below:

Table 2. Estimation Result of the Impact of Social Economy Factors on Food Plantation Land Area

No.	Variable	Portion of paddy field land area		Portion of paddy lea land area		Portion of corn land area	
		Koefisien	Prob>t	Koefisien	Prob>t	Koefisien	Prob>t
1.	Intercept	-128.760	0.0417	96.8432	0.0003	73.5997	0.0659
2.	Commodity price	**4.99E-6**	**0.0063**	5.19E-7	0.2166	6.64E-7	0.6365
3.	Share SS Food	**0.00032**	**0.0031**	**0.00013**	**0.0019**	**-0.00018**	**0.0083**
4.	Share Farming Sector	-1.46E-7	0.9952	-0.00001	0.2593	-2.09E-6	0.9009
5.	GDP percapita	**-0.00216**	**0.0029**	-0.00010	0.6455	-0.00029	0.4478
6.	Ekonomic Growth	-0.00002	0.1527	-2.67E-6	0.6894	-7.82E-6	0.3977
7.	Society Growth	-0.00002	0.8487	**-0.00016**	**0.0258**	-0.00004	0.6120
8.	Level of workforce	0.00012	0.2875	0.00008	0.1719	1.79E-6	0.9819
9.	particpnt	-0.00009	0.4597	-0.00005	0.4047	-0.00005	0.5354
10.	Depedency Ratio	**-0.06447**	**0.0420**	**-0.04810**	**0.0004**	**-0.03639**	**0.0703**
11.	Yesa	14.3200	0	65.3800	0	3.84000	0
12.	F Value	0.00010	0	<.00010	0	0.02050	0

13.	Prob > F R-Square	0.94501	0	0.98741	0	0.82177	0

Note: number "**Bold**" showed the real influecent on the trust level 90 %(P < 0.10)

According to the table above, it showed that price variable commodity, share subsector food except on the portion corn land area, the level of workforce participation has positive sign meanwhile farming sector, GDP percapita, the economic growth, society growth, depency ratio, and year variable has negative sign on food commodity (paddy field, paddy lea, and corn). This condition also matched to reseach hypothesis except parameter of farming section and parameter share subsector on corn land area.

Estimation result used SUR method on paddy field land area has value R-square 0.94501 showed that around94.5 % variation of paddy field land area can be explained by social economic variable factor in this research. Social economy factor variable togather has significant effect on the paddy field land area in the level 0.0001. In price partial of rice, share subfactor food, GDP percapita and year variable has significant effect on paddy field land area. Rice price has real influecent on paddy field land area with coefficient 0.0000499 and interpreted as the average changing (increasing) on portion of paddy field land area is 0.0000499 when the price increased 1 %, significant effectd in the level 0.0063. This condition can beunderstand because as known that the price is an indicator for farmer in farming industry

Price also a hope for farmer income. When the price low then the farmer will moved to the other commodity which the price is higher and use the other land to produce the other commodity which the price is higher. Beside the rice pprice, the variable that has significant effectd on level 0.0031 on paddy field land area is share subsector where increasing happened on portion of paddy field land areaalso increased 1%. The influence of share subsector on food is directly proportional with the portion of paddy field land area because it is the main food ingredient that mosthly endeavored and become main contributor that has very large contribution on food plantation in Jambi Province. GDP percapita also has significant effect on the paddy field area in level 0.0029 with negative coefficient which is mean decreasing happened on portion paddy field land area about 0,00216 when GDP percapita is increasing 1 %. May be the increasing of GDP percapita is acquired from the farmer who moved to othe sector which has higher income. It almost same to the research of Ndawa (2014) mentioned that decreasing of farmer land is an impact to the farmer income, because there were addition from the other sectors. According to the development from the years there found mostly decreasing paddy field land area every year, It proved from the significant level year variable about 0.0420 with coefficient -0.0644 that interpreted as portion of paddy field land area decreasing around 0.0644% every year.

The estimation result used SUR method on paddy lea land area is acquired value R-square 0.98741 showed that around 98,741 % variation of paddy lea land area can be explained by social and economic factor in this research. Altogather social economic factor variable has significant effectd on portion of paddy lea land area with value Prob > F in level <0.0001. in partial share subsector food, society growth, and variable each years has significant effectd in portion of paddy lea land area that showed from value Prob> t share subsector food influenced significant on the portion of paddy lea land area in the level 0.0019 with coeffision 0.00013 that interpreted as the average of paddy lea land area increasing when the share subsector increased 1 %. Positive influenced happened because paddy gavea biggest contribution than the land area of the other plantation food. Society growth in partial has significant effect on paddy lea land area in level 0.0258 with coeffisien -0.00016 and

interpreted as paddy lea land area decreasing in the average of 0.00016. it is similar to the research of Munir (2008) who mentioned that society growth caused the smallest land storage of average per-person.

The result estimation used SUR method on portion of corn land area acquired value R-square 0.82177 that showed about 82,177 % variation portion corn land area can be explained by social economic variable in this research. Social economic Variable factor togather has significant effect on portion of corn land area. In partial share subsector food from each year variable has significant effectd on portion of corn land area in level 0.0083 with coeffisien -0.00018 it can be interpreted as the average decrasing of corn land area when share subsector increasing1 %. Share subsector has negative sign which meant that share subsector food increased but it is decreasing corn land area. Share subsector mostly contributed by paddy commodity for paddy field and paddy lea whih is the main food for society in Jambi Province. Paddy field and paddy lea are invest in dry land because the competition use of both commodity. If the corn area is increasing then the paddy land area will be decreased and paddy contribution on share subsector will be decreased too. Then influenced the food contribution on subsector food plantation. The development of corn land area from year to year showed by the estimation result value prob > t year variable, with coeffision -0.02243 that meant decreasing exsist on the average of corn area about 0.02243 % every years. But this will be not significant effect in trust variable 90 %.

3.2.2. The Impact of Social Economic Changing Factors on Plantation Land Area

The impact of social economic changing factors on land area of plantation can be seen from estimation result in document 1. According to the result estimation also can be see that share sector variable on plantation, economic growth, level of workforce participation has positive sign, while society growth , depency ratio has negative sign in whole plantation land area. Price commodity, share sector plantation, GDP percapita, and years has positive sign in whole plantation land area. This condition is matched to the research hypothesis.

The estimation result used SUR method to the rubber land area which is acquired by value R-square is about 0.9929 which meant 99.29 % rubber land area variation can be explained by social economic factors variable that exisisted in this research. Togather with social economic factors variable in this research has singnificant effect in the level <.0001 to the rubber land area which showed by the value prob> F. in partial variable rubber price, share sector farming, GDP percapita and economic growth, each of them is very influence to the rubber land area, the significant level is about 0.0002 by the rubber price which is expensive made the farmer want to have higher income so they used their landto invest rubber. This is proved by the data from Statistic Center Office (2016). Rubber price became expensive in the year2005 make the rubber land area become increased about 55.150 hectare (Picture 14)

According to the result of Napitupulu (2004) rubber price increased in Indonesia's forest will be followed by the increasing of rubber plantation land area by the farmer and big company. Estimation result showed share sector has significant effect in level 0.0001. The positive influence between rubber land area and share sector plantation also increased for 1 %. This condition can be understood because as known most of people in Jambi Province has job in plantation sector especially as rubber farmer and palm tree farmer.This statement also supported by the research result of Hariyanto (2012) who said that the sector condition become leading sector because the most of people in Jambi Province has job in plantation sector especially in rubber and palm tree. Rubber land area in significant effectd by GDP percapita in the level 0.0003 where the rubber land area is increased in average about 0.0042 when GDP percapita increased is about 1%.

The positive relation berween GDP percapita with the rubber land area because most of people in Jambi Province acquired by income in rubber farming. Beside GDP percapita, economic growth variable also has significant effect in level 0.0033 and it is positive effect with rubber land area where the average is 0.00010 %. Rubber land is increased when economic growth increased about 1 %. This can be explained by dominant contribution plantation sector especially subsector of rubber plantation which is still dominant for economic in Jambi Province. So the increasing of rubber land area has impact to the economic in Jambi Province. If we see from the progress every years showed there is positive change in in rubber land area that is increasing for 0.02717 every year but the changing did not significant.

The result estimation used SUR method in palm tree land area has value R-square is about 0.9979 which meant 99.79% palm tree land area variation can be explained by social economic factors that found in this research. Togather with social economic factor variable in this research ahs significant effect in the level <.0001 in palm tree land area which showed prob> F. in partial variable share subsector of plantation, and year variable each of them has significant effect on palm tree land area. Palm tree commodity is one of superior commodity in Jambi Province withth rate of land area growth is very high that is about 5.87% every year.

The biggest contribution of palm tree to PDRB plantation sector especially for plantation, it proved by positive effect between palm tree land area and share subsector plantation which is significant in the level 0.0581 with the estimation coeffisien 0.00066 which meant there is increasing in palm tree land area in average about 0.00066 when the share sector of plantation increased for 1%. If we see from the year variable there found significant effect on palm tree land area in level 0.0002 with coeffision 0.63691 which meant there is increasing happened on palm tree land area in the average 0,63691 every year. Accrodingto Napitupulu (2004) it found that is competition between palm tree and nature rubber on land source that exsisted. Economic climate of palm tree focused on the increasing palm tree price product can be stimulate the farmer to converse the rubber plantation become palm tree plantation.

Estimation result used SUR method on coconut land area acquired by value R-square for 0.8986 which meant 89.86 % coconut land area variation can be explained by social economic factor varable that found in this research model. And ithas significant effect in level 0.0017 on coconut land area that seen in value prob> F. in partial variable share sector of plantation has significant effect on coconut land area in level 0.0079. Coconut has positive contribution for 0.00004 % when share sector increased aroun 1%. This can be understand because coconut is one of superior commodity in Jambi Province but if we see the progression every year there found some decrease of coconut land area. According to theestimation result there found a season of coconut land area decrease for 0.00637 % every year, but it is not significant in level 0.1%

The estimation result used SUR method on coffee land area which acquired by value R-square for 0.9710 which meant 97.10 % coffee land area variation can be explained by social economic factor variable that found in this research model. The social economic factor variable has significant effect in level <.0001 on coffee land area that can be see value prob> F. in partial share factor variable of plantation, GDP percapita, economic growth, society growth, and year variable has significant effect share sector variable of plantation in level 0.001 with coeffisien 0.00002 and can be interpreted as the average changing of coffee land area that is increasing for 0.00002 % when the share sector increased for 1%. Same to the other commodity coffee also has positive contribution to PDRB plantation sector.GDP percapita variable also has positive effect on coffee land area and the significant effect in level 0.0002 with coeffision 0.00041 which meant that there is increasing for coffee land area for

0.00041 when GDP percapita increased for 1%. This condition identified that the income from coffee land area in level 0,0051 with coeffisien 0,000074 which can be interpreted as the averageof land area increasing when the economic growth increased for 1%.This condition showed that coffee commodity still gave positive contribution to the economic sector in Jambi Province, this thing also can be seen by the share workforce on plantation that has significant effect in the level 0,033 with coeffision 0,00003 which meant increasing happened in coffee land area in average level 0,00003% when share workforce increased for 1%. Beside there also found negative effect of society growth to the coffee land area where there found decreasing of coffee land area for 0,00005% when society growth increased for1%, the significant level is 0,0234. Estimation result indentified that there is found land for palnt cultivation (coffee) that used by people as a settlement source. As stated by Lestari (2011) in her research that land conversion become settlement and public resource because of society growth. It can be seen on the effect of year variable on coffee land area is 0,02326% every year.

Estimation result used SUR method on areca nut land area acquired by value R-square for 0.9812 which meant 98,12 areca nut land area variation can be explained by social economic factor varable that found in this research model. And it has significant effect in level <.0001 on areca nut land area that seen in value prob> F. in partial variable share sector plantation, share sector farming and year variable has effect significant on areca nut land area. Estimation result showed the significant between share subsector plantation and share subsector farming on areca nut. Eact sector in the level 0.058 dan 0.011. There is average increasing for 0.00010 when the share subsector plantation increased for 1%. And there found average of increasing areca nut land area for 0.00002 when the share subsector farming is increased for 1 %. The positive effect happened because the contribution of areca nut is high in subsector of plantation. Then it effected to subsector of farming on PDRB Jambi province. It can be seen by the progress every year araca nut land area in the level 0.012 with the increasing areca nut land area focused is 0.05054 every year.

3.3. Conversion Plant Cultivation Pattern

Conversion pattern between kinds of plant cultivation commodity in Jambi Province can be proxied by the cultivation land area in every commodity. Land conversion among kinds of plant cultivation land area is happening dynamic and effected by the kinds of social and economic factors.theestimation result showed that there is increasing land area of some plantation and horticulture lke palm tree, coffee, areca nut, rubber, banana, and potato. Meanwhile food plantation land area like (paddy field, paddy lea, corn) and the other plantation commodity like coconut and cinnamon has decreased land area.

According to the cross model correlation the resultof SUR model (document 2) and season developing commodity land area which is positive (has increased every year), shortly the land area conversion pattern can be see in Fig 3.

Fig 3 showed about the phenomena changing pattern of using plant cultivation in Jambi Province with 2 (two) important issues; there is happening conversion of food plantation land area become plantation and make the land area for food plantation become decreased especially for paddy (paddy field and paddy lea), theexpansion of sawit and rubber plantation.

The expansion of palm tree plantation belong from the other cultivation land area except coconut. Coconut is specific plant in coast in the north of Jambi Province so the conversion become palm tree plantation still not too much happened. The progress of palm tree land area still belong from the other land conversion of rubber tree, areca nut, and coffee and the other land converstion even for dry land and wet land (paddy field). Every hactare palm tree

plantation is increasing togather with the increasing of coconut arounf 0,1667 and corn is 0,3536 Ha and will be followed by the decreasing 0,6039 Ha of paddy field around 0,0386 Ha, paddy lea is 0,1165Ha. Rubber tree plantation 0,0050 Ha, coffee plantation 0,1886 Ha. And areca nut plantation is 0,13316 Ha.
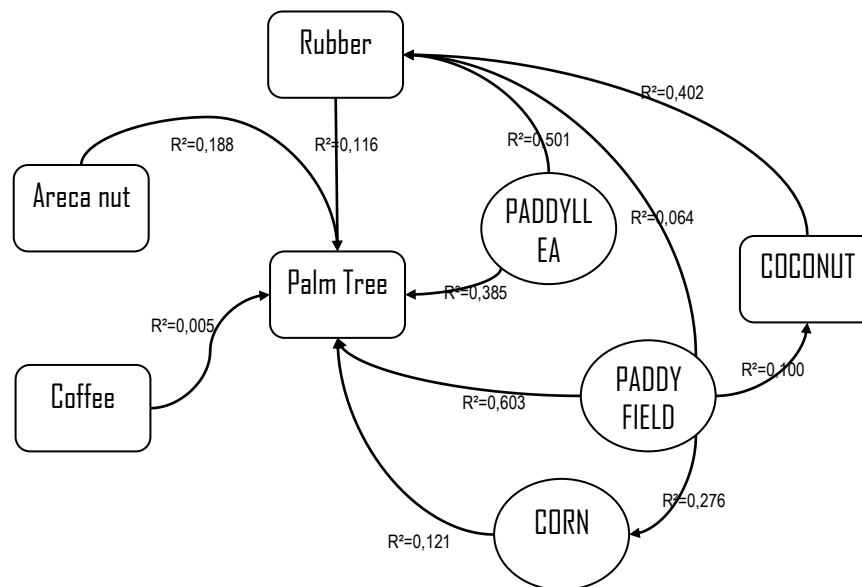

Fig 3. Plant Cultivation land area Conversion Pattern

The expansion of rubber tree plantation in Jambi Province nowdays begin showing the slowing down with the developing which only focused levelingoff. Although the rubber plantation land area still in the first level of the largest land area. Rubber land area is equally exsisted in whole area in the regency of Jambi Province. There found competition between rubber plantation and palm tree because land source where conversion land happened on rubber land area become palm tree land area because the price of rubber become low and there found limitation of farming land that reserve for rubber tree.

The same thing also mentioned in the research of Napitupulu (2004) who said that there found some rubber plantation land which is conversed become palm tree plantation because palm tree technology entering to some city as the effect of transmigration program. And Napitupulu (2004) added that there is notonly public rubber plantation but also the biggest plantation allocated some of their rubber land become palm tree land area because of the price of rubber in the world has negative rate. The development of rubber tree land area belong from the other land conversion like cinnamon in the highland region and coconut in lowland region. Every hectare has increased the rubber land area togather with coffee about 0,3245 Ha followed by the decreasing of food plantation like paddy field about 0,0649 Ha, paddy lea about 0,5012 Ha, corn 0,1606 Ha, the coconutland area decreased about 0,4027 Ha.

The conversion of food plantation especially paddy become plantation land area because of there is plantation land expansion caused the food plantation (paddy field and paddy lea) become decreased. This thing can be see by the decreased season of food plantation land area.

This conversion landwhich happeningcontinously is danger for food security in Jambi Province. The problem of food security is not only will decreasing the total of rice production but also will disturbed the stability of people growth, economic, social, and politic. The total of paddy plantation as the main food ingredients which reduced will be decreasing rice production that has been produced. This thing is inversely proportional to the society growth every year that always increasing. If this condition is happening continuously it is predicted that the total of rice production availability will getting smaller from the rice need so deficiency of rice will be happening. Every hectare of paddy field increasing about 0,6038 Ha or 60,38 % and become conversion to palm tree land area 0,0649 Ha or 6,49 %, and become conversion to rubber plantation 0,1004 Ha. Coconut and corn are about 0,2769 Ha. Beside paddy field is predicted for 0,5012 Ha being conversed to rubber plantation and 0,3857 Ha being conversed as palm tree plantation.

4. CONCLUSION AND SUGGESTION
4.1. Conclusion
According to the resultof analysis and discussion so from that it is concluded that:
1. The changing that is happening on the food plantation area is mostly influenced by the factor of society growth and decreasing focused every year.
2. The changing that is happening on the corps plantation land area mostly influenced by economic structure (commodity price, share sector of plantation, GDP percapita, economic growth) and social factor (workforce and society growth) with the focus of increasingevery years except coconut.
3. Plant Cultivation land area pattern in Jambi Province is the changing pattern in using plant cultivation land area from food plantation become corps plantation and palm tree expansion.
4. The expansion of palm tree and rubber tree cuased the decreasing of land area for food plantation especially for (paddy field and paddy lea) it will bedanger for food security.

4.2. Suggestion
An effort is necessary and government policy to make the price of food plantation commodity become stable from the economic structure so the land area of food plantation (paddy field, paddy lea, and corn) will not be decreased (finish). The economic growth which followed by the expansion of corps plantation (palm tree and rubber tree) and horticulture plants need to be control in other that it will not disturb the use of other land for food plantation. The need for controlling population with a family planning program because the high rate of society growth will be decreasing plant cultivation land area. And it necessary to review some region government' policy in land us planning in order to control the land conversion especially from the food plantation to the corps plantation.

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