

The Impact of Palm-oil Price Fall on Labor-use Optimalization and Household Income of Oil Palm Farmers in Ogan Komering Ilir District of South Sumatra

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Abstract. The objectives of the reasearch were to (1) measure working time allocation of farm household members in managing oil palm plantations and other productive activities before and after palm oil price fall, (2) measure income contribution from the plantations to the total household income in the two periods. The results showed that working time allocation of family labor for oil palm plantations was relatively low at the amount of 11.91 man-days a year or only 5.12 % of the total working time allocated before price fall, and became 14.54 man-days or 6.14 % after price fall. The farmers hired dominantly outside farmers for maintaning oil palm plantations, and spent more of their times for working at outside plantations such as trading activities and other farm labors. Oil palm plantation contributed around 31.6 % and 29.84 % to the total household income, respectively, during the two periods. From the income figures, Gini index in the research area was measured at the value of 0.20, showing low imbalance (high balance) distribution of income among the oil palm farmers. The only cause of the income imbalance was slight differences in land size owned by the farmers.

Keywords: Oil palm, Price fall, Labor, Time allocation, Gini index

1. Introduction

Palm oil price declined sharply in 2007-2008, which was affected by the global economic crisis. The same situation happened with the price of fresh fruit bunch (FFB) of oil palm, since it is one of Indonesian exported commodities. Further impact of the phenomenon was many farmers tried to search other employment opportunity in order to maintain their income level. This also gave the chance for the farmers to optimize family labor allocation among several productive works, while the activities at oil palm plantations only require intensive works at the moment of fertilizing, weeding and harvesting (Agricultural Departement of Indonesia, 2008).

Other sources of income for farm households beside oil palm plantations are goods or commodity trading, other person's farm hired labors, civil servants, and other business activities. These works were considered as off-farm activities. Since they had labor spare time unused at oil plantations, family labor allocations to other economic activities would affect household incomes. Utilization of labor spare time and its influencing factors were relevant to be learned. It is believed that labor time allocation at oil palm plantation was determined by economic and non economic factors, while the time allocation for off-farm jobs was influenced by wage level and net income from the on-farm business (Zahri, 2004). Therefore, two relevant aspects to be analyzed were (1) what was the working time allocation of the family labor between oil palm plantation activities and off-farm activities, (2) what was the income contribution from the oil palm business to the household income, and (3) what was the figure of household income distributions among the oil palm farmers.

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2. Literature Review

Labor time allocation of farm household is limited by five main activities, that are working at plantation, working outside plantation, domestic works take rest time, and leisure time. These five divisions of time allocation form the total time available for every individual or labor at farm household during twenty four hours a day (Hernanto, 1996).

Productive oil palm plantations do not require much labor working time. Only three activities require intensive labor works, that are fertilizing two time a year, weeding/pruning one or two time a year, and harvesting two time a month. Therefore, farm family labor have much spare time for other activities, and when utilized productively, it would increase household income (Zahri, 2004).

Further, Zahri (2005) reported that oil palm farmers allocated every farm labor on average 75.76 man-days per year, or 6.3 man-days per month, or 12.5 hours per week on oil palm plantation activities. The activities were farm maintaining, harvesting, and FFB selling. Research by Mulyana (2003), found that farm income from oil palm plantation could not fulfill family expenditure, therefore it was risky for the farmers to depend their livelihood only on oil palm business with two hectare size. This pushed the farmers to search other sources of income. Julia and White (2011) from their research in West Kalimantan revealed that several outside job opportunities were available, but still related with oil palm plantations. In the nucleus zone of the plantation which belongs to the company there were three types of plantation labor required : regular (contracted) labour, daily casual labour, and extra unpaid labour. The regular labourer is hired on contract and has a secure monthly salary, while the daily labourer is recruited by a foreman to work in the plantation on a daily basis with one specific task (spraying, area clearing, etc) and paid based on the number of days he/she works. The third type (not formally recognized) is the unpaid family members (spouses, relatives, children) of a hired worker who may assist him/her in the work but are not included as parties in the labour transaction.

However, as also mentioned by Nurmanaf (2004), they found that farm wage at the oil palm zone was still low. It was even lower than non farm wage, and poor farm household can only offer family labor, but hardly get access to non-farm employment opportunities since they had limited labor skills and fund.

3. Research Method

The research was done using survey method on oil palm farmers in Ogan Komering Ilir District of South Sumatra. Specifically, it was carried out at two locations, namely Sugih Waras of Teluk Gelam Subdistrict, and Burnai Timur of Pedamaran Subdistrict.

Sixty sample farmers, were chosen using stratified random sampling method with the criteria of 2 hectare land size, at least having oil palm plantations of the age 8 years old, and having other sources of income. Primary data was obtained directly from the farmers, while secondary data was collected from relevant institutions. The calculation of labor time allocation on several activities was managed by following mathematical formula (Suratiah, 2008):

$$\text{Total WH} = \text{PN} \times \text{WD} \times \text{WH}$$

$$\text{WPD} = \frac{\text{TotalWH}}{\text{SWH}}$$

Where:

WPD = Working person days (working days)

PN = Person numbers (person)

WD = Working days (days)

WH = Working hours (hours/day)

SWH = Standard working hours (hours), 7 hours on farm/day, 8 hours off-farm per day

(Labor and Transmigration Office of South Sumatra, 2007).

Income contribution:

$$YC = \frac{OPY}{Y} \times 100\%$$

Where:

YC = Income contribution (%)

OPY = Oil palm income (Rp/year)

Y = Household income (Rp/year)

In addition, to find out income distribution among farm household of oil palm plantation, the Gini Index or Gini Ratio measurement was applied (Szal and Robinson *in* Silaen, 2007):

$$IG_Y = 1 + \frac{1}{n} - \frac{2}{n^2 Y} (1Y_1 + 2Y_2 + \dots + nY_n)$$

Where :

IG_Y : Gini index value of income distribution

N : Sample numbers of household (units)

Y_i : Sample household income (Rp/year)

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Y : Average household income (Rp/household/ year)

Results Criteria: IG = 1, Income distribution perfectly inequality

IG = 0, Income distribution perfectly balance

4. Results and Discussion

Base on the real situation, in this research we decided that time frames of *before* crude palm oil (CPO) and FFB price fall were in July to December 2007, while *after* price fall were in January to June 2008.

4.1. Labor Working Time Allocation

Household labors were identified as husband, wife, children and relative labors, while from outside were hired labors. The labor time was allocated when required as in the period of fertilizing, maintaining (weeding and pruning), spraying pesticide and harvesting. In general working time allocation of oil palm labor presented at Table 1.

Table 1: Average Labor Time Allocation on Oil Palm Plantation Before and After Price Fall, 2008

No	Type of Labor	Labor Time Allocation (Man-days/2 Ha/6 Months)			
		Before	(%)	After	(%)
1.	Family Labor	8.41	8.44	12.36	9.51
2.	Hired Labor	91.22	91.56	117.64	90.49
	Total	99.63	100.00	130.00	100.00

It is revealed that both before and after price decreases, the oil palm farmers used more hired labor than family labor. However during price fall they increased family labor allocations since it became difficult to pay for hired labors. It means that the farmers eventually still considered the oil palm business as the important source of household incomes.

Among oil palm plantation activities, farm family labors were dominantly (72-73%) allocated in harvesting activities, since they have to control the hired labor in cutting-off the FFB to get standard fruit quality, and therefore would gain good price and high income.

4.1.1. Family Labor Allocation on Other Farm

Total family labor allocations on the farm than oil palm after price shock was 53.16 man-days per ha for 6 months, higher than that of before that period (44.22 man-days) as presented at Table 2. The increase of

labor time allocation showed the farmer response to the unexpected situation of price fall by increasing efforts to sustain their income level.

Table 2: Average Family Labor Allocation on Farms other Than Oil Palm Plantation Before And After Price Falls, 2008

No	Activity Types	Labor Time Allocation (Man-days/2 Ha/6 Months)			
		Before	(%)	After	(%)
1.	Fertilizing	1.25	2.83	0.55	1.03
2.	Maintenance	4.93	11.15	4.84	9.12
3.	Pesticide Spraying	2.85	6.46	2.71	5.09
4.	Harvesting	35.19	79.56	45.06	84.76
Total		44.22	100.00	53.16	100.00

4.1.2. Family Labor Allocation on Off-Farm Activities

The global crisis did not significantly influence family labor allocation on off-farm activities. The labor time allocation evenly during the year at the amount of 28.11 man-days per month on the activities, with highest proportion (26.67 %) spent on trading business since it can be done during the day and night time, without disturbing the time allocation for other activities.

4.1.3. Total Family Labor Allocation

Family labors of oil palm farmers were totally allocated at the amount of 232.60 man-days during six months before price fall, it increased slightly during the period of after price fall at 236.95 man-days with 317 man-days available from two family labor, there were still more than 84 man-days of unused family labor which were available for productive works. The small difference of labor time allocation between the two periods showed in significant influence of CPO and FFB price fall on farm household economic activities.

4.1.4. Income Contribution of Oil Palm Plantation

World price fall of CPO did not significantly affect the total income of oil palm household, and only reduce slightly its contribution to the total household income, as presented at Table 3. Oil palm plantation contributed on average 30 % to the total income.

Table 3: Oil Palm Income Contribution and Total Household income Before and After Price Fall, 2008

No	Income Sources	Income (Rp/year)			
		Before	(%)	After	(%)
1.	Oil Palm Plantation	7,274,671.03	31.06	7,340,812.02	29.84
2.	Other Farm Business	7,748,307.92	33.09	8,861,468.33	36.02
3.	Off-farm Activities	8,396,894.17	35.85	8,396,894.17	34.14
Jumlah		23,419,873.12	100.00	24,599,174.52	100,00

The unchanged oil palm income was caused by productivity compensation (from 9.12 tons to 16,47 tons per 2 hectare) to the FFB price decrease (from Rp1,737.50/kg to Rp1,137.16/kg). The higher productivity could be considered as the blessing of disguise since it was a nature of the trees that usually have lower yield at the beginning of the year and higher production at end year period.

4.1.5. Household Income Distribution

Gini index is a well known indicator for measuring equality level of household income distribution in one area or region. In this research it was shown Gini index value of 0.20, meaning that the income distribution among , oil palm households was rationally equal. The income differences were only caused by land size differences which infact did not really exist at the area. Todaro (2003) stated that income distribution is considered highly inequal, if the Gini index was at the value higher than 0.40.

5. Conclusion

Base on the research results, it can be concluded that family labor allocation at oil palm activities increased slightly from 11.91 man-days to 14.54 man-days after CPO price falls. In total the farmers still hired outside labor for maintaining their oil palm plantations, and spent more their time on other source of income activities.

The oil palm plantation contributed with insignificant difference to the total income of farm households at around 30 % during the two periods. However this contribution is still lower than income distribution from other economic activities carried out by the farm households.

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