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## **Is contract farming in the Indonesian oil palm industry pro-poor?**

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# Is Contract Farming in the Indonesian Oil Palm Industry Pro-poor?

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## Introduction

- In order to increase participation of the poor on oil palm development the government has enforced contract farming. Now, about 40 % of total oil palm area are owned by smallholders either independently or under contract with companies (MoA 2010)
- There is a debate on pros and cons of the impact of contract farming (Glover, 1984) in the oil palm industry (Rist et al, 2010)

## Objectives

- To assess the effect of contract farming on oil palm smallholders' well-being.
- To analyze the implication of contract farming in the oil palm industry for poverty reduction

## Methodology

### Data collection

Data were collected randomly from 245 smallholders (126 contract and 119 non-contract smallholders) in the District of Merangin, Province of Jambi Indonesia.

### Model

$$Y_h = \alpha X_h + \delta P_h + \mu_h$$

$$P_h^* = \beta Z_h + \varepsilon_h$$

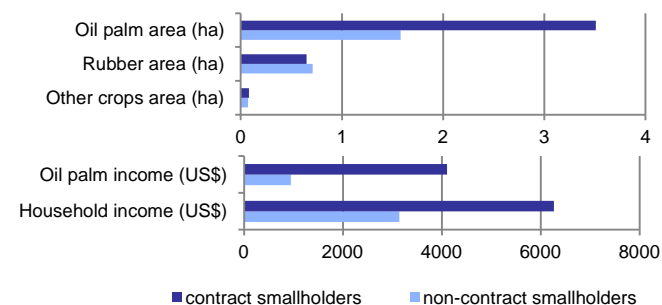
$$P_h = 1 \text{ if } P_h^* > 0, \text{ otherwise } 0$$

$Y_h$  = net household income  
 $X_h$  = Household characteristics  
 $P_h$  = dummy of participation  
 $Z_h$  = covariates of participation  
 $\mu_h$  = error term of household income  
 $\varepsilon_h$  = error term of participation

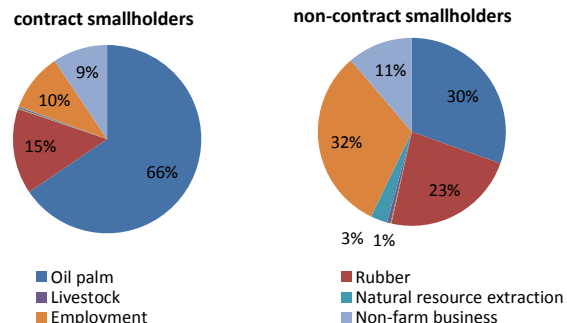
Endogeneity exists if  $\mu_h$  and  $\varepsilon_h$  are correlated. A treatment effect model is employed in order to deal with the endogeneity.

## Results

### Comparison of household characteristics



### Comparison of income portfolio



### Comparison of poverty headcount

| Contract smallholders | Non-contract smallholders | Total |
|-----------------------|---------------------------|-------|
| 23,0 %                | 49,6 %                    | 35,9% |

Note: \*Calculated using the US \$ 2 consumption poverty line (PPP)

### Econometric Results

| Variable                     | Model 1               |                       | Model 2               |                       |
|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                              | Overall sample        |                       | Poor                  | Non-Poor              |
|                              | 1 <sup>st</sup> stage | 2 <sup>nd</sup> stage | 2 <sup>nd</sup> stage | 2 <sup>nd</sup> stage |
|                              | Participation         | Income                | Income                | Income                |
| Age of husehold head         | 0.03**                | 0.04**                | 0.04                  | 0.02                  |
| Age square of household head |                       | -0.00**               | -0.00                 | -0.00                 |
| Household size               | 0.07                  | 0.07***               | 0.07                  | 0.09***               |
| Ratio of potential labor     | 0.68                  | -0.16                 | -0.23                 | -0.18                 |
| Education of household head  | 0.01                  | -0.01                 | -0.04*                | -0.01                 |
| Allocated land               | -0.29                 | -0.05                 | -0.21                 | 0.03                  |
| Social capital               | -0.01                 | 0.01**                | 0.01*                 | 0.01*                 |
| Origin dummy                 | -1.11**               |                       |                       |                       |
| Size of oil palm area        | 0.29***               | 0.16***               | 0.29***               | 0.14***               |
| Size of rubber area          | -0.03                 | 0.07***               | 0.11**                | 0.05*                 |
| Size of other crop area      | -0.01                 | 0.07                  | -1.08**               | 0.10                  |
| Age of oil palm              |                       | 0.02                  | 0.03                  | -0.00                 |
| Age square of oil palm       |                       | -0.00                 | 0.00                  | -0.00                 |
| Off-farm                     | -0.33                 | 0.31***               | 0.28                  | 0.36***               |
| Planted in 1989-1994         | 3.26***               |                       |                       |                       |
| Planted in 1995-2000         | 1.63***               |                       |                       |                       |
| PARTICIPATION                |                       | 0.47*                 | -0.86*                | 0.63**                |
| Constanta                    | -3.44***              | 8.19***               | 8.05                  | 8.74***               |
| Lambda                       |                       | -0.12                 | 0.63**                | -0.19                 |
| No. of observation           | 245                   | 245                   | 88                    | 157                   |

Note: \* p < 10 % , \*\* p < 5 % , \*\*\* p < 1 % . Source: own calculation

## Discussion

- Contract smallholders appear to be wealthier than non-contract smallholders.
- Participation in a contract can be explained by the age of household head, origin (migrant or indigenous), size of oil palm plot, and time of plantation establishment.
- Overall, contract farming in the oil palm industry has a positive impact on smallholders' income.
- Running a separate model for poor and non-poor group underlines the equity effect of contract participation. A significantly positive income effect can be shown for the non-poor group only.
- Poorer smallholders tend to lose from contract farming. They might be less able to apply input in the required manner and often cannot meet the strict credit repayment scheme.
- Propensity score matching was also applied, however the results are sensitive to hidden bias.
- Policy makers should review the contractual schemes and encourage oil palm companies to offer suitable contract terms for poor smallholders.

## References

- Glover, D.J. 1984. Contract farming and smallholders out grower schemes in less developed countries. World Development, 12, (11/12), 1143-1157.
- Rist, L. Feintrenie, L. Levang, P. 2010. The livelihood impacts of oil palm: smallholders in Indonesia. Biodivers Conserv 19, 1009-1024.
- Ministry of Agriculture. 2010. Statistics of crop estates.