



Oil Palm Boom, Contract Farming, and Rural Economic Development: Village-Level Evidence from Indonesia

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Summary. — Contracts between companies and local communities have been used in Indonesia for over 20 years to involve smallholder farmers in the emerging palm oil industry. Impacts of these contracts have not been analyzed systematically. Here, data from a village survey, spanning a time period from 1992 to 2012, are used to evaluate effects on rural economic development. Panel regression models with village fixed effects show that contracts have significantly contributed to wealth accumulation. Contracts signed before 1999 were more beneficial than contracts signed afterward, which is due to more public sector support and infrastructure investments during the earlier period. Contracts have contributed to decreasing inter-village inequality, not only because poorer villages were more likely to adopt a contract, but also because they benefited more from contract adoption than richer ones. The results suggest that well-designed contracts can be important for smallholder farmers to benefit from the oil palm boom. The village-level approach has clear advantages to evaluate direct and indirect economic effects, but it also has drawbacks in terms of analyzing environmental effects and issues of intra-village inequality. More research with various approaches is needed to better understand the multifaceted implications of oil palm contracts for sustainable rural development.

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1. INTRODUCTION

In response to the increasing global demand for vegetable oil, the production of palm oil has been extensively promoted in many developing countries. The emerging palm oil sector offered opportunities to spur rural economic development and alleviate poverty. To harness these opportunities, the government of Indonesia—the largest palm oil producing country worldwide—promoted ‘partnerships’ between commercial agro-industrial plantations and local communities (Feintrenie, Chong, & Levang, 2010). Such contractual arrangements were usually made with groups of farmers (Susila, 2004; Zen, Barlow, & Gondowarsito, 2005). While offering opportunities for economic development, the growing palm oil sector has also been associated with negative environmental and social effects. Several studies showed that the expansion of oil palm plantations has contributed to deforestation, loss of biodiversity, reduced carbon stocks, and conflicts over land (Colchester, Jiwani, Andiko, Firdaus, Surambo, & Pane, 2006; Carlson *et al.*, 2012; Hansen, Stehman, Potapov, Arunarwati, Stolle, & Pittman, 2009; Koh & Wilcove, 2008; Margono *et al.*, 2012; Rist, Feintrenie, & Levang, 2010). Furthermore, contracts with groups of smallholders often lack transparency and sometimes benefit private companies more than local communities (Rist *et al.*, 2010). Also within communities, access to contracts may be unequal and benefits are not always evenly shared (Cahyadi & Waibel, 2013; Cahyadi & Waibel, 2016; McCarthy, Gillespie, & Zen, 2012). On the other hand, there are also studies showing that the emerging palm oil industry in Indonesia has contributed to improved livelihoods in rural areas (Cahyadi & Waibel, 2013; Feintrenie *et al.*, 2010; McCarthy, 2010; Rist *et al.*, 2010). Overall, the findings are mixed and often based on case-study evidence from a small number of communities.

We add to this literature by providing a quantitative analysis of the effects of contracting with palm oil companies on

rural economic development, using data from a large number of communities. The study builds on village-level panel data that we collected through a survey in Jambi Province, Sumatra, one of the hotspots of the recent oil palm boom in Indonesia. Through recall questions asked to village leaders and other community representatives, the data span a time period from 1992 to 2012. The village-level perspective takes into account that it is usually groups of farmers, rather than individuals, who participate in contract schemes with palm oil companies (McCarthy & Cramb, 2009). Another important advantage of using the village as the unit of analysis is that this allows us to capture not only direct but also indirect effects of contract farming. For instance, wealth accumulation among contract participants may also benefit non-participants in the same community through economic spillovers. Moreover, the Indonesian government has supported the emerging palm oil industry through investments into transportation and market infrastructure (Larson, 1996). Such investments have likely affected all villagers to some extent, not only those directly engaged in contract schemes.

In spite of these advantages, using the village rather than the individual household as the unit of analysis also has drawbacks. In particular, with the village-level data we are not able to analyze effects of contracts on intra-village inequality, or on specific groups such as certain ethnicities or female-headed households. We try to estimate impact heterogeneity by focusing on inter-village differences, but acknowledge that this cannot substitute for more detailed analyses at the household level. Each approach has its advantages and disadvantages. This village-level research is part of a larger project looking at the effects of oil palm developments in Jambi (Drescher *et al.*, 2016), and this larger project also includes analyses with household-level data (Euler, Krishna, Schwarze, Siregar, &

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Qaim, 2017; Euler, Schwarze, Siregar, & Qaim, 2016). The different approaches complement each other and can thus contribute to a deeper understanding of the effects at different levels.

The remainder of this paper is organized as follows. In the next section, we present a brief historical account of oil palm developments in Indonesia with special emphasis on contract farming in Jambi. The village-level survey and the methods used for data analysis are introduced in Section 3, before the results are presented and discussed in Section 4. Section 5 concludes.

2. BACKGROUND

In Indonesia, two major phases of oil palm development can be distinguished: first, the government-led phase (1970–1998) and, second, the market-oriented phase (1999–present) that was initiated after the fall of Suharto's New Order regime (Budidarsono, Susanti, & Zoomers, 2013; Larson, 1996; McCarthy, 2010; Zen *et al.*, 2005). In this section, we present a brief historical account of oil palm developments in Jambi Province during these two phases with particular emphasis on the role of contract farming arrangements.

(a) Government-led phase

Throughout the first half of the twentieth century, the palm oil sector had only been marginally developed in Indonesia. Only during the late-1960s, the Indonesian government's involvement in the sector started to pick up when former Dutch plantation estates were reorganized into independent management units, or *Perseroan Terbatas Perkebunan* (PTP). During 1969–88, government investments in the palm oil sector were channeled through the PTPs (Larson, 1996). During this period, the Indonesian government also started to actively involve smallholder farmers in the sector as a mechanism to promote rural development (Budidarsono *et al.*, 2013; Zen *et al.*, 2005). Participation of smallholders in the palm oil sector was initially often linked to the government's transmigration program. The transmigration program involved the resettlement of families from densely populated islands, such as Java, to islands with lower population density, such as Sumatra (Fearnside, 1997).

During the PTP period until 1988, the government cleared lands and planted large-scale oil palm plantations close to newly established state-owned palm oil mills. Sponsored smallholders, mostly transmigrant families, were given 2–4 ha of oil palm land and technical assistance on oil palm production and management. Smallholder families managed their plots themselves, including the harvest of the fresh fruit bunches which they delivered to the state-owned palm oil mills for further processing (Larson, 1996).

During 1988–94, the Indonesian government sought to further stimulate the palm oil sector by gradually involving private companies. To support private companies, the government invested in infrastructure development, issued large land concessions, and provided subsidized loans. In exchange, companies were required to involve smallholders into their plantation plan (Larson, 1996). The community–company partnerships during that time period are referred to as *Perkebunan Inti Rakyat* (PIR), Nucleus Estate and Smallholder (NES) schemes, or Inti-Plasma systems. Typically, these partnerships had the company estate at its core (Inti) and were surrounded by smallholder plantations (Plasma) (Feintrenie *et al.*, 2010).

Inti-Plasma systems could involve transmigrant families or also autochthonous smallholder farmers. As before, transmigrants received 2–4 ha of oil palm land. Autochthonous smallholders, on the other hand, had to surrender a certain amount of community land to the company. While the amount of land that had to be surrendered could vary from case to case, a typical Inti-Plasma mix during that period was 80/20, meaning that 80% of the total community land involved in the scheme had to be surrendered (Larson, 1996; Rist *et al.*, 2010). In return, the smallholders received an oil palm “package” from the company, comprising several services such as the preparation of the land, planting of high-yielding oil palms, and agricultural training during the first four to five years. Furthermore, the package included the provision of agricultural inputs, such as fertilizers, herbicides, and pesticides (Zen *et al.*, 2005), as well as loan schemes with long repayment periods of usually 20 years. Participating farmers could use these loans to cover operational costs (Fearnside, 1997). Companies also provided employment on their large-scale plantations. Especially during the initial four to five years, this employment was critical to bridge the initial income gap experienced by smallholders before their oil palms started to yield.

Transmigrants obtained a formal land title for the land allocated to them. This land title was kept by the bank as collateral until the loan was fully repaid. In comparison, most autochthonous farmers in Sumatra do not hold formal land titles but rather rely on customary land rights (Murdiyarto, Noordwijk, Wasrin, Tomich, & Gillison, 2002). McCarthy *et al.* (2012) argued that the autochthonous population in Jambi remained poor because they frequently rejected offered contract terms that they considered in conflict with customary land-use practices.

After 1995, the Indonesian government decided to retreat from its active role in community–company partnerships and assumed a monitoring function instead. The government continued to provide subsidized loans to palm oil companies. In return, these companies had to follow particular rules for Inti-Plasma systems. The transmigration program was gradually phased out. Hence, new contracts with smallholders predominantly involved community land. While smallholders still received the above-mentioned oil palm package as part of their contracts, some of the other conditions changed. Villages interested in obtaining a contract were required to establish a farmer cooperative that would function as an intermediary between farmers and the private company. Cooperatives were responsible for gathering suitable village land, which would then be handed over to the company collectively for plantation development (Larson, 1996). Contracts established at the cooperative level were binding for all members, even though in most cases not all farmers living in the village became cooperative members. After a contract was signed, it was usually not possible for other farmers to join the scheme at a later stage (McCarthy, 2010).

A few more details on how the contracts between companies and local communities were negotiated may be useful as a basis for the empirical analysis below. Before a contract was concluded, a company representative—hereafter called an ‘investor’—visited a village, in order to start initial discussions. The investor usually attended a few village meetings to socialize with local farmers and communicate the possible benefits of oil palm cultivation for the village and the participating smallholders in particular. When both parties were generally interested, the investor proposed a contract. The components included in the oil palm package were relatively fixed, even though prices for inputs and outputs, loan amounts, interest rates, and a few other details were negotiable (Feintrenie

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