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Large Plantations versus Smallholdings in Southeast Asia: Historical and Contemporary Trends

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Abstract

This paper seeks to build on and provide empirical evidence concerning a: over the long term, in most of tropical Asia and Southeast Asia, it is not large farms that replace small ones, since, on the contrary, what is clearly occurring is a transition from plantation to smallholders for an important number of cash crops. Then why is this recent surge in large-scale land acquisitions occurring? To examine this issue, we seek to bridge the recent literature on land grabbing with the long-established debate on the relation between large and small farms. For this, we intend to investigate historical transformation of perennial tree crop production in Malaysia and Indonesia, two dominant cash crop producers. To do so, we focus on two important sectors, rubber and palm oil, both major cash crops in those countries, for which smallholders claim a large share of ownership. First, we briefly revisit discussions on the relation between large and small farms to identify key issues in the debate in lieu of conceptual framework. Second, with regard to the cultivation of rubber in Malaysia and Indonesia, we provide a historical perspective on the institutional and economic contexts which defined the relation between small and large farms. Third, for comparative purposes, we attend to the more recent expansion of oil palm in the region involving the emergence of smallholdings. For both crops, we are paying particular attention to national agricultural policies and context that favoured the consolidation and development of smallholder plantation agriculture. Finally and more generally, we discuss the issue of labour and employment.

Introduction

Following the 2008 surge in international land deals, several authors have provided a well-informed critique of large-scale agribusiness expansion in the South and its actual and potential negative impact on rural population welfare (Zoomers 2010; Borras et al. 2011; Franco 2012). After extensive reviews of case studies, this form of expansion has even been identified as the 'least desirable' option for development (De Schutter 2010, 20; 2011).

For the purpose of this paper, in which we will focus on Malaysia and Indonesia, we retain from this debate that current large-scale land acquisitions rest upon the assumption that smallholders, on their own, largely lack the capacities to achieve better productivity (Dove 1999, McCarthy and Cramb 2009). Whether this is true or not in specific contexts, many governments and development agencies often persist in believing that the most efficient mean to achieve needed improvement in production are large-scale agribusiness ventures. Our intention here is to revisit this question through a brief and preliminary comparison of the respective accomplishments of large versus small plantations as well as of their relations throughout Southeast Asia since the early 20th century and particularly over recent decades. But first, there is a need to look as some relevant and recurrent debates.

Since the beginning of the industrial era, the idea that small family farms or smallholders were destined to be replaced by large industrial farms has been continuously reasserted by a broad range of stakeholders (Brookfield 2008). And this idea keeps resurfacing despite the growing wealth of evidence that demonstrates the advantages of family farms and small farms, and why they are still around (Hayami 1996). The current land grab debate has drawn attention to a situation whereby large farms threaten to subsume peasant systems. When large-scale land transactions occur, local smallholders are at risk of being dispossessed or adversely integrated in schemes as contract farmers or workers (McCarthy 2010). However, large-scale land grabbing cannot sum up the whole picture, but rather appears as an aberration on a longer historical trend, if we consider that large industrial farms remain the exception in a world of family farms (Brookfield 2008). The recent land grab debate should not either obscure the fact that throughout most of Southeast Asia, for key sectors such as rubber, coffee and cocoa, smallholders have largely taken over large farms as the main producers.

Our paper therefore seeks to build on and provide empirical evidence concerning a problem highlighted by Byerlee (2014): over the long term, in most of tropical Asia and Southeast Asia, it is not large farms that replace small ones, since, on the contrary, what is clearly occurring is a transition from plantation to smallholders for an important number of cash crops. Then why is this recent surge in large-scale land acquisitions occurring? To examine this issue, we seek to bridge the recent literature on land grabbing with the long-established debate on the relation between large and small farms. For this, we intend to investigate historical transformation of perennial tree crop production in Malaysia and Indonesia, two dominant cash crop producers. To do so, we focus on two important sectors, rubber and palm oil, both major cash crops in those countries, for which smallholders claim a large share of ownership. First, we briefly revisit discussions on the relation between large and small farms to identify key issues in the debate in lieu of conceptual framework. Second, with regard to the cultivation of rubber in Malaysia and Indonesia, we provide a historical perspective on the institutional and economic contexts which defined the relation between small and large farms. Third, for comparative purposes, we attend to the more recent expansion of oil palm in the region involving the emergence of smallholdings. For both crops, we are paying particular attention to national agricultural policies and context that favoured the consolidation and development of smallholder plantation agriculture (Courtenay 1965; Fisher 1966). Finally and more generally, we discuss the issue of labour and employment.

The small versus large farms debate revisited

Whether it appears over time as competition or cooperation, the relation between large and small farms forms the very core of the agrarian question (Hayami 1996). Smallholdings are usually defined in official statistics as land holdings under 40 hectares in some countries, and 20 hectares in most. However, in Southeast Asia, perennial cash crop smallholdings usually cover between one and four hectares (Fox and Castella 2013), even if at times some authors have set the upper limit much higher (Ooi 1963, p. 187-9; Fisher 1966, p. 319-21). Smallholdings are better defined by their qualitative characteristics, which is their primary reliance on family labour, or at least on a small labour force that does not require bureaucratic management structures, which is the case with large holdings.

Kautsky (1899, 1988 edition), was among the first to try and move beyond the mere description of the teleological transition from traditional peasant agriculture to large industrial farms to analyse the relation between peasants and industrial farms in Germany. As he states, with the development of capitalist farming, “the small farm ceases to compete with large farms; in fact […] it (small farms) fosters and supports them (large farms) by providing wage-labourers and a market for their produce” (173). He points to a potential integration of both production systems, to the benefit of large farms for which small ones become a repository of labour and market opportunities. Although Kautsky’s insight is informative and actually largely describes some cash crop sectors, it is insufficient to capture the variety of forms of integration between plantations and smallholders in Southeast Asia. And most notably, it does not take into account the exact opposite situation, a situation where smallholders are able to dominate a sector, although estate companies may keep a leading position in technical innovation, as in the case of rubber and oil palm production in both Malaysia and Indonesia.

Historically, the success of smallholders in cash crop production has, to some extent, depended on state support, which has widely fluctuated over time. If competition between small and large farms is inherent to the emergence and diffusion of cash crops, it is necessarily mediated by economic and institutional factors. In this regard, Barlow and Jayasurija (1986) have proposed a model that appears useful to understand how policies and relative abundance or scarcity in factors of production shape conditions of production for smallholders. In a situation of low access to capital and infrastructures, but relative abundance of land, the cash crop is “fitted into a subsistence agriculture previously devoted to other activities” (p.639). As governments engage in pro-poor development in rural areas, forms of cooperation between smallholders and estate appear through state programs which speed up agricultural modernisation and infrastructure development. When urbanisation and industrialisation are sustained over decades, rural labour shortages exert an upward pressure on wages. However, capital becomes more accessible and infrastructures reach a level of maturity that favours to some extent smallholder involvement.

Smallholders throughout Southeast Asia have rapidly engaged in plantation crop production, in some cases despite policies that were clearly adverse to them in the first stage of perennial cash crop diffusion (Bauer 1948; Lim 1977). However, from the 1960s onward, the governments of Malaysia and Indonesia, aware that smallholder agriculture represented an adequate mean of rural development, designed programs to improve the production capacity of smallholders through various forms of assistance and service provision. This approach was founded on the argument associated with agrarian economist Chayanov, according to which the small family farm is a more productive unit than large estates (Booth 1988, 21). In situ technical advices, distribution of improved varieties of tree crops as well as replanting loans were extended to vast smallholders’ populations (Barlow and Jayasuriya 1984). However, in parallel, a more costly avenue has been pursued in the formation of agribusiness schemes for resettled smallholders. This model described as a ‘guided yeomanry’ combines central supervision of “certain processing and other general services with quasi-independent small farm units in the production phase” (643). Such smallholding schemes imply a fundamental distinction between

independent smallholders, and those who take part in schemes and who we will refer to as tied or organised smallholders.

The literature from Asia consistently highlights that family owned smallholdings are more efficient than large farms in terms of production costs and that their practices are also more ecologically sound (De Koninck 1979, 1983, Hazell et al. 2010). Some time ago already, Myint (1965) and Lewis (1970) pointed out that the involvement of smallholders in the production of plantation crops in Southeast Asia from the late 19th century onward was a significant contribution to economic development in the region (Hayami 2002, p. 69). Although independent smallholders have been characterised by much lower yields than plantations in most contexts[1] their overall production expenses remain inferior, despite diseconomies of scale. This has been highlighted by studies comparing production costs for oil palm smallholders and estates in Malaysia (Malek and Barlow 1988; Ismail et al. 2003). In these studies, although the costs of maintenance and harvesting are higher for independent smallholders, their overall production costs remain lower given that management expenses are practically inexistent. In the case of rubber in Indonesia, low production costs derive from agroforest production systems which require less maintenance costs (Budiman 1996). In fact, reliance on family labour is usually the main factor explaining why small family farms are more efficient than large ones relying on hired labour which necessitates costly supervision (Muyanga and Jayne 2014, 4).

In most cases, as smallholders come to control a growing share of a cash crop production, the vertical integration between production and processing which characterises estates is replaced by the emergence of smaller independent processors. This has been observed in the tea sector in Sri Lanka, as well as in the rubber sector in Indonesia (Herath and Weersink 2009). This generates a production system in which "independent parties coordinate through market mechanisms" instead of a system where production and processing are readily integrated (p. 1759). It has also been argued that commodities with less constraining seasonal cycles, less demanding technical characteristics as well as lower investment requirements, as is the case with many perennial tree crops, are more suited to a decentralized system of independent growers and processors (Hayami 1996). For some crops, large buyers and marketing actors have no interest in controlling production, which smallholders are better equipped to assume, even if their technical innovation capacities have been historically weaker due to their limited access to knowledge and capital without government support programs (Barlow and Jayasuriya 1984). Therefore, besides policies and factors of production, specific crops such as rubber, due to its biological characteristics and to the physical characteristics of latex, are particularly suitable to independent smallholder production. However, this does not mean that smallholders can be responsive to market opportunities if agricultural policies are unfavourable to them.

A historical view of rubber production

The transition from plantation to smallholder corresponds to a widely observed pattern in tropical Asia, particularly evident with the case of rubber in Malaysia and Indonesia at least. The rubber (*hevea brasiliensis*) crop originated from South America and was smuggled out of Amazonia to be introduced in Southeast Asia in the late 19th century as a plantation crop in British colonies. The demand for rubber surged rapidly in the early 20th century with the development of the automobile industry. Byerlee (2014) based on Bauer (1948) explains that in this early stage, the important costs required for the pioneering of a new crop could only be assumed by foreign investors in search of highly profitable, thus risky, business opportunities. This pattern can actually be observed for a large number of cash crops first introduced by estate companies under highly favourable land and labour policies of colonial

[1] With the notable exception of FELDA settlers during the early 1980s (De Koninck 1986, p. 363).

administrations for the allocation of concessions. In the pioneering phase especially, estates seek vertical integration of production and processing in order to secure supply, since the crop is not yet widely produced. However, large capital investments immobilised in plantation agriculture development, along with management and upkeep costs, render investors vulnerable to price fluctuation and political upheaval.

This explains why a large number of small rubber planters did not survive the price slump in the 1910s and 1930s[2]. However, rubber cultivation which had spread quickly outside the vicinity of plantation belts among smallholders, as extensive 'jungle rubber', had a highly elastic production system which proved more resilient to price fluctuation (Bauer 1948, 58). Rubber can be produced outside the plantation system, given the low level of capital and knowledge necessary to start production, and the fact that processing of latex, once it is harvested, is not time-sensitive and does not require elaborate and costly infrastructures. Rubber is a labour-intensive crop since tapping and field maintenance require important resources. Smallholdings have "low fixed costs and alternative subsistence activities" and therefore proved more economically viable than conventional estates (Barlow and Jayasuriya 1986, 640). In fact, rubber smallholders have the possibility to hedge price fluctuations by integrating different crops in their production systems, while relying on different sources of income (Lim, 1977; Dove 1993). They can switch to a low input low output system while investing more time and labour in other farm or off-farm activities.

During this first stage of rubber diffusion, competition between estates and smallholders was most acute. This competition took several forms. In Malaysia, at the beginning of the 20th century, the involvement of smallholders in rubber production was largely ignored by the colonial administration. However, after prices collapsed in the 1910s and 1930s, the rubber industry attempted to regulate production at the international level in order to prevent overproduction. It was done through successive systems of regulation[3], notably, the International Rubber Restriction Scheme of 1933 involving the British territories and Netherland East Indies. The 1933 Restriction Scheme implied the allocation of quotas calculated according to assessments of production capacities in each administration. According to Gordon (2001, 858), although it was virtually impossible to assess the real production capacity of smallholders[4], associations of rubber planters were well aware that smallholders were more productive than estates[5]. Officials would have deliberately underestimated smallholders' yields and overestimated those of estates to safeguard their quota. The International Restriction Scheme was apparently efficiently enforced among smallholders in Malaya as rubber production was physically concentrated in the more accessible coastal areas. As for the Netherland East Indies' administration, it had to resort to a special tax on rubber export by smallholders, which achieved a certain level of production restriction. Up to 1940, the production share of Malayan smallholders remained under 40% (Table 1) and the ratio remained relatively stable until the 1960s (World Bank 1989).

Measures deployed through the Restriction Scheme to attempt to curb the expansion of

[2] As explained by Bauer (1948) the economic crisis of the first half of the 20th century bankrupted most of the smaller planters who did not have the financial capacities to withstand decline in prices. It was a time of consolidation for the largest estate companies, most of which are still active today.

[3] The Stevenson Restriction Scheme in Malaya (1922-1928). This measure attempted to discourage the alienation of new land for rubber planting, confining rubber expansion to unplanted land banks. However, the vast majority of smallholders did not possess land reserves and this measure amounted to a restriction of smallholder production.

[4] Figures provided by Whitford's assessment (1929) were approximations in most cases and according to Gordon (1948, 2) a guess in the case of smallholders' planted areas in Indonesia.

[5] Reasons explaining why smallholders were able to attain higher yields than plantations are provided by Bauer (1948) and summed up by Gordon (2001, 858). At the beginning of the 20th century, smallholders practiced closer tree planting and had developed better erosion control as low maintenance allowed the development of a weed and bush strata on the ground, while in rubber estates the ground was usually cleared.

smallholder rubber production in a context of price volatility are an example of the competition between estates and smallholders. It shows how policies favourable to estates may have slowed down smallholder progression in terms of share of production and area cultivated (Table 2).

The rise of rubber smallholders in Malaysia

As stated in a World Bank report (1989, 3) about Malaysia, although rubber production globally expanded in the country from the 1960s to the 1980s, "the estates' contribution to national rubber production fell from about 60% in 1965 to about 29% in 1988, while the contribution of the rubber smallholder sector increased from 40% to about 71% over the same period". This shift occurred while total output was globally in an upward trend until the 1980s (Table 4). There are two main reasons behind this shift. At the time of independence, the fact that older trees at the end of their productive cycles were still being tapped on estates, while rubber prices remained volatile, explains why most rubber estates decided to switch to oil palm. Simultaneously, a comprehensive and well-funded program of assistance was deployed to encourage new planting and replanting of improved rubber varieties in the smallholding sector (Sukirno 2004). The agency established to administer the replanting programme in the 1950s later on became public and is now known as RISDA (Rubber Industry Smallholder Development Authority). RISDA, and to a lesser extent FELDA[6] and FELCRA are largely responsible for the success of rubber smallholders in Malaysia which now produce over 80% of total rubber in Malaysia and control 94% of rubber land (Table 2).

RISDA, which retains a central role in overseeing smallholder rubber development, has been pursuing, as stipulated in the 9th Malaysia Plan (2006-2010)[7], the diffusion of new high-yielding varieties for replanting and new planting (Mustapha 2011). Despite these efforts, rubber smallholders in Malaysia are still characterised by relatively low income and yields that remain below the optimal levels obtained by estates (Nazim, RISDA 2002). However, it must be noted that smallholders' yields, following those of estates have continually increased, gaining ground over the years, to a point where they are now only some 10% lower (Table 3). The continuity of RISDA clearly demonstrates the consideration for rural development and the importance of rubber even if, since the early 2010s, Malaysia has been importing more natural rubber than it produces, the major source of imports being Thailand. This clearly reflects the development of industrial processing capacities in the country (Malaysia Rubber Board 2014). In a high income and industrialised society such as Malaysia, the main issues regarding rubber production are currently labour shortages, growing costs of production and ageing of producers, all contributing factors to the recent decrease in production (Nazim, RISDA 2002).

The challenges for rubber smallholders in Indonesia

In Indonesia, the cultivation of rubber by smallholders over a large territory in scattered plots and the

[6] Federal Land Development Authority (FELDA) administered the establishment of rubber resettlement schemes and contributed to extend access to high yielding rubber mainly to impoverished Malay peasants in the from the late 1950s and throughout the 1960s, but rubber proved less reliable than oil palm as a sole source of income, and FELDA largely switched to oil palm (McAndrews 1978, 13-15).

[7] The 9th Malaysia Plan 2006-2010 (2006, 94) announced the allocation of funds to replant 383,010 hectares with rubber and oil palm to be been undertaken by The Rubber Industrial Smallholders development Authority (RISDA) and FELDA. RISDA has met the target according to Mustapha who also states: [...] "The primary objective of establishing RISDA is to assist rubber smallholders in increasing productivity and efficiency via replanting of old rubber trees with new hybrid rubber seeds. Besides this objective, the agency's goal is to create a new generation of farmers that can withstand competition and meet the current commercialisation needs and thus contribute to the future development of the industry and the nation." (Mustapha 2011, 156-157).

weak administrative control have historically limited the restrictions that could be effectively imposed on smallholders (Bauer 1948, 101-103). The current distribution of rubber cultivation in Indonesia is the clear result of a gradual diffusion from a plantation belt, and widespread adoption of the crop by smallholders[8]. This is evidenced by the regular increase in the share of rubber land cultivated by smallholders. By 2005, Indonesian rubber smallholders produced 73% of rubber although they cultivated 83% of the land allocated to the crop (Wulan et al. 2006). Most smallholder systems are classified as "jungle rubber" characterised by "unimproved" techniques. According to the Rubber Association of Indonesia (GAPKINDO), smallholders yields in 2012 remained on average substantially lower (1000 kg/ha) than those on government estates (1400 kg/ha) while being equivalent to only half the yields on private estates (2000 kg / ha) (Dalimunthe 2013).

The problem of low yields among rubber smallholders has been a concern for Indonesian authorities since independence. In 1991, Barlow and Tomich wrote (p. 31) "the yields of smallholder crops are low compared with those on estates, and have changed little over the last decade…" They also maintain that "systems of smallholder tree crop in the 1990s have changed little since they evolved from shifting subsistence cultivation…" (p.35). Most smallholders' management techniques remained extensive due to the reliance on old and low yielding varieties, while having limited access to capital (Table 4). However, these systems are considered as agroforests which provide, aside from rubber, a wide array of ecological services as well as non-timber products (Wulan et al. 2006). Nevertheless, agriculture officials and policy makers pursued the modernisation of rubber production among smallholders, considering agroforests as constraining for achieving higher yielding practices based on exogenous input (Barlow and Tomich 1991).

From the 1950s to the mid-1970s, the main form of *in situ* assistance consisted in providing tree crop extension services, such as setting up nurseries in different regions in order to distribute improved seeds and making small loans available for inputs. However, these efforts have remained underfunded, understaffed and insufficient to provide nationwide significant improvements (Barlow and Tomich 1991, 43). Subsequently, in the 1970s more substantial measures were undertaken to improve smallholder rubber yields through 'block schemes', i. e. contiguous land schemes covering from 300 to several thousand hectares depending on the project, in which each farmer received two hectares (PMU and PRPT) (Barlow and Tomich 1991, 44-47). This approach provided access for organised smallholders to high yielding clonal rubber responsive to chemical inputs, although the outcome of each scheme depended on specific institutional and managerial conditions. Yet, as a result of such initiatives, smallholder clone plantations cover 19% of all rubber land in the country, representing in theory a group of rubber smallholders practising a more intensive form of cultivation (Wulan et al 2006). The schemes, although considered very expensive and too capital intensive, contributed to spreading high-yielding varieties in surrounding areas. However, until now, both approaches seem to have had limited impact on smallholder productivity and level of wealth. Nevertheless, Indonesia is the second largest producer of natural rubber after Thailand in 2013, although Indonesian yields have since the 1990s compared poorly with those of Thailand (Table 5).

The oil palm boom and its consequences for smallholders

Oil palm is a tree crop from West Africa first cultivated in Southeast Asia as a plantation crop in the early 20th century[9] and which has expanded territorially more recently than rubber. But to such an

[8] Bauer (1948, 103) tells about a report provided by the U.S. Trade Commissioner in Batavia who took a newly established road through the jungle. The opening of the road revealed, many miles away from native villages, large areas of rubber, tapped only sporadically, and accessed by local inhabitant through jungle paths.

[9] In Central and Western Africa, where it had been cultivated as a smallholder crop for centuries, oil palm was first grown as a plantation crop in the late 1890s and early 1900s in several colonial domains. It expanded

extent that it is now much more widespread, having overtaken rubber by the turn of the century (De Koninck et al, 2015). Due to the versatility of palm oil in food and non-food uses, expansion has been rapid since the 1980s and the crop now covers over 12 million hectares in Indonesia and Malaysia. Comparatively, in these two countries rubber extends in total over only 4.5 million hectares (Tables 5 and 6). However, region wide, rubber has actually gained ground, with, by 2012, nearly eight million hectares covered with *hevea* trees. This is of course largely attributable to the expansion of rubber cultivation in Thailand, where it now covers nearly twice as much land as in Malaysia. This is an illustration of the frequent swapping and substitution in the cultivation of cash crops that have for a long time been going on throughout Southeast Asia (De Koninck and Rousseau 2012).

In this context, over the last decades, throughout Malaysia and Indonesia, estates and smallholders have been replacing rubber with oil palm (Fox and Castella 2013). The crop offers the highest yields per hectare and the lowest cost of production of all vegetable oils. To those clear advantages, must be added a growing demand for oil palm which, along with sustained high prices, largely explain the boom of the last decades (Weil 2010)[10]. Although a tree crop like rubber, oil palm does not provide the same advantages to smallholders as rubber agroforests. Oil palm cultivation is more capital intensive than that of rubber and has more specific requirements in terms of input and chemical treatments. Moreover, as the oil is extracted from fresh fruits, processing is time-sensitive since the quality of oil decreases quickly after harvest. As a result, mass palm oil production for industrial purposes requires complex and costly infrastructures, and relative geographical proximity between production and processing zones, elements which have not deterred the expansion of the crop among smallholders.

In Southeast Asia, oil palm was first cultivated in the early 20th century by European planters on a relatively small scale in plantation belts of North Sumatra and Selangor (Fieldhouse 1978, 505). Although in West and Central Africa it had been produced by smallholders for centuries, in its pioneering phase in Southeast Asia, oil palm was almost exclusively cultivated on estates (Thee 1977, 57-64). In part due to the rapid expansion of oil palm estates, by 1938 North Sumatra was the largest single exporting region in the world (Airriess 1995, 79). The first palm oil mill was built in 1917 in Peninsular Malaysia; however the production remained small in scale until the 1960s. The pioneering stage for oil palm estate production lasted much longer than for rubber, as it is only towards the last third of the 20th century that smallholders adopted the crop on a large scale.

Oil palm in Malaysia: successful integration between large and small farms?

Although Indonesia (North Sumatra) had been the dominant producer of palm oil since its introduction in Southeast Asia, sector since the 1960s political circumstances have favoured the Malaysian. Public investments in agricultural research infrastructures in Malaysia were gradually geared towards oil palm as part of a strategy to diversify the plantation economy that had become too heavily reliant on rubber (Tate 1996, 51). With extensive integration between government and private investments from emerging conglomerates, Malaysia became the cradle of technical innovations in this sector[11]. In the

noticeably after the development of high yield standardized varieties in the Belgian Congo by William Lever who established the company *Huileries du Congo Belge* (HCB). From 1911 to the 1920s, HCB relied on peasant oil palm fruits collected through a labour tax (Fieldhouse 1978, 505; see also Nicolson 1960).

[10] As Weil (2010, 360) states, oil palm remains unchallenged in terms of yield per hectare. This crop globally produced more oil on 14 million hectares than soybean over 100 million hectares, not to mention its profitability and the properties of palm oil which overall fare quite well when compared to other oils.

[11] The creation of the Palm Oil Research Institute of Malaysia (PORIM) by a governmental decree in 1979 sought to centralize research to improve the dissemination of findings among Malaysian companies (FAO/UNDP 2001). PORIM has since been merged with the Palm Oil Registration and Licensing Authority (PORLA) to form the Malaysian Palm Oil Board (MPOB).

early 1960s, FELDA was empowered to open large agro-industrial oil palm schemes for the resettlement of a class of impoverished peasants mainly from Malay ethnicity. Between 1965 and 1990, FELDA alone accounted for a third of all newly planted oil palms in the country (Gustafsson 2005, 66). A large class of organised smallholders, provided with planted oil palm plots of four hectares in a vertically integrated structure of production and processing, thus emerged, accounting by 2011 for 25% of oil palm land in the country (Table 7). In most cases, FELDA oil palm schemes were successful in providing resettled peasants an income far above the poverty line (De Koninck 1986, Bahrin 1988).

In tandem with FELDA's large-scale land development in the 1960s and 1970s, private estates joined in by engaging in massive oil palm expansion. The extension of infrastructures (roads, mills and input supply) for both conventional estate and land development schemes, if they meant large-scale public land conversion, also allowed for the widespread adoption of oil palm cultivation by independent smallholders. By 2011, these were cultivating over 14% of all land devoted to oil palm in the country (Table 7). The growing share of oil palm cultivated by independent smallholders represents a major achievement in Malaysia (Cramb and Sujang 2013). These smallholders own on average 2.6 ha plots, with the vast majority cultivating plots of less than four hectares. Between 2000 and 2011, the area devoted to oil palm by smallholders has more than doubled, reaching over 700,000 hectares, concentrated in the state of Johor (Ismail 2003; Omar et al. 2012). Their emergence is recent, as it depends on the relative proximity of a mill, reliable transport infrastructures and availability of capital and chemical inputs.

While by the early 1990s[12] FELDA and other agencies had abandoned new development for smallholders, private and independent smallholders pursued expansion. This reflects the new policy orientations in Malaysia, whereas the state has been withdrawing from large projects to entrust agricultural development strictly to private interests (Fold 2000), a situation that raises new challenges for smallholders. In Peninsular Malaysia, FELDA oil palms would be ageing and insufficient funds have yet to be made available for replanting (Profundo 2012). Moreover, in the Malaysian states of Sabah and Sarawak, agricultural policies clearly favour estates at the expense of smallholders (Cramb and Sujang 2013), and the rapid expansion of private plantations has led to competing claims around customary land rights (De Koninck et al. 2011). Nevertheless, one should not conclude too hastily that smallholders are being completely abandoned. For example, RISDA programs encourage independent rubber smallholders to integrate the cultivation of oil palm in their production systems in order to diversify livelihoods and increase incomes (Mustapha 2011, 156).

Does the future of oil palm belong to smallholders in Indonesia?

In Indonesia, the initial oil palm boom of the 1920s-1930s in North Sumatra was followed by a period of stagnation and slow growth. This lasted until the state plantation company (PTPN) started expanding production in the 1980s through conventional estates and smallholding schemes. In the 1990s, private Indonesian companies with close ties to political power invested massively in oil palm agribusiness. Concomitantly, Malaysian oil palm companies, attracted by low land and labour costs,

[11] FELDA adopted the structure of a conventional private plantation company in the 1990s. As stated in an economic report Profundo (2012, 2): "in 1990, when some 113,000 families were resettled, FELDA stopped accepting new settlers. Although the Group Settlement Areas Act of 1960 stipulates that it is FELDA's duty to manage the land for the settlers and that the Authority should not own land itself, a new course was chosen by focussing on the commercial development of a new plantation land bank. Instead of redistributing the land to settlers, FELDA Holdings was incorporated in 1995 as the plantation management arm of FELDA. It soon developed into one of the largest plantation companies in the world." If factors explain why FELDA abandoned smallholders' schemes – raising costs of land, large tracts of land now being scarce, the lesser need for rural development – its transformation into an international private plantation company clearly reflects the financial turn of the 1990s in Malaysian political economy, which affected most state owned companies.

launched an important expansion phase in Indonesia after further liberalization of foreign direct investments[13]. As a result, Malaysian and Indonesia oil palm sectors have become closely integrated (Gustafsson 2005, 68).

Although the Indonesian government appeared highly favourable to oil palm private estates, most often at the expense of indigenous peoples' land rights (Colchester 2011), since the 1980s it has nevertheless favoured the formation of a large class of smallholders. The long-existing state program of transmigration played a central role in the development of oil palm schemes. In the 1980s, the state plantation company (PTPN) implemented the first oil palm smallholder scheme in Sumatra and Kalimantan with transmigrants[14], mainly from Java (Zen et al. 2006). Settlers selected were provided with two to three hectare plots within centrally managed and vertically integrated schemes. This programme (1984-1998) largely modeled after FELDA, is known as Tran-PIR or People's Nucleus Estate Scheme, and has been responsible for the development of 900 000 hectares (Zen et al. 2006)[15].

Given the absence of efficient coordinating agencies such as FELDA, and because of the high level of decentralisation of land development since the 1990s, the outcome of Indonesian smallholding schemes have been diverse (McCarthy 2010). Concerning the Tran-PIR programme, in most cases plots granted were not planted upon the arrival of smallholders. Consequently most of them had to agree to work on contract on the nucleus estate for two to four years until their plot generated revenues (Levang 1997, 255). However, many accounts emphasise breach of contracts and failure of companies to provide productive oil palm plots within a reasonable period. Dove (2011, 31) states that "virtually all of the nucleus-estate (PIR) schemes have been plagued with serious agronomic and economic problems". This often left the scheme participants with no other choice but to work on the nucleus estates. For this reason, the PIR-Tran was described as a system that leads to the constitution of a pool of captive labour for the nucleus plantation (Levang 1997, 256; McCarthy 2010, 837; Li 2011). This clearly shows a form of adverse incorporation of smallholders into estate schemes, a system reminiscent of colonial semi-proletarian plantation labour in North Java (Stoler 1985, 38-39).

However, despite institutional problems related to the implementation of the schemes on a national scale since the 1980s, the distribution of oil palm by types of ownership has evolved in favour of smallholders (Tables 8 and 9). According to Indonesian government estimates, 1.7 million smallholders cultivated oil palm over 3.1 million hectares in 2009, mainly in Sumatra where 81% of oil palm smallholdings were found, followed by Kalimantan with 15%. From 2000 to 2011, the share of smallholder's oil palm area has almost tripled, to reach 3.6 million hectares. In 2000, about 30% of the total oil palm production area was controlled by smallholders, while in 2011 this figure stood at 41%, a total already reached in 2009 (Table 8). Over the same period, smallholders' share of

[13] The latest boom in oil palm agribusiness in Indonesia which started in the late 1990s is in large part a consequence of the neoliberal phase of globalisation in the food-fuel complex (Borras and Franco 2011).The neoliberal policy reforms of the late 1990s in Indonesia facilitated foreign direct investments in agriculture. The enabling business environment of Indonesia, such as favourable investment laws, advantageous land leases, low levels of export taxes, weak environmental regulations, low labour costs have stimulated oil palm expansion and insured high levels of profitability to investors (World Agroforestry Center 2010).

[14] Started under the Netherlands East Indies administration in the early 20th century and revived by the postcolonial government, the central objective of the transmigration program was to resettle population from the densely populated central islands to external islands. However, in the late 1970s, "transmigration (was) seen more as a land development programme in areas outside Java rather than as a means of reducing population pressure in Java." (Hardjono 1977, 31). Oil palm provided Indonesian authorities with the opportunity to extend agro-industrial infrastructures in scarcely populated regions of external islands.

[15] In practice, the plantation company, with state subsidies, would establish oil palm smallholdings and develop all industrial processing, transport and housing infrastructures. In return, it obtained exclusive concession rights over the nucleus – usually 20% of the total scheme – while the remainder, the plasma, would accrue to smallholders (Levang 1997). Smallholders were bound by an exclusive contract-farming agreement with the plantation company and had to repay a fixed amount charged by the company for the scheme's establishment.

production went from 27 to 38% (Molenaar et al. 2013, 5-7).

Although their exact number is not known, independent smallholders cultivate, according to estimates, up to 1.8 million hectares (Suharto 2009). Many own both a plot in a scheme as tied smallholders and other plots independently. In terms of area cultivated, smallholders' annual growth rates of 11.12% has been consistently higher than those of government estates (0.37 %) and private companies (5.45 %) (Indonesian Palm Oil Council 2010 cited by Lee et al. 2014, 501). Consequently, the share of palm oil produced by smallholders in the country is expected to keep on increasing, as the large contiguous tracts of land of at least 5,000 hectares necessary for the establishment of a plantation are becoming increasingly scarce (Molenaar et al. 2013). Due to its profitability and geographical spread, the oil palm boom in Indonesia has conferred value to large tracts of land owned by smallholders and located within reasonable distances from oil palm mills. The participation of smallholders to oil palm production in Riau province, where oil palm estates have been established early during the last boom, is actually telling of smallholders' capacity to respond to the opportunity. In this province, smallholders cultivated 52% of oil palm land in 2010. And although their average yield and overall production remain lower than those of private estates (Susanti and Burgers 2010), it seems likely that smallholders will soon become the main palm oil producers in Indonesia.

A recent study (Molenaar et al. 2013) drawing on a large sample of over 1000 participants from Sumatra and Kalimantan has highlighted pressing issues among oil palm smallholders, both tied and independent ones. The study shows that on average smallholders display much lower yields than large estates and that this trend is even more pronounced among independent smallholdings[16] (p.12). These lower yields are attributed to inadequate training and insufficient access to chemical fertilizer. Also, the replacement of oil palms after the end of their life cycle of 25 years along with the loss of revenues during the maturation of new palms (2-3 years) raise serious financial issues for a majority of smallholders. To rectify this situation, the authors of the report came up with recommendations to the Indonesian authorities. The authors suggest that the government should extend and intensify training, support replanting efforts, insure more direct communication between producers and mills, and provide smallholders with a better access to finance. Some government plans, such as the programme for plantation revitalisation for smallholders (2009) seem to move towards that direction, although they remain limited in scope (Kompas, Jakarta 19 January 2009 cited by McCarthy 2010).

Discussion

1) As with rubber, oil palm is suitable to the development of a robust smallholder economy, once mills and infrastructures are in place. Yet, even when policies favour private estates over smallholders' assistance, as is the case in Sarawak (Cramb and Sujang 2013) and elsewhere in Indonesia (McCarthy and Cramb 2009), smallholders are still able to adopt this crop as part of successful livelihood strategies. As stated by Cramb and Sujang (2013, 134) : "it has long been recognised that, once processing infrastructure is in place […] oil palm smallholders can readily take advantage of this infrastructure to pursue what is a profitable livelihood option, with lower cost and greater flexibility than large-scale operations". In fact, independent smallholders, even if their yields vary greatly according to local capacities and conditions, are able to produce palm oil efficiently, while not being tied to a single processor like organised smallholders. Independent smallholders thus retain a much greater level of control over their conditions of production.

2) Oil palm and rubber hold a great importance in livelihood strategies among large communities of smallholders in search of greater economic security. Livelihood studies have shown that, in many

[16] The performance of smallholders was assessed by comparison with an optimal plantation scenario (IFC WB 2012).

circumstances, oil palm is more attractive financially to smallholders than rubber. It offers them many advantages, as it can provide higher return to land and investment than rubber and therefore be more profitable in situations of relative land scarcity (Feintrenie et al. 2010). Less labour intensive, oil palm therefore has a greater return to labour than rubber. According to Tomich et al. (1998) cited by Papenfus (2013), rubber production and maintenance would require three times more labour, if calculated in person-days/ha/year (Table 10). In fact, the nature of oil palm, which requires intensive labour only at intermittent stages for planting and harvesting, is suited for an "absentee landlord-wage labour mode of production" (McCarthy 2010, 845). But, along with lack in technical expertise and high quality seedlings, sustained and intensive capital investments in fertilizer required to obtain sufficient oil palm fruit yields are considered as a deterrent for many (Feintrenie et al. 2010). Nevertheless, the trend still clearly shows the continuing attraction of oil palm for smallholders.

3) Palm oil is the main source of income for a significant proportion of the Indonesian population. Methods of assessment vary greatly from one study to the other. Barlow et al. (2003) state a number of over 1.2 million workers in the early 2000s; Zen et al. (2006) refer to 1.7 million jobs for the mid-2000s, while Rist et al. (2009) cite a figure of 4.5 million jobs for the oil palm industry and downstream activities at the scale of Indonesia. This last assessment seems to be the most realistic if we consider that 1.7 million small farming units are involved in the industry, cultivating over three million hectares, i.e. some 40% of total oil palm area (IPOC 2010 cited by Molenaar et al. 2013). As a result, oil palm expansion is often cited as a solution to the high level of underemployment and as a means to achieve economic development in rural areas (World Bank 2011). Although debates have been going on over the potential of this industry to create jobs as well as over the exact figures (Li 2011), it is considered by economic actors in the field as a labour-intensive activity. And in fact, given the centrality of manual labour at the production level, oil palm agribusiness remains more labour-intensive than other comparable forms of industrial agriculture such as soybean production. In this regard, it would seem like the potential takeover of oil palm production by smallholders could be beneficial.

4) Rubber in Malaysia and Indonesia is usually part of diversified livelihoods based on farm and off-farm activities. While in Indonesia smallholders for whom rubber is the main economic activity have in the past been plagued by high rates of poverty (Barlow and Tomich 1991), more recent findings indicate that oil palm plays a significant role in poverty reduction in different regions, with the incidence of poverty being consistently found to be lower by at least 10% among oil palm smallholders (Susila 2004). Strong correlations have also been found between decline in poverty rates and oil palm smallholding activities in specific regions (World Bank 2011, 15). Moreover, the contribution of the oil palm sector to provincial GDP has been increasing steadily (Bunyamin 2008).

5) But if it is undeniable that oil palm generates wealth, the distribution of this wealth among the population appears as a more significant indicator of the potential contribution of oil palm cultivation to socioeconomic development. Rist et al. (2010, 11) citing Dudley et al. (2008) are right to point out that simulations on poverty reductions related to oil palm fail to take into account production cycles and the effects of migration on local employment and landlessness. Moreover, the specific ways in which oil palm could be beneficial to impoverished populations has not yet been sufficiently documented (World Bank 2011, 15). If oil palm schemes in Malaysia have been generally lauded for producing a class of wealthy smallholders, the outcome appears less conclusive in Indonesia considering important inconsistencies in PIR schemes, in large part due to the opacity of land transactions processes.

6) The importance of smallholders in both rubber and oil palm production is the indirect result of the establishment of plantations. However, recent historical trends in Malaysia and Indonesia confirm that tied and independent smallholders are perfectly capable to take charge of plantation crop production, even when their yields appear lower than those of estates. This potential could be

reinforced through measures such as the provision of training services for the diffusion of best practices along with improved access to finance for intensification and replanting, all of which could have significant impacts on yield improvements.

Conclusion

Overall, the argument according to which it is only a question of time before small plantations give way to large ones throughout Southeast Asia is supported neither by historical nor contemporary trajectories of the smallholding sector. Neither does the logic of scale seem to hold ground in front of the adaptability and versatility of smallholders to changing market conditions. One factor has been determinant and is likely to remain so: the will of the state to support or not the small plantation sector. We have seen that, with that support, the small plantation sector has often been able to become competitive and even to gain ground as well as market share over large scale plantations.

Considering that increasing attention will undoubtedly need to be given by regional governments to environmental issues and that on that score large plantations do not perform well, might not the role of the state as determinant arbiter play in favour of the small plantation sector?

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Table 1. Shares of estates and smallholdings in Malayan rubber production, 1929-40

	Smallholdings		Estates	
	Tons (000)	Percentage of total Malayan production	Tons (000)	Percentage of total Malayan production
1929	200	44.8	246	55.2
1930	197	45.4	236	54.6
1931	197	44.9	240	55.1
1932	177	42.4	240	57.6
1933	221	47.8	240	52.2
1934	-	-	-	-
1935	137	36.0	243	64.0
1936	132	36.1	233	63.9
1937	189	37.6	314	62.4
1938	115	31.9	246	68.1
1939	117	32.3	245	67.7
1940	215	39.2	334	60.8

Source: Bauer 1948, p. 97

Table 2. Areas of rubber in Indonesia and Malaya for smallholders and plantations, 1940-1986 (in thousand hectares) (% of total are cultivated by smallholders)

	Indonesia			Peninsular Malaysia		
	Smallholder		Plantation	Smallholder		Plantation
1929[a]	728	57%	548	473	39%	718
1940	1301[b]	67%	626[e]	556[c]	39%	872[c]
1972/75	1854[b]	81%	440[e]	1,090[d]	65%	590[d]
1986	2 367[f]	82%	505[f]	-		-
2000	-		-	1,307[g]	91%	124[g]
2010	2928[h]	85%	507[h]	956[g]	94%	64[g]

a: Dr. Whitford cited by Bauer 1948, p. 3
b: Saad and Baharsjah, 1979, 28. Cited by Gordon 2001
c: Official figures for Malaya which overstate plantation area and underestimate smallholder according to Gordon 2001
d: Saad and Baharsjah 1979 : 28 cited by Gordon 2001
e: Sumardiko, Winitahardjaan dS oebiapradja, 1979: 39.
f: BPS (1981-89); Direktorat Jenderal Perkebunan (1989). Cited by Barlow and Tomich (1991)
g: Department of statistics, Malaysia, Rubber Statistics 2014
h: Estimate based on Rodgers et al. (2010) along with Fox and Castella (2013) who state that rubber smallholders control 85% of total rubber area circa 2010 and the figures of total area from The Association of Rubber Producing Countries (2014)

Table 3. Malaysian Natural Rubber Production and Yield ('000 tonnes)

Year	**Estate**		**Smallholdings**		**Total Production (tons)**	**Average Yield (kg/ha)**
	Production (tons)	**Yield (kg/ha)**	**Production (tons)**	**Yield (kg/ha)**		
1998	198.87	1,330	686.83	906	885.70	970
1999	183.06	1,447	585.81	876	768.87	960
2000	128.13	1,289	799.47	1,184	927.61	1,226
2001	99.53	1,358	782.53	1,167	882.07	1,211
2002	84.88	1,361	804.95	1,211	889.83	1,237
2003	76.36	1,344	909.29	1,270	985.65	1,280
2004	71.23	1,372	1,097.50	1,296	1,168.74	1,300
2005	65.29	1,381	1,060.73	1,320	1,126.02	1,320
2006	68.40	1,525	1,215.23	1,358	1,283.63	1,370

2007	66.80	1,520	1,132.80	1,414	1,199.55	1,420
2008	59.59	1,600	1,012.77	1,420	1,072.36	1,430
2009	56.23	1,610[e]	800.79	1,440	857.02	1,450
2010	55.98	1,620[e]	883.26	1,470[e]	939.24	1,480[e]

Source: Department of Statistics, Malaysia; Malaysian Rubber Board (MRB)

Table 4. Planted Areas, Production and Yields of Smallholding Tree Crops in Indonesia, 1980-87

	1980			1987		
	Area (000 ha)	Production (000 tons)	Yield (kg/mature ha)	Area (000 ha)	Production (000 tons)	Yield (kg/mature ha)
Coconuts	2,622.2	1,629.7	621.5	3,119.3	1,984.5	636.2
rubber	1,947.1	714.5	366.9	2,482.1	801.1	322.8
Oil palm	6.2	0.7	116.6	218.5	66.7	305.1
Cocoa	13.1	1.1	80.6	71.1	19.6	275.2

Sources: Direktorat Jenderal Perkebunan (1989) in Barlow and Tomich 1991

Table 5. Aggregated rubber area, yield and production for Indonesia, Malaysia and Thailand, 1961-2011

Indonesia				**Malaysia**			**Thailand**		
	Area harvested (ha)	Yield (kg/ha)	Production (tons)	Area harvested (ha)	Yield (kg/ha)	Production (tons)	Area harvested (ha)	Yield (kg/ha)	Production (tons)
1961	1353000	5123.4	693200	1300000	6074.45	789679	400160	4650.6	186100
1971	1532000	5097.6	780946	1550000	8507.16	1318610	922560	3428.5	316299
1981	1563997	6158.8	963238	1620000	9322.35	1510221	1269280	3999.9	507699
1991	1877537	7074	1328172	1610000	7808.70	1257200	1420000	10598.6	1505001
2001	2599470	6183.8	1607460	1250000	7056.00	882000	1503944	16772.6	2522508
2011	3456100	8652	2990200	1027041	9699.81	996210	2042502	16396.1	3348896

Source : FAO STAT 2015.

Table 6. Aggregated oil palm area, yield and production for Indonesia, Malaysia and Thailand, 1963-2013

	Indonesia			**Malaysia**			**Thailand**		
	Area harvested	Yield (kg/ha)	Production (tons)	Area harvested	Yield (kg/ha)	Production (tons)	Area harvested	Yield (kg/ha)	Production (tons)
1963	75000	119333.3	895000	49073	134901.1	662000	950	57894.7	5500
1973	100000	175000	1750000	278300	139058.6	3870000	1800	58333.3	10500
1983	255300	180180.2	4600000	1010879	152342.7	15400000	36272	83618.2	303300
1993	921000	185776.3	17110000	2020516	196484.5	39700000	133292	137090.5	1827307
2003	3040000	173026.3	52600000	3260000	204831.3	66775000	287903	170285.7	4902575
2013	7080000	169491.6	120000000	4550000	210392.1	95728589	626400	204533.8	12812000

Source : FAO STAT 2015

Table 7. Distribution of oil palm according to type of ownership in Malaysia, 1999-2011

	1999		**2000**		**2011**	
	Hectares	**%**	**Hectares**	**%**	**Hectares**	**%**
Private Estates	1,942,452	58.6	1,993,292	58.9	3,111,066	61.0
Public Sector:						
FELDA	674,948	20.4	685,520	20.3	723,394	14.2

FELCRA	132,354	4.0	134,357	4.0	164,426	3.2
RISDA	41,561	1.3	37,011	1.1	75,889	1.5
State schemes	235,565	7.1	242,002	7.2	316,204	6.2
Ind. Smallholders	286,513	8.7	290,818	8.6	714,015	14.0
TOTAL	**3,313,393**	**100**	**3,383,000**	**100**	**5,100,109**	**100**

Source: Malaysian Palm Oil Board cited by Simeh 2001; MPOB cited by Omar et al. 2012.

Table 8. Table 1. Oil palm area (ha) by type of ownership in Indonesia, 1980-2009

Year	Smallholders	%	Gov. Estate	%	Private estate	%	Total
1980	6,000	2%	200,000	69%	84,000	29%	290,000
1990	292,000	26%	372,000	33%	463,000	41%	1,127,000
2000	1,267,000	30%	588,000	14%	2,403,000	58%	4,158,000
2009*	3,061,412	41%	651,216	10%	4,236,761	49%	7,097,000

Source: Directorate General of Estate, Department of Agriculture 2008; *IPOC, Indonesian oil pam statistics 2010 cited in IFC WB

Table 9. Crude palm oil area, production and yield by type of producer (2009)

Type of producer	**Smallholders**	**Government**	**Private**
Total area (ha)	3,061,412	651,216	4,236,761
Production (t)	7,515,724	1,943,212	11,929,390
Yield (t/ha)	3.31	3.76	3.67

Source : IPOC, Indonesian Oil Palm Statistics, 2010, cited by IFC WB 2012

Table 10. Labour requirement for various land use activities in Sumatra

Land use system	Establishment period (Person-days/ha)	Operation phase (Person-days/ha)	Total labor (Person-days/ha)
Oil Palm (independent smallholder	130	51	48
Oil palm (large estate)	532	83	133
Rubber Agroforest	271	157	111
Rubber Monoculture	444	166	150

Source: Papenfus 2013, modified from Tomich et al. 1998

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About the Author

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