



Agricultural Policy Research in Africa



IN THE SHADOW OF INDUSTRIAL COMPANIES: CLASS AND SPATIAL DYNAMICS OF ARTISANAL PALM OIL PROCESSING IN RURAL GHANA

Gertrude Dzifa Torvikey and Fred Mawunyo Dzanku

Working Paper

WP|85
March 2022

CONTENTS

Acknowledgements	3
Acronyms	4
Executive summary	5
1 Introduction	6
2 Oil palm production, processing and marketing in Ghana	8
2.1 Production.....	8
2.2 Processing and marketing	9
3 Study area, methods and descriptive statistics	11
3.1 Study area and methods	11
3.2 Descriptive statistics	12
4 Artisanal oil palm processing and its determinants	15
4.1 Artisanal oil palm processing.....	15
4.2 Determinants of artisanal oil palm processing	17
5 Artisanal oil palm processing and food security	25
6 Conclusion and implications for policy and practice	28
References	30

List of tables:

Table 3.1 Summary statistics, by palm oil processing status	13
Table 4.1 Summary statistics of artisanal oil palm processing.....	16
Table 4.2 Probit marginal effects of the determinants of artisanal oil palm processing	18
Table 4.3 Tobit marginal effects of the determinants of artisanal palm oil processing	19
Table 5.1 Food security and artisanal oil palm processing	26

List of figures:

Figure 2.1. Ghana's palm oil production shares.....	10
Figure 3.1. Map showing the study communities in relation to companies and other important features	11
Figure 4.1. Intensity of palm oil processing among processing households.....	15
Figure 4.2. Artisanal palm oil processing increases with distance to a big company, but at a decelerating rate.....	20

ACKNOWLEDGEMENTS



The authors are grateful to the human subjects (farmers, palm oil processors, community leaders, oil palm companies) whose willing participation has made this research successful by providing answers to our questions and providing vital insights into the issues discussed in this paper. We also thank all the field research assistants and APRA researchers; particularly Louis S. Hodey, Amrita Saha, Kofi Asante, Francis Dompae, and John Thompson. We are also thankful to Charity Osei-Amponsah for providing a critical review that has helped improve this paper to a great extent.

Gertrude Dzifa Torvikey is research fellow at the Institute of Statistical, Social and Economic Research at the University of Ghana. Fred M. Dzanku is a senior research fellow at the Institute of Statistical, Social and Economic Research at the University of Ghana.

This working paper is funded with UK aid from the UK government (Foreign, Commonwealth & Development Office – FCDO, formerly DFID). The opinions are the authors and do not necessarily reflect the views or policies of IDS or the UK government.

ACRONYMS

1D1F	One District One Factory
AfDB	African Development Bank
APRA	Agricultural Policy Research in Africa
BOPP	Benso Oil Palm Plantation
CPO	crude palm oil
FFB	fresh fruit bunch
FGD	focus group discussion
FINS	food insecurity
GOPDC	Ghana Oil Palm Development Company
IFI	international finance institution
JML	Joint maximum likelihood
MoFA	Ministry of Food and Agriculture
MOTI	Ministry of Trade and Industries
NORPALM	Norpalm Ghana Ltd
PERD	Planting for Export and Rural Development
PPP	Purchasing Power Parity
PSI	Presidential Special Initiative
SAP	structural adjustment programme
SAS	Special Agricultural Scheme
TOPP	Twifo Oil Palm Plantations

EXECUTIVE SUMMARY

This paper is concerned with the multiple opportunities and challenges of artisanal palm oil processing and the potential multiplier effects on local economies. It examines the effect of the presence of large oil palm plantations and their industrial processing mills on artisanal palm oil processing in two districts in the Western region of Ghana. Although artisanal and industrial processors have co-existed for a long time in the same catchment areas, little is known about the impact of this relationship on artisanal processing. Acknowledging the importance of rural diversity, complexity, and difference in agriculture-based off-farm activities, this paper also examines the effect of community and household level factors on palm oil processing incidence and intensity as well as the impact of processing on food (in)security. These issues are addressed using a mixed methods approach that includes a qualitative study and a survey of 802 households in 23 communities.

On artisanal palm oil processing, only a modest proportion (about nine in 50) of households in our sample process palm oil in commercial quantities. They operate as family businesses which employ about 67 per cent of household members, on average. This is an important avenue for rural employment in the face of rising unemployment even in rural areas. Although our profit thresholds could be slightly overestimated due to the omission of equipment depreciation cost, we observed that only 18 per cent of artisanal processing households make losses, and the average profit per contributing family worker of over US\$500 or approximately US\$972 (in purchasing power parity, PPP) is well above the US\$1.90 international poverty line. Strikingly, the majority (about 95 per cent) of artisanal palm oil processing households produce their own raw material (oil palm fruits) for processing. The vertically integrated nature of the artisanal processing business thus calls for policies that address the needs of smallholder farmers and artisanal processors concurrently.

Our findings show that nearness to an industrial processing company decreases the probability that a household will process their fresh fruits into palm oil, preferring rather to sell to industrial processing

companies. While communities located far away from oil palm companies process more palm oil, they tend to have market access challenges. Related to this, we found from the qualitative study that palm oil processing is more common in communities with vibrant daily markets and alternative economic livelihood activities than in communities that are isolated from markets and lack alternative livelihood activities. In terms of household level factors, we found that the probability and intensity of palm oil processing increases with initial wealth, being heterosexual couple household, being female-headed household, and the availability of male labour. While in general more women are engaged in palm oil processing than men, as expected, their activities are less mechanised, and outputs tend to be lower than their male counterparts.

We put forward the hypothesis that artisanal palm oil processing reduces the incidence of food insecurity because it offers the opportunity for income generation over longer periods of the year, helping to smoothen consumption in a seasonally volatile environment. Although we found that the proportion of artisanal palm oil processing households that experienced seasonal food insecurity was eight percentage points less than their non-processing counterparts, that difference was not large enough to rule out chance variation. Our cautious conclusion is that a larger sample may be required to provide more statistical power to detect an effect, if indeed there is one.

Our findings show that multiple factors affect artisanal palm oil processing in rural areas. Development policies that aim at agro-industrialisation through the channel of micro and small-scale rural industries must thus address multiple constraints by creating access to markets though the provision of rural infrastructure such as roads and facilitating access to artisanal processing equipment, particularly for women and girls. These could help to propel rural economies, create decent jobs, all of which plantation agriculture and industrial palm oil processing companies alone are unable to achieve in these rural communities. This may require state regulated fair pricing regimes for oil palm fruits and investments that create alternative livelihood opportunities in deprived communities.

1 INTRODUCTION

Agricultural produce processing is a main livelihood activity for many rural dwellers. For some, it is an accumulative strategy. The economic liberalisation and structural adjustment programmes (SAPs) of the early 1980s and 1990s were accompanied by state de-investment in the agricultural sector, and even where the state retained investments, it favoured export commodities such as cocoa and horticultural crops (Tsikata and Torvikey, 2021). Oil palm, Ghana's second most important tree crop (aside cocoa), was also affected by the SAP period divestitures with a shift from state-led industrial oil palm processing to transnational corporations with concomitant restructuring of power relations. The structural shifts in agricultural systems since then has left rural producers to survive on their own. Yet, agro-industry expansion is important for economic transformation and employment generation in agriculture-based economies. Although this fact is recognised by Ghana's agriculture policy agenda (GoG, 2018), progress with respect to actualisation has been slow. The features of commercial agriculture since the 1980s have had immense influence on local processing of agricultural products, including artisanal palm oil processing, which is dominated by rural people. This paper uses household survey data and qualitative methods to addresses two broad research questions. First, it examines the determinants of artisanal oil palm processing, taking into account spatial proximity to plantations and their industrial processing mills, community and household demographics, and asset endowments. Second, it provides an analysis of the effect of processing on household welfare using seasonal food insecurity as the outcome of interest.

Agro-industry development was an integral part of agricultural development plans from the early years of independence to the mid-1970s, as reflected in the general framing of policies such as import substitution industrialisation, and Operation Feed Your Industries. However, these programmes focused on industrial processing to the marginalisation of artisanal processing despite the fact that some crops, such as oil palm, which has been traditionally processed even before exportation began in the 18th century, contribute significantly to the domestic processing industry. For example, oil palm processing is a

major livelihood activity for many people, particularly women in producing areas. As Moyo, Jha, and Yeros (2019) have argued, the fragmentation of agricultural production is important for the accumulation of capital and surplus extraction. The incorporation of smallholder farmers into contract farming schemes and similar models of commercial agriculture is part of a regime that leads to land concentration and potentially stifles smallholder accumulation. The historically deep focus of agricultural policies on production and productivity, and the shallow attention that has been paid to value addition through processing, have all contributed to the value system of raw material exportation. This paper, therefore, argues that the nature of integration of rural producers into markets and plantation models of commercial agriculture, as well as class and spatial differentiation, are important determinants of artisanal and small-scale processing at the community and household levels.

Although smallholder farmers produce the lion's share (more than 60 per cent) of oil palm fruits, the main raw material for palm oil production (Khatun et al., 2020), they are price-takers, particularly in the absence of vibrant farmer associations. Furthermore, the promise of a mutually beneficial relationship between smallholders and companies through contract farming arrangements is not always achieved, particularly in the case of marketing contracts (Ruml and Qaim, 2020). Some have argued that such relationships – whereby farmers only supply raw materials for processing – stifle smallholders' processing skills and capabilities (Mzembe, 2013). Besides, the opportunity for artisanal and small-scale palm oil processing provides opportunities for employment along the value chain within the local economy.

With unemployment, underemployment, and poverty among rural dwellers, the African Union has dedicated part of its Agenda 2063 to modernising agriculture, increasing agro-processing and value addition to create decent work and wealth, and improve the food security of communities and households. Agro-processing has thus gained gravitas in the continental agenda as a way of rejuvenating rural areas and diversifying livelihood sources (Owoo and Lambon-Quayefio, 2017). The

African Development Bank's (AfDB) High Five¹ priority areas for promoting development in Africa integrates agro-processing, showing change in direction in the Bank's lending bias against the sector. At the national level, however, artisanal palm oil processing is left to local processors with little policy attention despite the enormous potential for job creation and poverty reduction. For instance, the Oil Palm Development Association of Ghana recently raised concerns about the high costs of production and the effect on the competitiveness of locally-produced palm oil, which was exacerbated by the implementation in 2019 of a policy that provided 50 per cent discount on port clearing charges for selected imported goods including palm oil (GNA, 2021). Some mills were reported to be downsizing their workforce due to competition from imported oil. In one such instance, a workforce of 500 was cut by 50 per cent just two years into the implementation of the policy (GNA, 2021).

While agrarian political economy thinking holds the view that welfare deteriorates when farmers lose control of their means of production and output, pro-market views continue to advocate for the integration of farmers into company-controlled markets. The conflicts associated with the different views of how or how not to integrate peasants into global markets have influenced governments' prioritisation of primary production over processing, making raw material exports – or at best, primary processing – the largest chunk of Ghana's agricultural trade. State participation in land dispossessions, which allows farmers to be incorporated into capitalist production through contract and out-grower schemes, has many ramifications. For example, the availability of companies that buy oil palm fruits means that farmers may be less motivated to process. Large companies also compete with small processors for oil palm fruits during its lean season, a situation that could affect the sustainability of artisanal oil palm processing unless processors can produce

enough fruits for their own use. In terms of the social dimensions of processing, the generational transfer of processing skills could be negatively affected, as farmers are encouraged to sell the raw palm fruits to local companies instead of processing themselves, which could lead to the stifling of innovation in the rural economy.

In Ghana, plantations and contract farming arrangements, even if informal, are prevalent in oil palm production areas as policy orientation continues to focus largely on productivism and less on promoting artisanal production of palm and kernel oils. Plantations have been critiqued for their enclave-oriented nature and low integration into the local areas where they are established (Smalley, 2013). In examining the relationship between smallholders and capitalist production systems, this paper examines the ramifications of oil palm plantations and industrial processing for artisanal processing. It also challenges the argument that smallholders benefit from modernised agricultural schemes led by companies. Bearing in mind that rural areas are themselves heterogeneous, we employ Bernstein's (2010) classification of differentiation to explain the determinants and outcomes of palm oil processing in the study communities.

The rest of the paper proceeds as follows. The next section contextualises the oil palm value chain (production, processing and marketing). Section three describes the study areas, research methods, and provides descriptive statistics from the survey data. Section four addresses the first research question of the determinants of artisanal processing, after providing a background of processing activities using the survey and qualitative data. Section five is dedicated to the analyses of household food security implications of processing, which is the second research question. We conclude and reflect on the implications of our results for policy and development practice in section six.

1 AfDB's High 5s: <https://www.afdb.org/en/high5s>

2 OIL PALM PRODUCTION, PROCESSING AND MARKETING IN GHANA

2.1 Production

Oil palm (*Elaeis guineensis*) is an indigenous West African crop, although it is produced in other parts of the tropics (Henson, 2012). Prior to the 18th century, the crop largely grew in the wild and was processed by women for domestic use and for local markets. However, with the rise of mercantilism and European trade, the crop became an important export commodity particularly in the 1820s. In fact, the export of palm oil and palm kernels contributed the largest share of foreign exchange in the 1820s, with 70 per cent of total export revenue recorded in 1884 (Gyasi, 1992). Although palm oil's contribution to exports gradually reduced, it still accounted for two thirds of all Gold Coast exports in 1890 (Mikell, 1989). Through all these transformations, production was controlled by smallholders.

The domestication of oil palm due to rising commercialisation and exports in the 18th century led to important transformations in how the crop was traditionally produced, processed, and marketed, with implications for smallholder welfare. As the crop became more commercialised, European farmers, mainly the Dutch and British, established plantations with the colonial administration issuing processing rights for milling near oil palm concessions in 1913. Although the policy on oil palm at the time prioritised plantations and large-scale processing, smallholder production and processing continued alongside the new production model. Oil palm export from the Gold Coast declined from the 1950s – on the back of increased production from Dutch colonies in Southeast Asia and emerging production hubs in the temperate zones (Fold, 2008). From that point, production for domestic use continued and attempts were made by the state to modernise processing.

The oil palm sector was revived post-independence within the larger policy framework of import substitution industrialisation and food self-sufficiency. However, the model used for the development of the crop mimicked the colonial model of plantation development and large estates. As a result, state farms were established, and production intensified in the 1970s. For instance,

the now privatised Norpalm Ghana Ltd (previously known as National Oil Palm Limited) was established in 1965 as a state-owned nucleus estate. However, this production model was unsuccessful due to mismanagement and political patronage which led to low and unsustainable production and subsequent collapse (Gyasi, 1992: 94).

In 1977, the state partnered with multinational corporations and other agribusinesses to develop the oil palm sector as part of the Special Agricultural Scheme (SAS). With economic crisis threatening the country and the failures of both state-led agricultural schemes promoted by the Nkrumah regime (1960–66), and indigenous commercial farms that emerged during the Acheampong regime (1972–78), tripartite partnerships were established between the state, international finance institutions and multinational corporations for agricultural development (Glover and Kusterer, 2016). The internationalisation of agricultural finance and public-private partnerships became an essential part of agricultural development during this period (Graham, 1993). This financial arrangement changed the production model in significant ways, one of which was the expropriation of land by the state for the establishment of plantations (Amanor, 1999). The plantations then allocated land to dispossessed farmers through contract farming schemes. In addition, some farmers were recruited as oil palm out-growers with strict production regulations. The 'big four' industrial oil palm producers – Ghana Oil Palm Development Company (GOPDC), Twifo Oil Palm Plantations Ltd. (TOPP), Benso Oil Palm Plantations Ltd. (BOPP), and Norpalm Ghana Ltd (Norpalm) – emerged and were sustained through the SAS.

GOPDC was established in 1976 as a state company with a World Bank funding facility, while BOPP was established in 1977 as a partnership between Unilever, the Government of Ghana, and Barclays Bank International with 57 per cent, 40 per cent, and three per cent shares, respectively. TOPP was also established in 1977 through a funding facility from the Commonwealth Development Corporation and the European Development Fund. Following SAP and related conditionalities, all state-owned oil palm companies were divested in the 1990s. GOPDC is

now fully owned by Société d'Investissement pour l'Agriculture Tropicale of Belgium, with about 14,352 contract farmers. TOPP operates 4,234ha of nucleus estate with 1,690 out-growers; BOPP has 4,666ha of plantation and 1,650 out-growers, while Norpalm Ghana Ltd holds 68.6 per cent and 31.4 per cent shares respectively in Norpalm Ghana Ltd, which has 4,000ha of plantation.

These industrial corporate oil palm companies have operated under three main models of commercialisation: plantations, out-grower schemes and contract farming. The out-grower and contract farming schemes reinforced the marginalisation of smallholder production, processing, and marketing. Contract farming and out-grower schemes have been critiqued for stifling local production, processing and innovation without necessarily delivering the promise of increasing smallholder investments, productivity and welfare (Ton et al., 2018). Historically, contract farming thrives with increased specialisation in agricultural production and declining state investment in agriculture (Wilson, 1986). With increased production due to specialisation and the absence of strong farmer organisations, farmers are unable to negotiate their terms of contract engagements, which could lead to the deterioration of farmer welfare (Glover and Kusterer, 2016), although some authors have also reported positive impacts (Ruml and Qaim, 2020).

In 2002, the state made other attempts to participate in the oil palm sector through a special instrument known as the Presidential Special Initiative on Oil Palm (PSI-Oil Palm). In this model, hybrid seeds were distributed to farmers and state-run mills were established. Farmers supplied fruits to the established mills without formal contracts. However, by 2008, the PSI had collapsed due to policy incoherence and politics (Asante, 2012). Recent government flagship programmes and policies such as Planting for Export and Rural Development (PERD) and Tree Crop Policy, which prioritise cash crops, are also biased towards production with little focus on value addition through processing. The PERD, which was launched by the Ministry of Food Agriculture (MoFA) and the Ministry of Local Government and Rural Development, is to help diversify cash crop production away from cocoa dependency and rejuvenate rural areas. It has an ambitious goal of promoting six cash crops, namely cashew, coconut, coffee, oil palm, rubber and shea nuts to bring in US\$12 billion in revenues annually (Larnyoh, 2019).

Interventions by multinationals in the oil palm sector are also productivist in nature and do not pay attention to artisanal palm oil processing. For instance, Unilever's interventions in oil palm-producing areas have mostly focused on increasing yields (Pretty et

al., 2008). Indeed, in general, Ghana's agricultural policies, programmes and extension services do not pay attention to processors. Ghana's agriculture and trade institutions, such as MoFA and the Ministry of Trade and Industries, focus on production and export while the Oil Palm Research Institute of the Centre for Scientific and Industrial Research prioritises production and productivity.

2.2 Processing and marketing

Socioeconomic mobility in rural areas is linked to producers' capacity to diversify their economic activities by combining agricultural and non-agricultural production (Dzanku, 2020). Livelihood diversification can be either a survival or an accumulative strategy. Social difference, in terms of class, gender and generation accounts for why and how people diversify. In rural areas, agricultural processing and marketing are major economic activities for many people. While palm oil processing at the household unit is part of the agrarian structure in many areas, only a few rural dwellers actually process their farm output or engage in processing as part of their economic livelihood strategy. Value chain studies of commodities favour processing at the source or by producers, since this increases the value derived and retained in the local economy. In addition, seasonal agricultural production patterns often lead to overproduction during certain periods of the year, and processing is essential for reducing post-harvest losses and ensuring that commodity prices are not erratic.

The potential of artisanal palm oil processing has been undermined by agriculture and trade policies (Osei-Amponsah et al., 2018). Artisanal palm oil processing provides both economic (income and employment generation) and social (knowledge transfer and social learning) benefits. These socioeconomic dimensions should engage policy attention because of their potential impact on rural livelihood diversification strategies and sustenance. An artisanal and small-scale oil palm and kernel processing mill can employ about 14 people for each processing episode, on average (Sarku, 2016). Different communities in the oil palm agroecological zones have different processing structures and networks – and different levels of integration into markets. Depending on the nearness of a big company, a community may process more or less of fresh fruit bunches (FFBs), and differ in the type of produce they process (Brønd, 2018). In Ghana, oil palm fruit is processed into palm oil, palm kernel oil and soap. Over-aged plants are used for local liquor production. However, palm oil production is the most distinguished.

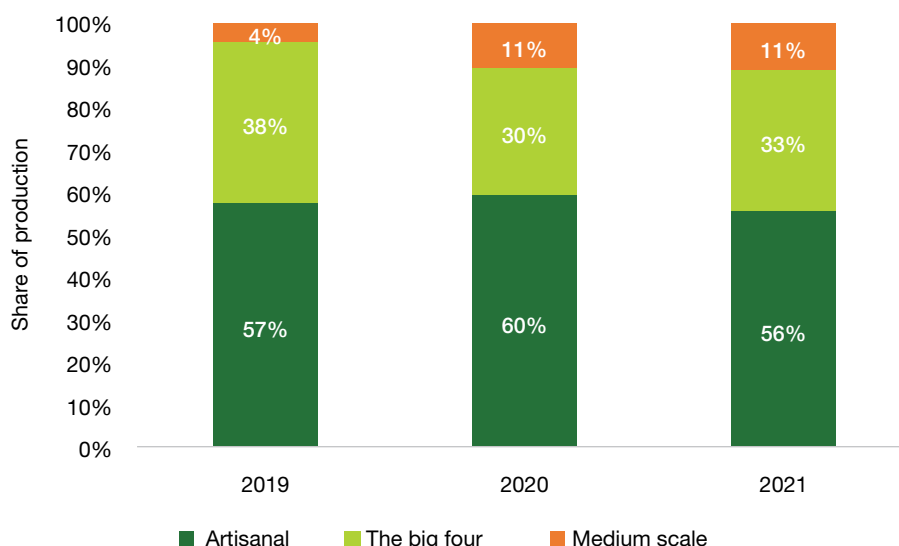
Ghana's oil palm processing structure is tri-modal in nature, with peculiar contexts, opportunities and challenges. There are large-scale processing companies with plantations, medium-scale processors also with plantations, and artisanal processors. Aside from producing their own palm fruits, both large- and medium-scale processors buy fruits from independent farmers; artisanal and small-scale processors also purchase part – or all – of their palm fruits from independent farmers. Artisanal processors have always produced the largest share of Ghana's palm oil. During the first decades of the new millennium (2001–10) artisanal processors accounted for about 60 per cent of palm oil produced in Ghana; the four major industrial oil palm companies and medium-sized mills accounted for roughly 25 per cent and 15 per cent, respectively (Sutton and Kpentey, 2012). The most recent data (2019–21) shows that, while the big four have increased their production share, this has been more at the expense of medium-sized mills than artisanal producers (Figure 2.1). There is still a large demand for palm oil in Ghana because imports exceed domestic production. Although Ghana exports some palm oil, over the past three years, for example, imports have exceeded exports, making the country a net importer of the commodity. Indeed, imports have exceeded domestic production by about 40 per cent over the past three years.

Although palm oil processing is the domain of women, some men are increasingly venturing into the sector as mechanised equipment becomes available (Sarku, 2016). The artisanal processing sector has a bimodal structure differentiated by class and gender. The first category is the *Kramer* (semi-automated mill)

processing, which uses machines with processing capacity of 3–8t of FFBs per day and extraction rate of 9–11 per cent (Osei-Amponsah and Visser, 2016). Setting up a *Kramer* processing centre is capital intensive and is owned mainly by men who render processing services to female processors. The second category is manual home-based processing, which may utilise the services of the *Kramer* for processing aspects or rely exclusively on rudimentary machines. In the oil palm belt of the Eastern Region, for instance, 80 per cent of small-scale processors semi-process their FFBs at the *Kramer*. Although small-scale processing is less capital intensive than the *Kramer* it is very labour intensive, with most tasks performed by women (Hassan et al., 2016; Osei-Amponsah et al., 2012). The rudimentary technology used for artisanal and small-scale processing also affects oil yields with losses estimated at about 37 per cent (Adjei-Nsiah, Zu and Nimoh, 2012).

Artisanal and small-scale palm oil processing face a number of challenges, some of which could be attributed to policy neglect. For instance, Osei-Amponsah et al. (2014) argued that the absence of policies and weak implementation of regulations in the palm oil processing sector are responsible for the quality issues that sometimes affect artisanal palm oil marketability. Artisanal and small-scale processors also face the challenge of high cost production, partly because, unlike corporate processing companies who have contract farming schemes that allow them to influence palm fruit prices, artisanal processors are essentially price-takers on the palm fruit market (Ofosu-Budu and Sarpong, 2013).

Figure 2.1. Ghana's palm oil production shares



Source: Authors' own, using 2022 data from the Oil Palm Development Association of Ghana

3 STUDY AREA, METHODS AND DESCRIPTIVE STATISTICS

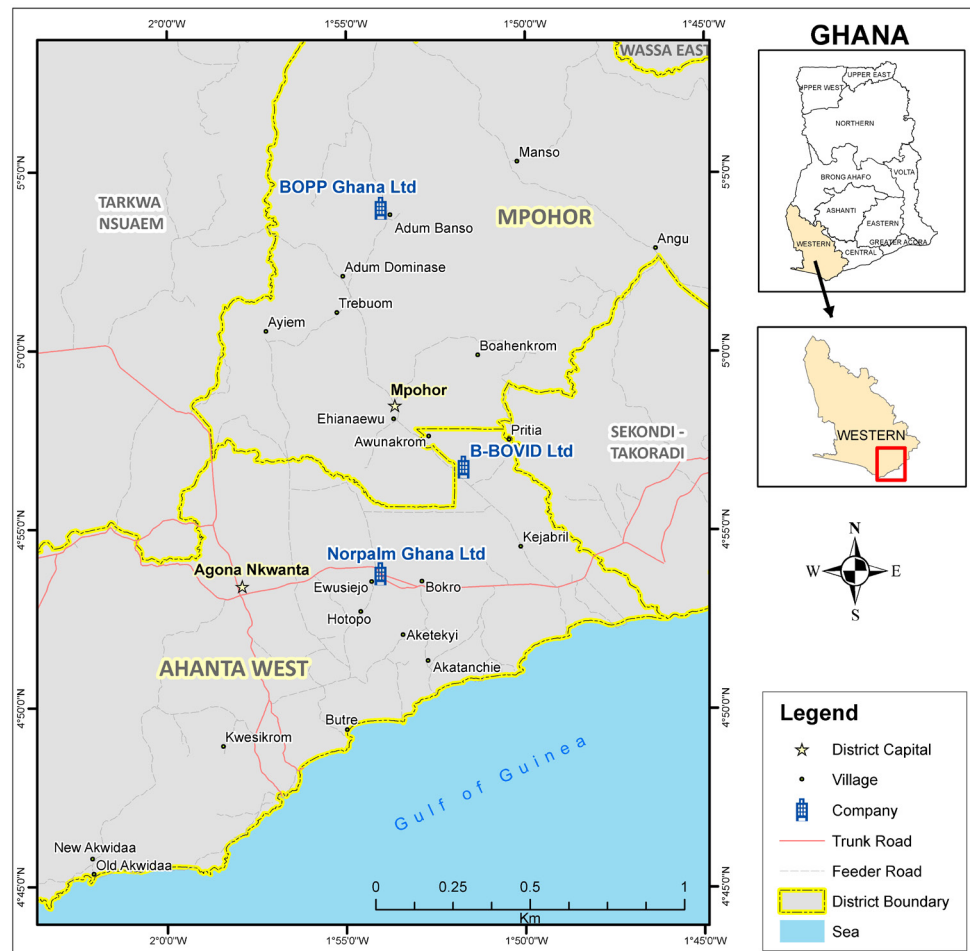
3.1 Study area and methods

Our empirical analysis relies on qualitative and household survey data collected as part of research activities of the Agriculture Policy Research in Africa (APRA) consortium. We study oil palm production and processing in 23 communities located in two districts – Mpohor and Ahanta West districts – in south-western Ghana (Figure 3.1). The districts were purposively selected based on their location within one of Ghana's largest oil palm belts. The districts also have a diversity of oil palm producers, processors and

oil palm companies (Norpalm and BOPP), all of which are essential for studying differentiations in oil palm production, processing and implications for household and community livelihoods. The mix of scales of oil palm processing in the districts also presents opportunities and challenges to artisanal processing.

The qualitative study took place at the district, company, community, and household levels in March–April 2019. There were 84 qualitative interviews altogether – 38 household interviews, 25 interviews with oil palm industry actors at various levels, 11 key informant interviews, and 11 focus group discussions (FGDs) at

Figure 3.1. Map showing the study communities in relation to companies and other important features



Source: Map created using data from APRA, generated by University of Ghana, using ArcGIS

the community level. For the community level study, we purposively sampled five of the survey communities based on variations in oil palm marketing channels identified during a baseline survey (Dzanku et al., 2020). Within each community, five households were selected, and within each household, the head and spouse were interviewed separately where possible. In cases where a spouse was not available, the next oldest member was interviewed.

Also in the communities, we interviewed key actors including farm workers, aggregators, processors, traditional leaders, and local government officials (unit committee chairs or assembly members). Sex-disaggregated FGDs – two focus groups per community – were also conducted in addition to one mixed FGD. At the district level, we conducted expert interviews with MoFA officers at Mpohor and Agona Nkwanta (the capitals of the Mpohor and Ahanta West districts). At the company level, we interviewed representatives of two large oil palm companies and one medium-scale company. Pseudonyms are used in this paper instead of the real names of interviewees.

The survey took place in 23 communities that were chosen purposively based on oil palm production and processing activities. The selection also considered variation in proximity to large oil palm plantations and companies because of our hypothesis that distance to companies influences production and processing. At the community level, we first carried out a census of all households to create a sample frame. In each community, the list was stratified by gender and processing activity, after which a random sample was drawn. The total sample size for the 2019 survey was 802 households and the sample size per community ranges between 10 and 64 depending on the size of the community.

We used Tablet Assisted Personal Interviewing technology for the survey data collection. We collected detailed information on household characteristics, livelihood activities and outcomes in general, but with more detailed information on oil palm production, processing, and marketing.

3.2 Descriptive statistics

In our survey sample, only about 18 per cent or approximately nine in every 50 households engaged in artisanal oil palm processing. Table 3.1 shows the characteristics of the households by their palm oil processing status. For each of the variables reported,

the third column shows the p -values from testing statistically significant differences between the two groups of households. We provide a summary below.

Community characteristics: The average population of the study communities was 3,000. This means that they are rural communities according to the definition of the Ghana Statistical Service.² Access to markets is an important determinant for the level of commercial production. Our survey captured three main access to markets variables: distance to the district capital where the major market is located, ease of accessing the community (i.e., tarred road connection), and availability of a daily market within the community. Processing and non-processing households differ markedly with respect to where they live, relative to market access – the former group live in communities that are, on average, 23 km closer to the major district market than the latter. The fact that the household groups do not differ significantly in relation to the other community level indicators (tarred road connection and daily community market availability), means that processing households live in communities with significantly better access to markets. The processing and non-processing households also differ significantly on two major community level variables: the availability of a processing mill within the community and distance to a large or medium-sized oil palm company. First, while 68 per cent of processing households live in communities with a mill, only about 30 per cent of non-processing households have a mill in their community. Second, processing households live significantly further away from a company than non-processing households do. We return to these defining characteristics in the next section.

Household characteristics: Processing households are not significantly different from their non-processing counterparts with respect to household demographic characteristics, except household size, number of male adults, and whether they live in a couple or single-headed household. Relative to non-processing households, processing households are significantly larger in size, have more adult males, and a larger proportion (about eight percentage points more) are heterosexual couple-led households. The fact that processing households have more labour available is important because artisanal processing is labour intensive.

Farm production and sales: The majority (79 per cent) of households in our sample cultivate farmland of two hectares or more, and thus, are typically not smallholders – as two hectares and below is commonly considered the threshold for defining smallholder tree

2 In Ghana, rural areas are communities with a population of less than 5,000.

Table 3.1 Summary statistics, by palm oil processing status

Variables	(1) All n = 802	(2) Processor n = 148	(3) Non-processor n = 654	(4) Difference p-val.
Community characteristics				
Community population (1,000)	3.0	2.7	3.0	0.234
Distance to district capital (km)	47.7	29.1	51.9	0.000
Tarred road to community (%)	31.5	31.8	31.5	0.951
Daily market in community (%)	35.9	37.8	35.5	0.589
Processing mill in community (%)	36.8	68.2	29.7	0.000
Distance to oil palm company (km)	18.0	22.0	17.1	0.000
Household demographics				
Female headed household (%)	20.7	18.9	21.1	0.555
Age of household head	52.8	53.6	52.6	0.405
Household size	4.2	4.6	4.2	0.015
Number of female adults	1.5	1.6	1.5	0.209
Number of male adults	1.4	1.6	1.4	0.013
Youth dependency ratio (%)	51.5	51.0	51.6	0.915
Couple household (%)	73.7	83.1	71.6	0.004
Head's years of schooling	7.8	8.4	7.7	0.109
Secondary education or higher (%)	21.4	25.0	20.6	0.244
Other adults mean years of schooling	7.5	7.8	7.5	0.273
Agricultural production and sales				
Farmland (ha)	5.3	5.8	5.2	0.260
Farmland per capita (ha)	1.7	1.7	1.7	0.996
Share of small-scale farmers (%)	21.4	17.6	22.3	0.203
Staple food crop producer (%)	52.5	45.9	54.0	0.077
Oil palm producer (%)	89.0	98.6	86.9	0.000
Oil palm farmland (ha)	1.9	2.4	1.8	0.000
Oil palm share of farmland (%)	49.2	57.3	47.3	0.002
Oil palm harvest (tonnes)	11.6	12.1	11.6	0.684
Oil palm sales (tonnes)	11.3	11.2	11.3	0.915
Oil palm producer price (US\$/t)	67.8	64.8	68.5	0.000
Income and wealth				
Income per capita (PPP US\$)	1474	1727	1417	0.098
Poverty headcount ratio (%)	47.9	39.2	49.8	0.019
Received non-farm income (%)	49.8	40.5	51.8	0.013
Received remittance (%)	12.6	8.8	13.5	0.122
Livestock wealth (cow equivalent)	2.4	3.8	2.1	0.000
Consumer asset index (0–100)	38.7	44.4	37.4	0.000
Seasonally food insecure (%)	36.9	26.0	39.2	0.013

Source: Authors' own, based on APRA-Ghana Work Stream 1 survey, December 2019

crop farmers (Ghana Statistical Service, 2020). Not all households produce oil palm – about 11 per cent do not. Although oil palm is a major crop in the study area, households have a diverse portfolio of crops, and only 49 per cent of total farmland is under oil palm. Strikingly, only about 52 per cent of the households in our sample produce some of their own staple foods, meaning a lot of farm households rely exclusively on the market for food, which could have a negative impact on their food security because of inefficient food markets (Dzanku, Tsikata and Ankrah, 2021). Of the 10 farm production and sales indicators (see Table 3.1 below), processing and non-processing households differ significantly (at the 0.05 level of significance) on four: a higher proportion of processing households produce oil palm, they have significantly larger oil palm farms, they devote a larger share of farmland to oil palm, and live in communities with lower palm fruit producer prices.

Income and wealth: Wealth is a main source of difference between oil palm processing and non-processing households, with the former group being significantly (at the 0.05 level) better off than the latter on all the reported welfare indicators, except per capita income, where although processing households reported an average of US\$310 (PPP) more than non-processing households, the difference is not statistically significant at the 0.05 level. We return to the association between oil palm processing and welfare in section five.

4 ARTISANAL OIL PALM PROCESSING AND ITS DETERMINANTS

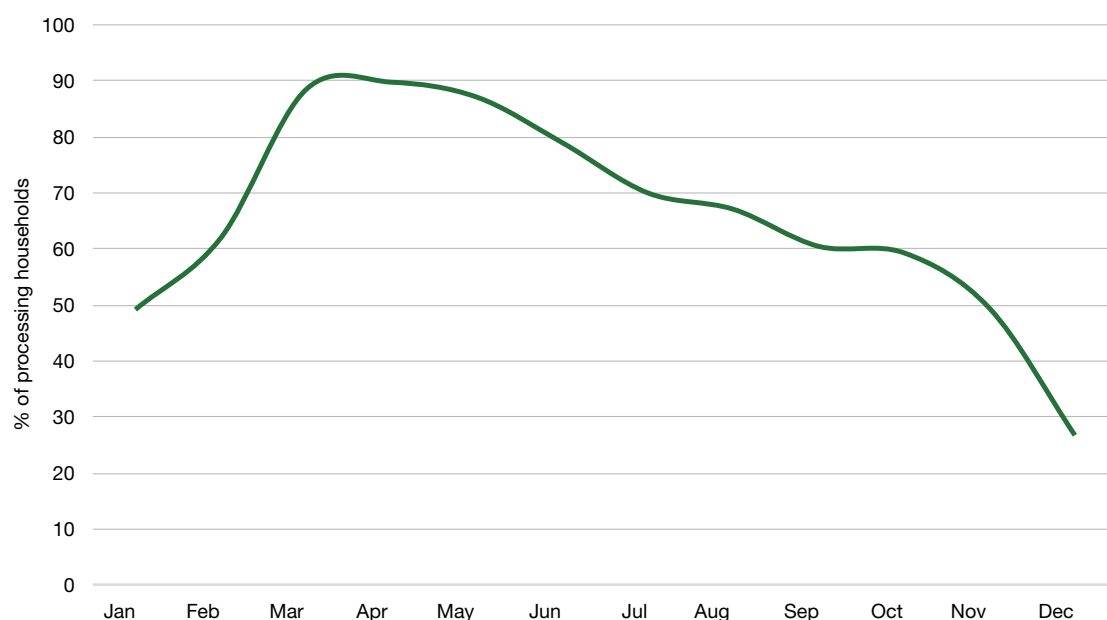
4.1 Artisanal oil palm processing

Artisanal palm oil processing takes place throughout the year but the intensity thereof depends on the availability of palm fruits. The main harvesting season is normally February – May and the lean season falls around September – December. The main season corresponds approximately to the high-intensity processing months reported in the survey (Figure 4.1). Table 4.1 reports summary statistics of processing indicators. Processing is a transient activity in the year for some households, but the average household is engaged for one half of the year and about 11 per cent are involved all year round. About 95 per cent of the processing households in our sample are oil palm farmers who process at least some of their own output into palm oil. On average, processing households produce more oil palm output than they process. Indeed, only 30 per cent of processing households source more palm fruits from the market than they produce themselves, showing high levels of vertical integration in the artisanal palm oil processing sector in the study areas.

On average, approximately two family members work in the artisanal palm oil processing business, which is approximately 67 per cent of household members. However, 59 per cent of processing households also hire in some labour, particularly during the peak season. The processing households in our survey sample produced about 2.1t of palm oil in 2019, on average, which yielded an average revenue of around US\$1,939.

Total production costs amounted to about 64 per cent of total revenues so average profit is positive (about US\$970) for 2019.³ Because we did not include equipment depreciation in the cost calculation, total cost of production would be slightly underestimated. But profits are negative for about 18 per cent of processing households; profits turn positive at around the 20th percentile of realised profits in the absence of equipment depreciation. This is nonetheless encouraging given the notion that these artisanal processors typically do not make profits. Indeed, the average annual profits per family worker of about US\$501 is way above the international poverty line of US\$1.90 per day.

Figure 4.1. Intensity of palm oil processing among processor households



Source: Authors' own, based on APRA-Ghana Work Stream 1 survey, December 2019

3 Own oil palm output as raw material was valued at FFB market prices.

Palm oil processors use multiple channels to market their produce. They sell in the district or regional markets but in some cases, traders visit the communities directly to aggregate the palm oil. Processors also sell directly to traders from Burkina Faso, Nigeria and Togo or through intermediaries. Processors face marketing constraints that relate to pricing, especially in the peak season when palm oil is in abundance. During such periods, market women determine the buying price. While palm oil could be stored for sale during the peak season, only a few processors are able to do this due to the need for cash to meet immediate needs of their households. Wealthier processors, mainly men, are able to process more oil during the peak season, which they store for sale during the lean season – a situation that was emphasised by a male processor during an in-depth interview *‘at times, I store some and sell them later on. As we speak, I have about 20 containers [two tonnes] of palm oil from last year still in storage.’*

Middlemen and women play an important role in palm oil marketing, but frictions exist between these groups and artisanal processors. The qualitative study showed that processors feel they do not get fair prices. Prices are often determined by the intermediaries, particularly during the peak season, and processors feel that these market actors make abnormal profits at their expense. This notion is not new and is not peculiar to palm oil marketing, and speaks to a longstanding view among producers, particularly of agricultural commodities, that they are cheated by ‘market queens’ (Britwum, 2013). The following statement explains the marketing structure,

‘The buyers are the ones who determine the prices so at times I feel cheated, and then there are times that I feel the prices are fair. Last year, for instance, someone came here to buy the palm oil at GH¢200 [about US\$35] per container and we felt it was a fair price. Two days later, another person came in with an offer of GH¢240 [US\$42] per container meaning we were cheated by the first buyer. I was very upset and disappointed.’ (Paintsil, male processor, Butre, 21/04/2019)

Palm oil buyers from Nigeria and Togo usually purchase oil through intermediaries and this affects the buying price at the community level as these buyers offer better-than-local prices. The organisational differences between processors and oil palm traders affect the power asymmetries between them, which also affect the pricing of palm oil. In general, market traders in Ghana mobilise around the commodities in which they trade, which is a long tradition in Ghanaian markets (Clark, 1997; Britwum, 2013). These associations have many goals including fixing prices and controlling the flow of produce. Processors in the study communities have no associations and would have to contend with organised market traders who collude to determine prices. A processor linked the ‘low’ prices of palm oil to the lack of processor associations, stating that, *‘processors don’t have an association, but the buyers have associations, so they determine the price of palm oil.’*

Nonetheless, there are price differences between retailers and bulk buyers with retailers offering better

Table 4.1 Summary statistics of artisanal oil palm processing

Variables	(1) Minimum	(2) Mean	(3) Std. Dev.	(4) Maximum
Number of months engaged in processing	1.0	5.7	3.5	12.0
Quantity of FFB harvested (t)	0.0	11.6	15.8	77.0
Quantity of FFB processed (t)	0.3	10.0	13.7	70.0
Number of households members involved	1.0	2.4	1.2	7.0
Quantity of oil palm processed (t)	0.1	2.1	2.5	13.3
Revenue from oil palm processing (US\$)	75.2	1,938.6	2,343.9	13,274.3
Cost of raw material (US\$)	18.6	646.9	868.4	4,336.3
Cost of household labour (US\$)	5.3	93.8	120.6	743.4
Cost of hired labour (US\$)	0.0	36.0	67.4	322.1
Other processing cost (US\$)	0.0	31.5	72.8	554.0
Total processing cost (US\$)	54.0	808.2	985.4	4,980.5
99% trimmed profits (US\$)	-3,308.0	969.7	1,634.6	7,265.1
Profits per family worker (US\$)	-2,403.4	501.4	924.8	3,634.5

Source: Authors’ own, based on APRA-Ghana Work Stream 1 survey, December 2019

prices. This means that the income processors earn is also determined by who buys their produce. A trader illustrated this saying that when retailers were paying GH¢25 (about US\$4.42) per gallon of palm oil (approximately 4.5 l), bulk buyers bought it at GH¢15 (about US\$2.65). Some artisanal processors prefer to sell to retailers but those who process in large quantities feel compelled to sell to bulk buyers despite the lower prices because retailers cannot buy the quantities they produce. During the qualitative interviews, particularly the FGDs, the general view was that government interventions such as the setting up of a body to determine and regulate prices could be beneficial.

4.2 Determinants of artisanal oil palm processing

Here, we employ both the qualitative and survey data to analyse and discuss the determinants of artisanal palm oil processing. We categorise the determinants into three broad themes: (1) community level factors including location in relation to large plantations and processing plants, (2) households level factors, and (3) household resource endowments. We used the survey data to estimate the following model for the determinants of processing:

$$process_i^* = \alpha + \beta'Community_j + \gamma'Household_i + \delta'Resource_i + \varepsilon_i, 1[process_i^* > 0] \quad (1)$$

$$process_i^* = \alpha + \beta'Community_j + \gamma'Household_i + \delta'Resource_i + \varepsilon_i, \varepsilon_i \bullet \sim Normal(0, \sigma^2) \quad (2)$$

where $process^*$ is in the indicator of oil palm processing at the household level, which for equation (1) take on the value one if the household processed oil palm anytime over a 12-month period prior to the survey, and zero otherwise, and for equation (2), $process^*$ is the quantity of palm oil produced, which is semi continuous with a mass at zero (only 18.5 per cent of households process palm oil in commercial quantities); $Community$ measures community level factors including the presence of a mill within the community, distance to the nearest oil palm company, the availability of a daily market within the community, distance to the district capital (as an indicator of access to a major market), whether the community can be accessed by a tarred road (ease of access to the community), and village-specific raw material price (i.e., palm fruit price); $Household$ measures household demographic factors including type of household (whether it is a heterosexual couple-led household or not), sex and age of household head, youth dependency ratio, and average educational attainment of adult household

members; $Resource$ captures household level resource availability that could promote or hinder processing including quantity of palm fruits harvested, number of female and male family labour available, farmland, non-land assets, and availability of alternative livelihood activities aside from farming and palm oil processing; β , γ , and δ are vectors of parameters associated with the various categories of determinants to be estimated. The Probit and Tobit maximum likelihood estimations of equations (1) and (2), respectively, are reported in Tables 4.2 and 4.3. We discuss the regression results together with the qualitative findings below.

4.2.1 Mechanisation and distance to corporate plantations

Our study communities are differentiated by level of integration into oil palm markets, level of processing, who processes, and how processing is done. The availability of a processing mill within the community, nearness to an industrial processing company, and distance to a district capital (which is a proxy for market access) all differentiate households that process from those that do not.

The labour-intensive nature of artisanal oil palm processing makes the presence of a mill an important determinant of processing because some farmers are unable to combine farming and processing without mechanisation. The regression results show strong correlation between the availability of a mill within a community and artisanal processing. We find that, even after adjusting for a rich set of covariates, the probability of processing palm oil is about 33 per cent for those living in communities with a mill compared with only 10 per cent for those in communities without a mill; the difference of 23 percentage points is highly statistically significant (Table 4.2). Similarly, the quantity of palm oil produced is approximately 729 l higher for those living in communities with a mill compared with those in communities without such mechanisation equipment (Table 4.3). In the qualitative study, all three communities with high incidence of processing had mills within or nearby. There was a private mill in new Akwadae that rendered services to processors although the owner also processed his own palm fruits. There were three processing mills located near Butre, one of which was built by World Vision (a non-governmental organisation) and the others by private individuals. Sankore, a community near Kwesi Krom had a processing mill which rendered services to processors in the catchment area. On the contrary, there were no processing mills in the other two communities (Adum Dominase and Pretsea) where very little processing took place using home-based traditional methods or rudimentary tools. These issues were articulated by farmers in the communities:

Table 4.2 Probit marginal effects of the determinants of artisanal oil palm processing

Variables	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Community level factors				
Palm oil mill in community	0.236*** (0.035)			0.228*** (0.034)
Distance to company (km)	0.028*** (0.005)			0.027*** (0.005)
Distance to company squared	-0.000*** (0.000)			-0.000*** (0.000)
Daily market in community	-0.027 (0.033)			-0.038 (0.031)
Distance to district capital	-0.001 (0.001)			-0.000 (0.001)
Tarred road to community	0.003 (0.028)			0.001 (0.027)
Price of raw material	0.000 (0.003)			-0.000 (0.003)
Household demographics				
Couple-headed household		0.118*** (0.032)		0.084** (0.033)
Female-headed household		0.082 (0.050)		0.082* (0.048)
Age of household head		0.001 (0.001)		0.001 (0.001)
Youth dependency ratio		0.003 (0.024)		0.016 (0.024)
Years of schooling		0.005 (0.004)		0.004 (0.004)
Household resources				
Quantity of fruit produced			0.024*** (0.005)	0.014*** (0.005)
Female labour available			0.014 (0.014)	0.003 (0.014)
Male labour available			0.021 (0.014)	0.031** (0.015)
Oil palm farmland per capita			0.003 (0.015)	0.002 (0.016)
Other crops farmland per capita			-0.001 (0.008)	0.003 (0.007)
Livestock wealth			0.007*** (0.003)	0.008*** (0.002)
Non-farm employment			-0.065** (0.026)	-0.068*** (0.025)
Log-likelihood value	-318.597	-376.390	-357.973	-294.448
Pseudo <i>R</i> -squared	0.169	0.019	0.067	0.232
Observations	802	802	802	802

Standard errors in parentheses; * p<.10, ** p<.05, *** p<.01

Source: Authors' own, based on APRA-Ghana Work Stream 1 survey, December 2019

Table 4.3 Tobit marginal effects of the determinants of artisanal palm oil processing

Variables	(1) Model 1	(2) Model 2	(3) Model 3	(4) Model 4
Community level factors				
Palm oil mill in community	0.763*** (0.130)			0.729*** (0.127)
Distance to company (km)	0.092*** (0.019)			0.087*** (0.019)
Distance to company squared	-0.001*** (0.000)			-0.001*** (0.000)
Daily market in community	-0.082 (0.118)			-0.125 (0.115)
Distance to district capital	-0.003 (0.002)			-0.002 (0.002)
Tarred road to community	0.127 (0.104)			0.114 (0.101)
Price of raw material	0.005 (0.012)			0.002 (0.011)
Household demographics				
Couple-headed household		0.381*** (0.139)		0.243* (0.131)
Female-headed household		0.188 (0.177)		0.193 (0.172)
Age of household head		0.005 (0.004)		0.003 (0.004)
Youth dependency ratio		0.028 (0.092)		0.080 (0.088)
Years of schooling		0.026* (0.015)		0.015 (0.013)
Household resources				
Quantity of fruit produced			0.105*** (0.021)	0.071*** (0.021)
Female labour available			0.023 (0.051)	-0.005 (0.052)
Male labour available			0.091* (0.051)	0.117** (0.054)
Oil palm farmland per capita			0.018 (0.057)	0.012 (0.058)
Other crops farmland per capita			-0.009 (0.029)	0.008 (0.027)
Livestock wealth			0.023*** (0.008)	0.019** (0.008)
Non-farm employment			-0.165* (0.098)	-0.179* (0.094)
Log-likelihood value	-611.269	-664.494	-643.073	-588.271
Pseudo R-squared	0.089	0.009	0.041	0.123
σ	19.433	23.949	21.457	17.356
Observations	802	802	802	802

Standard errors in parentheses; * p<.10, ** p<.05, *** p<.01

Source: Authors' own, based on APRA-Ghana Work Stream 1 survey, December 2019

'Women in Kade [a processing hub in the Eastern Region] do not combine farming and oil palm processing so they have the strength to process. But we have to go to the farm and work. We are usually very tired by the time we get back home. If I have about a pole of farmland [about a quarter of an acre] and I have cultivated cassava and other crops on it, I cannot add the processing work to the farming. Processing is all about money. We do not have the mill since we do not have capital to buy it. So, we need support to get the machine. The machines will do the pounding of the palm fruits. None of us here has the strength to do that and so the machine would help us.' (Female FGD, Adum Dominase, 24/04/2019)

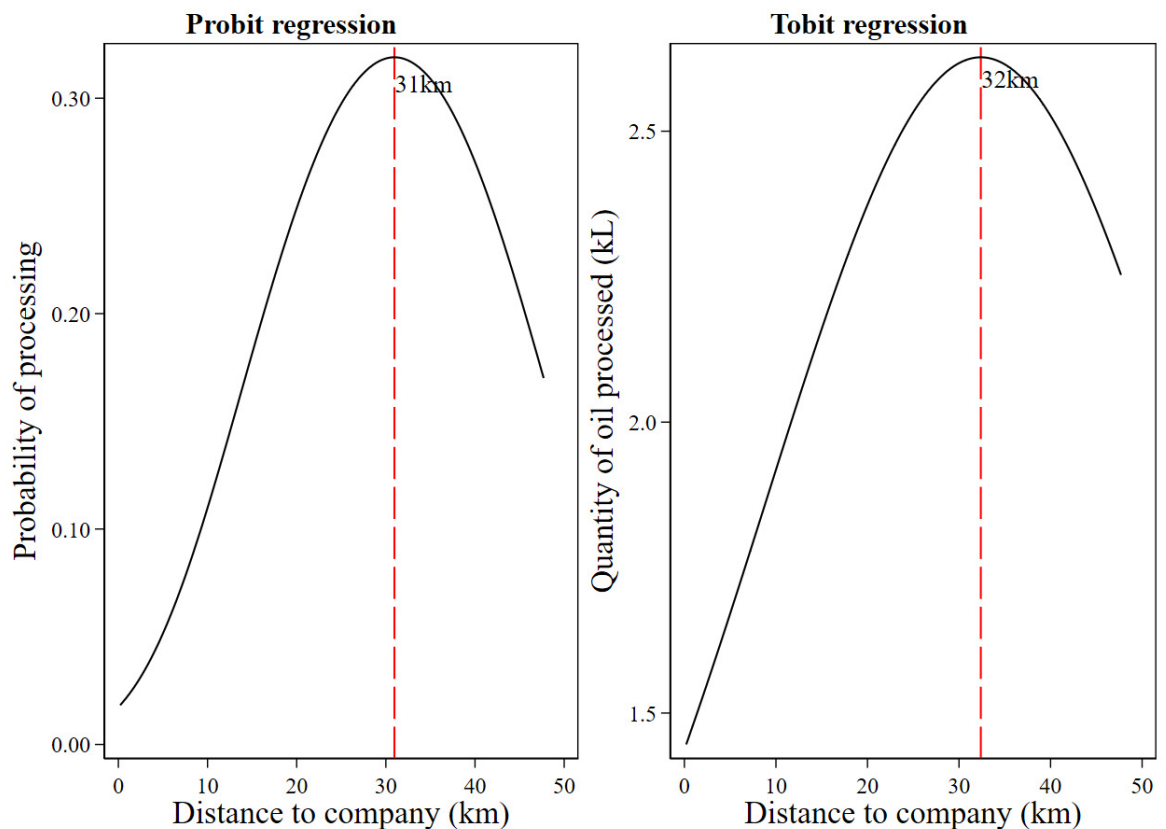
'Those who really process the oil palm are in the Ahanta area. Some of them have very big processing sites and they don't send their oil palm to BOPP anymore. But in this community, just a few households process and it is usually on a small scale. We don't have the mills here. All those who were processing in the past have stopped and have become BOPP contractors. They rather buy the fruits and supply to BOPP. The work is very tedious and most of them

suffered health problems. Were there a big machine in this community, we would have processed rather than sell to BOPP.' (Female farmers, Adum Dominase, 24/04/2019)

Indeed, the survey data also shows that artisanal processing mills are more common in Ahanta West communities than in Mpohor. While about 46 per cent of Ahanta West communities had a mill, only 17 per cent of Mpohor communities had one. It is not surprising therefore that the average probability of processing is 22 per cent for households living in Ahanta West compared with nine per cent for those in Mpohor. The difference of 13 percentage points is statistically significant (p -value = 0).

Being isolated from a company and markets can be an opportunity or a challenge in terms of availability of fruits and palm oil marketing options. While we noted that community location in relation to large processing companies could be an important determinant of processing incentives, the relationship is conceptually indeterminate a priori. On the one hand, innovation and technology diffusion could precipitate more processing in communities close to oil palm processing companies. On the other hand, given the large processing capacity of companies, communities that are near may rather specialise in palm fruit production for sale to the

Figure 4.2. Artisanal palm oil processing increases with distance to a big company, but at a decelerating rate



Source: Authors' own, based on APRA-Ghana Work Stream 1 survey, December 2019

companies. For communities living further away from the large processing companies, the high transaction costs of selling palm fruits to the companies through intermediaries could put producers off selling to companies and thus, make artisanal processing more common (Dzanku et al., 2020).

First, the econometric estimates of equations (1) and (2) show that both the probability and intensity of artisanal palm oil processing increases significantly as distance to the nearest company increases, but at a decelerating rate (Table 4.2 and 4.3), irrespective of whether we account for other factors that influence processing (Model 4) or not (Model 1). Palm oil processing increases with distance to a company until approximately 31km and 32km for the probability and intensity of processing, respectively (Figure 4.2). This result shows that the availability of markets matters for processing. Furthermore, locating further away from a big company also means that the level of isolation from palm oil markets also increases, which is why the likelihood and intensity of processing decelerates.

For those living within the 5th percentile distance to a company (about 6km), the probability of processing is only six per cent compared with 17 per cent for those living within the 50th percentile distance (about 14km); the difference of 11 percentage points is statistically significant (p -value = 0). Although the estimated difference in the probability of processing between the 5th and 90th percentile distances (6km versus 47km) is large and statistically significant (13 percentage points, p -value = 0), it is not as large as the distance gap would suggest. For the intensity of processing or the quantity of palm oil produced, the mean difference between the 5th and 50th percentile distances is 432 litres (p -value = 0), and the difference between the 5th and 90th percentiles is 592 litres.

The distance to company-processing relationship suggests that processing is a necessity for households in communities that are distant from the companies, but being deeply isolated also means that access to markets is limited and therefore, processing may be less remunerative. The implication is that while households that are processing may be doing so out of necessity, to solve palm fruit marketing constraints, the absence of companies also gives the processors some leverage to access fruits to process. This point was highlighted by a male processor:

'I have never sold my oil palm fruits to the company [Norpalm] and the reason is that I earn more income from processing the palm oil than selling the raw palm fruits to the company. If I consider the transportation expenses involved in trying to sell the palm fruits to the company,

I realised I was better off processing my palm fruits than selling them to the company. That was why I bought this milling machine to start processing.' (Mensah, processor, New Akwadae, 14/10/2019)

It has been documented that capitalist production stifles cottage industries by, for instance, drawing its labour and competing for raw material (Weis, 2006; Long, 2012). The presence of companies could attract farmers to sell their produce as a matter of convenience rather than better market incentives. When this happens, farmers are locked up in the circuits of capitalist production and accumulation strategies. Households near the companies would not have the motivation to process or innovate. Participants at an all-female FGD held at Dominase, a community near BOPP, stated that *'we don't process oil palm in this community because we don't have anyone to lead us.'* This shows the collapse in local initiatives to process because of longer-term processes of transformation happening in the community – linked to the activities of companies.

Artisanal processors who live close to companies have to compete with the large companies for palm fruits, and this affects the cost of processing, rendering processing unprofitable, which is why the majority of such processors are tending to produce their own raw materials. On the other hand, distant communities process more because farmers sell produce within the communities and often avoid the transaction cost of selling to companies directly – or through agents who fix a lower producer price to cater for their own transportation cost. Participants in a mixed FGD reiterated this point:

'The mills didn't come here because when we started to cultivate the oil palm, we were just producing it for the company. The company was bringing its trucks to collect the fruits every two weeks, so we didn't think of starting a mill to process the oil palm in the community. So, they [the companies] think that we can't do it. We know they are cheating us. We are fed up with the company, but we still sell the fruits to them. There is a mill right at Ayim and people around the mill no longer send their fruits to BOPP. They process the fruits. But we don't have the mill here so if we get one in this community and start processing the oil, they will certainly increase the current buying price. There is no competitor and that is why they are cheating us.' (Mixed group FGD, Adum Dominase FGD, 19/04/2019)

The existence of plantation and contract farming schemes also affect processing. There are high levels of land concentration and accumulation in communities near the industrial companies. These plantations have existed for over 50 years. Plantations create land scarcity which affects the size of land available to farmers. Generally, processing households have approximately 0.7ha more oil palm farmland than those that sell to companies. Contract farming and out-grower schemes are part of the production model of companies. Since households depend to a large extent on their own palm fruits, those with smaller farmlands often do not engage in palm oil processing at all because they would have to depend on the market for raw material, but are not able to compete with the big companies in the palm fruit market. This means that such smaller farmers are obliged to sell their palm fruits to companies directly or through agents, meaning they lose autonomy over their produce.

The few processors near company plantations rely on palm fruits that are rejected by the companies because of their undesirable properties. The large companies prefer the *tenera* variety of palm fruits because of its higher oil extraction rate. However, most farmers grow both the *dura* and *tenera* varieties, which allows artisanal processors living close to plantations to buy the undesirable variety for processing. Companies that buy the two varieties offer a lower price for *dura*. In addition, in some communities, credit-for-palm fruit is a common arrangement between farmers and processors. The processors hedge fruit sourcing difficulties through the advancement of credit to farmers. That is, some processors provide cash credit to farmers during the production season to ensure that farmers reserve an equivalent value of palm fruits (plus interest) for processors.

The existence of companies also affects intergenerational transfer of processing skills. State-led integration of farmers into capitalist production schemes – through its establishment of plantations and contract farming schemes since the 1970s – has limited household processing of oil palm, and the transfer of skills in communities close to the corporations. In one FGD session with women in Dominase, a community near BOPP where processing activities were very low (only two women processed oil palm), some participants maintained that in addition to capital, they have lost the skills to process. They attributed this to the presence of BOPP. In another community near a large company, a community leader indicated that there had been a shift away from palm oil processing to coconut oil processing due to the proximity to large oil palm companies, which outcompete artisanal processors for palm fruits.

4.2.2 Other community-level determinants

The qualitative study identified at least five other features that distinguish oil palm processing communities from their non-processing counterparts. First, agricultural produce marketing is one of the major post-production factors that has seen little policy attention in Ghana. Improving agricultural and related market access conditions are known to be important for generating multiplier economic activities in the agrarian economy (Jayne, Chamberlin and Benfica, 2018; Wiggins, 2000). Although the regression results do not show a statistically significant association between distance to markets and processing once we adjust for the presence of a mill within the community, the qualitative study showed that living further away from major market centres means fewer economic activities are available. In fact, without accounting for the presence of a mill in the community, those living within the 5th percentile distance to the major market (about 11km) have a 25 per cent probability of processing palm oil compared with only seven per cent for those living within the 90th percentile distance from the market (about 118km); the difference of about 18 percentage points is highly significant (p -value = 0).

Second, and related to the above, we found that vibrant artisanal oil palm processing communities have alternative economic activities that create markets within the communities; Butre and New Akwadae in the Ahanta West districts illustrate this vividly. These communities have vibrant fishing industries which have become a source of market for palm oil and other processed products such as soap. In addition, the income earned from the fishing industry is invested in oil palm processing, which is both labour and capital intensive. Access to alternative livelihoods also means that farmers are less likely to engage in the rapid or emergency sale of raw palm fruits to companies – in times of urgent income constraints – because they have funds available from other activities.

Third, and linked to the alternative livelihood effect, is the availability of alternative processing – palm kernel oil, soap, and alcohol distillation. The plantation logic means that companies own the palm trees and can dispose of them how they choose. Over-aged trees are used to distil *Akpeteshie* (local gin), which is a vibrant economic activity. We found that communities that sell palm fruits to companies have less by-products to process, but the reverse is true for artisanal oil palm processing communities. In Kwesi Krom and New Akwadae (isolated communities from companies), palm kernel processing is an additional livelihood activity. Alcohol distillation is also common in Kwesi Krom.

Fourth, palm oil agents (middlemen and middlewomen) are important players in the processing sector in the relatively isolated communities. In New Akwadae and Kwesi Krom for instance, agents were prominent in processing – either as an accumulative strategy or as resistance to low prices offered by the industrial companies or their subcontractors. In fact, in New Akwadae, an agent is responsible for fixing palm oil prices. This agent also gives market information to other processors in the community.

Finally, communities are also differentiated by the type of amenities and social goods that support processing. The lack of access to adequate water is a major processing constraint in Pretsea and its environs because, according to the community members, factory waste disposal into rivers by a nearby oil palm company has led to the pollution of their main water source for processing. In addition, since the communities must depend on water from streams, which dry up during the dry season, processing has become even more difficult. In these communities, water scarcity limits processing because the phenomenon coincides with their peak oil palm season (December–May). Thus, these communities are unable to take advantage of the seasonal price plunge during the peak season to increase processing.

4.2.3 Household demographics and resources

We expect household demographic factors to also be a source of difference between processor and non-processor. These factors include household type and composition, sex, age, and educational attainment. There are at least two main reasons why these variables could matter for processing. Artisanal oil palm processing is known to be dominated by women, although it has been noted that men are getting increasingly involved as processing becomes more mechanised (Sarku, 2016). Secondly, artisanal processing is labour intensive and so the availability of household labour could be a key determining factor. A well-known feature of domestic division of labour in Ghana regards the central role women and girls play in household food processing (Van Hear, 1982). The role of children was also reiterated by a processor who said:

'The children [girls] help me to pound the palm fruits. Even if I'm not around, they can process the fruits in my absence. They have learnt how to do it from me.' (Maame Ama, Pretsea, 21/10 /2019)

The regression models provide the following insights. After adjusting for other factors associated with processing, we find that heterosexual couple-led households and female-headed households have

significantly higher propensities of palm oil processing. The average probability of processing is 21 per cent for heterosexual couple-led households compared with 12 per cent for other households; the difference of nine percentage points is statistically significant (p -value = 0.010). Similarly, the quantity of palm oil processed by heterosexual couple-led households was 243 litres more than what other households produced (Table 4.3). The reason couple-led households are more likely to process is simply that more labour is available – they have about 30 per cent more adult labour. Female-headed households have a 25 per cent probability of processing palm oil compared with 17 per cent for male-headed households, but the eight-percentage points difference is only statistically significant at the 0.10 level (Table 4.2); female-headed households do not produce significantly more palm oil, however (Table 4.3).

On the effect of household resource endowments on palm oil processing, four variables remained statistically significantly and were associated with both the probability and intensity of processing after adjusting the models for other covariates (Model 4, Tables 4.2 and 4.3). The variables were: quantity of palm fruit produced (log), quantity of male labour, livestock wealth, and participation in non-farm employment. For a 10 per cent increase in household palm fruit production, the average probability of processing is estimated to increase by about 1.4 per cent (Table 4.2), and the quantity of palm oil produced rises by about 71 litres. These data suggest that, own palm fruit production matters significantly for artisanal palm oil processing incidence and intensity. One additional adult male in households to provide labour increases the probability of oil palm processing by three percentage points and raises the level of palm oil produced by 117 litres, on average. Surprisingly, the availability of an additional female adult labourer does not significantly increase the likelihood of processing. The reason for this result is that the households in our sample produce most of the palm fruits they processed, and men control most of the fruits within the household. In the qualitative study, we found that mechanised processing was more common among male than female processors, the latter tending to use rudimentary tools. Intra-household gender relations also play out with respect to processing. While women take on multiple tasks even when men control processing within the household, men do not reciprocate this if women control processing.

Mechanised artisanal processing requires capital. Initial poverty and inequality are therefore expected to be important determinants of mechanised processing. The empirical econometric model included some variables that capture livelihood capital assets: land

(oil palm farmland and other farmlands) livestock wealth, and the availability of alternative livelihoods aside from farming and processing. The results show that livestock wealth and engagement in non-farm employment are significantly correlated with both the probability and intensity of palm oil processing. While livestock wealth is significantly positively associated with processing, employment in the non-farm sector is negatively associated with the same. For households with members employed in non-farm work, the probability of processing is 15 per cent, compared with 22 per cent for those not employed in non-farm work; the difference of approximately seven percentage points is significantly different from zero (p -value = 0.007). Further, the difference in the quantity of palm oil produced by the two groups is about 179 litres (Table 4.3). This means that oil palm processing and non-farm employment are competitors at the household level, although the qualitative study showed that they are counterparts at the community level.

The qualitative study shows that wealthier farmers tend to have access to fruits if they must buy from other farmers because they are able to pay on time or are more credit worthy. Whilst this highlights social difference, it also explains how accumulation and wealth concentration can happen in rural areas. An artisanal processor related the phenomenon to farmers' financial strength:

'Although processing pays more than the sale of FFBs, there are some people who might not have the financial patience to wait to process the fruits into oils before selling them to earn income, so they'd have to sell the fruits to the agents. Also, those people harvest their fruits every two weeks because of the high demand of the fruits by the agents and the companies.'
(Samuel, artisanal processor, Butre, 19/04/2019)

5 ARTISANAL OIL PALM PROCESSING AND FOOD SECURITY

It is conceptually challenging to determine the welfare effect of artisanal processing because, as noted earlier, initial wealth and asset endowments determine the ability to process – at least mechanically. Therefore, unless we can adequately adjust for initial endowments or randomly assign processing to ensure that processing and non-processing households are similar at the baseline, one cannot tell the direction of causality. A male processor during the qualitative study, for instance, noted:

'I've come to know that processing the palm fruits into palm oil fetches more income than selling the raw fruits. A few weeks ago, I processed just a few bunches of fruits, but I earned GH¢10,000. If I sold the raw palm fruits, I wouldn't have made that much. However, there are some people who might not have the financial patience to wait to process the fruits into oil before selling them to earn income, so they have to sell the fruits to the agents. Also, those people harvest their fruits every two weeks because of the high demand of the fruits by the agents and the companies. For me, because I process the fruits into oil, I don't hastily harvest my palm fruits. I wait for the fruits to ripe fully because this produces the best palm oil. Another reason why others prefer to sell the raw fruits instead of processing them into oil is that it is a very tedious and cumbersome.' (Ekow, male processor, Butre 17/04/2019)

Given the above conceptual and econometric challenges to identify the welfare effect of processing, we proceeded with the study as follows: first, we used food security as our welfare indicator because although food is one of the most important basic needs, farmers are known to experience food insecurity, at least seasonally, even in commercial agriculture areas of Ghana (Dzanku, Tsikata and Ankrah, 2021). Our hypothesis is that the opportunity provided by value addition through palm oil processing could ensure more stable incomes that allow households to procure food throughout the year, even if they do not produce the food themselves. Therefore, we expect processing households to be less food insecure than non-processing households. The food insecurity variable is

constructed from the survey question that asked an adult female member of the household the following question: 'Identify the months in the past 12 months during which you did not have enough food to meet your family's needs?' A household is classified as seasonally food insecure if this question returned a yes answer for any month of the year.

The household food insecurity ($FINS$) regression equation is specified as:

$$FINS_i^* = \alpha + \delta * processing_i + \beta'X_i + \lambda'C + v_i \quad (3)$$

where $FINS_i^*$ is the latent unobserved level of food insecurity for the i th household, which is linked to the food insecurity outcome by:

$$FINS_i = \begin{cases} 1 & \text{if } FINS_i^* > 0; \\ 0 & \text{otherwise} \end{cases};$$

Processing is the binary variable that takes on the value of one for processing households and zero for non-processing households; X is the vector that contains all other covariates that are associated with food (in)security, including household demographic characteristics and wealth, own food production, access to food markets, transfers, and community characteristics. Since the factors that inhibit or promote food (in)security could also influence processing, as noted above, *processing* is said to be endogenous in equation (3). Given the binary nature of the *processing* indicator, our approach to dealing with the endogeneity problem is Joint maximum likelihood (JML) estimation of equation (3) and an auxiliary *processing* equation.

Theoretically, we need at least one variable that enters the auxiliary equation but not the $FINS$ equation. The candidate variable (instrument) must be strongly correlated with processing but should not directly influence $FINS$ except through its effect on processing. We use two variables for this purpose: the availability of a processing mill in the community (*mill*) and distance to an oil palm company (*company*).

Table 5.1 Food security and artisanal oil palm processing

Variables	(1) Probit: FINS	(2) Stage 1: Processing	(3) Model 3
Oil palm processing household	-0.035 (0.053)		-0.079 (0.153)
Female-headed household	0.072 (0.076)	0.102* (0.059)	0.075 (0.078)
Age of household head	-0.001 (0.002)	0.000 (0.001)	-0.001 (0.002)
Couple-led household	-0.080 (0.075)	0.090** (0.042)	-0.077 (0.077)
Adult females	-0.024 (0.023)	-0.019 (0.018)	-0.025 (0.023)
Adult males	0.027 (0.024)	0.028 (0.018)	0.028 (0.024)
Youth dependency ratio	-0.000 (0.037)	-0.006 (0.030)	-0.001 (0.037)
Years of schooling	-0.017*** (0.006)	-0.000 (0.004)	-0.017*** (0.006)
Farmland per capita	-0.017 (0.013)	-0.008 (0.010)	-0.017 (0.013)
Oil palm farmland share	-0.133** (0.067)	0.017 (0.053)	-0.132** (0.066)
Staple food producer	0.061 (0.044)	-0.054 (0.035)	0.057 (0.046)
Ln income per capita	-0.062*** (0.016)	0.037*** (0.012)	-0.060*** (0.017)
Received remittance	0.087 (0.063)	-0.068* (0.039)	0.079 (0.064)
Livestock wealth	-0.014** (0.006)	0.008** (0.004)	-0.013** (0.006)
Daily market in community	0.014 (0.042)	-0.005 (0.035)	0.022 (0.042)
Ln distance to main market	0.056** (0.023)	-0.054*** (0.020)	0.054* (0.028)
Ln distance to company		0.069*** (0.023)	
Community processing mill		0.169*** (0.042)	
Observations	582	582	582
F-stat for excluded instruments		14.422	
F-statistic p-val.		0.000	

Standard errors in parentheses; * p<.10, ** p<.05, *** p<.01

Source: Authors' own, based on APRA-Ghana Work Stream 1 survey, December 2019

The auxiliary equation is thus:

$$\begin{aligned} \text{processing}_i^* &= \alpha + \varphi_1 \text{mill}_j + \varphi_2 \text{company}_j \\ &+ \beta' X_i + \lambda' C + v_i \end{aligned} \quad (4)$$

where C is a set of community level factors. We argue that, after adjusting for market access, wealth indicators, and a rich set of demographics and community factors, the only channel through which the two instrumental variables could affect food (in)security is through their effect on processing. Econometrically, we tested the validity and strength of the instruments by estimating a linear model by linear IV (2SLS) that allowed us to do the weak IV analysis.

The results of the JML estimation of equations (3) and (4) are reported in Table 5.1. The observations are reduced to 583 because 219 households did not have any adult females present to which the food security question could be asked during the survey. The first column reports the naïve Probit food insecurity model that does not adjust for the endogeneity of processing. The second column shows results from the auxiliary equation (i.e., equation 4), and the third column shows the endogeneity adjusted food insecurity equation estimates.

The results show that, whether we adjust for endogeneity or not, palm oil processing households are not significantly less seasonally food insecure than their non-processing counterparts, although the respective coefficients carry the expected negative signs. For instance, for the endogeneity adjusted regression, the average probability of being seasonally food insecure is 38 per cent for non-processing households, compared with 30 per cent for processing households. However, while the difference of about eight percentage points is nontrivial – about 21 per cent of the sample mean food insecurity rate – it was not large enough to achieve statistical significance. A larger sample may provide more statistical power to detect an effect, if indeed there is one.

6 CONCLUSION AND IMPLICATIONS FOR POLICY AND PRACTICE

This paper has used a mixed methods approach to study how oil palm producing and processing communities and households in one of Ghana's largest oil palm belts of south-western Ghana are impacted by long-term processes of agricultural land concentration, and the activities of large-scale oil palm companies. The paper specifically examines how community-level mechanisation of labour-intensive palm oil processing activities and proximity to, or isolation from, large oil palm industrial companies plays out in shaping artisanal and small-scale palm oil processing incentives in 23 rural communities in the Ahanta West and Mpohor districts of the Western Region. Given that seasonal food insecurity tends to be a problem even in some highly commercialised farming communities in rural Ghana, the paper hypothesised that artisanal palm oil processing provides an opportunity for income smoothening, making participating households less seasonally food insecure than non-participating households.

Artisanal palm oil processing has been going on in rural Ghana for centuries. Since the period of economic structural adjustment in the 1980s, state policy orientation and practices have favoured increasing oil palm production through plantations and industrial processing companies. This is viewed as an important strategy for increasing growth in the oil palm sector, as well as integrating smallholders into global markets, through relationships with large transnational corporate entities in the oil palm sector. The underlying assumption is that such vertical integration and relationships, such as through contract farming and related agricultural commercialisation models, will lead to mutually beneficial outcomes. However, the evidence so far has been mixed, with no significantly positive outcomes in the case of marketing contract arrangements that are prevalent in the south-western oil palm belt where our study is sited.

The introduction of large industrial companies into this space has modified incentives and the general relations among actors in the value chain. While artisanal palm oil processors seem to live and operate in the shadows of the large companies, their activities in terms of output and employment are important not only for their households and the rural economies within which

they live and operate, but also for the country as a whole because they produce the lion's share of palm oil. Although artisanal processors contribute up to 60 per cent of total domestic palm oil output, there is little coordinated policy and development efforts towards modernisation and inclusivity. The high levels of vertical integration in the artisanal palm oil processing space means that a value chain approach that addresses not only the constraints facing processors, but also those facing small- and medium-scale oil palm farmers, is required for creating a vibrant oil palm agroindustry. On the one hand, the presence of large oil palm plantations and their industrial processing mills create palm fruit markets for small- and medium-scale oil palm farmers who are themselves potential artisanal processors. On the other hand, we observe that such opportunities tend to stifle the intergenerational transmission of artisanal palm oil processing knowledge and incentives for households living close to the industrial companies. But artisanal processors are not passive participants in the shadows of the large corporations. Indeed, in some cases, the incentive to process palm fruit into palm oil is in direct resistance to palm fruit price fixing by the large companies. But the unequal power structures mean that farmers and processors are only successful in areas where transaction costs make the operations of the large companies and their agents prohibitive.

On artisanal processing, we observed that only a modest (about nine in 50) proportion of households in our sample process palm oil in commercial quantities. These often small family businesses employ about 67 per cent of household members, on average. This provides an important avenue for rural employment in the face of rising unemployment in rural areas, even if processing activities are seasonal for 89 per cent of the survey sample. Although our profit estimates could be slightly overestimated due to omitting equipment depreciation costs, we observe that only 18 per cent of artisanal processing households make losses, and the average profit per contributing family worker of over US\$500 per year, or approximately US\$972 in PPP, is well above the international poverty line of US\$1.90. Strikingly, the majority (about 95 per cent) of these artisanal processing households produce their own raw material (palm fruits) for processing. The vertically integrated nature of the artisanal processing business

thus calls for the kind of policies that address the needs of small- and medium-scale farmers and artisanal processors concurrently. Paying policy attention to the sector could enhance Ghana's current agriculture and rural development policy initiatives through the Planting for Food and Jobs and the One District One Factory (1D1F) initiatives, all of which aim to create jobs through various state-led programmes. But the success of such initiatives may require significant shifts in policy conceptualisation and implementation. That is, there would need to be a shift from the current dominant narrative of productivism, which is at the core of most policy and development thinking, to one that integrates a truly value chain-oriented approach that includes small- and medium-scale farmers as well as artisanal processors.

On the determinants of artisanal palm oil processing, two main factors stand out at the community level: the presence of an oil palm processing mill within or close to the community, and the distance to an oil palm corporation. Artisanal processing is higher, by a factor of more than three, in communities that have mills relative to those without mills. Being isolated from a company promotes artisanal processing, with processing increasing significantly with distance to the closest company, but at a decelerating rate. We show that the likelihood and intensity of processing reaches a maximum level at around 31–32km from a company. The distance-processing relationship means that processing is a necessity for households in distant communities, but being isolated beyond a point lowers market access, making processing less remunerative. The evidence of impact of these community-level factors has immense policy implications. For instance, the establishment of gender inclusive palm oil processing mills using locally made modern equipment, particularly in communities that are further away from oil palm company processing facilities, could be a game changer. First, this could reduce seasonal fluctuations in fruit prices that reduce profits. Second, although women dominate oil palm processing, their activities are less mechanised, which makes the establishment of community-based processing mills important for reducing drudgery and freeing up time that allows women to reduce their double burden of

labour-intensive processing and reproductive work. Since the GRATIS Foundation – an agency under the Ministry of Trade and Industry tasked with promoting small-scale industrialisation – manufactures palm oil processing equipment, this could be incorporated into the government's 1D1F initiative, which is also hosted by the Ministry of Trade and Industry. This is important because, among other reasons, 1D1F aims to 'ensure even and spatial spread of industries that would stimulate economic activity in different parts of the country'. The YouStart initiative that was announced in the budget statement and economic policy of the Government of Ghana for the 2022 financial year could also play a role. YouStart could offer soft loans of GH¢100,000, which are tied to equipment acquisition for farmer associations.

Our hypothesis that artisanal palm oil processing is associated with lower incidence of seasonal food insecurity could not be sustained by the evidence gathered from the survey data. That is, the magnitude by which artisanal oil palm processing reduced seasonal food insecurity in our sample was not large enough for us to conclude that processing households are significantly less food insecure than their non-processing counterparts, even though the latter group were about eight percentage points less food insecure. Our cautious conclusion is that a larger sample may be required to provide more statistical power to detect an effect, if any.

Finally, we argue that the debate on the way forward for structuring Ghana's oil palm sector need not focus on whether industrial companies are good or bad for rural economic transformation, or whether policy should focus mainly on small and medium-size farmers and artisanal processors. While some beneficial relationships between large plantations and smallholders have been documented, others have found that the unequal power relations often lead to the deterioration of smallholder welfare. Providing the appropriate policy environment that allows farmers to have control over their output and decisions about how to engage with markets – whether as suppliers of raw materials to industry or to increase their artisanal palm oil processing capacity – is the crucial point.

REFERENCES

- Adjei-Nsiah, S., Zu, A. and Nimoh, F. (2012) 'Technological and financial assessment of small scale palm oil production in Kwaebibrem district, Ghana', *Journal of Agricultural Science* 4(7): 111.
- Amanor, K. (1999) *Global restructuring and land rights in Ghana: forest food chains, timber, and rural livelihoods*. Uppsala: Nordic Africa Institute.
- Asante, E.A. (2012) *The case of Ghana's President's Special Initiative on oil palm (PSI-Oil Palm)*. Available at: https://ciaotest.cc.columbia.edu/wps/diis/0027061/f_0027061_22110.pdf (Accessed: 25 February 2022).
- Bernstein, H. (2010) *Class dynamics of agrarian change* (Vol. 1). Kumarian Press, Colorado, USA.
- Britwum, A. O. (2013) 'Market queens and the blame game in Ghanaian tomato marketing', in: C. Scherrer and D. Saha (eds.), *The food crisis. Implications for Labour*. München, Mering: Rainer Hampp Verlag.
- Brønd, F. (2018) 'Territory and trade networks in the small-scale oil-palm industry in rural Ghana', *Applied Geography* 100: 90-100.
- Clark, G. (1997) 'Market queens: Innovation within Akan tradition', *Annals of the New York Academy of Sciences*, 810(1): 173-201.
- Dzanku, F.M. (2020) 'Poverty reduction and economic livelihood mobility in rural sub-Saharan Africa', *Journal of International Development* 32(5): 636-683. <https://doi.org/10.1002/jid.3471>.
- Dzanku, F.M., Asante, K.T., Quarmine, W. and Hodey, L.S. (2020) *Smallholder Farmers' Choice of Oil Palm Commercialisation Model and Household Welfare in South-western Ghana*. APRA Working Paper 43. Brighton: Future Agricultures Consortium. Available at: <https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/15714> (Accessed: 13 March 2021).
- Dzanku, F.M., Tsikata, D. and Ankrah, D.A. (2021) 'The gender and geography of agricultural commercialisation: what implications for the food security of Ghana's smallholder farmers?' *The Journal of Peasant Studies* 48(7): 1507-1536. doi:10.1080/03066150.2021.1945584.
- Fold, N. (2008) 'Transnational sourcing practices in Ghana's perennial crop sectors', *Journal of Agrarian Change* 8(1): 94-122.
- GNA (2021) 'Government urged to exempt palm oil from 50% benchmark policy', *Ghana Business News* [online], 25 August. Available at: <https://www.ghanabusinessnews.com/2021/08/25/government-urged-to-exempt-palm-oil-from-50-benchmark-policy/> (Accessed: 14 January 2022).
- Ghana Statistical Service (2020) *2017/18 Ghana Census of Agriculture*. Accra, Ghana Statistical Service. Available at: <https://statsghana.gov.gh/gssmain/fileUpload/pressrelease/Final%20Report%2011%2011%202020%20printed%20version.pdf> (Accessed: 4 April 2021).
- Glover, D. and Kusterer, K. (2016). *Small farmers, big business: contract farming and rural development*. Berlin: Springer.
- GoG (Government of Ghana) (2018) *Investing for food and jobs (ifj): An agenda for transforming Ghana's agriculture (2018-2021)*. Accra: Ministry of Food and Agriculture.
- Graham, Y. (1993) *Law, State and the Internationalisation of Agricultural Capital in Ghana: A comparison of colonial export production and post-colonial production for the home market*. PhD Thesis. University of Warwick.

- Gyasi, E.A. (1992) 'Emergence of a new oil palm belt in Ghana', *Tijdschrift voor economische en sociale geografie* 83(1): 39-49.
- Hassan, M., Njeshu, G., Raji, A., Zhengwuvi, L. and Salisu, J. (2016) 'Small-scale Palm oil processing in west and central africa: development and challenges', *Journal of Applied Sciences and Environmental Sustainability* 2: 102-114.
- Henson, I.E. (2012) 'A Brief History of the Oil Palm', In O.-M. Lai, C.-P. Tan and C. C. Akoh (eds.), *Palm Oil*. Illinois: AOCS Press.
- Jayne, T.S., Chamberlin, J. and Benfica, R. (2018) 'Africa's Unfolding Economic Transformation', *The Journal of Development Studies* 54(5): 777-787. doi:10.1080/00220388.2018.1430774.
- Khatun, K., Maguire-Rajpaul, V.A., Asante, E.A. and McDermott, C.L. (2020) 'From agroforestry to agroindustry: Smallholder access to benefits from oil palm in Ghana and the implications for sustainability certification', *Frontiers in Sustainable Food Systems* 4: 29. <https://doi.org/10.3389/fsufs.2020.00029>.
- Laryyoh, M.T. (2019) 'Ghana could earn \$12 billion from planting for export and rural development', *Pulse.com.gh* [online], 24 July. Available at: <https://www.pulse.com.gh/bi/strategy/ghana-could-earn-dollar12-billion-from-planting-for-export-and-rural-development/wpxptnl> (Accessed: 2 June 2020).
- Long, F. (2012) *Restrictive Business Practices, Transnational Corporations, and Development: A Survey* (Vol. 2). Berlin/Heidelberg: Springer Science and Business Media.
- Mikell, G. (1989) *Cocoa and chaos in Ghana*. Washington, DC: Howard University Press.
- Moyo, S., Jha, P. and Yeros, P. (2019) 'The scramble for land and natural resources in Africa', in: S. Moyo, P. Jha and P. Yeros (eds.), *Reclaiming Africa*. Singapore: Springer.
- Mzembe, D.K. (2013) *I Will Try: A Long Walk to Globalization*. Indiana: XLIBRIS.
- Ofori-Budu, K. and Sarpong, D. (2013) 'Oil palm industry growth in Africa: A value chain and smallholders' study for Ghana', in: A. Elbehri (ed.), *Rebuilding West Africa's food potential: Policies and market incentives for smallholder-inclusive food value chains*. Rome: Food and Agriculture Organization of the United Nations and International Fund for Agriculture Development.
- Osei-Amponsah, C., Agbotse, P., Swanzy, F. and Stomph, T. (2018) 'Role of small-scale enterprises in agricultural development agendas: Insights from oil palm processing enterprises in the Kwaebibirem District of Ghana', *Ghana Journal of Agricultural Science* 52: 131-144.
- Osei-Amponsah, C., Stomph, T.-J., Visser, L., Sakyi-Dawson, O., Adjei-Nsiah, S. and Struik, P.C. (2014) 'Institutional change and the quality of palm oil: an analysis of the artisanal processing sector in Ghana', *International Journal of Agricultural Sustainability* 12(3): 233-247.
- Osei-Amponsah, C., Visser, L., Adjei-Nsiah, S., Struik, P.C., Sakyi-Dawson, O. and Stomph, T.J. (2012) 'Processing practices of small-scale palm oil producers in the Kwaebibirem District, Ghana: A diagnostic study', *NJAS - Wageningen Journal of Life Sciences* 60-63: 49-56. <https://doi.org/10.1016/j.njas.2012.06.006>.
- Osei-Amponsah, C. and Visser, L. (2016) 'Does actor perspective matter? A case study of designing intervention for small-scale palm oil production enterprises in Kwaebibirem District of Ghana', *Rural Sociology* 81(2): 224-248.
- Owoo, N.S. and Lambon-Quayefio, M.P. (2017) *The agro-processing industry and its potential for structural transformation of the Ghanaian economy*. WIDER Working Paper 2017/9. Finland: UNU-WIDER. Available at: <https://www.wider.unu.edu/sites/default/files/wp2017-9.pdf> (Accessed: 24 February 2022) .
- Pretty, J., Smith, G., Goulding, K.W.T., Groves, S.J., Henderson, I., Hiñe, R.E., King, V., van Oostrum, J., Pendlington, D.J., Vis, J.K. and Walter, C. (2008) 'Multi-year assessment of Unilever's progress towards agricultural sustainability I: indicators, methodology and pilot farm results', *International Journal of Agricultural Sustainability* 6(1): 37-62.

- Ruml, A. and Qaim, M. (2020) 'Effects of marketing contracts and resource-providing contracts in the African small farm sector: Insights from oil palm production in Ghana', *World Development* 136: 105110. <https://doi.org/10.1016/j.worlddev.2020.105110>.
- Sarku, R. (2016) 'Analyses of gender roles in the oil palm industry in Kwaebibirem District, Ghana', *International Journal of Humanities and Social Science* 6(3): 187-198.
- Smalley, R. (2013) *Plantations, Contract Farming and Commercial Farming Areas in Africa: A Comparative Review*. FAC Working Paper 55. Brighton: Future Agricultures Consortium. Available at: http://www.fao.org/uploads/media/FAC_Working_Paper_055.pdf (Accessed: 10 March 2021).
- Sutton, J. and Kpentey, B. (2012) *An enterprise map of Ghana* (Vol. 2). London: International Growth Centre in association with the London Publishing Partnership.
- Ton, G., Vellema, W., Desiere, S., Weituschat, S. and D'Haese, M. (2018) 'Contract farming for improving smallholder incomes: What can we learn from effectiveness studies?' *World Development* 104: 46-64. <https://doi.org/10.1016/j.worlddev.2017.11.015>.
- Tsikata, D. and Torvikey, G.D. (2021) 'Rural women's livelihoods and food security in Africa', in: G. Berik and E. Kongar (eds.), *The Routledge Handbook of Feminist Economics*. Abingdon: Routledge.
- Van Hear, N. (1982). Child labour and the development of capitalist agriculture in Ghana. *Development and Change*, 13(4), 499-514.
- Weis, T. (2006) 'The rise, fall and future of the Jamaican peasantry', *The Journal of Peasant Studies* 33(1): 61-88.
- Wiggins, S. (2000) 'Interpreting changes from the 1970s to the 1990s in African agriculture through village studies', *World Development* 28(4): 631-662.
- Wilson, J. (1986) 'The political economy of contract farming', *Review of Radical Political Economics* 18(4): 47-70.

Toryikey, G.D. and Dzanku, F.M. (2022) *In the Shadow of Industrial Companies: Class and Spatial Dynamics of Artisanal Palm Oil Processing in Rural Ghana*. APRA Working Paper 85. Brighton: Future Agricultures Consortium

© APRA 2022

ISBN: 978-1-78118-955-9

DOI: 10.19088/APRA.2022.010



This is an Open Access report distributed under the terms of the Attribution-Non Commercial-No Derivs 4.0 Unported (CC BY-NC-ND 4.0) Attribution — You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use. NonCommercial — You may not use the material for commercial purposes. NoDerivatives — If you remix, transform, or build upon the material, you may not distribute the modified material. You are free to: Share — copy and redistribute the material in any medium or format.

<https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode>

If you use the work, we ask that you reference the APRA website (www.future-agricultures.org/apra/) and send a copy of the work or a link to its use online to the following address for our archive: APRA, Future Agricultures Consortium, University of Sussex, Brighton BN1 9RE, UK (apra@ids.ac.uk)

All APRA Working Papers go through a review process before publication.



DO YOU HAVE COMMENTS ON THIS PAPER?

We would welcome your feedback on this working paper!

To provide brief comments, please follow this link to our short APRA Working Paper Feedback form: <https://goo.gl/forms/1iVnXhhrlGesfR9>

Agricultural Policy Research in Africa (APRA) is a programme of the Future Agricultures Consortium (FAC) which is generating new evidence and policy-relevant insights on more inclusive pathways to agricultural commercialisation in sub-Saharan Africa. APRA is funded with UK aid from the UK Foreign, Commonwealth & Development Office (FCDO) and will run from 2016-2022.

The APRA Directorate is based at the Institute of Development Studies (IDS), UK (www.ids.ac.uk), with regional hubs at the Centre for African Bio-Entrepreneurship (CABE), Kenya, the Institute for Poverty, Land and Agrarian Studies (PLAAS), South Africa, and the University of Ghana, Legon. It builds on more than a decade of research and policy engagement work by the Future Agricultures Consortium (www.future-agricultures.org) and involves more than 100 researchers and communications professionals in Africa, UK, Sweden and USA.

Funded by



This report is funded with UK aid from the UK government (Foreign, Commonwealth & Development Office – FCDO, formerly DFID). The opinions are the authors' and do not necessarily reflect the views or policies of IDS or the UK government.

