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Community, cohesion and context: agrarian development and religion in Eastern Region, Ghana

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Abstract

The role of community based dynamics in successful agrarian development is considered through comparing two neighbouring villages in Ghana, with similar agro-ecological conditions and market access: one, Gyedi, is a religious community and the other, Apaa, is not. While the direct role of religion in promoting agrarian development is limited, interaction with extension staff in Gyedi enables farmers to avoid problems characteristic of smallholder realities in Africa in general. Skills intensive technologies and internal market co-ordination promoted by community cohesion are key explanations for diverging development trajectories. The role of tenancy arrangements in diverging trajectories, pointing to the potential challenges for pro-poor agricultural growth strategies in other settings.

While broad based development approaches and poverty reduction strategies have encouraged inclusivity¹ in some regional contexts the challenges of finding generalizable success stories for Africa have been monumental. In relation to agrarian development specifically, issues of social and economic nature are difficult to disentangle from aspects of agro-ecology. The large variation of soil types and rainfall patterns, even within short distances, is often put forth as a major obstacle to the replication of an Asian style Green Revolution in Africa. Less attention has been paid to local level variation in social characteristics. Research on social and institutional mechanisms of villages with

¹ Examples include comprehensive social welfare schemes such as the conditional cash transfer programmes in Latin America and the early Green Revolution policies in India.

similar physical conditions may however provide insights into local level divergence in types of livelihoods. Simply put: given similarities in agro-ecology, infrastructure and the broad agricultural policy environment what other explanations of differences in incomes and agricultural production patterns can be found at the village level? Comparing and contrasting successful and less successful cases of local level development processes may shed light on community based dynamics that contribute to this variation. This is what we propose to do in this article, on the basis of a mixed methods approach using quantitative survey data as well as qualitative interview material from Fanteakwa District in the Eastern Region of Ghana.

In November 2011, as a follow up to an earlier project on agrarian development in nine African countries (see Djurfeldt, Holmén et al. 2005; Djurfeldt, Aryeetey et al. 2011a) and as part of a new project on the gendered interaction between farm and non-farm income sources in Ghana and Kenya, we were involved in qualitative field work in a number of villages in the Eastern Region and Upper East Regions of Ghana.² In preparation for field work we studied the (cash) income data from the villages covered by the original sample of eight villages: one village, Gyedi in the Eastern Region, located just on the outskirts of the District capital of Begoro stood out. Here the average household cash income of 1493 USD in 2008 was twice as high as in the remaining villages in the Eastern Region. Perhaps most remarkably, it was more than double the average cash income per household, 731 USD, in the neighbouring village of Apaa, just seven kilometres away. In 2002 when both villages were selected for the survey, the differences were smaller: rainfall in Apaa was described as good, but erratic in Gyedi, land use was restricted to 65 percent of available area in Apaa and 60 percent in Gyedi. Both villages were considered to have generally good potential for agricultural growth, although Apaa was described as more marginal in terms of market access (Wayo Seini and Nyanteng 2003).

² The original survey covered eight villages in Eastern and Upper Eastern Region of Ghana (Dzanku & Sarpong, 2011).

Gyedi differed from Apaa not only with respect to average income, however. Our first visit to the village revealed that it was a religiously based farming community founded by the Saviour Church of Ghana in the mid-1970s. Gyedi therefore is the exception rather than the rule, at least when considering broader processes of rural development. The purpose of the following paper is to compare and contrast the successful (Gyedi) and less successful (Apaa) cases of village level development processes. If such development is an outcome of community characteristics indirectly linked to religion is a key question throughout the paper. Which processes have redressed many of the problems commonly associated with smallholder based agrarian environments in Africa is another issue that is dealt with. Whether generalizable lessons for the smallholder sector in Africa can be drawn also from the exceptional is in this sense the overarching research question. While our general answer to this question is 'no', our conclusions point to some insights that can be gained also from exceptional cases like that of Gyedi.

Theoretical framework

While the structural adjustment programmes (SAPs) of the 1980s and early 1990s plunged most African countries into the "lost decades" for smallholder based agriculture, another effect of these liberal reforms was the decentralization of development policy to regional or even local levels. Discussions of decentralisation and community based development therefore came to dominate the discourse as well as concrete development strategies in the two closing decades of the twentieth century. The conceptual framework for the empirical analysis of the villages considers the ways in which religiously based dynamics can interact to enhance or stymie the types of development processes envisioned in community based development approaches and decentralization strategies.

Decentralization and community based approaches to agrarian development

Promoted by notions of good governance and devolution of power, the redirection of funds to local level administrative structures as part of SAPs was connected to an ideology of bringing development closer to people through encouraging popular participation. By this token,

participation would encourage not only local level political involvement, but also economic growth and development more generally. The possibilities for stakeholders to engage in locally defined development initiatives was perceived to be greater than for policies rolled out from the political centre. Hence decentralization in itself was deemed to be capable of generating development (World Bank 2000). Connected also to ideals of self-reliance, ownership and empowerment, advanced as part of the agenda of economic liberalism in the 1980s and 1990s, participation came to be equated over time with localized, comprehensive social and economic transformation more broadly (Cornwall 2000).

In operational terms, decentralization and participatory approaches have, however met with limited success in an African context: the speed of decentralization has resulted in administrative and political ambiguity and conflict between different levels of government, while local government frequently depends on central government funding. Ambitions towards political decentralization have been further undermined by weak fiscal bases and lack of adequate resources (Prud'homme 2003; Smoke 2003; Awortwi 2011). Poor human resources and management at the local level alongside difficulties of controlling and reaching rural areas means that in practice the exercise of central government locally has been devolved to traditional elites (Holmén 2011).

The link between decentralization and local level democracy has also been shown to be spurious: While charged with greater responsibilities for service delivery, local governments as represented by local elites are as Crook (2003) suggests not particularly responsive to the needs of the poor. Instead, idioms of tradition and community based development have been used to “decentralize despotism” (Mamdani 1996) and uphold inherently inequitable systems shaped by the interaction of traditional elites with the political and economic influences of colonialism (Berry 1989; Berry 1993).

Community, development and religion

The empirical literature on decentralisation and community based development initiatives suggest that the radical, rights-based perspectives at the root of participatory research in the 1970s and

1980s (Freire 1971; Chambers 1983), when confronted with the realities of African politics have been unable to generate the type of transformation envisioned. Arguably, “the community”, which in practice often equates to traditional elites, has been stripped of its original meaning and failed to fulfil the participatory ambitions of community based approaches. By contrast theoretical approaches to community - whether in religious settings or otherwise - stress social cohesion and solidarity, also in an African context (Munyuki-Hungwe 2011).

While the concept of community draws its intellectual heritage from the early sociological works of Durkheim, Tönnies and Marx, who viewed “authentic communities as a major antidote to alienation and tyranny and as a key element of ‘good society’ (Etzioni 1996:4)”, all communities are based on collective identity, history and norms. In early socialist experimental communes (see Goldstein 1982 for example) as well as religiously based communities, egalitarian ideals often in combination with geographical isolation gave rise to what are known as Utopian communities “formed intentionally and voluntarily by men and women who were not exclusively kin, and who lived and worked together and shared their property. In such groups, members' private property is highly limited and does not include productive assets (Brumann 2003, p.396)”.

The connection between religion and economic growth has been postulated in a variety of contexts, perhaps most famously by Weber (1930) in *The Protestant Work Ethic and the Spirit of Capitalism*. Numerous examples of economically successful religious-based communities are documented in the literature, but for the most part these concern artisanal communities founded on the outskirts of large cities. Religious communities have, however on occasion also scaled up and diversified their activities from purely local ventures to large-scale, national and even international denominational scope (Turner 1969; Turner 1980; Jules-Rosette 1997).

In relation to African religion in particular the agrarian thrift of early African Independent Churches (AIC) is often contrasted with the ostentatious, modernizing, urbanism of later Pentecostal-Charismatic Churches, which tend to stress what is known as the prosperity gospel (Jules-Rosette

1997; Maxwell 1998; Gifford 2004; Meyer 2004; Gifford 2008). Fundamentally different both in theological outlook and history, the growth of AICs generally occurred in areas of heavy missionary presence, where disappointment with the ability of mainline churches and Western medicine to deal with spiritual concerns, in combination with vernacular bible translations, created the foundation for movements that linked traditional religion and Christian faith (Jules-Rosette 1997:155).

Dovlo (2004) suggests that the independent churches, as less intellectual than the missions of the mainline churches, catered primarily to rural groups. Competition with traditional priests served to help reconstitute traditional cultural practices and rituals, resulting in conflicts that led to the establishment of their own villages. The religious underpinnings of the spiritual churches are African³ and unlike the mission churches which postponed redemption into the afterlife, the independent churches “invoked the indigenous understanding of a practical theory of life, which is this worldly (p. 41).”

A range of characteristics of traditional African society were avoided through organizing in religiously based communes, where AICs re-shaped closed, ontocratic⁴, societies based on “the traditional mystiques of chiefship and of ethnic group, established specialized societies for the purposes of religion and in many coexistent forms, and so encouraged political development to proceed on increasingly secular basis (Turner 1969:528).” Describing the early independent churches, Turner (1980) suggests that religiously based communities, by virtue of their voluntary associational form contain better opportunities for individual advancement than elite dominated traditional communities. McClelland (1966) makes a similar point in relation to the religiously based utopia of the Company of the Apostles establishment at Aiyetoro in Nigeria: religion although the basis of the

³ A number of characteristics unite these churches: the emphasis on collective and social expressions of religion, the focus on spirituality and an emphasis on solidarity, all of which are traced to African culture (Asare Opoku 1968).

⁴ This is a concept put forward by van Leeuwen (1987) who proposes that political regimes in societies have historically been ontocratic; namely, that the social order is rooted in the cosmic order and is sacred, whatever the religious formulation has been.

⁵ 54 households in Gyedi and 35 in Apaa were interviewed in both 2002 and 2008. There were more missing cases in Apaa as result of higher mobility in the population.

community, cannot in itself explain the success of individual members, rather this is connected to a set of norms in which religious terminology interacts with secular values to serve as the basis for advancement both of individuals and the collective. As the AICs come of age, new generations of adherents are born into these movements in the process overturning the voluntary basis of membership and challenging the sustainability of communities. Weaker emotional and spiritual bonds among second generation members of utopian communities have been used to explain defection and difficulties in exercising internal control, suggested also by the eventual collapse of the community at Aiyetoro in the early 1970s (Barrett, 1979).

In ethical terms, what Turner (1980), terms “a loose parallel to the Protestant work ethic” characterizes many of the independent churches, encouraging hard work, frugality and educational achievement. Church members therefore are employable and trustworthy also to outsiders. While the ethics of the AICs promote thrift and diligence among their members, the indirect effects of dissociating from village life may also affect the prosperity of the community as a whole. Sectarian retreat enables the withdrawal from a number of aspects of traditional society, perhaps most importantly the ability to avoid the diffuse and manifold economic demands of kin and traditional ceremonial expenditures. This has been stressed as a source of prosperity both in relation to AICs, as well as the Pentecostal movement (Turner 1969; Maxwell 1998). Although the mutual-help character of religious based movements is not discussed in detail in writings on AICs, Maxwell (1998) points out the advantages of material support and welfare systems operating within the context of the Pentecostal movement in Zimbabwe.

It is hazardous to use a single case as illustrative of the whole universe of AIC communities, but as we will see Gyedi illustrates the general points made by Turner (1969; Turner 1980) and others. We will therefore venture to contrast Gyedi with the neighbouring village of Apaa. To what extent religion, or religiously based work ethics can be separated from other aspects of community based

mechanisms promoting agrarian achievements and how these interact and are shaped by the surrounding social and institutional environment will thus be traced in the following discussion.

Methodology and study site description

Methodologically we combine qualitative interviews with individual farmers and key informants with focus group interviews, carried out in Gyedi and Apaa in November 2011, with household level survey data collected in 2002 and 2008 and community level survey data collected in 2008. The *quantitative data* used to treat these questions is part of a larger survey of farm households in nine countries in the African maize and cassava belt. The overarching aim of the project was to assess the possibilities for smallholder intensification in Africa. As such the research design was based on the purposive selection of regions in agriculturally dynamic and less dynamic regions across Ethiopia, Ghana, Kenya, Malawi, Mozambique, Nigeria, Tanzania, Uganda and Zambia. The ambition was to provide a sample containing variation in agro-ecological and market based potential, with villages also being purposively sampled within the regions. Respondents within the villages were randomly sampled and the dataset hence is statistically representative at the village level. Data was collected in 2002 and 2008.

A detailed description of the data can be found in two books that have been published summarizing the project (Djurfeldt, Holmén et al. 2005; Djurfeldt, Aryeetey et al. 2011b). The household data collected in 2002 focuses on demographic characteristics, production volumes, agricultural techniques and crop patterns. Data related to the institutional environment for technology adoption was also a crucial component of the first round. In the second round (2008) more detailed data on prices, marketing and incomes were added. One of the most important limitations in the dataset therefore is the lack of detailed cash income data for 2002, with this data being collected only in 2008. A community level quantitative survey involving key informants and focus group participants was also carried out in 2008.

For 2002 the survey covers 63 households in Gyedi and 48 households in Apaa and for 2008, 76 households in Gyedi and 68 in Apaa.⁵ The analysis in the following is based on comparing the two village cross-sections (2002 and 2008). Although the use of the household as a unit for data collection is problematic, presuming that decision making and control of resources is made on a household basis while obscuring intra-household dynamics, it also has advantages, such as avoiding respondent fatigue. The use of a standard analytical unit also enables comparison over different geographical settings (Chant, 2007; Guyer, 1981; Udry, 1996; Udry & Woo, 2007). Since the data was collected in nine different countries, comparability was important and the household, as defined by residence, was used as the data collection unit for the quantitative study, with interviews carried out with the self-defined household head or farm manager.

We use analysis of variance of means (two way tests) to compare a set of variables deemed to be relevant.⁶ Given the small sample sizes, statistical significance was set at the 5% level. The selection of outcome variables was based on perspectives found in the theoretical literature on productivity and commercialization. To address community dynamics, village level institutions and the social fabric of the villages, variables capturing migration, land tenure systems as well as distributional indicators were included. While the analysis is broader than examining differences in cash income between the two villages, a more comprehensive welfare indicator would have enabled an analysis of the wider development outcomes of the processes that we discuss. Unfortunately the dataset posed limitations in this regard and our focus is therefore confined to unravelling commercialization dynamics in Gyedi and Apaa.

Qualitative data was collected in November 2011 to supplement the quantitative data. At the community level a focus group discussion covering the pastor, his spokesperson and a group of men

⁵ 54 households in Gyedi and 35 in Apaa were interviewed in both 2002 and 2008. There were more missing cases in Apaa as result of higher mobility in the population.

⁶ Data is analyzed using IBM SPSS Statistics Version 21

assembled outside the pastor's compound were carried out in Gyedi. In Apaa, the Odikro (the village chief) of Apaa, his adviser, the linguist, the Odikro's wife, the headman, the queen mother, the District Assembly member from the village⁷ and the youth leader were part of the focus group. In both cases the groups were facilitated by the former extension agent who knew the respondents well. The extension agent was also interviewed individually. Whereas the Gyedi focus group consisted entirely of men and could be described as cautious in their opinions, the Apaa group contained a few women, although clearly not the poorer segments of the village. The Apaa group generally was much more outspoken.

In addition we carried out individual interviews with seven farmers in each village: husbands and wives in three households stratified by perceived wealth (these were selected by the focus group participants) and a widow who headed a female headed household in each village. In total therefore eight households were covered, containing fourteen individual farmers. In each male-headed household the husband and wife were interviewed separately, with a female researcher and research assistant interviewing the wife and a male researcher and research assistant interviewing the husband. The purpose of the interviews was to understand local production systems, crop choices, linkages to nonfarm sources of incomes and issues tied to access to resources and intra-household dynamics based on gender. Three farm visits were made, two in Gyedi and one in Apaa.

Finally, the Saviour Church headquarter at Akim Osiem some 18 km from Begoro was visited and the Superintendent of the church was interviewed. Parts of Akim Osiem were established as a religiously based settlement, with the Saviour Church under the leadership of the present Superintendent also having established a number of schools as well as a hospital boasting a higher patient intake than the nearby government hospital.

⁷ Assembly members are non-political members of the District Assembly, the tier of local government covering rural areas. The District Assemblies are responsible for co-ordination of central government programmes at the local level (Adusei-Asante 2013).

Crop patterns and shifts in production in the two villages between 2002 and 2008

As suggested at the outset of this article, the relative position of Gyedi and Apaa appear to have diverged remarkably since 2002. Although income data are not available for 2002, the village level descriptions from 2002 as well as the quantitative data suggest that the villages were largely similar, with the climate being described as less favourable in valley-bottom Gyedi than in mountain-side Apaa, although market access was considered better in Gyedi. In 2008, in contrast average household cash income was more than twice as high in Gyedi (1493 USD) as in Apaa (731 USD). The qualitative interviews suggested that the source of this discrepancy lay in rapidly increasing commercialization over the period in Gyedi, either through entering markets for additional crops or by selling an increased volume of crops. This notion is confirmed also by the quantitative data, which suggests that while production in Gyedi became increasingly commercialized between 2002 and 2008, farmers in Apaa have left markets during the same time.

Table 1: Crop patterns in the two villages, share of households growing particular crops

TABLE 1 HERE

In terms of crop patterns (see Table 1), staple crop production was nearly identical, with maize and cassava being grown by nearly all households in both villages in 2002. In addition other food crops and vegetables were grown by around eighty percent of households in both villages. The main difference in production patterns in 2002 lay in non food cash crops which were predominantly grown in Apaa – where 38 percent of the households grew such crops, compared with only 11 percent in Gyedi (statistically significant at the 1% level) . By 2008, this situation had changed radically: the proportion of households growing non food cash crops in Gyedi had increased to 49 percent, but dropped to 29 percent in Apaa (statistically significant at the 5% level). A major increase

had occurred in relation also to vegetables, where all households in Gyedi reported growing vegetables in 2008 (compared with 83 percent in 2002) and 92 percent of the Apaa households (compared with 77 percent in 2002) (statistically significant at the 0.1% level). This confirms our perception from the qualitative field work which suggested a strongly commercialized smallholder agriculture especially in Gyedi, based on a combination of cocoa and tomatoes, and to a lesser extent other vegetables.

Average area under maize per farm has decreased by more than a hectare in both villages since 2002, to around half a hectare. The amount of land devoted to cassava has also dropped in both villages: from 1.2 to 0.5 hectares in Apaa, and from 0.9 to 0.5 hectares in Gyedi. The share of maize sold had declined in Apaa from 63 percent to 59 percent, while increasing in Gyedi from 53 percent to 63 percent. For cassava, market participation remained stable at around 90 percent for both villages. This seems to suggest that non staple crops and especially non food cash crops are the primary drivers of increasing commercialization in Gyedi. Maize production for the three year period leading up to the survey is small (752 kg on average per year for Gyedi) and the role of maize in commercial processes is therefore limited.

Crop patterns have on the whole become much more diverse between 2002 and 2008, with plantains and vegetables increasingly complementing maize and cassava production. In both villages households have shifted into plantains and vegetables and out of groundnuts and beans (see Table 2). Cocoyams and yams were specified only in the 2008 survey, although they may have been entered under the “other” category in 2002. Even assuming that *all* the crops listed as “other” in 2002 were cocoyams and yams, these crops have gained ground since then: more than 80 per cent of the households grew cocoyams in 2008, compared with around 40 per cent who grew “other” crops in 2002. For yams, patterns have been less dramatic, with around half of the households in both villages growing this crop in 2008. While average land under both staple crops and other food crops has decreased since 2002, land devoted to non food cash crops has increased in Gyedi, while

falling in Apaa. Average land under non food cash crops was 1.25 hectares in Gyedi in 2008, up from 0.89 hectares in 2002, whereas in Apaa it fell from 1.29 hectares to 0.93 hectares.

In terms of market participation for food crops and vegetables (see Table 3), this has also increased in general since 2002, largely following new patterns of crop diversification, towards plantains, cocoyams and to a lesser extent, vegetables, while households have withdrawn somewhat from the markets for beans since 2002. Changes in non food cash crop production in general, and cocoa in particular provide the most dramatic shift in cultivation patterns and commercialization over the period, however and has contributed to a remarkable reversal of fortunes between 2002 and 2008. While production of non food cash crops as noted above had increased in Gyedi and fallen in Apaa, there had also been changes in the types of non food cash crops produced. Dynamism in cocoa since 2002 explains much of the repositioning of the villages: 61 percent of the eighteen respondents who grew non food cash crops in Apaa cultivated cocoa in 2002, compared with 85 percent of the twenty households who grew non food cash crops in 2008 (see Table 4). For Gyedi the move into cocoa was even more remarkable: all of the 37 households who grew non food cash crops reported growing cocoa in 2008, compared with 57 percent of the seven non food cash crop producers surveyed in 2002 (see Table 4).

These tendencies confirm broader findings on the cocoa sector in Ghana as a whole, which point to rapid growth in the sub-sector since the early 2000s. While data from the Ghana Statistical Service shows that the agricultural sector as a whole grew by 5.2 percent yearly between 2008 and 2011, the cocoa sub-sector grew by 8.1 percent on average over this period. Moreover, data from the Ghana Living Standards Survey documents a fall in the incidence of poverty among export farmers (most of whom are cocoa farmers) from 30 percent to 16 percent between 1998/99 and 2005/06 (Dzanku and Sarpong 2013). Al-Hassan and Jatoe (2007) attribute the fall in poverty to increasing producer prices and the depreciation of the Cedi, which raised returns for producers of export crops.

Shifts into cocoa production and the advancement of the sub-sector can in turn be explained by recent initiatives by the Ghana Cocoa Board especially in the realms of pest and disease control through the mass spraying programme. These efforts add to the institutional support structure for cocoa specifically, which can be traced back to 1947 (Dzanku and Sarpong 2013). More localized initiatives have also been undertaken by the Ministry of Food and Agriculture with regards to promoting commercialization and production in the horticultural sector.

The quantitative findings support the qualitative interview data, which point to the dominant role of cocoa and vegetables in recent processes of smallholder commercialization in Gyedi. While the survey data therefore document a number of agrarian shifts in both villages, they do not tell us why Gyedi, in relative terms, has been more successful in adapting to these shifts than their poorer neighbours in Apaa. For a discussion of these aspects we turn now to the qualitative interviews.

Table 2: Crop patterns per village: share of households per village growing other food crops and vegetables

TABLE 2 HERE

Table 3: Market participation by village: share of producers participating in markets for other food crops and vegetables (beans no market participation)

TABLE 3 HERE

Table 4: Share of households who grew particular non food cash crops, among households reporting growing cash crops, 2002 and 2008

TABLE 4 HERE

Explanations for “success” – why is Gyedi outpacing Apaa?

A variety of explanations for Gyedi’s relative success were offered by the respondents participating in the qualitative interviews, whether individually or in group discussions. At the outset, respondents concurred with our observations regarding Gyedi’s relative success over the past decade (between 2002 and 2011) and also confirmed the survey data. Explanations in all cases centred around the communal spirit fostered by the Saviour Church, the farm basis for its existence and the strategic and practical role taken by the Pastor, locally, and the Superintendent, centrally, in steering the community towards social and commercial advancement. Theological explanations focusing for instance on divine interventions and rewards for steadfastness and piety were curiously absent in nearly all our discussions.

Founded in 1924, the Saviour Church is a Christian church with traditional African values of community being its defining feature. This sets it apart from other churches that are based on individualism. Community members live together in estates and eat together after the service on Saturdays. All community members also participate in labour on a number of church estates, where proceeds are used for social projects, like the establishment of health clinics and schools. Under the present Superintendent, a former Secondary school headmaster, who has headed the church since 1997 a strong emphasis was placed on education and healthcare, with membership in the Ghana National Health Insurance scheme being obligatory for church members (personal communication, Superintendent, November 14, 2011).

The community in Gyedi was established in 1974, with leases for village land being granted by a local chief. Individual farmers stressed the fall back options within the community in case of disease, food scarcity, death of close family members or crop failure: in this case the community, under the guidance of the pastor, assists the victim or their family. Funeral costs are borne by the community, as confirmed by the recently bereaved widow who was interviewed as one of the individual farmers. Funds for social projects and assistance of this kind are raised on a monthly basis within the

community, while resources are also raised centrally through communal labour on estates or through participation in social projects such as the construction of schools. Food is also sent by members to the church headquarters, although tithe as such is not collected.

While community functions were stressed in all interviews, one key explanation for the achievements of Gyedi lies in the relationship between the community, its leadership at local and central level and the Ministry of Food and Agriculture locally. The large majority of Saviour Church members, 70 percent, are farmers, with the church being represented in 51 Districts across the country (personal communication, Superintendent, November 14, 2011). In the Eastern Region alone, there are twelve communities like Gyedi, whose members meet annually for a national congregation in which farming and farming techniques are one of the main issues under discussion (Personal communication, Pastor, Gyedi community, November 13, 2011).

The strategic role of the Pastor as the leader of the local community can be described as that of linking the Ministry of Food and Agriculture and its extension staff to an interested and receptive audience. Indeed, the excellent relationship with the Ministry of Food and Agriculture was put forth as a major explanation for Gyedi's success, with tomatoes taken as one example. Tomato farming in the region started with demonstration plots in Gyedi and individual respondents also reported receiving seed material and marketing advice from the extension staff as instructed by the Pastor. For cocoa also, improved seedlings were bought from the Ministry of Food and Agriculture, with villagers partaking in government run spraying campaigns to avoid crop disease. In the focus group discussions, the community factor in combination with an eagerness to learn and readiness to absorb new technologies were discussed and individual respondents also pointed to the leadership of the Pastor as an explanation for adherence to extension advice. Co-ordination within the community in terms of planting and seasonality was mentioned as a way of avoiding internal

competition and market gluts, especially with respect to perishables like tomatoes⁸. The weekly meetings in connection with the services on Saturdays provide a platform for the Pastor to steer the community in particular directions, depending on the advice given by the extension services as well as the instructions provided by the Superintendent.

In many respects, the performance of the Gyedi community adheres closely to the pro-poor agricultural growth agenda which promotes a combination of productivity raising technology, capacity building (Crawford, Kelly et al. 2003; Minde, Jayne et al. 2008; Andersson Djurfeldt 2013) and improving market access to redress producer incentives and poor consumer confidence in food markets (Hazell, Poulton et al. 2010; Jayne, Mather et al. 2010). The pro-poor agenda in this sense aims to break a vicious cycle in which low levels of production among resource poor smallholders are suppressed further by low producer prices and physically inaccessible markets, leading producers to grow food primarily for their own consumption.

Inspirational aspects of a communal work ethic stressing hard work, farming and educational progress were also mentioned. Abstention from alcohol was another explanation linked to prosperity in the interviews. Although some households were polygamous, intra-faith marriage promoted stability with respect to communal beliefs, both religious and otherwise. As suggested by one respondent: “I was born a Catholic, but as I grew in education, I joined this church. Everything is going well now. I no longer drink and chase women”.

An indirect benefit of the reputation for honesty and hard work was related to the recent boom in cocoa production. Agreements in which a tenant farmer receives half the land under cocoa as payment once the estate has been developed and the first crop is taken after three years maturation had been entered into by one respondent. His wife in the individual interview claimed that the

⁸ The area is well known for tomatoes, with traders coming from as far as from Togo to buy produce. Strategies to counteract local market gluts included irrigation to farm off season to meet demand from outside the village.

community's reputation for honesty meant that landlords were approaching its members specifically to engage in these arrangements.

Other explanations

While the qualitative data from Gyedi stresses thrift, learning, social cohesion and solidarity as the main explanations of the large differences between the two villages, other reasons can also be sought in the quantitative data, as well as the qualitative data, from Apaa.

When asked to comment on the differences between the villages, members of the focus group discussions in Apaa, as well as the individual interviews with farmers and key informants focused on land tenure systems, ecological characteristics tied to technologies and the (mis)use of technology as well as broader marketing issues.

Migration, migrant communities and restrictive tenure systems

While residents of Gyedi cannot be blamed for taking certain structural conditions for granted when expounding on reasons for their community's progress over the past decade, the underlying social and economic principles of the two settlements are important determinants of recent increases in commercialization and, to a lesser extent, technology transfers. In turn these conditions are related to land tenure systems as well as the migrant histories of the two settlements, which differ distinctly.

Land tenure systems and migration patterns

Like many countries in Africa, land tenure in Ghana is characterized by legal pluralism, in which local customary land rights co-exist with other formal and informal systems of land use regulation.

Community based land rights and their legal bases moreover "are constantly being reinvented in response to changing circumstances and changing power relations (Crook, Affou et al. 2007, p. 22)".

Despite the constant negotiation of such rights, an overarching principle of customary land tenure, is however, the distinction between allodial and usufructuary rights to land, with allodial rights being granted to the paramount chiefs as the trustees of stool (throne) land, in contrast to the

usufructuary rights of their subjects. The latter provide the citizens of a particular chiefdom user rights to earn a livelihood from the land, but not the right to sell the land (Amanor 2008: 57). As suggested by Crook et al. (2007), the concept of allodial right and the provisions for safeguarding community wide interests have been contested by the paramount chiefs in Ghana since the late 19th century, with the aim of securing absolute ownership of stool land. At the village level, the village chief as a representative of the lowest rung of the chiefly hierarchy is responsible for allocating customary land to residents of the villages.

Migration into the Fanteakwa area has for long been tied to the expansion of the cocoa sector. Krobo settlement in the area was made possible during the cocoa boom of the 1920s through the outright sale of land by the sub-chief at Begoro town to incoming migrants, in defiance of the paramount chief (Hill 1963). The purpose of such sales was to recruit labour for development of cocoa plantations in the area, with large tracts of land being sold to migrants in return for estate development. Successive waves of migration have been shaped by shortages of land and labour – sometimes in combination - depending largely on the dynamism (or decline) of the labour intensive cocoa sector. By the 1970s, however land scarcity in the region was pronounced (Amanor 2010).

Tenure security of migrants varies considerably from one area to another and the relationship between migrants and their host communities are harmonious in many parts of Ghana. Nonetheless, incitement of violence against migrants in some parts of the country (Boni 2008) and growing concerns that secure land rights of migrants based on historical land purchases may be transformed into leaseholds (Crook, Affou et al. 2007, p.98), point to possible sources of increasing tension based on migration and growing pressure on land. With respect to agricultural productivity and commercialization in Ghana in general, Codjoe and Bilsborrow (2012) identify a number of mechanisms by which insecure tenure tied to migrant status may lead to poorer use of natural resources and lower yields. Short term pressures to meet the demands of sharecropping contracts

common among migrants, risk reducing long term investment in maintaining soil fertility, while relative poverty and lack of social support may reduce labour resources and capital for farm inputs among migrants. Weaker emotional commitment to the land and limited prospects for migrant children to inherit land can also undermine measures to raise productivity. Finally, lack of local level ecological knowledge and relevant technology can reduce yields. Generally therefore, tenure insecurity can affect production and commercialization negatively through discouraging investment in long term soil improvement measures and permanent farm technologies such as irrigation structures.

While Fantekwa District as a whole has a longstanding history of migration, differences in ethnic composition and settlement patterns are apparent between the two villages. Gyedi is more ethnically homogeneous than Apaa: 86 percent of the household heads belong to the same ethnic group, compared with 50 percent for Apaa. Another striking difference is that Apaa is dominated by the more recently settled Krobo, whereas Gyedi has been settled by the Akyem whose descendants established the settlement of Begoro (now the District capital) and hence have been present in the area for well over two centuries (Amanor, 2001). By contrast the migrant Krobo, who strongly dominate Apaa, only constitute 3 percent of the population of Gyedi (see Table 5).

Table 5: Ethnicity of household heads (shares by village)

TABLE 5 HERE

In-migration, moreover, is more rapid in Apaa than Gyedi: the community level survey carried out in 2008 stated that 50 migrants were reported to have sought land in Apaa, compared with only 16 in Gyedi since 2002. Given the stringent religious criteria for acceptance into the community at Gyedi this is not surprising, however. In Apaa, recent migrants were from other ethnic groups than the dominant Krobo, suggesting a new wave of migration from other areas. Recent in-migration therefore appears to be putting pressure on already scarce land in the context of Apaa.

In some respects migrant histories are reflected in differences in security of tenure with individual family land dominating the tenure structure in Gyedi, in contrast with Apaa where rented land (through sharecropping) was the most frequent tenure type, with 46 percent of households in Apaa renting their land. The qualitative interviews in both villages, however suggest that households hold land under different tenure regimes, combining individually controlled family land with sharecropped land. The differences in tenure types were only statistically significant with respect to individually controlled family land, however, with 53 percent of households in Gyedi reporting that they hold most of their land as family land⁹, compared with 32 percent in Apaa (statistically significant at the 5% level). In the case of Gyedi, its residents as the indigenes of the area have stronger historical ties to customary family land than the inhabitants of Apaa.

A general lack of land in the cocoa belt of the Eastern Region, means that there is no vacant village land available for chiefly allocation, either to existing residents or in-migrants. Rather land is held by absentee landlords who have family land in the villages and lease it to tenants. Higher population pressure on land in Apaa is underscored by differences in average farm size, 1.9 hectares compared to 2.5 hectares in Gyedi, a difference which was statistically significant at the 5% level. Despite the stress placed on solidarity in the qualitative interviews in Gyedi, the gini coefficient for land distribution was, however higher in Gyedi at 0.41 when compared to Apaa (0.35).

Differences in tenure regimes can to some extent be reflected in control over land management and farming decisions, with lacking control affecting investment in agricultural improvement and yield raising technologies. Despite differences in formal tenure rights between the villages, there were no statistically significant differences in control over land with around half of the households in both

⁹ Mixed tenure regimes are common in many African countries, and therefore the survey question documents the tenure status of most of the household's land.

Gyedi and Apaa claiming to have control over their land¹⁰, regardless of tenure status. While differences in land control as such do not seem to explain the discrepancies in agricultural dynamics between the two villages, the quantitative data does not specify the time frame over which the tenant exercises control. Nor is it possible to ascertain from the quantitative data whether land management decisions by the tenant are made within the context of agreements that by default prevent the planting of certain crops (mainly tree crops) through the time limits of such contracts.

Customary land rights and sharecropping agreements

Traditional sharecropping arrangements and their possible effects on agricultural productivity therefore need to be superimposed on local tenure systems in order to understand how Apaa has been side lined in recent processes of commercialization.

In the qualitative interviews both at village, household and individual level, what were perceived to be exploitative sharecropping agreements were presented as explanations for the poor agricultural performance of Apaa. In both villages, however, similar, traditional sharecropping arrangements existed for food crops: half or a third of the produce was given to the landlord at the end of the contract, which coincided with the harvest. The sharecropper then moved on to another piece of land or remained on the same plot, if a new agreement was entered into. As documented by Amanor (2010) such arrangements were an outcome of the prolonged downturn in cocoa prices from the 1970s onwards, when cocoa plantations were converted to food crop production, with sharecropping agreements being adapted to the shorter production cycle of food crops (Amanor 2010:117).¹¹ The recent surge in cocoa prices appears to have redirected sharecropping structures towards long term arrangements based on cocoa, but the type of cocoa farm agreements reported for Gyedi, where farmers were approached by landlords to develop cocoa estates, was not mentioned in the context of Apaa. The re-emergence of such agreements in Gyedi, which according

¹⁰ The wording of this question in the survey was “Do you have full control of all the land you now cultivate or do you need to consult any other person in order to obtain permission for cultivation, change crops/land use, for some or all of your land?”, with the possible answers being “full control” or “need permission”.

¹¹ Among the respondents food crops were also grown on rented land, with rent for land under vegetables and tree crops (to the extent that the landlord permitted their planting) being paid in cash rather than in kind.

to one respondent, were related to the Gyedi community's reputation for honesty and hard work, may be one explanation for changes in crop patterns and stronger commercialization dynamics tied to cocoa in Gyedi specifically.

While the conditions of sharecropping arrangements in terms of payment were similar in both villages, the length of agreements and the crops produced were not: whereas cocoa farming was prevalent in Gyedi, short term contracts for food crops were the norm in Apaa. Rising demand for cocoa hence benefited Gyedi disproportionately. Moreover, the view of sharecropping varied between the villages, with respondents in Apaa, arguing that arrangements were exploitative and a cause of poor agricultural performance. Although there was no discussion of outright land disputes in Apaa, this issue was raised in Gyedi, where one female farmer mentioned the role of the church specifically as an arbitrator of land disputes: "The church will help you in situations of land conflict. They will represent you in relation to the landlord". The broader institutional support of the church in relation to conflicts with external landlords may therefore be a valuable indirect consequence of belonging to Gyedi community that is not available in the context of the weaker tenancy arrangements characteristic of Apaa.

Ecological constraints and technology

While members of the focus group discussion in Gyedi mentioned the role of a favourable climate in promoting agricultural success, the emphasis in this interview as well as in individual farm interviews was on the co-operation with the Ministry of Food and Agriculture staff as well as technology adoption by the residents. By contrast, the focus group interviews in Apaa came to centre almost entirely on changing ecological conditions and lacking technology uptake and know-how. As the focus group discussion in both cases was facilitated by the same extension agent, the responses by the discussion members came to be interspersed with answers to specific issues raised. Problems in Apaa ranged from lack of irrigation facilities, poor soil fertility, nematode infestations and cassava affected by fungus rotting in the fields.

While the production systems in the villages are largely comparable, relying on similar agricultural techniques, a number of significant differences stand out (see Table 6): irrigation is more frequent in Gyedi, while the use of chemical fertilizer, zero or minimum tillage and herbicides/pesticides are also practiced by a larger share of farmers than in Apaa. The growing use of herbicides over the past decade was mentioned in the qualitative interviews as an increasingly central method for dealing with the arduous job of weeding in both villages. Zero tillage and herbicide use are connected, since the technique relies on combining herbicides with particular planting techniques that do not disturb the soil and therefore conserve nutrients. As explained by one respondent: “I weed the old field, burn the crop residues, spray with weedicide and plant a month later, in rows and with a digging stick. This is a good method, superior to what we were doing before. It prevents weed growth.”

Table 6: share of households practising particular agricultural techniques in each village

TABLE 6 HERE

Minimum tillage, like herbicide use in general, however is a knowledge intensive technique not suitable for all farmers, as pointed out in other country contexts, like Zambia where the broader practice of conservation farming and its effects on yields have been studied in detail (Haggblade, Tembo et al. 2010). Reading and understanding detailed instructions for application of particular herbicides requires not only basic literacy but also adhering closely to agricultural advice. Indirectly the emphasis placed on education and co-operation with local extension staff in Gyedi may therefore be advantaging these farmers over their less successful neighbours in Apaa. There was no statistically significant difference in average years of education for farm managers between the two villages, however with the average year of education being 7.8 years. Likewise, the share of households who received extension training or advice were similar in the villages (with no statistically significant differences between the two), with 75 percent of respondents stating in the survey that they had received extension advice from the Ministry of Food and Agriculture. A smaller

share, 28 percent, reported receiving extension through NGOs, but again there were no statistically significant differences between the villages.

The preoccupation in the Apaa focus group discussion with weeds and issues related to problems arising from herbicide use suggest that such complications do not lie in the delivery of extension advice as such, but rather how it is translated into production practices. Gramoxone^{®12} (paraquat) is used on cocoyams for instance, with respondents suggesting that this was causing the latter to wither. As opined by one of the respondents in the focus group discussion in Apaa, “weedicides are weed-specific but how can we know which weedicides are meant for which weeds?” The extension agent in response stated that farmers in the village instead of consulting with the agricultural officers visit the agro chemicals shop and ask for the advice of the shop owner. Problems also mentioned were a lack of protective clothing when spraying crops.

Diffusion of stakes or cuttings of new cassava varieties less sensitive to fungus infestations had failed in Apaa because of problems in recruiting farmers to plant them. Lacking knowledge of how to deal with nematode infestations and crop rotation to handle poor soil fertility, similarly appeared to be related to a weaker organizational environment than in Gyedi. The strategic role of the leadership in Gyedi in encouraging technology transfer and market co-ordination was essentially absent, possibly as a result of less social and ethnic cohesion.

While the poor road between Apaa and the District capital of Begoro, clearly put farmers in Apaa at a disadvantage in terms of market access, the village was connected through taxis and buses traversing the route many times a day. Although the focus group discussion mentioned accessibility as one of the main challenges for Apaa, individual respondents commented on the ease of access to markets in Begoro and the availability of transport. In terms of markets, the extension agent pointed to attempts to organize the farmers into groups to improve their bargaining power in

¹² While the respondent stressed the selectivity of herbicides, it should be noted that Gramoxone specifically is a non-selective contact herbicide.

relation to external buyers and middle men especially, but also this had failed. Membership in farm organizations was also more pronounced in Gyedi where 24 per cent belonged to a farmers organization compared with 10 percent in Apaa (the difference is significant at the 5% level).

Distributional aspects and farm-nonfarm linkages

Returning to the qualitative data on Gyedi, two features of the community were repeatedly stressed by all informants: on the one hand issues tied to solidarity and equality and on the other the notion that the Saviour Church is dominated by farmers with a common agrarian ethic based on farm improvement specifically.

Initially, it is relevant to note that despite the strong emphasis given to solidarity in the qualitative interviews in Gyedi, income distribution is more uneven, although less dominated by a few extreme cases¹³ than in Apaa. Despite the emphasis on farming in the qualitative interviews, moreover, 47 percent of the households in Gyedi reported earning income from nonfarm sources, compared with 29 percent in Apaa (significant at the 5% level) in 2008. This contrasts, with the data on pluri-activity from 2002 that shows no statistically significant differences between the villages in terms of access to nonfarm sources of income. While entry into the nonfarm sector had increased slightly for households in Gyedi, where 44 percent of the households had incomes from both sectors in 2002, the Apaa households had actually decreased their diversification out of agriculture, with 33 percent of the households being pluri-active in 2002. Diversification away from farming and increases in commercialization therefore appear to have occurred in tandem in Gyedi over the 2002 to 2008 period. The direction of causality is difficult to establish: whether nonfarm incomes were used to provide cash for agricultural investments, or whether agricultural incomes enabled entry into the nonfarm sector, is not possible to assess from the quantitative data. The impression from the qualitative interviews was, however that households in Gyedi had used recent windfalls from agriculture to invest in trading and transport businesses especially, with nonfarm profits in turn

¹³ That is in statistical terms, there are fewer extreme cases in the distribution of the cash income variable for Gyedi

being turned into farm investments, in a virtuous cycle of income generation involving both farm and nonfarm incomes. By contrast, in Apaa, households were less diversified and also less involved in sale of non food cash crops when compared with 2002.

Table: 7: Mean household cash income, from farm and nonfarm sources by village

TABLE 7 HERE

Turning to gender relations, these were described by the widowed respondent in Gyedi as problematic: “women are not heard in this community”. The rules regulating marriage stipulate that the widow waits a year before remarrying leaving widows in a precarious situation over a lengthy period. The respondent noted that there are very few men in the community, with the prospects for finding a husband being limited by rules stating that this person had to be found either within the community or persuaded to convert into the faith. Courtship is forbidden and the prospective groom has to be approved by the pastor, although he cannot reject a man from within the faith. She knew of two widows who had not been remarried after a year.

There were no statistically significant differences in the share of female headed households between the villages. On average 14 percent of households were headed by women. Nor were there any statistically significant differences in average total cash income between households headed by men and women respectively within the villages. Given the lack of statistical significance for indicators of gender based discrimination, it appears therefore that gender based differences in access to agrarian resources and incomes, do not in themselves explain the different degrees of commercialization in the two villages.

Within married couples, female command over resources varied. The married female respondent who ranked as above average wealth in Gyedi, for instance, was responsible for managing the household farm, with her husband bringing the proceeds from the farm to her for budgeting, while planting decisions were made together. In other households, both in Apaa and Gyedi, the female

respondents accounted for the proceeds from the shared farm to their husbands, while managing and keeping the profits from their own farm and trading to themselves, usually using such income to pay for school fees and household expenses. While the quantitative data do not contain information on intra-household division of income emphasised in the current literature on gender and agricultural production in sub-Saharan Africa (Doss 2013), the qualitative interviews are too limited to draw any firm conclusions on the gender dynamics of local agrarian growth processes. Better quantitative data and more qualitative work is needed to address these aspects (Andersson Djurfeldt, Djurfeldt et al. 2013).

Conclusions

We return now to the initial questions posed at the beginning of this paper: can development in the successful case be described as an outcome of community characteristics indirectly rather than directly linked to religion? How have farmers (and the wider community) in Gyedi dealt with the problems commonly faced by smallholders in Africa? And finally can generalizable lessons be drawn also from the exceptional in this respect?

The data, whether qualitative or quantitative suggest that the source of Gyedi's improvements over the past decade lies in reaping the benefits especially of growing demand for cocoa and to a lesser extent tomatoes and other vegetables in local and to some extent global markets. While religious doctrine, unlike the underpinnings of the prosperity gospel for instance, was not a plausible explanation for this process, the secondary effects of an ethic stressing honesty, hard work, education and perhaps above all allegiance to the leadership of the Church both locally and centrally intersected with the technological ambitions of the Ministry of Food and Agriculture. Avoiding the ecological challenges characteristic of many smallholder environments across Africa was made possible through uptake of recent technologies under close supervision and co-operation with local extension staff. Seasonal shifts in markets were avoided through internal co-ordination and planting off season, again according to advice from the Ministry.

Insecurity of tenure and weaker migrant land rights are prominent reasons for lower agricultural productivity found in the literature, which were to some extent confirmed by the differences between the two villages. While control over land and tenure systems per se provide central explanations for the different development trajectories of the two villages, the divergence between the two villages appear to be even more strongly connected to differences in sharecropping arrangements. The intersection between sharecropping agreements and the recent boom in cocoa cropping specifically explain the surge in commercialization in Gyedi relative to Apaa. The diverse ethnic composition of the villages and the more precarious position of recent migrants in tenancy contracts contribute to the differences in commercialization trajectories. The role of the church in defending land rights and the reputation for honesty among community members in Gyedi are aspects that underscore this interpretation. Agrarian commercialization meanwhile had gone hand in hand with income diversification out of agriculture in Gyedi, but not in Apaa, suggesting further sources of the diverging fortunes gap between the villages.

In terms of generalizable lessons, the study in some respect points to the challenges for pro-poor agricultural strategies that combine productivity raising technology, capacity building and marketing to deal with poor producer incentives and ecological constraints. The successful case of Gyedi suggests the crucial role of knowledge in increasingly skills intensive agricultural techniques, and the potential pitfalls in pinning agrarian hopes on technologies alone without strong support mechanisms for receiving such knowledge at the village level. The results also point to the role of internal market co-ordination in dealing with seasonality and counteracting external market forces. Clearly, Gyedi is the exception rather than the rule, however suggesting the necessity of fine-tuning agrarian strategies to local conditions, with the missing internal link between farmers and extension services being one key explanation for Apaa falling behind its richer neighbour.

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Table 1: Crop patterns in the two villages, proportions of households growing particular crops

		Maize		Cassava		Other food crops, vegetables		Cash crops	
		2002	2008	2002	2008	2002	2008	2002	2008
Gyedi	Mean	0.98	0.95	0.97	0.97	0.83	1.00	0.11	0.49
	N	63	76	63	76	63	76	63	76
	SE mean	0.016	0.026	0.022	0.018	0.048	0.000	0.037	0.058
Akaa	Mean	0.98	0.90	1.00	0.99	0.77	0.92	0.38	0.29
	N	48	68	48	68	48	68	48	68
	SE mean	0.021	0.037	0.000	0.015	0.061	0.032	0.072	0.056
Total	Mean	0.98	0.92	0.98	0.98	0.80	0.97	0.23	0.40
	N	111	144	111	144	111	144	111	144
	SE mean	0.013	0.022	0.013	0.012	0.038	0.015	0.040	0.041

Source: own survey

Note: statistical significance in differences in means are presented in the text where results are discussed. Standard error of the means are presented to enable estimation of the confidence intervals around the means in Tables 1, 2, 3 and 4.

Table 2: Crop patterns per village: proportions of households per village growing other food crops and vegetables

Village		Plantains		Beans		Peas		Sweet potatoes		Ground nuts		Vegetables		Other		Yams	Cocoyams	Fruits
		2002	2008	2002	2008	2002	2008	2002	2008	2002	2008	2002	2008	2002	2008	2008	2008	2008
Gyedi	Mean	0.24	0.89	0.26	0.16	0.00	0.00	0.05	0.03	0.21	0.07	0.73	0.83	0.43	0.01	0.59	0.89	0.07
	N	62	76	62	76	62	76	62	76	62	76	62	76	51	76	76	76	76
	SE mean	0.055	0.035	0.056	0.042	0.000	0.000	0.027	0.018	0.052	0.029	0.057	0.043	0.070	0.013	0.057	0.035	0.029
Apaa	Mean	0.35	0.86	0.25	0.21	0.02	0.00	0.04	0.00	0.23	0.17	0.40	0.70	0.38	0.11	0.46	0.84	0.05
	N	48	63	48	63	48	63	48	63	48	63	47	63	45	63	63	63	63
	SE mean	0.070	0.044	0.063	0.051	0.021	0.000	0.029	0.000	0.061	0.048	0.072	0.058	0.073	0.040	0.063	0.046	0.027
Total	Mean	0.29	0.88	0.25	0.18	0.01	0.00	0.05	0.01	0.22	0.12	0.59	0.77	0.41	0.06	0.53	0.87	0.06
	N	110	139	110	139	110	139	110	139	110	139	109	139	96	139	139	139	139
	SE mean	0.044	0.028	0.042	0.033	0.009	0.000	0.020	0.010	0.040	0.027	0.047	0.036	0.050	0.020	0.042	0.029	0.020

Source: own survey

Table 3: Market participation by village: proportions of producers participating in markets for other food crops and vegetables

		Plantains		Beans		Sweet potatoes		Groundnuts		Vegetables		Other		Yams	Cocoyams	Fruits
		2002	2008	2002	2008	2002	2008	2002	2008	2002	2008	2002	2008	2008	2008	2008
Gyedi	Mean	0.47	0.88	0.63	0.58	1.00	1.00	0.69	0.60	0.84	0.92	0.71	0.00	0.56	0.96	0.60
	N	15	68	16	12	3	2	13	5	45	63	21	1	45	68	5
	SE mean	0.133	0.039	0.125	0.149	0.000	0.000	0.133	0.245	0.055	0.034	0.101	0.000	0.075	0.025	0.245
Apaa	Mean	0.82	0.87	0.75	0.62	0.50	0	0.64	0.64	0.75	0.89	0.82	0.86	0.59	0.91	1.00
	N	17	54	12	13	2	1	11	11	20	44	17	7	29	53	3
	SE mean	0.095	0.046	0.131	0.140	0.500	0.000	0.152	0.152	0.099	0.048	0.095	0.143	0.093	0.041	0.000
Total	Mean	0.66	0.88	0.68	0.60	0.80	1.00	0.67	0.63	0.82	0.91	0.76	0.75	0.57	0.93	0.75
	N	32	122	28	25	5	2	24	16	65	107	38	8	74	121	8
	SE mean	0.085	0.030	0.090	0.100	0.200	0.000	0.098	0.125	0.048	0.028	0.070	0.164	0.058	0.023	0.164

Source: own survey

Table 4: Proportions of households who grew particular non food cash crops among households reporting growing non food cash crops 2002 and 2008

		Cashew nuts		Cocoa		Coffee		Other		Fruits/vegetables for export	Spices
		2002	2008	2002	2008	2002	2008	2002	2008	2008	2008
Gyidi	Mean	0.14	0.00	0.57	1.00	0.00	0.00	0.29	0.11	0.00	0.03
	N	7	37	7	37	7	37	7	37	37	37
	SE mean	0.143	0.000	0.202	0.000	0.000	0.000	0.184	0.052	0.000	0.027
Apaa	Mean	0.06	0.10	0.61	0.85	0.39	0.20	0.77	0.00	0.05	0.00
	N	18	20	18	20	18	20	13	20	20	20
	SE mean	0.056	0.069	0.118	0.082	0.118	0.092	0.122	0.000	0.050	0.000
Total	Mean	0.08	0.04	0.60	0.95	0.28	0.07	0.60	0.07	0.02	0.02
	N	25	57	25	57	25	57	20	57	57	57
	SE mean	0.055	0.025	0.100	0.030	0.092	0.034	0.112	0.034	0.018	0.018

Source: own survey

Note, there are five missing cases for “other”.

Table 5: Ethnicity of household heads (proportions by village)

	Gyedi	Apaa
Akyem	0.86	0.22
Asante	0.08	0.00
Akuapem	0.04	0.21
Krobo	0.03	0.50
Ewe	0.00	0.07
Total	1.00	1.00

Source: own survey

Table 6: Proportion of households practising particular agricultural techniques in each village.

	Cro p rota tion	Intercroppi ng	Fallowi ng	Improv ed fallowin g	Anima l manu re	Zero or minimu m tillage	Green manure0. composti ng	Chemic al fertilize r	Soil and water conservati on	Improv ed plantin g practice s	Integrated Nutrient Managem ent	Agrofores try	Pesticides/herbic ides	Rain water harvesti ng	Irrigati on
Gyedi	0.22	1.00	1.00	0.00	0.05	1.00	0.25	0.80	0.36	0.89	0.01	0.01	0.92	0.03	0.59
Apaa	0.24	0.97	0.96	0.01	0.07	0.90	0.22	0.54	0.25	0.79	0.00	0.04	0.76	0.06	0.40
Diff.	- 0.01	0.03	0.04	-0.01	-0.02	0.10	0.03	0.26	0.11	0.10	0.01	-0.03	0.16	-0.03	0.20
Sig.						**		**					**		*

Source: own survey

Note: *denotes 5%, ** 1% and *** 0.1 % level s of statistical significance respectively

Table: 7: Mean household cash income from farm and nonfarm sources by village

		Total cash income	Total cash income from farm sources	Total cash income from non farm sources
Gyedi	Mean	1493	1065	428
	N	76	76	76
	SE mean	163	112	109
Apaa	Mean	731	593	139
	N	68	68	68
	SE mean	101	73	47
	Diff means	762	473	289
	Sig.	***	**	*
Total	Mean	1133	842	291
	N	144	144	144
	SE mean	103	71	63

Source: own survey

Note: *denotes 5%, ** 1% and *** 0.1 % level s of statistical significance respectively