University of Malawi
Chancellor College

DEPARTMENT OF ECONOMICS

Working Paper No. 2009/04

Farmer Organisations and Profitability in Smallholder Tobacco in Malawi

Ephraim W. Chirwa

March 2009

Department of Economics
University of Malawi
Chancellor College
PO Box 280
Zomba
Malawi

Tel: +265 (0) 1 524 222 / 1 525 021 (D)
Tel: +265 (0) 1 524 256
Fax: +265 (0) 1 525 021
Email: economics@chanco.unima.mw
Web: http://www.economics.chanco.mw

University of Malawi
Chancellor College

DEPARTMENT OF ECONOMICS

Working Paper No. 2009/04

Farmer Organisations and Profitability in Smallholder Tobacco in Malawi

Ephraim W. Chirwa

March 2009

Farmer Organisations and Profitability in Smallholder Tobacco in Malawi *

Ephraim W. Chirwa †
University of Malawi - Chancellor College

Abstract: The liberalisation of tobacco production through the repeal of the Special Crops Act has led to the entry of many smallholder farmers into tobacco production. Smallholder farmers interact with a number of institutions providing various services to farmers including extension services, credit extension and tobacco marketing. Some smallholder farmers belong to clubs affiliated to national level institutions and sell tobacco through various marketing institutions. This study tests the hypothesis whether smallholder farmers benefit from these institutions in terms of profitability of tobacco farming. The results show that gross profits from tobacco are not positively associated with membership to farmer clubs or affiliation institutions. We however, find evidence that profitability is positively related to productivity, specialisation, the marketing of tobacco to intermediate buyers but negatively related to distance to the market.

1. Introduction

Agriculture in most developing countries is dominated by smallholder family units mainly producing for subsistence requirements, and generally lack access to input credit, capital and technologies. The old paradigm in agricultural development was based on the structuralist view of government interventions and creation of coordinating organisations justified on the basis of market failures and thin markets, which raise transaction costs. Nonetheless, in many countries these interventionist approaches have proved a fuilure particularly after being subjected to economic shocks. This motivated many countries to liberalise their economies towards a market based system under the auspices of the

* The author wishes to acknowledge the financial assistance provided by the World Bank. The views expressed in the study are those of the authors, and the usual disclaimer applies.
† Professor of Economics, Department of Economics, University of Malawi, Chancellor College, PO Box 280, Zomba. Email: echirwa@yahoo.com.

International Monetary Fund and the World Bank. After decades of liberalisation, most markets, particularly agricultural markets have not performed as expected and market failures have persisted. Kherallah et al. (2000) and Jayne et al. (2002), however, observe that the lack of success in the liberalisation of agricultural markets in African economies is not due to the policies, but to the incomplete implementation of policies and policy reversals. The failure of the neo-classical paradigm of liberalising markets in developing countries has brought the debate about the desirability of institutions as an integral part of the development process. Kydd and Dorward (2001) note that although the liberalisation measures in structural adjustment reforms contain positive aspects, the reforms have largely ignored the role of institutions (institutional arrangements) in poor agricultural economies. Others have argued that institutions should not only be seen as contributing to the working of the competitive market, but to see markets as institutions that coordinate and fulfil exchange in a market economy (Dorward et al., 2005). The role of the institutional environment and institutions in the market economy has been acknowledged by the proponents of the neo-classical paradigm of competitive markets such as the World Bank (World Bank, 2002). Dorward et al. (2004) also emphasizes the role of institutions in reducing some of the transaction costs associated with thin markets and the importance of institutions in driving growth in poor agricultural economies.

Like in many other developing countries, agriculture in Malawi is dominated by the smallholder sector cultivating on less than 1 hectare. Maize, the main staple food crop, is the main agricultural crop grown by smallholder farmers. Most of the maize is produced to meet subsistence needs with only less than 20 percent disposed off at the markets. The dominant cash crops for smallholder farmers in the 1970s and 1980s were cotton and groundnuts, but with the collapse of the state marketing system, there has been a declining role of these crops in the production basket among smallholder farmers. Up to the early 1990s, Kadzandira et al. (2004) note that smallholder farmers were allowed to produce northern division dark fired tobacco and varieties of sun dried tobacco, while burley tobacco was mainly produced in estates. Tobacco is a major agricultural crop in Malawi, important for foreign exchange earnings and livelihoods. The liberalisation of burley tobacco production in 1992, has led to increased participation of smallholder farmers in the high value cash crop, which was hitherto dominated by estates. GOM (2004) reports that about 18.9 percent of smallholder farmers participate in burley tobacco cultivation. Estate production of burley tobacco has declined since the 1990s due partly to declining profitability. According to GOM and World Bank (2006), smallholder farmers accounted for 80

percent of total tobacco production in the late 1990s. World Bank (2003) also notes that productivity in burley tobacco has declined over time, from 1,150 kilograms per hectare in 1990 to 973 kilograms per hectare in 2001.

Since the liberalisation of burley tobacco production, a number of organisations with varying institutional arrangements have emerged to coordinate production and marketing activities among smallholder farmers. Notably, 'burley clubs' affiliated to the National Smallholder Farmers' Association of Malawi (NASFAM), Tobacco Association of Malawi (TAMA), Malawi Rural Finance Company (MRFC), and intermediate buyers have emerged providing services to smallholder farmers. In addition, the liberalisation of tobacco marketing of smallholder tobacco, hitherto monopolised by the state marketing agency, the Agricultural Development and Marketing Corporation (ADMARC) has opened alternative avenues of marketing tobacco. These include direct marketing to Auctions, direct selling to leaf buyers under contract farming, marketing to neighbouring estates and marketing to intermediate buyers or private traders (GOM and World Bank, 2006).

This study analyses the role of farmer organisations in promoting the welfare of smallholder farmers in the tobacco industry. If farmer organisations are transaction costs reducing, then we expect farmers that are affiliated to farmer organisations to be more profitable than those that operate individually. The paper is organised as follows. The next section reviews the institutional issues in smallholder tobacco in Malawi. Section 3 specifies the model and describes the data and variables used in the econometric analysis. Section 4 presents results from the econometric analysis. Finally, section 5 provides concluding remarks.

2.0 Farmer organisations in smallholder tobacco in Malawi

The nature of production and marketing of tobacco necessitates the development of organisations to coordinate production and marketing services among smallholder farmers. Most of the institutions dealing with smallholder farmers in the tobacco sector have been created through legislation in Parliament. However, some organisations have evolved following the liberalisation of burley tobacco production. The services offered by farmer organisations include regulation of the sector, extension services, credit provision, facilitation of the transportation of tobacco and inputs, input and produce marketing. According to Maleta (2004) institutions in the tobacco sector can be divided into those offering regulatory services, those providing agricultural services, those providing marketing

services and member associations. In addition, there are institutions that are also providing financial services. These institutions include the Tobacco Control Commission (TCC), Agricultural Research and Extension Trust (ARET), Auction Holdings Limited (AHL), Tobacco Association of Malawi (TAMA), National Smallholder Farmers' Association of Malawi (NASFAM) and the Malawi Rural Finance Company (MRFC).[1]

The legal environment in the tobacco sector is provided by the Tobacco Act of 1970 to control the production of tobacco and the Control of Auction Floors Act to control the marketing of tobacco. The Control of Auction Floors Act provides for the establishment of The Tobacco Control Commission (TCC) with the main objective of controlling and regulating the sale of tobacco on the auction floors; advise the government on tobacco sales and exports; expand and promote sale of tobacco; collecting and disseminating tobacco statistics. The TCC is the only authority that can license premises for the sale of tobacco, by auction, and is empowered to set tariffs of weight, selling and commission charges after consultation with the holders of auction floor licenses and approval from Ministry of Agriculture.

The Tobacco Act of 1970 vested powers in the Minister responsible for Agriculture over control of production and marketing of tobacco. This control was also reinforced by the Special Crops Act that designated specific crops, including tobacco, as special crops to be grown by a certain class of farmers and marketed through specific institutions. The repeal of the Special Crops Act in 1994 has enabled smallholder farmers to participate in the cultivation and marketing of burley tobacco, consequently necessitating the evolution of new smallholder farmer organisations.

The other institution established by the government to provide services to farmers is the Agricultural Research and Extension Trust (ARET) – established in 1995 as a merger between the Tobacco Research Institute of Malawi (TRIM) and the Estate Extension Service Trust (EEST) to provide agricultural services to tobacco estate farmers while the Ministry of Agriculture retained extension services to smallholder tobacco farmers (Maleta, 2004).[2] The mandate of ARET includes improving diversity and sustainability of tobacco production, conducting research in crop improvements and

[1] See Maleta (2004) for a detailed assessment of the performance of these institutions in the tobacco sector and the role they are playing in the promotion of smallholder tobacco farming.

[2] Following adjustment programmes the extension services offered to smallholder farmers have virtually collapsed due to lack of replacements of field personnel who retired or who died and lack of training (GOM, 2002).

diversification, providing agricultural training to growers, and improving the welfare of tobacco farmers. The other institution is Auction Holdings Limited (AHL), originally established as a subsidiary of the Agricultural Development and Marketing Corporation (ADMARC). Following divestiture, AHL became a public company[3], in which ADMARC is a major shareholder, which provides tobacco marketing services at designated auction floors in Blantyre, Lilongwe and Mzuzu. Its activities are supervised and regulated by the TCC.

The main sources of income for these public and quasi-public institutions in the tobacco sector are levies imposed on sales revenues of growers. Farmers pay TCC a cess of 0.10 US per kilogram, 1 percent of gross revenue levy for ARET and AHL imposes a 3.25 percent on gross proceeds obtained by the tobacco sellers at the auction (Maleta, 2004). Others have argued that the number of institutions involved with smallholder farmers in burley tobacco imposes implicit taxation on farmers through the many levies that they pay on the sales of tobacco (Koester et al., 2004).

In markets that are dominated by private haggling in spot markets over small volumes produced by individual smallholder farmers typically raise transaction costs of exchange (Jayne et al., 2002). Poor infrastructure development and infrastructural services and lack of access to commercial credit pose potential challenges to commercialisation of agriculture in developing economies. In order to minimize the transaction costs associated with thin markets, institutions and organisations emerge to coordinate various activities. Farmer organisations not only offer benefits on minimizing transaction costs, but also build social capital among smallholder farmers. Smallholder tobacco production embodies different institutional arrangements with the aim of minimising transaction costs. Kadzandira et al. (2004) identify three categories of burley tobacco farmers: smallholder farmers farming as individuals or belonging to clubs, estate-based tobacco farmers (landlords and tenants) and contract tobacco farming.

There are two main smallholder apex associations in the tobacco sector: TAMA and NASFAM. These apex organisations have tiered organisational structure of its members starting from clubs at local level. Most of the clubs that belong to TAMA and NASFAM were initiated by the Ministry of Agriculture, although some clubs have recently been formed (Kadzandira et al., 2004). TAMA has a long history. It was established in 1929 as the Nyasaland Tobacco Association as a member association for tobacco farmers, originally

[3] AHL is not listed on the Malawi Stock Exchange, but growers partly hold shares in the company as a result of the dilution of ADMARC shareholding.

catering for expatriate farmers. TAMA, in its present form, was incorporated in 1982 and its main objective is to promote and develop the tobacco industry in Malawi and to advance and protect interests of sections and classes of producers (Maleta, 2004). TAMA has also developed infrastructure of depots and warehouses through which it serves its members. TAMA also provides loans to its members. The main source of revenue is the levy imposed on tobacco sales of its members at 0.70 cents per kilogram.[4]

NASFAM emerged soon after the liberalisation of burley tobacco production by smallholder farmers. It started initially as a project in 1995, but developed into one of the sound farmer organisations in Malawi (Kachule et al., 2005). NASFAM is a member association of smallholder farmers established to strengthen the capacity and capabilities of smallholder farmers in the production and marketing of cash crops through the establishment of farmer cooperatives. NASFAM places emphasis on taking farming as a form of business. NASFAM has diversified to an apex organisation for smallholder farmers' associations producing a variety of cash crops including tobacco. NASFAM provides transport services through negotiating best prices for its members for the collection of tobacco and delivery of farm inputs. NASFAM also provides training in business management, quality control and literacy, link associations to financial institutions, provides extension services and sells farm inputs to farmers.

Another important institution in the smallholder tobacco sector is MRFC. MRFC is a financial institution that provides agricultural credit to smallholder farmers. MRFC was created in 1994 and provides loans to individual farmers with title deeds and smallholder farmers in groups that are affiliated to TAMA or NASFAM or after having undergone training for six months (MRFC, 2002). MRFC operates through a network of branches, satellite offices and field offices located throughout the country. Access to credit eases the capital constraint among smallholder farmers and allows farmers to intensify input use. Jayne et al. (2004) find that farmers that have interlinked credit tend to use greater amounts of fertilizers in cash cropping in Kenya. Foltz (2004) also finds evidence that credit access significantly affects the profitability in Tunisian agriculture. Others such as Hazarika and Alwang (2003) find no evidence that access to credit in tobacco cultivation in Malawi has any effect on cost inefficiency.

[4] Prior to the 2003/04 season, this levy was compulsory. However, following the decision by the Malawi Government, the levy is only deducted from signed up members of the association (Maleta, 2004).

Table 1 shows the array of benefits that smallholder farmers derive from affiliating to various organisations. It is apparent that credit is the main benefit that farmers derive from belonging to farmer organisations. MRFC as a financial institution ranks highly in terms of credit access, with 86 percent of smallholder farmers affiliated to MRFC indicating that they benefit from credit access compared to 50 percent among those affiliated to TAMA. NASFAM does not directly provide credit to its members, but rather links associations to financial institutions that provide agricultural credit.

Table 1 Benefits from club membership by affiliation (percent)

Benefits	NASFAM	TAMA	MRFC	Other
Credit	61.1	50.0	86.4	85.4
Timely input provision	36.1	38.4	57.1	59.4
Lower prices for inputs	15.7	22.5	19.5	17.7
Better tobacco prices	18.5	23.2	18.4	20.8
Extension services	75.0	75.4	77.5	78.1
Quota, access to auction floors	78.7	73.2	79.1	74.0
Transport of bales to market	75.0	68.8	68.6	68.8
Others	7.6	3.9	8.1	3 .3
Number of households	*108*	*138*	*191*	*96*

Source: Computed from IHS-2 data (NSO, 2005)

The major benefits across all institutions are extension services, access to auction floors and transportation of tobacco to the market. Smallholder farmers tend to benefit less from the associations in terms of better prices for inputs and tobacco. The farmer organisations have no influence over the prices in the auction market that has highly concentrated buyers suspected of fixing prices through a cartel (Koester et al., 2004; Maleta, 2004). On the buyer side, the auction is dominated by two buyers that account for more than 90 percent of the market (GOM and World Bank, 2006), a situation that introduces inefficiencies and rent-extraction to the detriment of smallholder welfare. Owing to this suspected price fixing behaviour of buyers, government introduced floor prices for tobacco in the 2005/06 season but buyers have continued to buy at below prices announced by government. Koester et al. (2004) in a value chain analysis show that in a baseline case of a small estate farmer, farmers only get 30 percent of the auction price and 12 percent of the international tobacco price, while farmers affiliated to NASFAM have 33 percent improvement (15.5 percent of the international price) over the baseline case main due to exemption from withholding taxes and lower transportation costs.

With liberalisation, smallholder tobacco farmers have various marketing alternatives through which they sell their tobacco

although the auction floors is the main channel. Smallholder farmers that are affiliated to farmer organisations typically sell their tobacco at the auction holdings. The other market options that exist for smallholder farmers include contract farming with leaf buyers, intermediate buyers and neighbouring estates. Prior to 1994 when ADMARC was the sole buyer of smallholder tobacco, although illegally, intermediate buyers in tobacco have existed (Koester et al., 2004). In 1994, intermediate buyers, whether individuals or organisations, obtained a quantity specific license from the TCC which allowed them to buy tobacco from smallholder farmers at negotiated prices and sell the tobacco at the auction floors. However, in 2000, the government discontinued the licensing of intermediate buyers and no new system has been put in place to replace intermediate buyers.[5] Although, the system of intermediate buyers was discontinued, recent data from the integrated household survey reveal that about 35 percent of smallholder farmers sold their tobacco to intermediate buyers or private traders or neighbouring estates. Thus, regardless of the justifications for discontinuing the intermediate buyer system, some smallholder farmers still find it convenient to sell their tobacco to unlicensed intermediate buyers.

3.0 Model specification and data

3.1 Model specification and data

The empirical analysis of the role of farmer organisations in the smallholder tobacco sector is modelled by investigating the importance of farmer organisations and marketing arrangements on the profitability of tobacco farming among smallholder farmers. We estimate the following model:

$$\pi_i = \alpha_0 + \beta HC + \kappa FC + \delta CM + \lambda MKT + \omega X + \varepsilon_i \qquad (1)$$

where for household i, π is the profit from burley tobacco farming, HC is a vector of household characteristics including gender and education of household head, FC is a vector of farming and product characteristics including productivity and access to credit, CM is a vector of farmer organisation membership, MKT is a vector of

[5] The discontinuation of intermediate buyers was based on complaints from some stakeholders in the sector and the reasons included the alleged theft of tobacco by tenants from estates, the poor prices paid to smallholder farmers and the decline in the quality of tobacco (see Koester et al., 2004).

market characteristics, X is a vector of control variables and ε is the disturbance term.

The data used in this study comes from the second Integrated Household Survey (IHS-2) conducted by the National Statistical Office between 2004 and 2005. Data was collected from a total of 11,280 households from randomly selected 564 enumeration areas using a questionnaire (NSO, 2005). We obtained a usable sample of 1,133 smallholder burley tobacco farming households in rural Malawi. These smallholder farmers sold an average of 485.53 kilograms of burley tobacco resulting in sales of MK39,408.30 per household. The average land size under burley tobacco cultivation among these farmers is 3.5 hectares out of an average of 15.3 hectare of total cultivatable land holdings. However, the standard deviations of cultivatable land (total and under burley tobacco) is quite high.

3.2 Definition of variables

The dependent variable in the model is the revealed gross profits from tobacco defined as sales revenue net of costs excluding imputed cost of family labour (*GPROFITS*). Gross profits are measured in Thousands of Malawi Kwacha. The questionnaire directly asked household heads on the net returns that they generated from burley tobacco farming in the 2003/04 season. This variable is likely to have larger standard deviations than the mean; consequently it may have a number of outliers.

The independent variables include household characteristics, farming characteristics, institutional framework, market characteristics and other control variables. The household characteristics include sex of the household head, household size, age of the household head in years (AGEHH) and education of the household head. Headship of the household (*SEXHH*) is represented by a dummy variable that takes a value of 1 for male-headed households and zero otherwise. The household size (*HHSIZE*) is the total number of persons in the household. The education of the household head is represented by four dummy variables of educational qualifications: *NONE* equal to 1 if the household has no education qualification (base category), *PSLC* equal to 1 if the household head has a primary school qualification, *JCE* equal to 1 if the household head has Junior Certificate (completed junior secondary school), *POSTJCE* equal to 1 if the household head has post junior secondary school qualification. We expect higher education to be positively related to gross profits as educated farmers may be expected to have better farm management skills.

Farming characteristics variables include the efficiency in burley production, the extent of specialisation in tobacco production, the

computed price of burley tobacco, application of the recommended amount of fertilizers and access to credit facilities. The efficiency of burley tobacco (*BUPROD*) is measured as the productivity of production captured by the ratio of quantity of tobacco produced in tonnes to land under burley tobacco cultivation in hectares. We expect more efficiency farmers to be more profitable than less efficient farmers. We also capture the extent to which households specialize in burley production by a specialisation variable (*SPRATIO*) measured as the ratio of land under burley cultivation to total household cultivatable land. Economic theory suggests that there may be gains from specialisation. The effective price of burley tobacco (*PRICE*) was computed as ratio of sales revenue to quantity of burley tobacco sold. [6] We expect a positive relationship between the price of burley tobacco and gross profits. Burley tobacco requires adequate fertilizers, and appropriate application of fertilizers is critical in maximising production. The appropriate application of fertilizers (*FERTREC*) is represented by a dummy variable equal to 1 for households that revealed that they applied the recommended amount of fertilizers, and zero otherwise. Access to credit addresses the liquidity constraint of farmers, although this also exerts pressure on profitability through loan repayment and servicing. Foltz (2004) develops a model that links credit access to profitability and show that access to credit allows farmers to optimize input usage given a set of fixed assets, hence increase allocative efficiency. Access to credit (*CREDIT*) is captured by a dummy variable if the household used credit to purchase inputs into burley tobacco production. The interest payments on loans are expected to dampen gross profits for farmers that had access to credit.

Smallholder burley tobacco farmers are typically organized into farmer clubs that are affiliated to formal institutions. These formal institutions provide services to farmers such as provision of credit, timely provision of inputs, extension services, transport services and marketing services. We use two alternative measures to capture the effects of institutions (farmer organisations) on gross profits. We include dummy variables representing affiliation of clubs to *NASFAM*, *TAMA*, *MRFC* and other institutions or not affiliated (*CLUBO*) taking a value of 1 if the club is affiliated to the institution. Alternatively, we include a club membership (*CLUBMEM*) dummy variable equal to 1 if the farming household belong to a tobacco club. These institutions have the potential to reduce transaction costs in smallholder production through scales in transportation of tobacco to the markets. Membership to clubs also

[6] This variable was found to have outlier observations which were excluded from the analysis.

strengthens social capital that may be important for sharing information. Nonetheless, these cost savings may be undermined by the levies that these institutions impose on the farmers. DTIS (2004) notes various institutional levies, for research, associations, tobacco classification system, and for other purposes are automatically deducted from the gross revenues of the farmers.

We also control for various market or marketing characteristics. Farmers sell their tobacco through four main marketing channels: at the auction floors, to neighbouring estates, to intermediate buyers and other unclassified buyers (base category). In order to control for variations in the market channels, we include three dummy variables. First, we include dummy variable, *AUCTION*, equal to 1 if the farming household sold tobacco at one of the Auction Floors located in Mzuzu, Lilongwe and Blantyre. Secondly, the dummy variable, *NESTATES*, equal to 1 if tobacco is sold to neighbouring estates is included in the model. The third market channel is sale to intermediate buyers (*IBUYERS*), represented by a dummy variable equal to 1 if tobacco is sold to intermediate buyers. We also control for the multiple use of marketing channel by including a dummy variable, *MULTMCH*, equal to 1 if the farming household sold to more than one market channel.

In addition, we control for the timing of tobacco sales by including dummy variables for months in which households sold most of their tobacco. The high sales months included in the model are March to August (*MAR, APR, MAY, JUN, JUL, AUG*), the other months are base category. The location of the market also matters and farmers have four options: home (base category), local market, district centre and urban centre. Three dummies are introduced in the model: *LMARKET* equal to 1 if tobacco was sold at the local market, *DCENTRE* equal to 1 if tobacco is sold at district centre and *UCENTRE* equal to 1 if tobacco was sold at an urban centre. We also include quality of tobacco in terms of grading by introducing three dummies: no grading (base category), *SGRADE* equal to 1 if the household self-graded tobacco and *HGRADE* equal to 1 if household hired local graders. Distance to the market, *DISTMKT*, has implications on the transaction costs that can reduce the returns to the farmers. *DISTMKT* is the estimated distance in kilometres to the location of sale from where tobacco was kept. We expect a negative relationship between distance and gross profits from burley tobacco. We also include regional dummy variables to capture the variation in the availability of the various market channels. The regional dummies are *NORTH* for farmers in the Northern Region, *CENTRE* for farmers in the Central Region and *SOUTH* for farmers in the Southern Region (base category).

4.0 Results and discussion

Table 2 presents descriptive statistics of the variables used in the econometric analysis. On average burley tobacco farming households earned MK22,681 in gross profits. Most households that grew burley tobacco are male-headed, with only about 8.9 percent of the burley farming households being female-headed. This suggests that burley tobacco is generally a crop for males. The average household size is 5.3 persons which is higher than the national average household size of 4.3 persons according to the 1998 census. Human capital is quite low among the burley tobacco farming household heads, with about 74.6 percent without any education qualification. Only 2.6 percent of household heads have post junior secondary school qualifications. Productivity in burley tobacco averages 0.9 tonnes per hectare. Koester et al. (2004) note that productivity in burley tobacco has been falling over time - from 2 tonnes per hectare in 1986/87 to less than 1 tone per hectare in 2002/03. The specialization ratio shows that on average households that grew burley tobacco devoted 33.9 percent of total cultivatable land to burley tobacco. Only 31.4 percent of burley growing households applied the recommended amount of fertilizers, 27.7 percent had access to credit and 22.7 percent were club members, while affiliation to apex institutions is quite low. Sale of tobacco to auction is the most common marketing channel, followed by sale to intermediate buyers. The average distance to markets is 85.5 kilometres. Most burley tobacco farmers come from the Central Region, 60 percent, followed by Southern Region accounting 22 percent.

Table 2 Descriptive statistics of variables

Variable	Mean	Std. Dev	Min	Max
Gross profits from tobacco (*GPROFITS*)	22.681	43.930	0.000	670.00
Sex of household head (*SEXHH*)	0.912	0.284	0.000	1.000
Age of household head (*AGEHH*)	40.354	14.550	17.000	98.000
Household size (*HHSIZE*)	5.349	2.428	1.000	16.000
Education: completed primary (*PSLC*)	0.140	0.348	0.000	1.000
Education: completed junior secondary (*JCE*)	0.088	0.284	0.000	1.000
Education: completed post junior secondary (*POSTJCE*)	0.026	0.158	0.000	1.000
Productivity (*BUPROD*)	0.896	0.654	0.000	3.600
Specialisation ratio (*SPRATIO*)	0.339	0.217	0.0001	1.000
Tobacco price (*PRICE*)	79.470	35.843	0.446	250.00
Applied recommended fertilizer (*FERTREC*)	0.314	0.464	0.000	1.000
Had access to credit (*CREDIT*)	0.277	0.448	0.000	1.000
Club affiliation is NASFAM (*NASFAM*)	0.071	0.256	0.000	1.000
Club affiliation is TAMA (*TAMA*)	0.073	0.261	0.000	1.000
Club affiliation is MRFC (*MRFC*)	0.113	0.317	0.000	1.000
Club affiliation is other (CLUBO)	0.052	0.222	0.000	1.000
Club membership (*CLUBMEM*)	0.227	0.419	0.000	1.000
Tobacco sold to Auction (*AUCTION*)	0.822	0.382	0.000	1.000
Tobacco sold to neighbouring estates (*NESTATES*)	0.015	0.122	0.000	1.000
Tobacco sold to intermediate buyers (*IBUYERS*)	0.140	0.348	0.000	1.000
Tobacco sold to multiple channels (*MULTMCH*)	0.188	0.391	0.000	1.000
High sales month is March (*MAR*)	0.033	0.178	0.000	1.000
High sales month is April (*APR*)	0.144	0.351	0.000	1.000
High sales month is May (*MAY*)	0.242	0.429	0.000	1.000
High sales month is June (*JUN*)	0.238	0.426	0.000	1.000
High sales month is July (*JUL*)	0.204	0.403	0.000	1.000
High sales month is August (*AUG*)	0.081	0.273	0.000	1.000
Tobacco sold at local market (*LMARKET*)	0.034	0.180	0.000	1.000
Tobacco sold at district centre (*DCENTRE*)	0.049	0.215	0.000	1.000
Tobacco sold at urban centre (*UCENTRE*)	0.756	0.430	0.000	1.000
Tobacco graded by self (*SGRADE*)	0.674	0.469	0.000	1.000
Tobacco graded by local graders (*HGRADE*)	0.225	0.418	0.000	1.000
Distance to the market (*DISTMKT*)	85.470	96.595	0.000	911.00
Region is Northern region (*NORTH*)	0.184	0.387	0.000	1.000
Region is Central region (*CENTRE*)	0.597	0.491	0.000	1.000

Table 3 presents the ordinary least squares (OLS) estimates of determinants of gross profits among smallholder burley tobacco farmers in Malawi given two alternative specification of membership to a burley club. Model 1 specified club membership in terms of affiliation to formal or apex farmer organisations while model 2 specifies club membership as belonging to a burley tobacco club. The models explain about 27 percent of the variations in gross profits. The F-tests shows that the null hypothesis of all coefficients being equal to zero except the constant in both model is rejected at the 1 percent level. In both specifications, only the household size (HHSIZE) among the household characteristics is statistically significant at the 10 percent level. The results show that a unit

increase in household size increases gross profits by at least MK1,400. Gross profits are, however, inelastic with respect to household size, with the computed elasticities of 0.33 and 0.34 in models 1 and 2, respectively. The positive relationship between household size and profitability reflects the easing of labour constraints – hence large households have a potential pool of family labour for a labour intensive crop such as burley tobacco.

Among the farming and crop characteristics, we find productivity, specialisation ratio, price of burley and appropriate application of fertilizers to be positively related to gross profits. The coefficients of these variables are statistically significant at the 1 percent level in both models. The results show that a unit increase in productivity leads to an increase of at least MK21,348 in gross profits. The computed elasticity of gross profits with respect to productivity is 0.84. This provides evidence of a positive relationship between efficiency and profitability. The results also show that there are gains from specialisation, with households that devote relatively more land to burley tobacco farming being more profitable. The computed elasticities show that a percent increase in the proportion of land devoted to burley tobacco leads to a 0.62 percent increase in gross profits. Since burley tobacco farming is labour intensive, households that devote less land to burley tobacco tend to substitute family labour in other crops and put less effort in burley tobacco management.

Table 3 Ordinary least squares profitability model (dependent variable: gross profits)

	Model 1		Model 2	
Variables	*coeff.*	*t-ratio*	*coeff.*	*t-ratio*
Sex of household head (*SEXHH*)	-0.6375	-0.23	-0.5299	-0.19
Age of household head (*AGEHH*)	0.1279	1.28	0.1297	1.31
Household size (*HHSIZE*)	1.3759	1.86*	1.4601	1.81*
Education: completed primary (*PSLC*)	4.1379	0.78	4.1716	0.79
Education: completed junior secondary (*JCE*)	2.8843	0.78	2.6799	0.71
Education: completed post junior secondary (*POSTJCE*)	15.9730	1.17	15.7030	1.15
Productivity (*BUPROD*)	21.3482	7.82***	21.8108	7.51***
Specialisation ratio (*SPRATIO*)	41.6557	4.90***	41.6787	5.00***
Tobacco price (*PRICE*)	0.2261	6.36***	0.2232	6.33***
Applied recommended fertilizer (*FERTREC*)	12.9125	4.55***	13.3678	4.31***
Had access to credit (*CREDIT*)	-4.1137	-0.87	-1.8121	-0.52
Club affiliation is NASFAM (*NASFAM*)	-0.0271	-0.01	-	-
Club affiliation is TAMA (*TAMA*)	-6.2508	-1.80*	-	-
Club affiliation is MRFC (*MRFC*)	0.5593	0.11	-	-
Club affiliation is other (CLUBO)	6.6772	0.70	-	-
Club membership (*CLUBMEM*)	-	-	-5.7243	-1.48
Tobacco sold to Auction (*AUCTION*)	19.0534	2.36**	21.9497	2.65***
Tobacco sold to neighbouring estates (*NESTATES*)	11.0499	1.39	11.6016	1.45
Tobacco sold to intermediate buyers (*IBUYERS*)	30.2922	3.98***	31.9840	3.98***
Tobacco sold to multiple channels (*MULTMCH*)	-4.3347	-2.27**	-4.4975	-2.38**
High sales month is March (*MAR*)	12.4531	3.14***	11.9051	3.08***
High sales month is April (*APR*)	6.7927	1.09	6.1710	1.03
High sales month is May (*MAY*)	4.2060	1.41	3.9551	1.35
High sales month is June (*JUN*)	9.3248	2.90***	8.8766	2.89***
High sales month is July (*JUL*)	8.1920	2.38**	7.6996	2.20**
High sales month is August (*AUG*)	7.0431	1.70*	6.8879	1.67*
Tobacco sold at local market (*LMARKET*)	9.1966	3.16***	9.1902	3.18***
Tobacco sold at district centre (*DCENTRE*)	21.0433	1.86*	20.9699	1.80*
Tobacco sold at urban centre (*UCENTRE*)	14.9017	2.96***	14.5867	2.97***
Tobacco graded by self (*SGRADE*)	-1.8524	-0.53	-2.5290	-0.71
Tobacco graded by local graders (*HGRADE*)	0.1859	0.04	-0.6597	-0.15
Distance to the market (*DISTMKT*)	-0.0292	-2.78***	-0.0294	-2.84***
Region is Northern region (*NORTH*)	11.0869	2.13**	11.3476	2.12**
Region is Central region (*CENTRE*)	7.0706	3.54***	5.9400	3.03***
Constant	-85.8481	-5.22***	-86.8543	-5.15***
Number of observations	1133		1133	
F(32, 1100)	9.06		10.34	
Prob > F	0.000		0.000	
R-squared	0.2710		0.2711	
Root MSE	38.055		38.001	

Note: The standard errors are heteroscedastic-consistent. *** significant at 1 percent level, ** significant at 5 percent level, * significant at 10 percent level

The effective price of burley tobacco is positively associated with gross profits and the computed elasticity is 0.79, implying that a 1 percent increase in the effective price of tobacco leads to a 0.79

percent increase in profitability. Thus, breaking the suspected anti-competitive behaviour of buyers at the auction floors is likely to improve the profitability of burley tobacco farming among smallholder farmers. Appropriate use of inputs such as application of recommended amounts of fertilizers is positively associated with gross profits.[7] Applying recommended amounts of fertilizers improves the productivity of land and hence higher profits to the farmer, *ceteris paribus*. Access to credit is not a significant factor influencing profitability; the coefficient is negative, reflecting the adverse effect of indebtedness through loan servicing. Thus, although GOM and World Bank (2006) find access to credit to be a significant determinant of participation in tobacco production in Malawi, there is no evidence of the profitability – liquidity relationship. The results in this study are similar to the findings in Hazarika and Alwang (2003) in which they find a non-significant relationship between access to credit and cost efficiency among smallholder tobacco farmers in Malawi.

The results provide evidence that the institutions that exist to assist the smallholder farmers do not boost farmers' profitability. In model 1, belonging to farmers' clubs by type of affiliation has mixed effects while in model 2 club membership is negatively associated with profitability. Profitability is negatively associated with club affiliation to NASFAM and TAMA but positively associated with affiliation to MRFC and other institutions. However, the coefficients are statistically insignificant except for affiliation to TAMA which is statistically significant at the 10 percent level. Clubs that are affiliated to TAMA are MK6,251 less profitable compared to smallholder farmers that do not belong to clubs. Studies have shown that services offered by TAMA are not cost effective (compared to NASFAM) especially due to the failure to negotiate better transportation services for tobacco from collection depots to the auction (for example, Koester et al., 2004). In addition, the fees and commissions levied on farmers by TAMA tend to depress farmers' profitability (DTIS, 2004; Koester et al., 2004). These institutions are therefore adding unnecessary transaction costs in the supply chain. Maleta (2004) notes that some members are dissatisfied with services of TAMA and doubt if the organisation has worked in the best interest of its members. These results contrast with the findings of GOM and World Bank (2006) which find club membership to be positively related to technical efficiency.[8] This implies that although

[7] We also included a dummy for application of fertilizers, but the coefficient was statistically insignificant in both models.

[8] It is worth noting, however, that the GOM and World Bank (2006) analysis is based on a monocrop sample of burley tobacco farmers while this

the club membership is important as a vehicle for technical advice to farmers, this does not necessarily translate into higher profitability among smallholder farmers. As Hazarika and Alwang (2003) note, a producer can be technically efficient, but unable to maximize profits given technical efficiency (allocative inefficiency).

The choice of market for burley tobacco has some effect on gross profits. Smallholder farmers that sold their tobacco to intermediate buyers relatively made more profits (MK30,292) than those that sold to other buyers while those that sold at the auction (through affiliation institutions or directly) made only MK19,053 more profits. In relative terms, of the four market channels, the intermediate buyer channel is more profitable for the farmers. One reason for the profitability associated with intermediate buyers may be a reduction in transaction costs such as transport costs and avoidance of the many levies that are imposed on tobacco when farmers sell directly at the auction or through their affiliated institutions. Farmers who diversified across marketing channels on average earned less profit than those that used a single market channel. The coefficient of the multiple market channels is statistically significant at the 5 percent level. Profits are higher among smallholder farmers that sell most of their tobacco in March, June, July and August than among those farmers that sell most of their tobacco in the period between September and February.

We also find a positive relationship between gross profits and the location of the market. Smallholder farmers who sold their tobacco at a district centre on average earned more profits than those that sold tobacco at an urban or local market. Urban markets are relatively far from most farming households, and transportation costs are therefore likely to depress profitability. The important role of transport costs in determining profitability is confirmed by the negative relationship between profits and distance to the markets. The coefficient of distance to the market is statistically significant at the 1 percent level in both models. We also find that gross profits are higher in the Northern Region relative to profits earned by farmers in the Central and Southern Region.

5.0 Concluding remarks

The repeal of the Special Crops Act in the early 1990s that imposed barriers to smallholder farmers in the production of certain cash crops, opened new opportunities to participate in high value cash crops such as tobacco. Smallholder farmers currently account for more than 70 percent of burley tobacco production in Malawi.

---

study includes all burley tobacco farmers.

Studies show that participation of smallholder farmers has had positive effects on poverty – with participation in tobacco production being associated with the probability of being non-poor (Mukherjee and Benson, 2003; GOM and World Bank, 2006). The liberalisation of tobacco production has also been associated with the evolution of farmer organisations with different institutional arrangements aimed at reducing transaction costs incurred by smallholder farmers. This study set out to investigate the relationship that exists between farmers' affiliation to farmer organisations and profitability from burley tobacco farming. Our working hypothesis is that farmer organisations can potentially reduce transaction costs paid by farmers by negotiating better terms of inputs, transport services apart from offering technical advice to farmers.

Using gross profits from tobacco farming as a measure of profitability, the study finds that smallholder farmers do not significantly gain from farmer organisations. This is true whether membership to organisation is measured as affiliation to apex organisations or membership to the smallest organisational unit – farmers' club. Smallholder farmers are affiliated to NASFAM, TAMA and MRFC with access to credit, extension services, markets and transport services as the main benefits to members. The econometric results show that affiliation to TAMA depresses farmer profitability – reducing profitability by around MK6,250 compared to the base case of not being affiliated. In comparison, with other apex organisations, this is consistent with the findings in Koester et al. (2004) that indicate the inability of TAMA to negotiate better transport charges due to the fact that the councillors in the satellite depots are also providers of transport services to the auction. Some of the inefficiencies may be due to capacity constraints of many farmer organisations, leading to a failure to effectively deliver services to their members. The results provide support for voluntary membership to farmer organisations.

Another significant result is the positive role of intermediate buyers in the gross returns to farmers. Although the intermediate buyer system was discontinued by government in 2000 for reasons including exploitation of farmers through lower prices, this study provides compelling evidence that they tend to be better than selling tobacco through other channels such as auction, neighbouring estates and other channels. The mark-up of selling to intermediate buyers over auction is about MK11,000 and MK19,000 over selling to neighbouring estates. One reason for this positive effect of intermediate buyers of smallholder profitability is the absence of levies and transport charges imposed by the market participants and farmer organisations. The implication of the discontinuation of the intermediate buyer system is that such government policy is welfare

reducing among smallholder farmers. Although there seem to be opposition from industry stakeholders on re-introducing intermediate buyers (Koester et al., 2004), from farmers welfare point of view there seem to be no valid justification, as those that are operating illegally tend to offer better returns to smallholder farmers.

The distance to the markets is another binding constraint on the profitability of smallholder burley tobacco farmers. Given that most farmers in the sample sell their tobacco at the auction floors, the negative effects of distance to the markets reflects the transaction costs arising from the centralisation of auction floors in Blantyre, Lilongwe and Mzuzu. The effect of distance is also re-affirmed by the fact that farmers in the Northern Region tend to earn more profits than the other two regions. Relatively, the Mzuzu auction is within reasonable distance of the main tobacco growing districts of Mzimba and Rumphi, compared to the average distance to the auction in the Central and Southern Regions. These results therefore provide support for the decentralisation of auction markets.

In summary, there is compelling evidence that higher productivity, higher specialisation, better prices, correct use of inputs and selling tobacco to intermediate buyers do benefit smallholder farmers in terms of profitability. On the other hand, affiliation to farmer organisations, selling tobacco to multiple channels and distance to the market tend to depress smallholder profits. These results points to the need to re-introduce intermediate buyers, resolving the anti-competitive practices among the few buyers, reconsideration of the roles of farmer organisations and the decentralisation of tobacco auction markets.

References

Dorward, A., Kydd, J., Morrison, J. and Poulton, C. (2005) Institutions, markets and economic co-ordination: linking development policy to theory and praxis, **Development and Change 36(1)**, 1–25.

Dorward, A., Fan, S., Kydd, J., Lofgren, H., Morrison, J., Poulton, C., Rao, N., Smith, L., Tchale, H., Thorat, S., Urey, I. and Wobst, P. (2004) Institutions and policies for pro-poor agricultural growth, **Development Policy Review, 22 (6)**, 611-622.

DTIS (Diagnostic Trade Integration Study) (2004) Malawi integrated framework: diagnostic trade study, Lilongwe: Ministry of Trade and Private Sector Development.

Foltz, J. D. (2004) Credit market access and profitability in Tunisian agriculture, **Agricultural Economics, 30(3)**, 229–240.

GOM (Government of Malawi) (2002) **Malawi poverty reduction strategy**, Lilongwe: Ministry of Finance and Economic Planning.

GOM (Government of Malawi) (2004) **Malawi economic growth strategy**, Lilongwe: Ministry of Economic Planning and Development.

GOM (Government of Malawi) and World Bank (2006) Malawi poverty and vulnerability assessment: investing in our future, Lilongwe: Ministry of Economic Planning and Development.

Hazarika, G. and Alwang, J. (2003) Access to credit, plot size and cost inefficiency among smallholder tobacco cultivators in Malawi, **Agricultural Economics, 29(1)**, 99–109.

Jayne, T. S., Govereh, J., Mwanaumo, A., Nyoro, J. K. and Chapoto, A. (2002) False promise or false premise? The experience of food and input market reform in Eastern and Southern Africa, **World Development, 30(11)**, 1967–1985.

Jayne, T. S., Yamano, T. and Nyoro, J. (2004) Interlinked credit and farm intensification: evidence from Kenya, **Agricultural Economics, 31**, 209–218.

Kachule, R., Poole, N. and Dorward, A. (2005) Farmer organisations in Malawi: the organisation study. Farmer Organisation for Market Access Project, London: Imperial College London.

Kadzandira, J. M., Phiri, H. M. and Zakeyo, B. (2004) The perceptions and views os smallholder tobacco farmers on the state of play in the tobacco sector. Lilongwe: World Bank.

Kherallah, M., Delgado, C., Gabre-Madhin, E., Minot, N. and Johnson, M. (2000) The road half travelled: agricultural market reforms in Sub-Saharan Africa, Food Policy Report No. 10, (International Food Policy Research Institute (IFPRI), Washington D.C.).

Koester, U., Olney, G., Mataya, C. and Chidzanja, T. (2004) Status and prospects of Malawi's tobacco industry: a value chain analysis, Lilongwe: Ministry of Agriculture and Food Security.

Kydd, J. and Dorward, A. (2001) The Washington consensus on poor country agriculture: analysis, prescription and institutional gaps. **Development Policy Review, 19(4)**, 467-478.

Maleta, M. (2004) Malawi – tobacco sector performance audit: review of the performance of sector institutions, Lilongwe: Ministry of Agriculture and Food Security.

Mukherjee, S. and Benson, T. (2003) The determinants of poverty in Malawi 1998. **World Development, 31(2)**, 339-358.

MRFC (Malawi Rural Finance Company) (2002) **2002 Annual report and accounts**, Lilongwe: MRFC.

National Statistical Office (NSO) (2005) Malawi second household survey (IHS-2) 2004 – 2005: basic information document, Zomba: National Statistical Office. Available at http://www.nso.malawi.net.

World Bank (2002) **Institutions for markets: world development report 2001/2002**. Washington, DC: The World Bank.

World Bank (2003) **Malawi country economic memorandum: policies for accelerating growth**. Washington: World Bank.

Other DOE Working Papers Series

2005

2005/01 **Pro-poor Growth in Agriculture and the Land Question in Malawi** by Ephraim W. Chirwa, April 2005

2005/02 **Evidence against Static Asset Pricing on the JSE Securities Exchange of South Africa** by Ronald D. Mangani, May 2005

2005/03 **Gender and Performance of Micro and Small Enterprises in Malawi** by Ephraim W. Chirwa, May 2005

2005/04 **Household Consumption of Complementary Infants' Foods in Malawi: The Case of Zomba and Chiradzulu Districts** by Levison Chiwaula and Ben Kaluwa, July 2005

2005/05 **Role of Migrants' Remittances in an Unstable Low-Income Economy: A Case Study of Malawi** by Chinyamata Chipeta and Willie Kachaka, July 2005

2005/06 **Macroeconomic Policies and Poverty Reduction in Malawi: What Can we Infer from Panel Data?** by Ephraim W. Chirwa, July 2005

2005/07 **Cash Crop Liberalization and Poverty Alleviation in Africa: Evidence from Malawi** by Winford H. Masanjala, August 2005

2005/08 **Agricultural Marketing Liberalisation and the Plight of the Poor in Malawi** by Ephraim W. Chirwa, Peter M. Mvula and John Kadzandira, September 2005

2005/09 **A Rough and Lonely Road to Prosperity: A Re-examination of the Sources of Growth in Africa using Bayesian Model Averaging** by Winford H. Masanjala and Chris Papageorgiou, October, 2005

2005/10 **Expected Returns and Volatility on the JSE Securities Exchange of South Africa** by Ronald Mangani, November, 2005

2006

2006/01 **Determinants of Child Nutrition in Malawi** by Ephraim W. Chirwa and Harold Ngalawa, January 2006

2006/02 **Technical Efficiency of Smallholder Farmers in Southern Malawi: A Study of Adopters and Non-adopters of Integrated Aquaculture-Agriculture** by Richard Mussa, February 2006

2006/03 **Farm-Level Productivity in Smallholder Tea Farming in Malawi: Do Contractual Arrangements Matter?** by Ephraim W. Chirwa and Jonathan Kydd, March 2006

2006/04 **Commercialisation of Food Crops in Rural Malawi: Insights from the Household Survey** by Ephraim W. Chirwa, January 2006

2006/05 **The Poverty - HIV/AIDS Nexus in Africa: A Livelihoods Approach** by Winford H. Masanjala, March 2006

2007

2007/01 **Monetary, Financial and Real Sector Interrelationships in South Africa** by Ronald Mangani, August 2007

2007/02 **The Demand for Private Health Insurance in Malawi** by Donald Makoka, Ben Kaluwa and Patrick Kambewa, August 2007

2008

2008/01 **A GARCH Representation of Macroeconomic Effects on the JSE Securities Exchange** by Ronald Mangani, March 2008

2008/02 **What Explains Variations in Access to Land in Malawi?** By Ephraim W. Chirwa, March 2008

2008/03 **The Effectiveness of Anti-smoking Policies in Poor Countries: Evidence from Kenya**. By Ben Kaluwa, Scholastica A. Odhiambo and Felix Maoni, December 2008

2009

2009/01 **The Rates of Return on Education in Malawi** by Ephraim W. Chirwa and Mirriam M. Matita, January 2009

2009/02 **The Impact of Education on Self-Employment, Farm Activities and Household Incomes in Malawi** by Mirriam M. Matita and Ephraim W. Chirwa, February 2009

2009/03 **Determinants of Marketing Channels among Smallholder Maize Farmers in Malawi** by Ephraim W. Chirwa, February 2009