Weaknesses in Institutional Organization: Explaining the Dismal Performance of Kenya's Coffee Cooperatives

A. MUDE

Contributed paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18, 2006

Weaknesses in Institutional Organization : Explaining the Dismal Performance of Kenya's Co ffee Cooperatives

1 INTRODUCTION

While a general consensus exists that empowering the poor to ta ke a proactive role in their development should be a c entral pillar of development efforts, it is not as clear that membership based organizations are always the most effective means to improving the welfare of its members. Several studies have documented case s in which collective organizations have failed to meet their stated objective, at t imes even leaving members worse off (Gugerty a nd Kremer 2004, Morduch 1999, Rahman 1999). Drawing from such experiences, a nascent literature now studies how the vary act of creating a membership based organization can give rise to incentives that work against the original intended goals of the organization (Gugerty and Kremer 2004, Stiles 2002, Howes 1997).

This paper highlights this issue from the perspective of the smallholder coffee sub-sector in Kenya. We hypothesize that the marked deterioration of coffee cooperatives in Kenya c an be partly explained by institutional changes in cooperative organization that gave full ownership and administrat ive control to members. The rules by which cooperatives' memberships elect their lead ers lend itself to capture by corrupt individuals whose rent -seeking predictably reduces members' efficiency and welfare.

2 COFFEE COO PERATIVES IN KENYA

Small-scale production dominates the Kenyan coffee sector with over 75 percent of land under producti on controlled by smallholder farmers [1]. The large fixed costs

[1] Any farmer with less than five acres of land under coff ee production is class ified as a smallholder grower.

involved in the processing and marketing of coffee, along with the additional hindrance of inadequate transportation, communication, and banking infrastructure poses significant challenges to smallholder profitability. For this reason, the smallholder coffee sector has traditionally been organized into cooperatives in order to facilitate regulation and to improve the effectiveness and efficiency of smallholder coffee production, marketing and the provision of key inputs such as fertilizers, pesticides, credit and extension services.

Since its introduction as a cash crop in the early 1900s, coffee has traditionally been the backbone of Kenya's rural highlands economy. Coffee was the nation's top foreign exchange earner from independence in 1963 until it was surpassed by tourism in 1989. Since then, national coffee earnings have steadily declined and currently rank fourth after tourism, tea, and horticulture (Karanja, 2002).

Reacting to pressure from international donors in the late eighties and early nineties, the government enacted a series of reforms aimed at the eventual liberalization of the Kenyan economy. As Kenya's main foreign exchange earner, the coffee sector was a major target for reforms. The policy change of particular interest to the hypothesis advanced in the paper involves the new Cooperatives Act of 1998 which gave farmers complete autonomy over the activities of the cooperative. Prior to 1998, the government played a major role in the running of cooperatives through the office of the commissioner of cooperatives, and their field-agents lead by district cooperative officers (DCOs). Although members owned the cooperatives and elected their board members, the commissioner's office had powers to dissolve the governing board, call for fresh elections or directly appoint a care-taker committee. DCOs were counted as extra-official members of the governing board and were mandatory signatories to all cheques and withdrawals made by the management. The commissioner's office was also the sole agent authorized to audit society accounts.

Under the new policy, government no longer had any policy making jurisdiction over the economic activities of cooperatives and took on a minimal advisory role. Cooperative board members were free to conduct elections as they pleased, make hiring decisions of their choice, and contract, if they so wished, their auditor of choice. DCOs were no longer required to co-sign on any financial transactions. These changes increased the incentives to rent-seeking by providing board members with unfettered access to cooperative coffers without the fear of persecution.

Thereafter, payments to growers plummeted amid growing political opportunism at the grassroots that damaged farmer morale and raised the level of corruption and mismanagement in cooperative administration. Violence became common at annual general meetings (AGMs) called to elect board members. Through the years, a general decline in AGM attendance ensued as growers began to be disillusioned by the process of elections. Widespread belief has it that a majority of those who continued to attend AGMs are bribed for a pittance. Indeed several of the growers surveyed under this study unabashedly acknowledged that they indeed had accepted bribes of Sh 100 (roughly, $1.40), or offerings of the local brew on election day to vote for the incumbents [2]. In this way, corrupt board members entrench themselves and embezzle the proceeds of coffee sales, further eroding the ailing cooperatives.

3 ELECTION CAPTURE IN KENYA'S COFFEE COOPERATIVES

"Election capture", describes the process by which self-interested and corrupt candidates illegitimately manipulate the electoral process in order to secure their victory. Along with the Cooperatives Act of 1998 that increased the expected returns to rent-

[2] One respondent lamented his role as "middleman", accepting Ksh 1000 to run a candidate's vote buying program. He regretfully recognized that he had helped elect a board that had brought ruin to their cooperative.

seeking and decreased the risk of detection and censure, certain features of the existing institutional environment contributed to facilitating election capture in Kenya's Coffee Cooperatives.

A. Perfect Vote Signaling

All of the nine coffee cooperatives surveyed for this study conducted their elections in the traditional fashion of *mlolongo*. *Mlolongo*, literally translated as "line-up", describes the method of having voters line up behind their preferred candidate with the candidate having the longest line winning the election. Clearly, the consequence of such a method is that everybody knows who everybody else voted for. This facilitates vote-buying by offering a free and perfect enforcement mechanism for candidates. A voter who might otherwise simply accept the bribe and thereafter vote independently under a secret-ballot regime must now consider the cost of near-certain punishment should he deviate. A secret ballot system for democratic majority-rules elections weakly dominates a perfect signaling *mlolongo* approach. *Mlolongo* provides just the enforcement mechanism a rent-seeking candidate could use to advance his objective, undermining grower productivity in the process.

B. Local Monopsony Power

Kenyan law requires all coffee growers with less than five acres of land under coffee to market their output solely through cooperatives. Furthermore, due to poor transportation infrastructure and the need to pulp coffee cherry so on after it is picked in order to avoid quality-reducing fermentation, each cooperative has a legally defined catchment area. Making it illegal for growers to sell their coffee to other potential buyers effectively grants cooperatives local monopsony protection and shields them from potential competition. The logic of organizing to attain an input-output mix at the bottom

of the long run average cost curve assumes a competitive market that requires collective cooperation among small producers who intend to be competitive. Yet, protecting such organizations against competition discourages them from being efficient as there are no longer constraints that force them to maximize the benefits to cooperation. The very motivation for organization, to attain optimal scale in the face of competition, loses its salience under monopsony. In addition, local monopsony protection empowers rent-seeking managers to exploit their growers by forcing them to accept payments lower than the equilibrium price that would obtain under a competitive market.

4 EMPIRICAL ANALYSIS

4.1. Data

The data were collected over a four month period between November 2003 and February 2004. Murang'a District of Kenya's Central Province, was selected as the survey site. It is a high potential agricultural area on the eastern slopes of the Aberdare ranges endowed with good soils and favorable rainfall. In order to capture variation at the institutional level, our sampling method was stratified. We first picked nine out of a total 19 coffee cooperatives in the District, purposively selecting the cooperatives so as to achieve the greatest variation in spatial coverage of Murang'a, cooperative size, and subjective performance based on information from the District Cooperative Officer, the District Agricultural Officer, and recent payments offered to members for their output. Once the cooperatives were selected, we randomly picked a factory (two for cooperatives with six or more factories) and from that randomly selected our household sample, from the members' registry. We collected both cooperative level data and conducted farm level surveys. Table 1 presents some general statistics of the cooperatives.

4.2. Empirical Strategy

Our goal is to test for the presence of rent-seeking behavior in cooperatives and to show that, to the extent it exits, it has an inverse relationship to farm level technical efficiency. Diminishing efficiency is a stricter measure of the negative consequence of rent-seeking as it goes beyond merely asking if total output or yields have decreased - a trend that has already be shown to exist in the aggregate. A decline in output itself is not necessarily a signal of weak performance and could simply reflect a rational shift in aggregate production patterns in response to changes in the expected returns of available livelihood options. As such, in our empirical investigation, we impose a more stringent condition, seeking to identify a statistically significant association between farm-level technical inefficiency and corruption or mismanagement at the cooperative level.

To tease this out from our data, we conduct three separate but interrelated tests. First, we estimate a stochastic production frontier for coffee yield and use the results to generate a farmer-specific measure of technical efficiency. We then conduct two separate factor analyses to extract proxies that together provide an indication of the likelihood and extent that the various cooperatives are involved with rent-seeking behavior. The third test uses the efficiency measures generated from the frontier estimation as the dependent variable in an Ordinary Least Squared (OLS) regression aimed at determining the sources of technical efficiency. The rent-seeking proxies generated from the factor analyses are here used as independent variables in an effort to gauge the relationship between cooperative level rent-seeking and individual member technical efficiency. We hypothesize a statistically significant relationship between cooperative corruption and farm-level inefficiency.

4.3. Estimating Farm-Level Technical Efficiency.

To investigate patterns of farm-level technical efficiency, we estimate a stochastic coffee production frontier then calculate each unit of observation's deviation from this

benchmark of optimal efficiency. Assuming k inputs, we estimate the following production frontier

$$\ln(q) = \beta_0 + \sum_{j=1}^{k} \beta_j \ln(z_j) + \sum_{j=1}^{k} \gamma_j [\ln(z_j)]^2 + v - u$$

where q is yield in kilos of coffee cherry per tree, z denotes inputs, v is the common disturbance term which we assume to be normally distributed with mean zero, and u which has a non-negative half-normal distribution and parameterizes the inefficiency error term.

Table 2 provides summary statistics for the variables used in the estimation. Estimation results are given in Table 3. Results indicate that the total acreage of land available to the grower, the acreage under coffee, the amount of hired labor used in coffee production, the age of the coffee trees, the use of inorganic fertilizers and the estimated pre-harvest loss were all significantly related to the observed cherry coffee yield.

Our principle objective in estimating the production frontier was to obtain the estimates of grower technical efficiency within our sample. We included cooperative level dummies to control for heteroskedasticity in the inefficiency error term. Estimates for eight of the nine cooperative dummies are statistically significant indicating that systematic differences in farm-level technical efficiency exits across cooperatives. As presented in Table 3, the estimates are parameterized as the log variances of the error components. From these results, we can extract the farm-specific estimates of technical efficiency[3]. These estimates will later be used as the dependent variable for the test we run to look at the effect of corruption at the cooperative level on farm specific efficiency. Table 4 presents some descriptive statistics on the estimates of technical efficiency.

[3] Values of technical efficiency range from zero to one, with one signifying optimal efficiency.

What immediately stands out from these statistics is the generally low levels of technical efficiency and the large variations that exist both within and between cooperatives.

4.4. ***Creating Proxies for the Likelihood and Extent of Rent Seeking Behavior.***

The next step is to create proxies for the relative level of corruption and management incompetence between the cooperatives. The idea is to identify and differentiate cooperatives by the likelihood that they are run by rent-seeking and inept board members. Our sample of only nine cooperatives with a total of thirteen factories is too limiting to allow the use of regression analysis to generate the requisite proxies. As such, we take a different approach, seeking to identify corruption within cooperatives indirectly by studying the outcomes and perceptions that are commonly associated with corruption or mismanagement.

Factor analysis, which is concerned with uncovering the latent structure of a set of variables, is well suited for our purposes. We use factor analysis to reduce a set of variables into common factors that correspond to various aspects of cooperative organization and practice that are likely to affect its productivity and are plausibly related to the degree of corruption plaguing the cooperatives. We conduct two separate tests, extracting two underlying factors from each.

The first test includes only factory level variables and aims at generating common factors that speak to the structure and performance of the cooperatives. Table 5 defines the variables used in the first test and provides some basic statistics. Table 6 summarizes the factor analysis results. The first factor, which we call *size* loads heavily on members, factories, and variance which are all correlated with increasing size. The low uniqueness posted by each of these variables indicates that the underlying communality of size is

well characterized by these variables. Uniqueness is defined as that fraction of variance for the variable that is *not* explained by the factors. The second factor, which we call *performance* loads primarily on variables associated with the performance or productivity of the cooperative as given by the payments its members receive, the volume of output they produce and the quality of their coffee. *Size* and *performance*, as defined by the factors, increase with increasing factor values.

Beyond the structural features of a cooperative that may determine the ease with which corruption takes root, or their relative performance that can proxy for the extent of mismanagement or rent-seeking activity, members beliefs regarding the effectiveness of cooperative management could also reveal some key information. To investigate this possibility, we run a second factor analysis on the variables defined in Table 7. In order to facilitate interpretation of the subsequent factor loadings, we include the variables response structure.

Table 8 summarizes the results of the second factor analysis. The first factor, *dissatisfaction*, loads heavily on variables that encompass subjective beliefs of how well the cooperative is managed. While the uniqueness levels of most of these variables are high, the variables "effectivemanage" and "coopcompare", which are closely related to our interpretation of the underlying factor, are associated with acceptable levels of uniqueness. As loaded, *dissatisfaction* increases as farmers are more likely to rate there cooperative as poorly managed, lacking in the provision of services, associated with violence and disengaged from the membership. As such, we would expect *dissatisfaction* to be negatively related to farmer technical efficiency.

The second factor seems to represent a measure of pessimism in the regulatory environment or a lack of faith in the commitment of policy makers to improve cooperative performance. We call this factor *pessimism*. As a lack of confidence in the

regulatory environment is likely to generate disincentives to productivity, we expect a negative correlation between *pessimism* and technical efficiency.

4.5. *Determinants of Farm-Specific Technical Inefficiency.*

The third test is an ordinary least squared (OLS) regression of the farm-specific estimates of technical inefficiency we previously constructed, on a set of likely covariates, including the rent-seeking factors, in an attempt to determine the sources of inefficiency. Table 9 presents some descriptive statistics of the variables used in the regression. We control for the traditional household demographic variables in addition to experience (the number of years the household has been growing coffee), the receipt of extension services, as well as the ratio of advance payment to total payment received by members. The advance ratio is defined as the fraction of total payment that is received as an advance at the start of the season [4]. We include this variable as a proxy for liquidity.

For the four factors we use to proxy for corruption, the actual values do not mean much and are here simply normalized to mean zero. However, because the variables are cardinally ranked, the position of a given observation relative to the variable's entire range is important. Table 10 presents the results.

None of the demographic variables, including experience in coffee growing, prove to be significantly related to degree of efficiency. A possible explanation is that some of these variables are related to the use and availability of inputs whose variation is already captured in the estimates of technical efficiency. The fraction of the total payment given as an advance at the beginning of the season, a key policy variable, is significantly and positively related to efficiency. This points to the crucial importance of providing smallholder farmers, who are often cash constrained and have limited access to

[4] Recall that cooperatives pay their members in two installments. A coffee advance payment (CAPS) at the beginning of the season, and a final payment at the end of the season.

credit, with some form of advance payment on their output in order to facilitate the timely purchase of critical inputs such as inorganic fertilizers and pesticides.

The four rent-seeking variables, each of which proxy different aspects of cooperative organization and performance that can be linked to the likelihood and extent of rent-seeking activity, are all significantly associated with farm-level technical efficiency. As hypothesized, *size* is negatively associated with technical efficiency. In our analytical model, we showed that the likelihood of election capture increased with increasing membership, a variable clearly related to cooperative size. As such, this result could be interpreted as revealing a significant association between the probability that a cooperative has been captured by rent-seeking officials and technical efficiency. High values of *performance*, associated as it is with higher payments to farmers and increases in the quality and quantity of output, suggest a cooperative leadership that seeks to maximize member welfare and provide the right incentives for increased productivity. As such, a positive and significant relationship between *performance* and farmer efficiency also supports the hypothesis that rent-seeking at the cooperative level impacts negatively on farm level efficiency.

The negative and significant result on *pessimism* lends further credence to our claims. Lack of confidence in policy makers' resolve to improve the rules and regulations that underlie the smallholder coffee sector suggests a current institutional arrangement that does not provide growers with incentives that aptly reward productive behavior.

The only result unexpected result regards the positive and significant relationship between *dissatisfaction* and efficiency. Because *dissatisfaction* explained the least variation among the variables it loaded heavily on, it could be that our interpretation of the underlying communality explained in the factor *dissatisfaction* is somewhat imprecise. An alternative explanation is that having controlled for cooperative

performance, *dissatisfaction* may be picking up farmer-specific expectations of how cooperatives could be managed, which, in turn, is associated with a farmer's understanding of the disparity between the status-quo and what is possible under optimal management. Such farmers, who are likely to be the most enterprising, would express the most discontent with management while still applying effort into their own production.

5 CONCLUSION

In this case study, we applied the principles of institutional economics to explain the declining performance of coffee cooperatives in Kenya. We showed that when the government ceased to regulate cooperatives in 1998, the lack of a credible enforcement mechanism opened the way for corrupt and incompetent members to capture cooperative management positions for their personal benefit. Sub-optimal electoral procedures that required members to publicly signal the candidate they support facilitated the process of election capture by providing a costless enforcement mechanism for vote-buyers. The exploitation of members by a self-serving board was further exacerbated by a legally supported local monopoly that forced members to market their coffee only through their cooperative, even though intermediary agents could offer them better terms. As payments to members fall, they respond by cutting back on output. Cognizant of being ripped off, and with no access to legal redress, their disenchantment with the state of affairs manifests in declining productivity.

REFERENCES

Gugerty, M., and M. Kremer, 2004. The Rockefeller Effect. *University of Washington, Working Paper*

Howes, M., 1997. NGOs and the Institutional Development of Membership Organizations: A Kenyan Case. *The Journal of Development Studies* 33(6), pp. 820-848

Karanja, A.M., 2002. *Liberalisation and Smallholder Agricultural Development: A Case Study of Coffee Farms in Kenya*. Ph.D. thesis, Wageningen University. ISBN 90-5808-603-8

Morduch, J., 1999. The Microfinance Promise. *Journal of Economic Literature* 37, pp. 1569-1614.

Rahman, A., 1999. Micro-credit Initiatives for Equitable and Sustainable Development: Who Pays? *World Development* 27 (1),

Stiles, K. 2002. International Support for NGOs in Bangladesh: Some Unintended Consequences. *World Development* 30(5) pp. 835-846

TABLES

Table 1: Descriptive Statist ics for Sampled Cooperatives

Cooperative Name	Number of Members Sampled	Number of Factories Owned	Total Number of Members	Average Yield (Kgs/Tree)	Payment (Ksh) per Kilo of Cherry[5]	Coeff of Variation Of Pay Across Factories
Kamacharia	18	4	3760	0.56	4.82	0.43
Gaturi	48	5	3752	1.65	3.97	0.80
Weithaga	20	4	2101	2.34	3.27	0.22
Kanyenyaini	15	2	1249	2.71	7.68	0.18
Kahuhia	50	6	3704	1.54	1.41	0
Iyego	36	12	7000	2.46	5.27	6.35
Kiru	19	4	2837	1.44	4.51	0.16
Kangunu	21	1	1320	2.99	15.85	-
Kiriti	20	3	2085	1.03	7.99	0.10

Table 2 : Des criptive Statist ics for Frontier Estimation V ariables

Variable	Mean	Std. Dev.	Min	Max
Coffee Yield *	2.04	1.96	0.16	7.5
Plot Area* (acres)	0.56	0.49	0.00	3.00
Land Area * (acres)	1.84	1.77	0.20	13.00
Household Labor * (Days)	44.84	38.06	0	120
Hired Labor * (Days)	29.37	38.35	0	112
Age of Coffee Tree *	30.88	11.13	2	50
Pre Harvest Damage *	26.73	32.29	0	95
Inorganic Fertilizer (0=N, 1=Y)	0.234	0.424	0	1
Organic Fertilizer (0=N, 1=Y)	0.447	0.498	0	1

* Denotes variables used in natural log fo rm in estimation. For these variables, we followed the common practic e of substituting 0.001 for zero -valued observations to log - transformations to be defined across the variables range. Statistics presented for non - transformed variable.

Table 3: Stochastic Production Frontier Estim ate s

Parameter		Coefficient	Std. Err.	Parameter		Coefficient	Std. Err
Constant		0.656	0.830	$\ln(s_v^2)$	***	-1.853	0.236
Plot Size	**	-0.256	0.103	$\ln(s_u^2)$			
Plot ^2	***	-0.043	0.010	Kamachari a	***	1.996	0.758
Land Size	*	-0.138	0.079	Gaturi	***	2.597	0.779
Land ^2		-0.050	0.039	Weithaga		0.025	0.805
House Labor		-0.003	0.024	Kanyenyaini	**	2.023	0.990
House Labor^2		0.008	0.007	Kahuhia	***	2.882	0.801
Hired Labor	***	0.112	0.020	Iyego	***	2.067	0.803
Hired Labor^2	***	0.028	0.005	Kiru	***	3.199	0.799
Tree Age	**	0.638	0.263	Kiriti	***	2.870	0.802
Tree Age^2	**	-0.109	0.045	Constant	**	-1.998	0.795
Harvest Loss	*	-0.135	0.071				
Harvest Loss^2	**	-0.047	0.024				
Inorganic Fertilizers	***	0.658	0.112				
Organic Fertilizers		0.058	0.107				
Log Pseudo - Likelihood		-28011.05		No. of Observations		207	
Wald chi2(14)		210.57		Prob > chi2		0.00	

*** - Significant at 99% level
** - Significant at 95 % level
* - Significant at 90 % level

[5] All pri ces quoted herein and throu gh this section are deflated to 1998 pric es using the mean national CPI index published b y the Central Bank of Kenya.

Table 4: Descriptive Statistics of Technical Efficiency Estimates

	Mean	Std. Dev	Min	Max
Kamacharia	0.50	0.19	0.18	0.78
Gaturi	0.46	0.25	0.04	0.86
Weithega	0.75	0.06	0.66	0.87
Kanyenyaini	0.59	0.21	0.07	0.84
Kahuhia	0.39	0.24	0.04	0.80
Iyego	0.54	0.21	0.10	0.85
Kiru	0.26	0.17	0.06	0.57
Kangunu	0.76	0.08	0.64	0.88
Kiriti	0.42	0.28	0.05	0.88
Total	0.50	0.25	0.04	0.88

Tables 5: Variables Used to Generate Size and Performance Factors for Cooperatives

Variable	Definition	Mean	Std. Dev
payment	total factory level payment (Ksh per kg of output) made to members for 2002/2003 season	5.52	3.98
members	number of active members per cooperative	3413	1738
factories	number of factories operated by cooperative	5.31	3.12
payvariance	coefficient of variation of intra-cooperative pay	0.31	0.4
quality00	net value of coffee sales 2000 (kg per kilo)	81.69	28.85
quality99	net value of coffee sales 1999 (kg per kilo)	76.68	8.03
coopyield	average cooperative yield for 2002/2003 season (kg per tree)	1.84	0.67

Table 6: Results of Cooperative Size and Performance Factor Analysis.

Variable	Size	Performance	Uniqueness
members	**0.98**	**-0.16**	**0.02**
factories	**0.98**	**-0.09**	**0.03**
payvariance	**0.88**	**0.14**	**0.21**
payment	**-0.28**	**0.77**	**0.33**
quality00	**-0.08**	**0.63**	**0.59**
quality99	**0.30**	**0.40**	**0.75**
coopyield	**0.09**	**0.66**	**0.55**

Variance in Variables Explained by Factors

Factor	Proportion	Cumulative
Performance	**0.57**	**0.57**
Size	**0.31**	**0.88**

Table 7: Variables Used to Generate Members' Perc eption and Confidence Factors

Variable	Definition	Response Structure
goodrelations	members of the coop have generally good relationships with each other	1
caninfluence	membership can influence decision making process	1
profit distribut e	membership unders tands how management distributes cooperative profits	1
effective manage	management is effective in running the cooperative	1
coop compare	your cooperative is managed better than other coffee cooperatives in the region	1
insecurity	this village/neighbourho od has a problem with insecurity and violence	1
local govt	local government officials can be trusted	1
centralgov t	central government officials can be trusted	1
ag officer	district agricultural officers do their best to improve the welfare of farmers	1
coop officer	district co -operative officers do their best to improve the welfare of farmers	1
credit access	do you have access to money lending facilities	2
empowerment	are you able to make important decisions tha t could change the course of your life	3

Response Structure

1	1 = Strongly Agree; 2 = A gree ; 3 = Neither; 4 = Disagree ; 5 = Strongly Disagree
2	1 = Yes; 2 = No;
3	1 = Totally Unable; 2 = Largely Unable; 3 = Neither ; 4 = Largely Able; 5 = Totall y Able

Table 8 : Factor Analsysis of Members' Perception and Confidence

Variable	Dissatisfaction	Pessimism	Uniqueness
goodrelations	0.23	0.04	0.95
caninfluence	0.24	0.05	0.94
profitdistribute	0.37	0.03	0.87
effectivemanage	0.64	0.03	0.58
coopcompare	0.61	0.00	0.62
creditaccess	0.19	-0.06	0.96
insecurity	-0.22	-0.06	0.95
coopofficer	0.40	0.32	0.73
agofficer	0.24	0.40	0.78
localgovt	0.05	0.56	0.68
centralgovt	-0.05	0.55	0.69
empowerment	-0.06	0.23	0.94

Variance in Variables Explained by Factors

Factor	Proportion	Cumulative
Dissatisfaction	0.60	0.60
Pessimism	0.33	0.93

Table 9 : Descriptive Statistics For Sources of Inefficiency Re gression

Variable	Mean	Std. Dev.	Min	Max
Gender	0.825	0.381	0	1
Age	57.753	13.758	27	96
Household Size	5.096	2.244	1	15
Primary Education	0.332	0.472	0	1
Secondary Education	0.328	0.470	0	1
Post Secondary	0.057	0.232	0	1
Experience	26.017	12.762	1	65
Extension	0.320	0.467	0	1
Advance Payment Ratio 2002	0.519	0.308	0.133	1.00
Size	0.00	0.99	-1.16	2.28
Performance	0.00	0.92	-1.35	1.77
Dissatisfaction	0.00	0.81	-2.51	1.70
Pessimism	0.00	0.75	-1.93	1.93

Table 10 : Sources of Inefficiency Estimates

Variable	Coefficient		Std. Err
Constant		0.308	0.286
Gender		-0.018	0.049
Age		0.003	0.010
Age^2		0.000	0.000
Household Size		0.001	0.008
Primary Education		0.017	0.051
Secondary Education		-0.027	0.057
Post Secondary		-0.029	0.082
Experience		-0.001	0.006
$Experience^2$		0.000	0.000
Extension		0.055	0.036
Advance Payment Ratio 2002	**	0.196	0.086
Size	**	-0.036	0.018
Performance	***	0.127	0.029
Dissatisfaction	**	0.046	0.022
Pessimism	**	-0.053	0.022
R-Squared		0.1911	
Number of Observations		197	

*** - Significant at 99% le vel
** - Significant at 95 % level
* - Significant at 90 % level