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WHAT ROLE FOR SOCIAL CAPITAL ON CROP INCOME SHOCK? A CASE OF PADDY FARMING HOUSEHOLDS IN KILOMBERO VALLEY, TANZANIA

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ABSTRACT

This paper analyses the impact of social capital on crop income shock. The purpose is to consider *ex ante* shock reducing role of social capital components of social trust, social cohesion and group membership. Data were collected from randomly selected 309 paddy farming households in Kilombero valley. The Probit model with social capital interaction terms is employed in econometric estimation. Results show that, the effect of social trust and group membership interaction term is positively associated with decreased likelihood of being affected by crop income shock. Hence, for a rural community in which trust is embedded in networks and associations, the desired effect of social trust will only happen it is moderated by group membership. On contrary, there is no evidence indicating social cohesion to be moderated by membership in proving insurance against income shock. However, group membership by itself also plays a significant *ex ante* shock reducing role. Despite being a component of social capital, social cohesion and group membership interaction term is less statistically intuitive in explaining the social capital role of preventing income shortfall. Therefore, measures that will build more trustworthy within and between groups at village level are of critical importance.

Keywords: Income shock, Kilombero valley, Group membership, Social trust, Social capital.

1. INTRODUCTION

For most of Sub Saharan African countries, agriculture is and will remain to be an essential part of rural livelihoods. Farming is an important source of both income and rural employment. Rural areas are oriented toward subsistence agriculture particularly crop cultivation which is associated with production and consumption uncertainties. These uncertainties are often caused by weather, market related factors and other unpredictable events (Dercon *et al*., 2005, OECD, 2011). As a results farming households often fall victim of crop income shocks and increased

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poverty and which is a common phenomenon associated with rural subsistence farming livelihoods in Africa.

Literature has discussed various strategies that rural households adopt to avoid and cope with shocks of different nature. These strategies range from *ex post* consumption smoothing (porter 2008) to *ex ante* engaging in off-farm and non-farm employment (Koshkar, 1999; Dercon *et al.*, 2005). Other households resort to help from kinships and ties within and outside their village through associations and networks (Carter and Maluccio, 2002; Skoufias, 2003).

The particular kind of shock that is a subject of analysis in this paper is the one related to crop income. The discussion here focuses on idiosyncratic shocks that are specific to individual brought about by decreased price of output price of rice (paddy). Output marketing price has been a recurrent phenomenon that affects subsistence farmers in Sub Saharan Africa. The shock event is seasonal and mostly predictable as it resonates with peak harvest and output market seasons. Output sale price fluctuation has been reported to results into severe income short fall and shocks elsewhere in developing countries. For example in Bangladesh, rice farmers face higher income loss due to low rice sell price during peak season (Talukder and Chile 2014). In practice farmers could have reserved their crops and put them to sale during (lean) high price season, but crop storage is costly and often unreliable in rural areas. Additionally, opportunities to save are also limited because assets that retain a positively value after accounting for price volatility, are typically lacking (Ellis, 2000). Hence households which have poor assets base, constrained by imperfect produce market, in environment of inefficiency crop insurance can hardly avoid negative shocks. Social capital in the form of networks or group membership can therefore potentially provide buffer against shocks.

While the potential of social capital as the rural poor only reliable assets in reducing exposure to shocks is well recognized (Carter and Maluccio, 2002; Sanyal and Routray, 2016), the mechanisms under which its subjective and tangible elements interact to bring combined effect is not clear. Even for studies that have considered social capital role on risk or disaster management (Weerdt and Dercon, 2006; Sanyal and Routray, 2016) do not differentiate between the separate effects and interactions between cognitive elements such as social trust, social cohesion and structural social capital i.e. association membership, in bringing about desired risk insurance impacts. The objective of this paper is to examine the role of social capital, considering both its cognitive and structural aspect in risk reduction and coping with shocks using Kilombero Valley, Tanzania as a case study. In particular, I examine whether social trust and social cohesion as part of cognitive social capital interact with group membership in providing insurance against idiosyncratic shocks. Thus the shock is result of both imperfect market coupled with desperation among farming households.

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2. THE ROLE OF SOCIAL CAPITAL IN RISK MANAGEMENT.

Social capital is an evolving concept and has gain prominence in social science literature and social policy over the past three decades. Social capital refers to "any features of social organization, such as networks, norms, and trust that facilitate coordination and cooperation for mutual benefits" (Putman, 1993). Hence social capital is about investment that is expected to bring desirable outcome in a group. In the same vein Bartkus and Davis (2009) defines social capital as a representation of the resources that arise from relationships and which could assist individuals and the collective to reach their goals in working towards the common good. for the purpose of simplifying social capital measurement, two main dimension are often discussed in social capital literature. I focus on these two dimension of social capital: the structural social capital referring to the externally observable and relatively objective social structures like networks in a community, institutions and associations (Putnam, 2000; Grootaert and Bastelaer, 2002) and cognitive social capital that considers more subjective elements of a community such as trust, social cohesion, attitude and behavioural norms (Narayan and Pritchett, 1997).

Social trust is a key component of social capital, defined as a feature of social life "that enable participants to act together more effectively to pursue shared objectives" (Putnam, 1995). According to Cote and Healy (2001) social trust is both an outcome and a component of social capital. It is trust that will results in reciprocity and risk pooling in networks and groups for the purpose of attaining some sort of insurance against shocks. So in essence, social trust and membership are the elements that complement each other to have desired effect in addressing rural households' hardship including those related to income shock.

The other social capital component of social cohesion has not been extensively discussed in social capital literature. Social cohesion is that societal attribute that 'hangs or holds society together' and keeps society from falling (Janmaat, 2011). Society is held together depending on extent of division in social and economic attributes of religion, income or ethnicity political affiliation and others. Incorporating these attributes Easterly *et al* (2006) views social cohesion as the "nature and extent of social and economic division within a society". Whereas in some literature (e.g. Cloete., 2014,) social cohesion is treated as embedded concept in social capital, Oxoby (2009) maintain distance between social capital and social cohesion. However, in this analysis as elsewhere in social capital theory (Word Bank, 2004) social cohesion is treated as a component of social capital. Hence if social capital is a resource then this resource is embedded within its interacting parts i.e social trust, social cohesion and association membership. The relevance of analysing the interactions of social capital constituents emerge from controversy within social capital theory itself. At some point Putman argues that social capital components are self-reinforcing and have cumulative effect (Putnam, 1993), but at the same time, he consider

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these elements of trust and networks to be special forms of social capital. It is unclear as Beugelsdijk and Schaik (2002) argues "whether or not the components of social capital are at the same level or if one influences the others in causal terms". It is not intention of this paper to engage on these theoretical wangles on social capital attributes, the aim is rather to set a scene and give empirical perspective on the extent to which it social capital constituents parts do have independent or coordinated effects in affecting any social phenomenon such as income shocks in the context of Tanzanian rural livelihood. An attempt is therefore made in this analysis to address this theoretical and empirical conjecture.

Social capital in its both dimensions has been found to play a shock buffering role elsewhere in rural Africa. In a study conducted in rural Uganda Mawejje and Holden (2014) have shown that higher level of group participation is associated with increased ability for households to rebuild their assets after shocks. It has also been shown to help in preparing households for impending disaster in rural India (Sanyal and Routray, 2016). Social capital can also be employed to enhance households capacity to avoid effect of seasonality associated farm income uncertainties which according to literature (e.g. Koskhar, 1999; Porter, 2012; Cervantes-Godoy *et al*., 2014), is a major shock concern. This means that social capital may offset this shock. Accordingly, from the risk management point of view social capital is considered as an informal risk reducing strategy and a shock coping measure (Rose, 2001; Porter, 2012). Generally, households with high level of social capital can for example avoid potential market related shocks of farm output price, which has seasonal fluctuation by selling their produce during the peak price season thus, reducing their exposure to seasonal crop income shocks. On the other hand, households engage in networks and participate in associations with the mere incentives of smoothing their consumption during the season of low crop income.

3. HYPOTHESES

3.1 Social cohesion and group membership

Relational cohesion theory posits that interaction that occur within group members decrease as social cohesion decrease (Lawler and Yoon, 1996; Soboroff, 2012. This indicates that social cohesion reinforces the role of association membership. Because of its complementary role, Oxoby (2009) consider social cohesion to be a condition of a group or an economy that affect its decisions. These two elements work together in environment of predominance of informal risk insurance agents to bring desired benefit of preventing shocks that are not covariate such the one discussed in this study. If benefits i.e. buffering against shock is an outcome of a broader social capital, membership by itself may not results into any meaningful benefit during the time of hardship. The positive effect of group membership depends on whether individual within a group have individualistic attributes or cooperative attitudes. In the event of shock, a household will

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depend on strength of ties with individuals who should largely be within its own networks or associations. It is this cooperative attributes that has been referred to as solidarity in conception of social cohesion in Janmaat (2010) and Von Haldenwang (2008). Thus a combination of social cohesion and association membership may be relevant in assisting households to cope with livelihood insecurity such the one related to crop income shock in the contenxt of Kilombero Valley. Hence, building from earlier studies that consider social cohesion as embedded in social capital (Von Haldenwang, 2008; Cloete, 2014) and arguments in relational cohesion theory the following is hypothesized:

Social cohesion interacts with association membership to influence households positive response to shocks.

3.2 Social trust and group membership

Social capital theory (Coleman, 1990; Putman, 1993; Woolcock, 2001) suggests that the core of social capital is trust. However trust may not be a necessary condition that will enable households to avoid shocks, unless it is combined with the extent of being socially connected or in other words, being in a group. This interaction between trust and group membership emanate from two theoretical arguments. The first is built with consideration of trust and reciprocity as being more meaningful as social capital resources if these are within social groups or networks (Beugelsdijk and Schaik, 2005). The second argument breeds from rational behavior theory. This theory postulates that membership entails collective attributes in which some member will rationally use this to accrue individual benefits. As a results member will only invest resources (social capital) and accrue benefits only if collectivism is rooted into trust. Therefore following Misztal, (1996) and Kovalčíková, and Lačný (2016) assertion in which, trust seems to reinforce cooperation and make it easier for community to work, it is expected that in confronting negative shocks households will rely on combination of both creation of trust and mutual exchange within their groups. This makes sense, since expected social capital outcome (buffering against crop income shocks) that is analysed in this paper is essentially idiosyncratic nature. i.e. it does not affect all people at the same time. Some member in a village may be in better position to support through networks and social groups built in trust. Hence trustworthiness increases the probability that association membership will have desirable effect on shocks. In sum and factoring arguments in both dimensions of social capital theory and rational behaviourism view of thinking I hypothesise the following:

Social trust and group membership are complementary in affecting the likelihood of being ensured against shocks.

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4. THE STUDY AREA AND METHODS

This paper uses cross sectional survey data collected among paddy farming households in Kilombero Valley, Tanzania. The study area is dominated by subsistence farming households and paddy cultivation is the main economic activity in which almost 95 of households get engaged. With a total of 108 villages (Siima *et al*., 2012), the valley has global significance, as it is is one of the area under Ramsar convention (to which Tanzania ratified in 2003) whose wetlands need to be protected. Despite of its productivity as a wetland, floods related shocks and those associated with paddy price market fluctuation are common and frequent (Kato, 2007). These shocks have imposed limited produces market opportunities which results into relatively low cash income earnings among farmers in the study area compared to other wetlands in Africa (McCartney *et al.*, 2010). In worst case scenario shocks may lead to increasing stress and unsustainable utilisation of wetland resources as households are forced to encroach protected wetland.

The purpose was to examine shocks which correlate with farming season. Data collected was a reflection of two seasons i.e. 2012/13 and 2013/14, I considered shock exposure related to 2013/14 season which result from of risk incurred in 2012/13 season. Since the approach was mainly cross sectional, quantitative information on risks for 2012/13 farming season was collected rather retrospectively as a questionnaire survey was conducted in the first quarter of 2014. For questionnaire I rely on information from the households head and the interest was data on general households' socio-economic characteristic, social capital endowment, and risks and shocks.

A total of 309 households whose selection strategy involved a series of multi stage, purposive and random sampling participated in a survey. The first sampling stage involved purposive selection of 5 villages[1] that represented socio-economic and land resource endowment characteristics of the study area. Two villages of Mwaya and Lumemo were chosen to represent accessibility in terms of better road infrastructures, whereas, the other three villages, Mngeta, Lupilo and Malinyi represented poor road infrastructure with poor seasonal roads. As described in literature both of these characteristics of road infrastructure and endowment of agriculture land may affect exposure to different degree of shocks. The second sampling stage involved random selection of households from each village, in which proportionate to size sampling was

[1] There are a few of agro-pastoralists migrant households in three of the sampled villages (Mngeta, Malinyi and Lupilo), but the purpose of investigation was on households engaging in and obtain substantial income from farming. Thus, agro-pastoralist households were not included in the sample. Hence the representativeness of the sample is only claimed for non-agro-pastoralist households.

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employed. That is the sample size was determined by total household numbers. Village registers were used as sampling frame.

5. ANALYTICAL APPROACH

5.1 Measurement

Crop Income shock measure. A household survey questionnaire had a question which measured the extent to which households have been victim of crop income shock brought by rice output seasonal pricing. I used a dummy variable for household on exposure to crop income shock. Hence a household that sold 75% of its 2013/14 paddy crop before December 2013 was considered as having exposed to crop income shock. This measurement does differ slightly to the one used by in Beegle *et al*. (2006) in Western rural Tanzania in which shock was assessed based on crop loss due to natural calamities. The focus in this study was income loss that is related to decreased output sale. Households in Kilombero valley may have two choice of selling paddy harvest. They may either made their sale immediately after harvest, in which the price is very low, or they may sell their paddy stock during the rainy season (Feb-April) of the following year (in our case 2014) which is highest price peak season. Selling paddy harvest immediately after harvest is an income shock because the sale price is so low to the extent that the households cannot compensate for the cash investment they have made in that paddy farming season. Hence as a result they became victim and exposed to the crop income shock.

Social capital measure. Social capital measures recognise structural and cognitive dimensions as described in literature. Membership density was used as a proxy for structural social capital. This was measured by a number of associations or groups a household head and spouse belongs. A group is defined in this work as a formal and structured association composing individual with a common goal. It's rare in Kilombero to find a household without at least one group attachment. Groups includes religious organisation, credit groups such as Village community banks (VICOBA), e.t.c. Social trust is a common utilised concept with universally agreed measure. However, there is no standard universally agreed social cohesion measure (Van Haldenwang, 2008). Hence for measuring both social cohesion and social trust, the tool developed by the World Bank (2004) for measuring social capital in developing countries was adopted. This tool has been utilised within the cultural context of Tanzania in other studies (e.g. Natarayan and Pritchett, 1997; Lanjouw *et al.*, 2001). Social trust was meant to imply a household head's perception of trust towards fellow villagers and village leaders; three items representing each sub indicator were used: The first item measured trust towards fellow villagers and the second and the third items were for village and central government leaders respectively. Each of the items had a score ranging from the highest level of trust '5' to lowest level of trust '1'. Then three items were aggregated to form a single household's level social trust index. The total index

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accumulation of the social trust score as additive of the highest level scored on all three items was thus 15 and the lowest was 3.

The same procedure as one explained in social trust was used to measure a household head's perception of social cohesion which was also captured by three items. For each item a score of '5' was meant for perception of high level of unit and '1' extreme conflict. To examine moderation effect of social capital, two interaction terms were created and included in the econometric analysis. These were interactions between social cohesion and membership density (social cohesion*membership density and social trust with membership density (social trust*membership density)

5.2 Other Independent Variables.

A number of variables that have been found to affect households' ability to cope or avoid income shocks were specified. Education is often included in shock studies (Beegle *et al.*, 2004) and it was measured by number of schooling years of the head. Educated household head have increased awareness on crop selling and bargaining and hence ability to prevent shocks. Because of increasing trend of off-farm income diversification in rural Africa, a dummy variable for household engaging in off-farm employment was used. Experience shows that households with more diversity in number of crops grown can also prevent income shortfall. Another dummy for household growing another crop apart from paddy was included in the model to control for crop diversity. I also specified both farm size and total paddy harvest to capture for general farm productivity. Lastly village location was controlled by including a dummy for Mwaya/lumemo. These villages are advantageously located in more urban areas with better roads and market infrastructure. It is expected that these attributes may lead to less shocks among households located in these two villages compared to other three more remotely located villages.

5.3 Regression Analysis

Because the dependent (a dummy for exposure to crop income shock) is binary variable, the estimation method is based on a probit model. Two set of probit regressions were run. The first regression did include all specified variables without the interactions between social capital variables. The second regression (model II) included specification for interactions variables. These were social trust*membership density and social cohesion*membership density. The purpose of running these separate estimations was to delineate the separate and moderating effect of membership density (structural social capital) on cognitive social capital dimensions. For the purpose of this analysis the interpretation is based on the direction and significance of the regression result without focusing on the magnitude. Hence, marginal effects are not matters of concerns here.

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6.0 RESULTS AND DISCUSSION

6.1 Main shocks and their nature

There are number of covariates and idiosyncratic shocks that have affected households in Kilombero valley in 2013/14 farming season. Households were asked an open question on the main shock event that had serious negative monetary impact and hence income loss. About 89 % of households were affected in at least one of these shocks. Shock events were then categorized into four broad categories based on households responses: Agro-climatic, economic, health, crime and miscellaneous. Agro-climatic shocks constituted floods, floods and pest infestation. Economic shocks were further subdivided into those related to decrease in output price and increase in input such as (herbicides, fertilizer) price. Crime shocks included largely theft of property. Health shocks were those related to the death or prolonged illness of a family member. The last category included those events of land disputes with other villagers or migrant agro-pastoralists and this was termed as miscellaneous. The proportions of households reporting a particular shock is presented in Table 1. The most common shock reported was that of fall in price of their (output) paddy produce. It was reported that as a results of this shock, household had to sell their crops at relatively low price which in fact interpreted as the income loss. About a third of households 34% reported price fall as the major shock concern. This indicates a significant income shortfall and shocks. Income loss due to poor market price is a major concern among subsistence farmers as reported elsewhere (See Talukder and Chile, 2014). Observation and interviews with rice traders indicated that, the year (2013/14) had reported lowest paddy price for over the past 5 years. The price for a100 kg bag of paddy during cropping season was 70,000 (42.8USD) Ths in 2011/12 whereas in 2013/2014 the price was 40,000 Tshs (24.5USD). It is during this time that government imposed a ban on rice export leading to plummeting in price internally produced rice. The consequences for this income loss as the farmers could not pay back the loan/ expenditure invested on rice cultivation during that season.

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Table 1: shocks events in 2013/14 among Households (n=279)

Shock type	Nature of the shock	Frequency	Percent
Agro-climatic shocks (floods, drought)	Covariate	60	21.5
Economic shocks (i.e. decrease of output price)	Idiosyncratic/Covariate	96	34.4
Economic shock (high input price)	Idiosyncratic/Covariate	30	10.7
Health shock (Illness/death of household member)	Idiosyncratic	41	14.6
Crime shocks (theft of assets and crop theft)	Idiosyncratic	30	10.7
Miscellaneous shocks (land disputes with fellow villagers and agro-pastoralists	Idiosyncratic	22	7.8
Total		279	100

With respect to the nature of shocks findings indicated that both covariate and idiosyncratic shocks prevailed. A reasonable proportion of farmers (21.5%) fell victim of agroclimatic shocks due to crop destruction by pests in this farming season, floods and drought. It was during this season that there was great loss of crops due pests infestations. The risk of infestations was compounded by high price of pesticides which was not one of the inputs that was subsidized by the government through National agricultural input voucher scheme (NAIVS). NAIVS is a scheme whereby the Tanzanian government subsidies provision of seeds and fertilizer to selected region including the study area. Floods had a sort of idiosyncratic characteristic as it affected those who had their paddy fields in low lying areas. For those with paddy field located in upland area, flood was not a major concern. The last category, 'miscellaneous' includes idiosyncratic shocks related land conflict with other farmers or agro-pastoralists. This category also includes some households whose shock of concern was weighing determination unit of their produce by the buyers. From the field observations, it was revealed that some buyers used a 30 kg size tin instead of the conventional 20 kg size tin to weigh paddy. Generally, farmers are on the receiving end and have less power to control this measurement as they are in a desperate need for cash after harvest.

6.2 Effect of social cohesions, social trust and the interaction terms on shock exposure

Results of the Probit estimation are reported in Table 2. Whereas, Model 1 present all control variables with social capital variables, model 2 introduce interactions terms between; i) social trust and membership density and ii) social cohesion and membership density. There is little threat from malticollinearity problem among variables as preliminary diagnostic tests gives a value of 4 as variance inflation factor. This VIF is within tolerance limit based on standard econometrics literature (Woodridge, 2009)

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Model 1 support the general social capital theory on relevance group membership on reducing shock exposure. Membership density is positive and significant. The implication here is that, there is a reduced likelihood of being exposed to shock as one increase number of groups memberships. In Kilombero Valley there is increasing abundance of self help credit groups in response to imperfect formal credit and insurance markets. It is from these groups where by one enhances his social and kinship network to which she can fall upon during uncertainties including income shocks.

On relevance of cognitive dimension social capital, and in absence of interactive variables described earlier, social cohesion does significantly reduce exposure to shocks as model 1 in Table 2 shows. Social cohesion entails solidarity which may not be necessarily entrenched in group membership. It does act like a 'glue' Janmaat (2010) that holds communities. For homogeneous community in terms of livelihood strategies, social cohesion may be a stronger force that can serve as social protection agent in times of shock. This finding is not surprising since Kilombero valley is generally homogeneous in terms of religion, ethnicity and even income levels, feature that enhance togetherness that ensure more support during shocks. Probably it is because this isolated role of social cohesion (having control for membership), it is not included as a constituent of social capital in classical social capital literature (see Coleman, 1988; Putnam, 1995, 2000)

Model II supports the hypothesis of combined effect of social trust and group membership on preventing exposure to crop income shock. The interaction term, social trust *and membership density is significant and positive. This should though be interpreted with a caveat as the level of significant is not very strong. Nevertheless it provides indication that the effect of social trust is moderated by membership density. Households need to build trust in case of support during income shortage. Hence a household with investment in high level of trust, and with several group memberships is less likely to suffer from liquidity concern let alone sell its crop during time of paddy price fall. It seems trust alone is less beneficial during time of shock unless it is consolidated in membership.

Trust is important since in rural Kilombero as observed during survey, there are a lot of exchange and reciprocity. For example one person can labour in a neighbor farms with a mere tacit agreement of receiving some amount of paddy during harvest. Social trust has also been found to affect other livelihood aspects such as non-farm participation in different peri-urban and rural areas of Tanzania (Lanjouw *et al.*, 2001).

The other interaction term (Model II) of social cohesion*membership density, does not explain household shock exposure. This is against what I hypothesized in the literature section. Two plausible explanations may be offered regarding this less empirically intuitive finding. One is

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based on the theory and the other is rooted in methodological approach. If social cohesion is itself considered as a social capital as in Cloete (2014) then its effect does not necessarily need to be moderated by another more tangible social capital variables. If this assumption is correct then, the relational cohesion theory need to be subjected to further empirical scrutiny, because contrary to what the theory predicts, cohesion does relate to group characteristics. Furthermore, interpretation of solidarity is not always associated with norms and reciprocity which are basic foundation of social group formation. If social cohesion has got a meaning that does not lend itself in explaining resource that one can accrue from membership and networks, then empirical reason of it being interacted with membership may sound less convincing. From methodological perspective, I should point to possible measurement error that might have occurred because of complexity of the concept itself. Social cohesion entails high level of abstraction and it depends on people's perception of the so called 'togetherness' or 'belonging'. More time should have probably been invested in educating the respondents on the exact meaning of social cohesion in Kilombero village's contexts.

Concerning other control variables, results depict largely what is expected. For example both models, show education to be positively associated with the probability of being hit by shocks. Education rise awareness on the timing and bargaining power to get reasonably high sale price of paddy. This then ensure beneficial selling and thus avoiding potential crop income shock. Table 2 also shows that, engaging in farm labour lead to increased probability of being victim of income shock. Farm labour which is common in Kilombero during intensive paddy weeding season on March-April is probably associated with destitution and households invest less time to work on their farm leading to poor harvest. As a consequence household engaging in farm labour may have less stock to sell during high price season, a feature that drive them to income loss and ultimately crop income shocks.

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Table 2. Results of the Probit Regression for Shock Exposure with Moderation Effects

Variable	Model 1			Model 2		
	Coef.	S.E.	P-value	Coef.	S.E.	P-value
Education of household head	0.111	0.046	0.012	0.126	0.048	0.010
Access to credit in 2012/13	0.281	0.291	0.328	0.211	0,305	0.489
Total farm owned	-0.047	0.031	0.131	-0.047	0.034	0.159
Total paddy production	0.007	0.008	0.379	0.010	0.008	0.257
Other crops grown	0.116	0.116	0.678	0.248	0.293	0.401
Farm labour participation	-2.243	0.484	0.000	-2.397	0.507	0.000
Crop shock in 2012/13	-0.246	0.293	0.402	-0.428	0.310	0.167
Membership density	0.256	0.095	0.007	-0.313	0.463	0.499
Social trust	-0.105	0.098	0.284	-0.266	0.143	0.062
Social cohesion	0.158	0.0733	0.031	0.234	0.104	0.025
Social trust *membership density	-	-	-	0.119	0.068	0.084
Social cohesion *membership density	-	-	-	-0.039	0.052	0.453
Mwaya/lumemo location	-0.267	0.291	0.359	-0.381	0.306	0.214
Constant	-2.047	0.875	0.019	-1.729	1.113	0.120
No. of observation	309					309
Log likelihood	-162.85					94.17
Pseudo R^2	0.19					0.23

7. CONCLUSION

In environment of poor and inefficiency credit and insurance market, coupled with income and asset shortfall, social capital can act as a fallback position during in events of crop income shock. Attempt has been made on this paper to describe the mechanism in which social trust, social cohesion and group membership as social capital dimension can be a shock exposure reducing strategy. The interaction effects between these social capital variables have been analyzed.

The finding shows that social trust does not have the effect of its own on shocks; its effect is rather reinforced by group membership. Interaction between social cohesion and membership does not explain income shocks. The effect of social cohesion is rather isolated with respect exposure to income shocks. The interaction between these social capital variables does not traditionally feature in social capital theory. This is probably because of the complexity in understanding the social capital concept itself. Nonetheless it is important to bring into attention on combing force of cognitive and structural dimensions of Social capital. This provides another

angle of examining social capital effects on risk and shock management in rural subsistence based economy like the study area.

The policy relevance of this paper is that; social capital should be viewed in its complexity and the focus should not be on a single variable i.e. insisting on group membership alone. More subjective social capital indicators such as social trust have stronger effect on ensuring resources availability in groups/associations. In addition policies that intend to address rural shocks must recognize the strength of collective or group based intervention. This is critical since social structure in Kilombero is built with more or less formal groupings which provide important buffer against shocks. In environment of imperfect insurance market, social capital does provide reliable support to prevent further rural households destitution caused by common occurring crop income shocks.

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