

Does Poor Access to Rural Credit Constrain Smallholder Cash Crop Production Participation? Evidence from Wolaita Zone, Ethiopia

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Abstract

Agriculture sector continues to lead Ethiopia's economy as modernizing the sector necessitates linking smallholder farmers with markets. Promoting cash crop production is one avenue of such strategies. However, constrained by a number of factors, smallholder farmers are not actively participating in such crops in many parts of the country such as in Wolaita Zone. This study was designed to empirically analyze the impact of credit constraints on smallholder's cash crop production participation. Primary data was used and logit model was employed to analyze the issue. The study result indicates that, access to credit is one among the significant factors in influencing farmers' decision to produce ginger in the study area. Improving rural credit access can be taken as an important strategy to promote increased and sustainable ginger production in the study area as one venue to improve smallholder market participation in the zone.

Keywords: Cash Crop, Access to credit, Ginger, Smallholder Commercialization, Wolaita Zone.

1. INTRODUCTION

It is generally conceivable that smallholder farmers can derive better livelihoods from agricultural commercialization (Von Braun and Kennedy, 1986; Strasberg et al., 1999; Govereh and Jayne, 1999; Jagwe, 2011). Market-oriented agricultural production is trusted to serve as a mechanism to increase smallholder farmer's welfare, rural market performance, and contribute to overall economic growth in any country (Schneider and K. Guarty, 2010). One common way of commercializing smallholder agriculture is through production of cash crops. And the principal justification for smallholder commercialization through cash crop production is that, cash crop production provides highest returns to their productive recourses, hence has immediate effect on income poverty reduction.

However, smallholder farmer's participation in production of such profitable crops is influenced and constrained by a number of internal and external factors. Lack of technical and institutional innovations, lack of access to market and credit constraints are among the major factors. Credit constraint demands special attention in this regard. The reason is that, smallholder farmers generally lack working capital to be commercialized through cash crop productions (Achterbosch et al, 2014).

2. OBJECTIVE OF THE STUDY

The specific objective of this study is to investigate how access to rural credit influences smallholder farmers' commercialization through production of ginger crop.

3. SIGNIFICANCE OF THE STUDY

This study can give a better insight to enrich the stock of existing but limited literatures regarding smallholder farmer's participation in ginger production and can serve as an input for policy makers and researchers who wish to work in this area.

4. SCOPE OF THE STUDY

This study is designed to identify demographic, socioeconomic, physical and institutional factors explaining the participation status of smallholder farmers in production of ginger as a cash crop in Boloso Sore Wereda alone, Wolaita Zone.

5. LITERATURE REVIEW

Cash crops is defined as a farm output that is sold on a formal agricultural market. These crops assumed to be an integral part of strategies to improve food security both at national as well as farm household levels in developing countries with a substantial agricultural sector. It is in this regard that cash crops can bring about substantial wage and employment opportunities to the rural economy. In addition, cash crops provide a stimulus to agricultural innovation by raising capital for agricultural investment and accelerating the build-up of institutions that enable further commercialization, over time. Furthermore, cash crop production are expected to enable smallholder farmers and farm workers to increase their livelihoods, thus contributing to poverty reduction. Generally, cash crops production creates investment opportunities for smallholder farmers and believed to improve management

of their farms that assist to stimulate agricultural innovation and increasing productivity (Achterbosch et al, 2014).

Empirical evidence suggests that access to credit is a crucial factor in the development of the agricultural sector (P.Mavimbela, Masuku and Belete, 2010). The plausible explanation is that, agricultural producers, particularly smallholders rely on credit facilities to raise the capital required to initiate and sustain these production activities. Specially, rural credit is a key factor in influencing smallholder farmers' participation in cultivation of a given cash crop (Poulton et al., 2001; G. Lukanu et al., 2010). Study finding by Burke, suggests that rural credit is the key determining factor in all stages of smallholder commercialization (Burke, 2009). Similarly Masuku argue that the role of credit in agricultural production is crucial because inputs such as seeds and fertilizers are purchased at the beginning of the production season, but returns are realized only at the end of the season (Masuku, 2009).

In addition, access to credit by rural poor was regarded as a key incentive strategy in encouraging and powering smallholders in their commercialization processes (Immink and Alarcon, 1993; Lerman, 2004). The study by Lerman suggests that agricultural credit plays a vital role in the process of smallholder farmer's commercialization (Lerman, 2004). Lerman stress that farms, like all business entities, need access to credit especially short-term credit to finance working capital requirements in order to bridge the temporary gap between production costs and sales receipts (Lerman, 2004). According to Joshi, the role of financial institutions in rural area is critical in stepping-up investments in the key areas to promote high-value commodities and their processing. Joshi argue that such commodities need more working capital, and face higher risks in both production and marketing (Joshi, 2005).

Similarly, the constraints of smallholder cash crop production and marketing in Ethiopia include absence of credit facility, poor market infrastructure as well as poor access to improved technologies and inputs (Demese, 2006, Afework, 2007). By taking Wolaita Zone (Ethiopia) as a case study, this paper is designed to analyze how credit constraint limits smallholder farmers' commercialization through production of ginger crop, one of the traditional cash crop in Ethiopia and is currently the crops receiving government's top priority¹.

Currently Ginger sector in Ethiopia is one among the potential sectors in generating foreign exchange earnings for the country and is used as a major source of agricultural income for those smallholder farmers participating in its production in agro-ecologically suitable areas for its production in the country². Reports indicate that Ethiopia is among the top Ginger producers in the world (ranked in the 12th place, according to FAOSTAT, 2015) and different studies and reports suggest that there is still great potential to further increase production and productivity of the crop in the country. According to this report, in 2013 Ethiopia has a world share of 0.5%. This is also supported by the available increasing demand at international markets (Sorsa, 2009). Despite the available potential and opportunities, smallholder farmers are not participating actively in its production, and their level of participation is insignificant if any. For instance, in Wolaita Zone some farmers produce Ginger but others not, while living in the same agro-ecology. In addition, according to the zones' Agriculture and Rural Development Office, only about 29% of the available potential land is cultivated under Ginger up to 2014/2015 production year. This indicates that smallholder farmers are differently benefiting from the available potential and opportunities, due to constraining factors which may be specific to individual households. Amare found that financial constraints were one of the major challenges for sesame producers in Humera, Tigray region of Ethiopia. He found that access to credit is especially important for such cash crops production in Ethiopia because it is remarkably capital intensive crop in the country (Amare, 2009). Thus, given the existing gap between the available potential and the actual status, analyzing factors determining smallholder farmers' participation decision to participate in this crop production is reasonable from research, government and policy point of view. The aim of this paper is to examine the role of access to credit in influencing farmer's participation decision in production of Ginger in Ethiopia, taking Wolaita Zone as a case study.

6. The Issue of Smallholders' Commercialization In Ethiopia

Ethiopian government pays top priority attention to smallholder commercialization issue in its different growth strategy. For example in the current government's growth strategy i.e. Ethiopian Five Year Growth and Transformation Plan (GTP in short), smallholder commercialization is considered as the key driver of agricultural growth, and agricultural growth is the key driver of overall country's growth. This recognizes that smallholder sub-sector is an important sector in Ethiopian economy and their commercialization was put at top of the government agenda.

¹Ethiopia's smallholder commercialization agenda highly encourages and pays special focus on commodities that has export potential and supports the production of such crops by paying special attention to potential areas based on agro-ecology and other conditions (MoFED, 2010 GTP main text) and Ginger is one among such crops.

²Only few areas are agro-ecologically suitable for Ginger production in Ethiopia. Wolaita Zone is one of the potential areas for Ginger production and productivity in Ethiopia, and found in east South Nation, Nationalities and Peoples regional state of Ethiopia.

This commercialization agenda places major effort to support the intensification of marketable farm products - both for domestic and export markets, and by small and large farmers (GTP, 2010). One among such potential crop is Ginger. Many smallholders grow this crop in Ethiopia. According to CSA, in 2010/2011 production season, about 763,893 small-holder farmers were engaged in its production in different areas of the country. In 2011/2012 production year the number of participant reaches about 893,883 smallholder farmers. Different reports suggest that Ethiopia has still great potential to increase production and productivity of Ginger in different areas of the country. This implies that, Ginger is an important export product of Ethiopia, on which the livelihood of hundreds of thousands of farmers depends, hence contributes to employment and income generating opportunities for the poor, and thus helps reduce poverty. Thus, encouraging and empowering these farmers could help both government and these farmers.

7. Data Set, Study Area and Methods of Analysis

This study is based on primary data collected from 90 farm household heads randomly selected from, Boloso Sore Wereda, Wolaita Zone, which is found in South Nation, Nationalities and Peoples regional state, Ethiopia. Boloso Sore is chosen as study site because it is one among the few potential areas for Ginger production and productivity in the zone.

Agriculture drives the life of almost all populations of the zone. Crop-livestock mixed farming system is the common livelihood strategy in the area. Crop production is primarily characterized by rainfed system. Thus, the performance of the sector and the overall livelihood of the populations in this area are highly dependent on the time onset, duration, and amount of rainfall. This implies that, livelihood strategy in the area should focus on rainfed crops like Ginger if encouraging and linking smallholder farmers to market as a pathway to come out of poverty in the area is required.

Agro-ecologically, the zone is divided into two; namely midland which comprises about 40%, and lowlands accounting for the remaining 60%. In lowland areas Ginger production is the major cash crop produce used for so many smallholder farmers as a source of income, hence the primary cash crop product produced in the zone. Thus, improving Ginger production and productivity in this area can be considered as one of the major strategies in improving the livelihoods of smallholder farmers in the zone.

Administratively, the zone is divided into 12 districts; locally called Wereda. A two-stage sampling was used to select households. In the first stage, three kebeles were purposely selected depending on their ginger production potential and practices. In the second stage, simple random sampling was used to select 30 household heads from each kebeles comprising 90 respondents in total. Then using structured questionnaires, all sampled farmers were interviewed.

8. SPECIFICATION OF THE MODEL

Theoretically, farm households are assumed to be either utility or profit maximizer. These theoretical assumptions and background are used by researchers to identify factors influencing farmers' decisions regarding consumption and production (Singh et al., 1986; de Janvry et al., 1991; Goetz, 1992; Key et al., 2000; Boughton et al., 2007, among others). The common thing, these authors did in their work is that, farm household is assumed to be utility or profit maximizer subject to a list of constraints including cash/income, resource allocation and technology constraints. This allows them to identify factors affecting farmers' decisions regarding production, resource allocations and market participation status. In line with this, the aim of this study is to empirically analyze whether access to credit is one among the factors influencing farmers' decision to produce traditional cash crop (Ginger), the case of Wolaita Zone.

Conceptually, the decision to produce a given cash crop is expected to be affected by factors such as: household characteristics (age, education, gender, household size, and household food availability); economic factors such as crop profitability and market availability; institutional factors (such as availability of extension, inputs and credit services), and environmental factors that involve the crop's compatibility to existing climate, soil, disease and pest conditions (G.Lukanu et al., 2010).

Thus, by assuming access to credit by rural farm as one possible factor in influencing farmer's decision to produce Ginger, we can analyze the issue by using Logit model. According to available literature on this area, decision rule for production participation can be derived from the technology constraint, which relates output and inputs together (Key et al., 2000; Jaleta, 2007; and Burke, 2009).

To do this, we presume a random dependent variable Y which takes the value of "1" if the household decides to participate in Ginger production and "0", otherwise. That means the probability decision of a household to produce the crop depends on a vector(s) of independent variable(s) and a vector of unknown parameters. This Logit model assumes that while we only observe the values of 0 and 1 for the dependent variable Y , there is a latent, unobserved variable Y^* that determines the value of Y . Thus, to identify these factors, we define the level of resource allocated to the crop production as P_i , and x_i as the vector of all variables thought to influence that decision.

Mathematically:

$$Y_i^* = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + U_i \dots \dots \dots (1)$$

and that:

$Y_i = 1$ if $Y_i^* > 0$; i.e. $P_i > 0$ – producing households

$Y_i = 0$ otherwise; i.e. $P_i = 0$ – non-producing households

where $x_1; x_2; \dots; x_k$ represent vectors of independent variables (continuous or discrete), and u represents a random disturbance term.

Now from equation (1) we can describe the full Logit model as follows:

$$\Pr(Y_i = 1) = \Pr(Y_i^* = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki} + U_i > 0) \dots \dots \dots (2)$$

Rearranging terms,

$$\begin{aligned} \Pr(Y_i = 1) &= \Pr(U_i > -(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki})) \\ &= 1 - \Pr(U_i < -(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki})) \\ &= 1 - F(-(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki})) \dots \dots \dots (3) \end{aligned}$$

where F is the cumulative density function of the variable u . If we make the usual assumption that u is normally distributed, we have:

$$\begin{aligned} \Pr(Y_i = 1) &= 1 - \phi(-(\beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_k X_{ki})) \\ &= 1 - \phi(-X_i \beta_i) \\ &= (X_i \beta_i) \dots \dots \dots (4) \end{aligned}$$

where ϕ represents the cumulative normal distribution function, X_i represents the independent variables thought to determine the probability of production decision, and β_i is a vector of parameters to be estimated. Using maximum likelihood techniques we can compute estimates of the coefficients (β_i 's) and their corresponding standard errors that are asymptotically efficient.

Based on this mathematical model the empirical model for this study is specified as follows:

Pr(Y_i = 1) = f(age of hh head (AGEHH), educational level of hh head (EDCN), number of active family labour (FAMLAB), access to credit (CRDT), land size owned by hh which is suitable for Ginger production (SUITLND), number of oxen (OXEN) and donkey owned (DONKEY), access to non-farm income (NONFRM), family food availability (FAMFD), distance to market places (DSTMRKT), distance to extension service centers (DSTEXTN).

From this Logit model estimation, we can estimate the Inverse Mill's Ratio which captures the effect of sample selection bias and help us to analyze factors that affect the level of resource allocated to the crop production by using the usual OLS method using this estimated selection bias control factor, LAMBDA, as an additional explanatory variable. This allows us to test whether there is a sample selection bias in our data collection process, by testing the significance of LAMBDA variable coefficient in influencing the level of resource allocated for the crop production. If it is statistically significant, we should add this variable as an additional independent variable in the final estimation of OLS regression and, not otherwise. Thus, mathematically, the level of production participation represented by the size of resource (land) allocated to the crop production can be given as:

$$P_i = X_i' \beta_i + \mu_i \lambda_i + \eta_i \dots \dots \dots (5)$$

Where: P_i is the land size allocated to the crop production (in ha)

X_i is a vector of explanatory variables determining the size of land allocation such as age of household head, number of oxen owned, number of active family labour, land size suitable for Ginger production, distance to nearest market, existence of Ginger diseases in the year preceding the survey year, household food availability for whole year, and the amount of Ginger produced in the preceding survey period).

β_i is unknown parameters to be estimated,

μ_i is a parameter that shows the impact of participation,

η_i is the error term

9. MODEL SPECIFICATION TESTS

Before executing the final model regressions, it is necessary to test statistical clearance of all the hypothesized explanatory variables. Accordingly, heteroskedasticity and multicollinearity problems have been checked for our model variables. Regarding multicollinearity test, we used variance inflation factor (VIF) technique for continuous explanatory variables (Gujarati; 1995, 204) and contingency coefficient (CC) method for discrete variables (Healy, 1984). Our test result reveals that there is no evidence that shows the existence of multicollinearity problems among our model variables (both continuous and discrete variables).

In addition the heteroskedasticity problem for our model variables has been checked by employing the most-often used test for heteroskedasticity; the Breusch-Pagan test. In our case, the test result shows that there is a problem of heteroskedasticity among the hypothesized variables. Thus, based on the available solution we used the corrected standard error, hence the reported standard error in our result is the corrected robust standard error. According to Wooldridge, a nice feature of such correction is that the values will be corrected whether or not you

have heteroskedasticity; so one could even skip the tests above (Wooldridge, 2002).

10. RESULTS AND DISCUSSIONS

10.1. Cash Crop Production Participation Decisions

This model estimation is based on data collected from 90 smallholder farmers, from Wolaita Zone. Out of these sampled farmers, 67 of them were participated in Ginger production in 2014/2015 production year while the remaining 23 farmers were not participated. The aim of this paper is to identify factors that influence these farmers' decision to participate or not to participate in production of Ginger in the specified production year. Using Logit method we analyze the issue in this section.

Table 1: Result from Logit regression (reporting marginal effects)

Factors Expected to Affect Participation Decision	coefficients (dF/dx)	Robust S. E.	z-value
Household head age	.0000284	.0000905	0.54
Education level of the household head	.1129457	.1626501	0.69
Number of active family labour	.0009162**	.0021514	2.07
Land size suitable for ginger production	.0069887***	.0160255	3.08
Number of oxen owned	.0014022***	.0033945	2.88
Number of donkey owned	.0013355**	.0032398	2.06
Non-farm activity	.0686414	.001387	1.34
Access to rural credit	.0075744**	.0163355	2.39
Family food availability	.0133033**	.0287685	2.69
Distance to extension level	-.0000356*	.0000832	-1.91
Distance to nearest market	-7.35e-06	.0000202	-0.83
obs. P	.7583333		
pred. P	.9995549 (at x-bar)	Number of obs = 120	
Wald chi2 (9) = 24.62		Prob > chi2 = 0.0000	
Log pseudo likelihood = -12.431611		Pseudo R2 = 0.8127	
NB: (^) dF/dx is for discrete change of dummy variable from 0 to 1			
z-value correspond to the test of the underlying coefficient being 0 and thus, *, **, and *** indicates significance of the coefficients at 10%, 5% & 1% levels, respectively			

The result from the coefficient of land size suitable for Ginger production reflects a positive association with probability of producing Ginger, *ceteris paribus*, and their association is statistically significant at 1 percent probability level. This result indicates that farmers are most likely to produce Ginger if they have enough land which is suitable for its production, keeping the effects of other variables constant. The plausible explanation is that land is one of the basic factors for production of any agricultural production, including cash crop productions. Therefore, land size owned by sampled household is one of the determinant factors in influencing decision of farmers to produce Ginger in Wolaita zone. The findings by Poulton et al., suggests that land is an important factor in influencing farmer's decision to produce any cash crop (Poulton et al., 2001), hence support our findings.

In addition, the estimated coefficient for variable "number of active labour force in the household" found to be positive, indicating the direct association with probability of participating in Ginger production. This result suggests that family labour is one of the critical variables in influencing decisions of households to produce Ginger in the study area, *ceteris paribus*. Thus, farmers who have more access to family labour are more likely participate in production of Ginger in the study area. The reason is that labour markets are highly imperfect in this area while Ginger productions, from land preparation to its harvest, highly require labour and lack of such access has a great impact on farmer's decision to produce the crop. For example, Ginger harvesting is a very critical activity which should be completed at short period of time; otherwise the crop will be lost by rainfall associated problems within short day. This indicates that farmers who have access to more family labour are likely to produce Ginger under *ceteris paribus* assumption.

As sampled farmers reply, access to credit is one possible solution for such related problems. These farmers reported that, even if they have access to labour from market, they lack cash to hire that labour. As a result, we proposed this variable as one possible factor in influencing farmers' decision to participate in Ginger production in Wolaita zone. Based on the result, we obtained the evidence that support such positive linkage between access to credit and probability to produce Ginger. And the obtained result is statistically significant at 5 percent level. This result suggests that access to credit is an important factor in influencing the probability of participation in Ginger production, assuming the effects of other variables constant. This implies access to credit enables smallholder farmers to finance purchase of inputs and other production equipments, hence encourage farmers to produce a given cash crop like Ginger. Thus, as credit becomes more available for farmers, they are more likely to produce market-oriented crops. The findings by Immink and Alarcon; and Lerman supports the finding of this study by arguing as agricultural credit plays a vital role in the process of commercialization (Immink and Alarcon

1993; Lerman 2004) and decision to produce market-oriented crops is one and the primary activity in such processes.

Evidence from Logit regression result also indicates that the coefficient for distance to extension services significantly influences the probability decision to produce Ginger in the study area. The estimated coefficient for this variable shows that there is a negative correlation between distance to extension centers and the likelihood of producing Ginger. And their relationship is statistically significant at 5% level. This result suggests that farmers require advisory and other services to actively participate in production of market-oriented crops, thus those farmers who live near the extension service centre are more likely to produce the crops.

The coefficients of variables 'OXEN' and 'DONKEY' reflect positive and significant result in influencing the probability of farmers' decision to produce Ginger in the study area, keeping the value of other variables kept constant. Ox is used as a major means of land preparation in the study area. The estimated coefficient for this variable indicates significant impact on the decision probability of farmers to produce Ginger, ceteris paribus. This reflects that farmers having larger number of oxen are most likely to produce the crop. Similarly while donkey is traditionally used as a means of transportation in many rural areas of Ethiopia, including Wolaita zone, recently it becomes common to use donkey as a means of land preparation in some areas of the country. Accordingly, some farmers are using donkey for land preparation activities in Wolaita Zone. The result from the Logit regression reflects this importance of access to donkey in influencing the likelihood of producing ginger. This is supported by the result obtained from the Logit regression with positive and statistically significant at 5 percent probability level for variable 'DONKEY'.

Furthermore, this Logit regression result reveals availability of family food for the whole year has a substantial marginal effect on increasing the probability of producing ginger in the study area, keeping the value of other variables constant. The plausible explanation is that as farmers have good experiences in producing family food for the whole year, their likelihood to participate in production of high value cash crops like Ginger is higher under ceteris paribus assumption. In other words, this is to mean households who can produce family food for the whole year has a predicted probability greater than those farmers who cannot produce the family food for the whole year. Thus, family food availability is one of the major factors in influencing farmers' decision to produce Ginger in the study area. The estimated result for variable 'FAMFD' reflects this, with positive sign and statistically significant coefficient at 5% level. The study by G. Lukanu et al identified that household food availability is one the factors that affects farmers' decision to cultivate a given a cash crop (G. Lukanu et al., 2010), hence supports our finding.

11. CONCLUSION

From the above finding, I can conclude that credit constraint coupled with other factors such as number of active family labour, land size suitable for ginger production, number of oxen owned, number of donkey owned, family food availability, and distance to extension significantly influence smallholder farmer's decision to participate in cash crop production in the study area. This implies that, even if the area is agro-ecologically suitable for such high value cash crops, farmers are constrained by these factors.

12. RECOMENDATION

The findings of this study suggests that institutional services like availability of rural credit is the key factors in influencing farmers decision to participate in cash crop production such as ginger production. Thus availability of credit service can help to facilitate farmers to participate in its production. Broadening and expanding sources of such institutional service is the possible recommendation from the present study, if active participation of smallholder farmers is required in production and marketing of such valuable crop in the study area.

References

- Achterbosch, T.J., S. van Berkum and G.W. Meijerink, 2014. *Cash crops and food security; Contributions to income, livelihood risk and agricultural innovation*. Wageningen, LEI Wageningen UR (University & Research centre), LEI Report 2014-015, 57 pp.; 20 fig.; 3 tab.; 60 ref.
- Amare, H. S. (2009) Production and Marketing Analysis of Ginger in Kafta_Humera Woreda (Western Tigray). Mekelle, Tigray Agricultural Research Institute Humera Agricultural Research Center.
- Alemu, Dawit, and Gerdien W. Meijerink. Ginger Traders and the ECX: An Overview with Focus on Transaction Costs and Risks, VC4PPD Report #8, Addis Ababa, July-2010
- Boughton D., Mather.D, Barrett.C, Benfica R., Abdula D., Tschirley.D and Cunguara. B, "Market Participation by Rural Households in a Low-Income Country: An Asset-Based Approach Applied to Mozambique;" *Faith and Economics* Vol 50, Fall 2007: 64-101
- CSA, Agricultural Sample Survey 2010 / 2011 (2003 E.C.), Report On Area And Production Of Major Crops, Volume I, April 2011, Addis Ababa, Ethiopia.
- CSA, Agricultural Sample Survey 2011 / 2012 (2004 E.C.), Report On Area And Production Of Major Crops,

- Volume I, 2012, Addis Ababa, Ethiopia.
- FDRE, Ministry of Agriculture and Rural Development, "Ethiopia's Agricultural and Sector Policy and Investment Framework (PIF): 2010-2020, Addis Ababa 21010.
- CSA, Agricultural Sample Survey 2010 / 2011 (2003 E.C.), Report On Area And Production Of Major Crops, Volume I, April 2011, Addis Ababa, Ethiopia.
- G. Lukanu, Maryann Green, Peter Greenfield & Steve Worth (2004): Farmers' cash crop cultivation decisions in Southern Niassa province, Mozambique, *Development Southern Africa*, 21:3, 531-554
- Gujarati, D., 1995. *Basic Econometrics*. Third Edition, McGraw Hill, New York.
- Healy, F. J. (1984). *Statistics: A Tool for Social Research*. Wads Worth Publishing Company, California.
- <http://faostat3.fao.org/home/index.html#DOWNLOAD>
- IFAD (International Fund for Agricultural Development), 2011; Smallholder Agriculture and Food Security in 21st century, enabling rural poor to overcome poverty; Policy Division
- Immink MDC and Alarcon JA. 1993. Household income, food availability, and commercial crop production by smallholder's farmers in the western highlands of Guatemala. *Economic Development and Cultural Change* 41:319-342.
- Jagwe John, Emily Ouma, and Charles Machethe; "Transaction Costs and Smallholder Farmers' Participation in Banana Markets in the Great Lakes Region" International Institute of Tropical Agriculture, Burundi, c/o IRAZ, B.P. 91 Gitega,
- J.Burke, William, "Triple Hurdle Model of Smallholder Production and Market Participation in Kenya's Dairy Sector," M.sc. thesis, 2009
- Jayne T.S. and William Burke (MSU), "Factors Affecting Smallholder Commercialization," AAMP Training and Materials, 2011
- Jayne T.S.; D. Mather and E. Mghenyi (2010) Principal Challenges Confronting Smallholder, Agriculture in Sub-Saharan Africa. *World Development* Vol. 38, No. 10. Pp. 1384_1398.
- Jennie van der Mheen_Sluijer and Francesco Cecchi, 2011; Benefiting from the gold rush Improving smallholder Ginger production in Ethiopia through contract farming, VC4PD Research Paper, No. 13
- Lerman, Zvi, 2004, Personal report: Policies and institutions for commercialization of subsistence farms in transition countries, *Journal of Asian Economics* 15: pp 461-479
- Masuku MB (2009). Access to credit by smallholder farmers: Implications for policy. UNISWA Res. J. Agric. Sci. Technol., 12(1): 23-32.
- Moti, Jaleta; Gebremedhin, Berhanu and Hoekstra D. 2009. *Smallholder commercialization: Processes, determinants and impact*. Discussion Paper No. 18. Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project, ILRI (International Livestock Research Institute), Nairobi, Kenya. 55 pp
- P.Mavimbela, M. B. Masuku and A. Belete; Contribution of savings and credit cooperatives to food crop production in Swaziland: A case study of smallholder farmers, *African Journal of Agricultural Research* Vol. 5(21), pp. 2868-2874, 4 November, 2010)
- Poulton, C., R. Al-Hassan, G. Cadish, C. Reddy and L. Smith (2001) "The Cash Crop versus Food Crop Debate" Crop Post Harvest Program, Issue Paper 3.
- Singh, I., Squire, L. and Strauss, J. (eds.). (1986). *Agricultural Household Models: Extensions, Applications and Policy*. Baltimore, The Johns Hopkins University Press.
- U.N. Food and Agriculture Organization's FAOSTAT database, <http://faostat.fao.org/>
- Wijnands, Jo; Biersteker Jaap, and van Loo, Robert., Oilseeds Business Opportunity in Ethiopia, 2009
- Wooldridge, J.W. 2002. *Econometric Analysis of Cross Section and Panel Data*, Cambridge, Massachusetts: MIT Press.

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