



Journal of Development and Agricultural Economics

Volume 9 Number 4 April 2017

ISSN 2006-9774



*Academic
Journals*

ABOUT JDAE

The Journal of Development and Agricultural Economics (JDAE) (ISSN:2006-9774) is an open access journal that provides rapid publication (monthly) of articles in all areas of the subject such as The determinants of cassava productivity and price under the farmers' collaboration with the emerging cassava processors, Economics of wetland rice production technology in the savannah region, Programming, efficiency and management of tobacco farms, review of the declining role of agriculture for economic diversity etc.

The Journal welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence. Papers will be published shortly after acceptance. All articles published in JDAE are peer- reviewed.

Contact Us

Editorial Office: jdae@academicjournals.org

Help Desk: helpdesk@academicjournals.org

Website: <http://www.academicjournals.org/journal/JDAE>

Submit manuscript online <http://ms.academicjournals.me/>

Editors

Prof. Mammo Muchie

Tshwane University of Technology,
Pretoria, South Africa and
Aalborg University,
Denmark.

Prof. S. Mohan

Indian Institute of Technology Madras
Dept. of Civil Engineering,
IIT Madras, Chennai - 600 036,
India.

Dr. Munir Ahmad

Pakistan Agricultural Research Council (HQ)
Sector G-5/1, Islamabad,
Pakistan.

Dr. Wirat Krasachat

King Mongkut's Institute of Technology Ladkrabang
3 Moo 2, Chalongkrung Rd,
Ladkrabang, Bangkok 10520,
Thailand.

Dr. Morolong Bantu

University of Botswana, Centre for Continuing
Education
Department of Extra Mural and Public Education
Private Bag UB 00707
Gaborone, Botswana.

Dr. Siddhartha Sarkar

Faculty, Dinhata College,
250 Pandapara Colony, Jalpaiguri 735101, West
Bengal,
India.

Dr. Bamire Adebayo Simeon

Department of Agricultural Economics, Faculty of
Agriculture
Obafemi Awolowo University
Nigeria.

Editorial Board

Dr. Edson Talamini

Federal University of Grande Dourados - UFGD
Rodovia Dourados-Itahum, Km 12
Cidade Universitária - Dourados, MS - Brazil.

Dr. Okoye, Benjamin Chukwuemeka

National Root Crops Research Institute, Umudike.
P.M.B.7006, Umuahia, Abia State. Nigeria.

Dr. Obayelu Abiodun Elijah

Quo Vadis Chamber No.1 Lajorin Road, Sabo - Oke P.O.
Box 4824, Ilorin Nigeria.

Dr. Murat Yercan

Associate professor at the Department of
Agricultural Economics, Ege University in Izmir/ Turkey.

Dr. Jesiah Selvam

Indian Academy School of Management
Studies(IASMS)
(Affiliated to Bangalore University and Approved By
AICTE)
Hennur Cross, Hennur Main Raod, Kalyan Nagar PO
Bangalore-560 043
India.

Dr Ilhan Ozturk

Cag University, Faculty of Economics and
Administrative Sciences,
Adana - Mersin karayolu uzeri, Mersin, 33800,
TURKEY.

Dr. Gbadebo Olusegun Abidemi Odularu

Regional Policies and Markets Analyst, Forum for
Agricultural Research in
Africa (FARA), 2 Gowa Close, Roman Ridge, PMB CT
173, Cantonments,
Accra - Ghana.

Dr. Vo Quang Minh

Cantho University
3/2 Street, Ninh kieu district, Cantho City,
Vietnam.

Dr. Hasan A. Faruq

Department of Economics Williams College of
Business
Xavier University Cincinnati, OH 45207
USA.

Dr. T. S. Devaraja

Department of Commerce and Management, Post
Graduate Centre,
University of Mysore, Hemagangothri Campus, Hassan-
573220, Karnataka State, India.

ARTICLES

- Refining the impoverishment risks and reconstruction (IRR) model: A study of the model's "overlooked" risks, evidences from the impacts of Tekeze Dam, North East Ethiopia** 66
Andnet Gizachew
- Determinants of Malawi's cotton exports from 2001 to 2013** 80
E. Magombo, A. Edriss and M. A. R. Phiri
- Assessing challenges of non-farm livelihood diversification in Boricha Woreda, Sidama zone** 87
Yohannes Yona and Tafese Mathewos

Review

Refining the impoverishment risks and reconstruction (IRR) model: A study of the model's "overlooked" risks, evidences from the impacts of Tekeze Dam, North East Ethiopia

Andnet Gizachew

Wollo University, Dessie, Ethiopia.

Received 30 July, 2015; Accepted 9 December, 2015

This article tried to question the viability of the impoverishment risks and reconstruction (IRR) model in assessing all risks development projects like dams brought to affected communities. It argued that in some cases the model fell short of showing exhaustively all risks communities faced as a result of grand development projects like dams. Taking the case of Tekeze dam in Ethiopia, it unearths some of the risks the model overlooked pertaining to the analysis of risks caused by dam-induced displacement and resettlement. Overlooked risks taken from the case of the Tekeze dam construction included: cattlelessness, constrained community mobility, loss of resilience, constrained access to education, and loss of aspects of human rights.

Key words: Overlooked risks, IRR model, cattlessness, resilience, dam.

INTRODUCTION

Dwivedi (2002) avers that 1990s marked the emergence of an accumulated research on displacement and its particularly disastrous effects on some segments of a society. Sociology and anthropology as fields of studies that give due attention to the living realities and challenges of human societies have taken the frontal battle in developing a more precise and integrative approach in understanding displacement and its complexities. Since the 1970s and 1980s efforts, fueled by the increased state of globalization and the attendant

free flow of ideas and goods with no border restriction, it brought displacement in the right frame of academic research.

This is a study of the "overlooked" risks of the hydroelectric dam in the impoverishment risks and reconstruction (IRR) model. The "overlooked" impacts are impacts which this study has tried to incorporate in its impact analysis of the Tekeze dam by taking into account the different suggestions different researches have pointed out in relation to expanding the horizon and of the

*Corresponding author. E-mail: andugiz77@yahoo.com

Author(s) agree that this article remain permanently open access under the terms of the [Creative Commons Attribution License 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

IRR model. For example, loss of resiliency (Scudder, 1997), loss of education (Mahapatra, 1999) and loss of human right (Downing, 1996) are stated to be included in treating the impoverishment risks entailed by development-induced displacement. This study concedes that these impacts identified are not its own formulations, but developed from the different literature consulted. But what the study intends to affirm is that “cattlelessness” as a big impoverishment risk has to be included in dealing with the impoverishment process which has been at work in the Tekeze dam affected communities.

More and more people began to be displaced from their so-called ‘stable life styles’ in the name of conducting development projects. This prophesy has, however, seemed to take a wrong turn as more and more people in the governments’ desperate fight to deal with the existing poverty become newly impoverished and the new state of impoverishment and destitution looks to be more lethal than the older one looked to be. To Dwivedi (2002): “this developing impasse necessitated fresh insights into the life-worlds of affected people, and a review of assumptions, questions, and options in social engineering, a challenge that was taken up in sociological and anthropological research”.

Following the widespread practice of mega scale and grandiose development projects throughout the world particularly in developing countries, more and more reports about the misfortunes and ill-treatments of communities who directly and indirectly have become affected by these major works of development programs have begun to leak and find their way into the academic circle, spurring huge array of debates. Some debates have even gone as far as the point of questioning the viability and necessity of embarking on the campaign of conducting development projects. Accordingly, several extreme criticisms have been leveled on the carrying out of development projects. Particularly the World Bank, which finance and fund several development programs, especially the construction of dam projects, received hard-earned attacks from different circles of academics, particularly from sociology and anthropology (Dwivedi, 2002).

Giving a welcoming ear to many of the criticisms that mainly are of ethical character, the World Bank decided to find ways to minimize the risks development projects would bring to the affected communities. As part of this program, the World Bank began to finance research works that aimed at exposing problems that loom over the skies of the would-be-displaced people and how to develop an effective mitigating measures and coping mechanisms. Thus, Cernea and Guggenheim’s edited volume (1993) became the first of its kind that dealt with the opportunities and threats of development programs in general and dams in particular. This volume, labeling the 1980s as the ‘decade of displacement’, stresses the need to work more on the issues of displacement, resettlement

and impoverishment. Accepting the notion that development-induced displacement literature was in its infant stage, the authors tried to sketch the ways by which a better and sound policies of development project planning and implementation, and strategies that could result in effective resettlement and rehabilitation projects could be devised (Koenig, 2001).

AN OVERVIEW OF THE TEKEZE HYDROELECTRIC POWER PROJECT

This project as part of the Federal Government’s move to increase the capacity of the country to generate power began to be studied as an alternative scarce energy coping mechanism in 1996. The Tekeze hydro power dam, which is posited in the regions of Amhara and Tigray, is now considered as one of the major sources of electrical power for the country. Located 80 km west of Mekele (the Capital of Tigray), the Tekeze dam covering a catchment area of 30,000 km² is found in the middle of the Tekeze River. As a major tributary to Atbara that enters into Nile, the Tekeze is also tribute by the rivers of Angereb and Goang. Topographically, the basin of the river is flat and mountainous in the east and west around Ras Dasha Mountain and the Sudanese border, respectively. The basin receives an average rainfall ranging between 500 and 1400 mm. The river flows in a generally northern direction in its middle reaches, though at the dam site axis it flows northwesterly in a deep gorge at an elevation of 970 m a.s.l. The gorge is incised into Precambrian sedimentary deposits to a depth of 350 m. The dam site is located on the high volcanic plateau of Ethiopia, less than 150 km from the western edge of a region with high seismic and volcanic activity: the Afar depression and the East African Rift System (Humphreys et al., 1998).

The Ethiopian Electric Power Cooperation constructed the Tekeze hydroelectric power plant. It was built as part of the national plan of ensuring sustainable energy to help the accomplishment of the national development plans. The plant is designed to accommodate four 75 MW units. According to the feasibility study conducted in 1998, six sites were proposed for the construction of the dam. However, TK5 (Tekeze dam site five) was finally selected to be the dam site. It is found at the coordinates of 13° 21’ North and 38° 45’ east. This dam site is characterized by a step narrow gorge. The dam site of the large hydropower on the Tekeze (TK5) is located in Abe Merdanos. In this locality, the Tekeze forms the boundary of regional states of Tigray and Amhara (EEPCo, 2009: 14-15).

The development of Tekeze hydroelectric plant involved the construction of 188 m high, mass concrete double curvature arch dam, and spanning 450 m across 350 m deep natural gorge, two river diversion, an underground

Table 1. A Brief note on the general features of the Tekeze hydroelectric dam.

Features	Capacity
Total storage	9.3 Bm ³
Maximum retention level	1145 m a.s.l
Minimum operation level	1096 m a.s.l.
Surface area at MRL	147 km ²
Live Storage	5.3 Bm ³
Dead Storage	4.0 Bm ³
Catchment area	30,000 km ²
Mean Annual rainfall	850 mm
Annual inflow	3.75 Bm ³
Sedimentation	30 Mm ³ /year

Source: Ethiopian Electric Power Corporation, Tekeze Hydroelectric Power Plant (2009: 27)

powerhouse, water conveyance tunnels and outlet works, a variety of hydro mechanical and electromechanical equipment, substation and a 105 km long transmission line to link with the Ethiopian National grid at Mekelle (Ibid.) (Table 1).

Based on the interview made with a senior geologist Ato Asfaw Shirga, the paper work of the dam construction required the selection of the right contractors and consultants. Ethiopian Electric Power Corporation conducted the process of coordinating and administering the activities using the Tekeze Project Coordination Office. The consultancy Services Contract including design review and construction supervision of all the civil and electromechanical works was awarded to a joint venture of Harza Engineering Company Inc. of the USA (now known as MHW- Montgomery Watson Harza) and EnergoprojektHidroinzenjering of Serbia. The Lot 1A contract for the design and construction of a new 35 km access road to the site was awarded to Berta construction Company, a local Ethiopian company. The major construction work of the dam was carried out by the CWGS Joint Venture, comprising of CWHEC (Sinohydro) CGGC of China and Sur Construction Company of Ethiopia. Other companies involved in the construction process include the Wanbao engineering Company (CWBEC) of China, the Jilin Power Transmission and Substation Project (JPPC), and China National Electric Wire and Cable Import/Export Company (CCC) (EEPCo, 2009: 17).

The project implementation process went through two stages. In the first stage (July, 1998 to July, 2002) the Coordination Office of the Tekeze Project claims that the feasibility study was reviewed and various deficiencies of the new consultant and additional site investigations were performed. Selection of contractors was done during this stage. It was during this phase of implementation that the

35 km access road was constructed to facilitate the actual construction phase. The second phase was the construction phase that lasted between June, 2002 and September, 2009. Geological problems and non-stop increase in the international market material costs were to have their impact in delaying the construction phase (Ibid, 21-23).

The reservoir of the Tekeze hydroelectric power plant is the biggest man made body of water in Ethiopia, with a total water storage capacity of 9.3 billion cubic meters. Lying on the eastern side of the Semien Mountains, the reservoir will be almost 147 km long at full supply level, with two main branches reaching almost to *Säqota* in the east. It has a catchment area of 30, 000 square kilometers, with a long-term annual average inflow of 3.75 BM³. At this rate of inflow, the reservoir would take at least three years to fill completely. However, the average annual inflow recorded during the years 2008 and 2009 was abnormally low so that the reservoir was still only 52% full at the end of the 2009 wet season (Ibid.). It was in November, 2009 that the project was inaugurated.

According to the Office of Environmental Protection (2009), most of the affected communities of the Tekeze dam-caused displacement are found in *Wag Hemra* zone of the Amhara National Regional State. These communities base their survival from the ecology of the riverian basin of the Tekeze River. Reports show that about 15 peasant associations or kebeles have become swayed by the impacts of the dam and the total numbers of affected households are 1549.

Michael Cernea's impoverishment risks and reconstruction (IRR) model: A critical review

Impoverishment risks and reconstruction (IRR) model, as an applicable model, has been devised and used as a research tool to understand forced or involuntary displacement by both war/conflicts and mega scale development projects in the last three decades. The application of the model has received applauded welcome in the African continent as it has become the testing ground of many development policies and strategies that directly aim at reducing and if possible at eradicating and counting poverty out from the continent. In due course, when such development projects are put into effect they result in the mushrooming of a new type of poverty. Such cropping up of new poverty in the process of fighting the older one bedevils the different planners, government officials, scholars and development advocates. Thus, to develop a better development policy and strategy, concerned organizations and scholars, public officials and development advocates have called and are still calling for the designing of an integrative and inclusive approach. The designing of such a policy is important

to deal better with the ails and misfortunes suffered by a segment of a society and how they could be mended and prevented.

Since its inception considering itself as a model that gives emphasis to the ethical element of displacement, IRR has been accepted as the dominant model edifyingly used to assess the intensity and degree of the impact of involuntary, particularly development-caused displacement (Cernea, 2005). This currently widely used analytical tool in revealing displacements and their adverse effects was first adopted to give fuller picture of what social pathologies displacees are made to go through the analysis of the impoverishment risks. In the attempt to better develop a palatable explanation, Cernea, by coining the term Impoverishment Risks and Reconstruction Model, breaks down the impoverishment process into eight different but interconnected risk continuums: landlessness, joblessness, homelessness, marginalization, increased morbidity and mortality, food insecurity loss of access to common resources and services, and social (community) disarticulation. Cernea puts forth the IRR model four functions: predictive, diagnostic, problem resolution and planning, and research methodology (Cernea, 2005). However, this model, though widely accepted and practiced in recent decades, is not without any defects of its own. Cernea left open-ended for possible addition of risks to the list. In view of this, researchers suggested several risks. Scholars such as Maphapatra (1999), Scudder (1997), Feleke (1999) and Cernea (2004), made their attempt to add to the Cernea's list of the impoverishment risks: loss of education, risk of loss of resilience and risk of migration respectively (Kassahun, 2001). Kassahun (2001) also attempted to uncover what he believes are some of the basic deficiencies of the IRR model: unbalanced economic emphasis to the different economic elements of the local economy that could be affected by the displacement processes. For instance, the IRR model when first adopted and even till today gives special attention to the loss incurred in the crop economy than to the cattle economy. It is also believed that most of the IRR-based research outputs give credence to the holism of the impacts to assess the extent of their effect on the local population. Indeed, Cernea later concedes that impacts across different segments of a society have to be taken into consideration so that a better impact-picture could be drawn (Cernea, 2005). Moreover, the author believes that Cernea's attempt to gauge the level of impacts based on the distance relocatees has taken away from their original area of settlement and source of survival seems flimsy. This assessment of impact of displacement processes on the affected people based on geographic distance of move undermines the holistic and integrative nature of the displacement concept (Gebre and Ohta, 2005).

It is by incorporating all the afore-talked about criticisms

that this article tries to apply the IRR model to its case of displacement and impoverishment study. Henceforth, the article analyzes the developments that have brought the sources of livelihood and means of survival to a bleak state and the ensuing impacts that these have on the life conditions of the displaced people. The article intends to take into account any other impoverishment risk that could be added to Cernea's lists.

Analyzing the “overlooked” impacts of Tekeze dam on the displaced populations

In this section, attempts will be made to show the different impacts the affected communities of Tekeze dam have faced. These impacts, however, are not incorporated in Cernea's IRR model risks of impoverishment and resettlement. Cattlelessness, constrained community mobility, constrained access to education, loss of resiliency and loss of human right are highlighted as some of the risks the affected communities have faced. However, the author stresses that the IRR model has overlooked these impacts.

Cattlelessness: Constrained social and economic capital

In Sub-Saharan Africa in general and in Ethiopia in Particular, cattle economy plays a substantial role in the gross domestic product (GDP) make-up of countries (McCabe, 1996 as cited in Kassahun, 2001). Hand in hand with the farming economy, cattle, for most people of northern Ethiopia, have of paramount importance in supplementing their economic and social lives. Such part of the rural economy, more often than not, is not given the necessary attention among social science researchers and particularly by those who deal with the ‘unwanted’ impact development projects bring to the displaced people. In any displacement related literature it is the loss, which if incurred by the affected communities to agricultural land that, is given special attention. The impact on the cattle economy is often relegated to the level where it is difficult to come up with a picture of how much loss the affected communities have encountered, referring to it. The recently widely tested IRR model to study the impoverishment risks of displacement processes seems to have overlooked the impact the displacement have on the cattle economy. Cernea (2004) in developing the eight continuum impoverishment risks seems to have given the cattle economy a limited or no place in that he even seems reluctant to treat it under the risk of loss of common property resources. The risk of common property resources refers to the loss of common property regimes, such as grazing lands, water wells and springs, forests and other related ones. But though the IRR model identifies the constrained access affected

communities will have on grazing lands, which will have its own direct bearing on the cattle economy, the model has failed to give recognized place to the loss of the cattle economy which in fact is solely dependent on the availability of grazing lands. This 'unforeseen' impact by the model has resulted in its failure to be taken as a context-specific comprehensive model to analyze all the losses of a community incurred both to movable and immovable assets.

Kassahun (2001), in his work regarding the displacement and resettlement process which was at work on people who lived along the courses of the Gilgel Gibe where a dam was established, aided by the limited space the IRR model has given to the cattle economy tried to include 'cattlelessness' as one impoverishment risk that has to be given attention when dealing with displacement process by taking economic contexts of the affected communities into consideration. He tried to see how the loss experienced in the cattle economy has constrained the capability of the displaced in coping with new environment. For example, he stated that the relocated people of the Gilgel Gibe dam have been forced to be sharecroppers, as they do not have the necessary draught power. He also noted that the constrained access to cattle economy has robbed the relocatees off the income they used to generate from milk and milk products, and thus, according to him, losing their capability to deal with the impacts some economic shortfalls can have on the economic setup of households. But Kassahun's assessment of the cattle economy seemed to be economic-centered and even this economic aspect is not treated well to take 'Cattlelessness' as one impoverishment risk to be included in Cernea's risks-continuum.

In the upcoming pages, this study strongly puts that taking the context nature of including 'cattlelessness' as an impoverishment risk, like the farming economy, the cattle economy in the affected communities have greatly been disrupted. The disruption has brought its impact in the economic and social life of the affected communities in that they have lost many of the benefits they derive from the cattle economy.

In the case of the Tekeze dam-affected communities, almost all the grazing lands are found within the great basin of the river. As thus, when the dam began to take-in much water, grazing lands have started to be filled by the water of the dam until eventually they became inaccessible for the cattle to continue grazing. One of the noticed failures of the dam in relation to the relevance it has had to the local communities is that it undermined the role of these swamped grazing lands for the sustenance of the life of the affected areas. Rearing cattle (locally, *qem*) and goat (locally, *feč'er*) have been for long, a source of extra income for the peasants to supplement their agricultural and household needs. It is also based on the cattle wealth a peasant possesses that he will be

ranked as rich, middle or poor man. The cattle wealth helps a lot in running several social institutions such as marriage and it plays huge role in the organization of intra-group and inter-community associations. However, such social and economic derivatives of the cattle economy seemed to have been lost to the dam. This could easily be evidenced by referring to the amount of cattle wealth, which is now left in the hands of the affected peasants, and to how this loss has greatly disturbed the life of the cattle owners. Moreover, the importance of cattle economy in the social life of the affected people is symbolically expressed in such a way that men wear a leather coat like cloth that locally is called *bālebal*. Those who want to show how they are in cattle wealth wear the *bālebal*. Informants stress that the symbolic importance of the cattle economy is manifested in the clothing style of the men. That is, shirts are knitted to have long sleeves that have the shape of a goat's ear (locally called, *kořeto*). This is to show, informants claim, how much cattle wealth, especially goats, are valued in the social life of the Tekeze dam-affected communities. This symbolic representation and interpretation can show the view the local populations have on the cattle economy.

The following brief case of an informant shows the impact of the dam in the disruption of the cattle economy to the affected people in such a way that:

"I had sixty cattle, thirty calves and four hundred goats. Last year [2009] I was left with ten cattle and eighty goats. The size of my cattle wealth very much contracted due to the prevalence of drought in the last three years. To save the life of the remaining cattle and goats, I sent my son to eastern *bālāsa* or specifically to the locality of *digeb*. I did not know what had happened to him but he was found dead. He was buried in the church of *Abo*. After this, the remaining cattle and goats died of drought. After all this, I have no cattle property left (Merhawi, The Impact of Tekeze Dam on the Community, 2010)".

Some have been left bare-handed from what they had before the project began. To Ato Woldesenbet, the dam brought nothing good to the maintenance of his cattle wealth. He had 400 cattle and 600 goats. Now he has only 100 cattle and 200 goats. Compared to the other peasants who are left bare handed from their cattle wealth, Ato Woldesenbet seems to be better off. Some of his cattle and goats perished through the agonies of drought while he sold some of his property and has amassed 36,000 Ethiopian birr. Unlike the other negatively affected cattle owners, this peasant has been able to develop an effective coping mechanism. However, this does not mean that the peasants have good access to markets where they could sell their cattle and goats. One of the big problems, which are repeatedly mentioned by them, is the limited access to market

centers due to the obliteration of the crossing paths (Woldesenbet, 2010). To Ato Wolde the Tekeze project brought nothing but the loss of his 15 cattle and 120 goats, which he possessed as good markers of wealth. Now he is left with two cattle and no goat. He now is empty-handed and does not know how to deal with such grim and impasse period. Another informant recounts that he had 30 cattle and 150 goats. Now he is left with nothing and his agricultural plot has been flooded by the construction of the dam (Wolde, 2010).

Hand in hand with the economic problem, the loss of cattle has brought to the affected areas; social woes have also been at work. Cattle, for instance, was used by the affected communities youth as the best alternative to start a living that could help them prepare for their future life. To get bride wealth possession, youth of the affected areas would give their labor to wealthy families to work as shepherds. In return to this service of theirs they will be paid one in four cattle (locally, *Sezäter*) and one in three goats in a term (locally, *Shewena*). That is, if a certain lad gets hired to look after 100 cattle and 400 goats for a term, then at the end of his term he will be paid for his service with 25 cattle and almost 133 goats (Wolde, 2010). In such a way, the cattle economy works its own way of distributing wealth, which paves the way for the younger generation to start a new life to cope up with any upcoming life challenges. However, all this has been constrained as the cattle population has been dwindling at an alarming rate due to ever narrowing tract of grazing land. In the areas of the upper stream of the river, the grazing land has been totally inundated. This has resulted in the acute shortage of pasture for cattle and goats. To cope with this problem, peasants have taken several measures: buying fodder by going to markets as far as *Säqota*, migrating to some areas where there is grazing land to be attended and selling the cattle and goats.

The crisis in the cattle economy has brought several economic and social problems to the affected areas. First, to at least find a temporal solution to the shortage of the grazing land, peasants have opted to looking for grazing land in other areas. Thus, they have started to migrate to areas such as *bäläsa* in north Gondar. This migration has become a new phenomenon to the affected areas since the 1984-85 season of famine. Apart from the moral loss that migration will have on certain migrants, this forced man-made caused migration has resulted in social friction between the migrants and the host communities. The hosts in *bäläsa* have at all not allowed the outsiders to use the grazing lands found in their bounds and this have brought occasional collision and sometimes it out surfaced and overflowed beyond control, resulting in the loss of lives and damage of materials and resources.

Two, the crisis has resulted in the development of stiff competition among peasants of the affected areas in the

use of the small plots of grazing lands available. This in the long run may work against the social stability of the area. Third, the crisis in the cattle economy has worked against the long established levels of social prestige and status. The yardstick at least for now has taken a blurred image and has become fluid. The possession of cattle, not land, has been taken as a good measure of social status and being rich and poor was determined by the amount of cattle wealth a peasant possessed. However, the post construction impact has resulted in the 'narrowing of social and economic differences' in the affected societies. The narrowing has been achieved through the impoverishment of the rich, not by the prosperity of the poor. A certain recently impoverished peasant who used to be a rich one lamented on the bad fortune the dam has brought to him and alike. He now believes that he has forcibly become part of the lower class. He stressed that they have become equals and put the situation as: "*you poor, we rich have become like you*" (Belay, 2010). Those who have large number of cattle and goat have tried to survive by sending their cattle population to markets. This has enabled them to cope up with the economic problems that they have been in for now. However, this measure has started to rob the rich their capability to deal with future economic shortfalls and problems. This seems a work of continuously impoverishing economic situation for the rich ones. It is easy to see the impact the cattle crisis have on the poorer sections of the society as it resulted in declined wealth distribution. More explicitly put, the poorer section has become more impoverished and destitute.

Last, but not least, the crisis in cattle economy has brought its impact on the social life of the communities. Marriages among the locals were enforced through the cattle economy in that a certain lad to get married with a girl has to have good possession of cattle and goats to present them as a *macha* (bride price) for the girl's family. The cattle economy thus has been at the center of any new life the younger generation of the community aspires to start. In the past, the locals were able to finance with ease and simplicity the economic necessities of enforcing marriage. Both families of the boy and the girl would easily come to terms to enforce the marriage relation based on the cattle wealth they possess. Now that the cattle economy has greatly been disturbed and has not been operating the way it had as of the implementation of the project, it has become difficult to see the financing of marriages using cattle. This has resulted in decreased number of newly married couples.

Having a girl to a family has been for long regarded as a means through which an economic bargain could be made. Families of girls consider girls exchangeable and that if properly dealt can bring the necessary and expected better bargain. An interviewee sadly expresses this loss which the crisis in the cattle economy have brought as it has made him unable to find someone who

could marry his girl by presenting an acceptable *macha*. For him from now then wards giving birth to a girl will not be economically beneficial, it only will be a burden to a family (Lakew, 2010). The following verse can show the aforementioned explanation regarding what the locals think is the negative consequence of the dam on the maintenance of the centuries long built in marriage tradition and the value the society has developed towards giving birth to a baby girl:

“The new bride veiled with the headscarf,
Has eaten my heart with love.
What price you have brought,
For our sister [girl] is dear,
[she deserves a better bargain]” (Folk-art).

The verse tells how the society viewed marriage as having a social and economic bargaining element in that the bride is expected to bring the necessary dowry related payments as the bride’s families ask something to be paid according to the tradition to the bride. Now that the cattle economy has been disrupted, it will be difficult for the bridegroom to meet the dowry payment expectations.

Regarding compensation, what the government has given attention to is the price it would pay to the lost farming plots especially the flood-recessed lands. Losses incurred from the inundation of the grazinglands, though included in the EIA of the project as losses subject to compensation, seem to have been left uncompensated. To people who regard the cattle economy as one of the epicenters of their lives, it would be very difficult to see their grazing lands swamped and left with no compensation. Those living in the affected areas stress that the cattle economy is tantamount to cultivation of crops as it is one of the life sustenance mechanisms. However, those who studied the feasibility study and the Environmental Impact Assessment have failed in recognizing the central role the cattle economy plays in the social and economic lives of the locals. The cattle economy was greatly disturbed when the water of the dam inundates the grazing lands, which unfortunately were found near the courses of the river. With this inundation of the grazing lands the locals become bedeviled by the question of where to make their cattle graze. Even this bedeviling question is not met by a satisfactory answer as almost all the best grazing lands were swamped and the locals found it difficult to identify a land that could be reserved for grazing. As thus, the cattle have been made to move incessantly from an area to another in search of grazing land. This has been exhaustive both to the locals and to the cattle population. One, the locals become tired of moving for long days away from home and thus, to help themselves economically, began to sell their cattle and goats. Two, the cattle population due to exposure to such problematic

situation become unable to withstand the changed conditions and thus there has been gradual decline in their number. Moreover, it seems that the construction of the dam has a perceived impact on the climate nature of the affected areas which particularly are found near to the reservoir. This seems to have a cooling effect on the climate of the area and this dynamism in the climate of the region seems to have its toll in the health conditions of particularly goats who do not adapt to cooler environments. Some informants argue that their goats have become unable to withstand the changed climate as it has brought some changes in the health balance of the goats. As a result, the number of goats is diminishing from time to time. This situation has become further aggravated by the loss of food the goats had access to when the grazing land was swamped by the reservoir. Not only has the nature of the new climate, the water of the dam also brought the growth of a different breed of vegetation that the goats forage to the detriment of their health. The cumulative impact of all these developments is that there has been decreased dependence on the cattle economy and this, as a result, has its part in disrupting the economic and social lives of the affected communities.

Physical barrier: Constrained community mobility

The other very daunting impact of the dam on the local population and their economy for which there is no dearth of data is the jeopardizing role the dam has played in the transportation sector and in its access. Transportation has been at the center of every human interaction and the more there is an access to transportation the more there is the higher probability of human interaction and intermixing. Especially for communities that are found in inaccessible areas, transportation of different types by any means has to be devised and put into use to open up doors for a better interaction and flow of ideas and goods. Likewise, the Tekeze basin inhabitants live in one of the most inaccessible areas of the country (FGD-A, 2010). As thus, transportation access has been one of the most pressing needs of the local populations. To satisfy this transportation quest they used nine crossing paths which now are totally swamped by the water of the dam.

The construction of the dam has brought its shortfall on the accessibility of transportation to the people, particularly to those who are found immediately near the courses and banks of the river. Crossing paths, which previously were taken as connecting ones to people living on both sides of the river, have now been submerged by the dam water and are not feasible for conducting transportation activities (FGD-A, 2010). Thus, these people have difficulty to pursue what they were able to have as economic and social links with people on the opposite side of the river. Using the crossing paths,

people on both sides of the river entered into strong and continuous interaction that have its overwhelming impact on the social and economic lives of the communities. Through such paths, goods and animals were transported from one side of the river to the other. Peasants brought their farming products and a wealth of the cattle economy to markets crossing these paths. This had for long helped the affected communities to have an outlet for the external economies situated mainly outside the immediate Tekeze basin. However, the construction of the dam has affected the trading activities. Now, the affected people have to make long journeys for about four or five days to get their products sold out in the 'outside' markets. Informants averred that what was hours of journey has now become a day's journey and this has slowed down the rate of interaction their local economy would have with the other local economies and markets (FGD-A, 2010).

For instance, informants disclosed that during the pre-dam period, for a person from Ketfen vicinity (from Säménbärkebele) to go to Yechila (Tigray region) he had to take the route via kolé vicinity in Ambadago kebele. This journey took two days. Now the same person to reach Yechila has to take the route through gilew (in Säménbär) → dābrāabay → sāqzambo → niraq → Yechila. This route takes a week. Moreover, a person to go to Delezeba (in Bāyeda, Gondar) from dāli peasant Association in Säménbär kebele previously had to take the route via fināwa (found in Sāhala Sāyémetworāda). This route took one day. Now this person has to take the route dābrātsehay (Zequalaworāda) → amedāt (selazgikebele, in Sāhala Sāyémetworāda) → māharit (Sāhala Sāyémetworāda) → Delezeba. This route takes four days (FGD-B, 2010). Due to the dam, crossing paths that connected māharit (Sāhala Sāyémetworāda) and qedamit (Zequala Worāda), selazgi (Sāhala Sāyémet Worāda) and sāsāmu (Ziquala Worāda), mirebiya (Sāhala Sāyémet Worāda) and dābrātsehay (Ziquala Worāda), čana (Sāhala Sāyémet Worāda) and dābi (AbārgälléWorāda) and, fināwa (Sāhala Sāyémet Worāda) and bālāqa (AbārgälléWorāda) have completely been lost (FGD-B, 2010).

In times of such economically and socially grim period, the inaccessibility of several venues of economic interaction has served as infusing a streak to a wound. These times, peasants have become troubled in their living as they were made to remain bare handed due to the flooding of their farming and grazing lands. This situation was further aggravated by the inability of the local economy to see into the outside markets through which it can develop coping mechanisms.

Transport inaccessibility also has affected the social networks of the affected people living on both sides of the courses of the Tekeze River. Peoples on both sides of the river in addition to the active economic link they had, have had strong social ties such as through marriage, they have been connected for long. This strong social tie

seems to have now been in a weak position by the construction of the dam which has made inter-community social interaction difficult for communities living on both sides of the river. The most glaring social disruption affected by the dam construction and its direct impact on transport accessibility has been the change of attitude locals have towards one another in terms of marriage relation. Because of this constrained relation, the affected communities on both sides of the river have difficulty to make marriage relation as before, which was with ease and simplicity. Thus, the rate of newly married couples coming from both sides of the river has been getting smaller and smaller. Interviewees and group discussants reveal that this new social development began to besiege the mentalities of the localities as allowing their children living on both sides of the river get married is tantamount to making them leave their families forever. The chance for the affected communities to enforce marriage between those dwelling on either side of the courses of the river has been diminishing. The social impact of the transportation problem does not end here. Married couples who came from either side of the river have now started to think over their relation, as they fear that the dam will hamper any future relation they would have with their families. Such a problem is taking roots in some localities and divorce (locally, *Daqaru*) particularly among the young married couples has now started to be taken as an issue to consider for thinking.

This constrained community mobility can have its effect on the affected communities as it in the end will result in the loss of the affected areas social capital which is one of the necessities for a certain society to be operational and functional. Moreover, this transport related problem might have its unnoticed impact in narrowing the social base marriage relations. As people are forced to split from their previous marriage bonds and relations, they have to look for other options and the existing reality shows that the most viable option available is looking inwards to what is present in their own newly created and diminished 'social island'. Rather than looking to the outside to fetch for potential marriage spouses, now local populations may be forced to look into the geographically limited land.

Thus, the aforementioned expositions show that the dam has brought barrier in the physical interaction between communities that live on either sides of the River and this physical barrier has ushered in the development of constrained community mobility.

Loss of education or constrained access to education

The other practical reality the local populations have faced after the construction of the dam is that the number of children who attend schools has decreased. In fact, Maphapatra (1999) has identified loss of education as

one of the impoverishment risks that displaced people are made to go through. For those affected people who live near the Tekeze and for some of the villages to make their children attend education, they had to cross the river. In villages which are found in the upper stream basin, sending such children to school crossing the river is too difficult and has sometimes become unthinkable. Transport inaccessibility-caused education problem is also aggravated by the economic condition to which the affected people have been made to live with. Due to the economic burdens and problems, which have been imposed on the shoulders of the peasants, households were unable to make their children get on with their education. In families where there are many children, some of them were made to attend schools while others were made to look after family related responsibilities. Some families also take the option of sending their children to school on shift basis. This has been a loss to large extent to families who want to see out their children's future through education (FGD-B, 2010). An informant strongly puts his grievance on the impact the dam has on his capability in letting his children attend schooling as:

"All my five children have stopped attending school for I am incapable of making them continue their education. Let's say five of them go to school, what will they eat, drink and get for clothing. When I think of this the answer for me is too big to go with by. We could educate our children by farming our land and rearing animals but the dam robed us off our property. Now that we have become grieved for we are illiterate. However, it is for us despondent to see our children remain uneducated because we are unable to send them to school. Without economic capability a child cannot get his/her education. Now there is nothing. Everything is moving down to deep state of trouble. Anything can happen if there is economic capability, if not..." (Gebreselasse, 2010)

For the aforementioned informant, the constrained education access that his children have faced is directly related to the economic problem his family has encountered as entailed by the construction of the dam. He argued that to put his children in school he needs to have an adequate economic power. He stressed that the loss of the *diffa* and the constrained economic benefits derived from the cattle economy have played their major part in making him incapacitated to send his children to school. Instead, children are made to look after family business and on ways that could make them contribute to relieving of the temporal economic problem of their family. This has hindered the children from ensuring effective access to education. Moreover, this informant lamented on the future fate of his children as he gives huge value to education. He wants to see the future of his children carved out from their educational career.

Lamenting that he was made to be illiterate for he had no chance of getting schooling, it has become difficult to see his children to be out of the educational track that would eventually make them illiterate. He fears that things may take a full circle of wrong turn (Gebreselasse, 2010).

Loss of resiliency

Scudder (1997) suggested that the IRR model has to include some risks in its risk-continuum based on the context of the displacement case to be studied. Accordingly, he added 'loss of resiliency' as one potential risk that may loom over the sky of the would-be-displaced people. For Scudder, resiliency refers to the ability of the displacee in crafting mechanisms that could help them adapt with the newly created social and economic setting and environment. Any society, as to Scudder's belief, has the capability to deal with any emerging economic shortfalls, making use of the available economic and social resources (cited in Kassahun, 2001). Contextualizing Scudder's risk of 'loss of resiliency', though not a major one, based on the data gathered, it can be inferred that the affected communities of the Tekeze dam have lost the ability of dealing effectively with the emerged economic problem through different manipulation of their environment as they used to do in the previous times in times of economic failures.

The area of *Wag Hemra* has been hit by one famine after the other in the previous one or two centuries. In the face of such repeatedly occurring famine, the people had resorted to using several coping mechanisms by which they can withstand the perils of the famines. One of the options which were taken in particular by those living around the Tekeze River was the taming of the courses of the river to their economic good. The Tekeze particularly for those who made their shelter across its courses served as an asylum, making an effective and efficient manipulation of the silt and fertile alluvial soils brought down by the river. Some interviewees draw equivalence to the current situation they are in from the 1984\85 period of disastrous famine which has been claimed to have resulted in the death of hundreds of thousands of Agew men, women and children, and the complete shattering of (for some time) the human, economic and social resources of the area. Even during the 1985 evil days, those dwelling along the courses of the river had escaped the days working on what they best could do by utilizing effectively the deposited alluvial soils and flood recessed lands that helped them to produce at least for mere survival which by then was a luxury. Now they have nowhere to go as this land has been taken away for good to the practical implementation of the project. As a result, interviewees and group discussants have claimed that life has become too difficult to deal with. Henceforth, after 1985 season, it is now that the

local populations have taken migration as one coping mechanism. The following case shows how much the dam has robbed the affected communities off their resilience to deal with social and in particular economic failures they face.

“We derive our livelihood from the rearing of animals. We used the *diffa* [the fertile and productive flood recessed land] to escape from occasional drought and famine. When a drought visited our land as we had the wet fertile and silt soil of the Tekeze we went there and got benefited by producing on the land. Our cattle and goats saw the bad days off by grazing the different grasses found along the courses of the river. Now our only and best alternative coping mechanism has gone for good. Due to lack of nowhere to go, we saw a part of our cattle died of drought and others died when we migrated to *bäläsa* in search of pasture. Even reaching *bäläsa* after such a mess, we have faced several problems and challenges from the host communities. We have not encountered such a problematic situation. We are in a great trouble but we have found no one to look after us. No one has noticed that we are living like this [wretched and morally unfair life]. Alas! We are in a great trouble” (Kasa, 2010).

The aforementioned recount tells the impact the Tekeze dam has in making the people lose a sort of their resilience power. It puts that in times of economic failures precipitated by rain shortage, the Tekeze-bounded people make use of the moisturized alluvial soils of the Tekeze to escape from the perils of drought and famine. Even the cattle economy survives such periods by depending on the pastures found along the courses of the River. But this resilience power, informants indicated, has been stripped off the local population. This injecting out the resilience power has exposed the locals to look for unsecured coping mechanisms to, for example, save the life of their cattle. That is, they have opted to migrate to some pasture rich neighboring areas such as *Bäläsa*.

Loss of human right

The loss of human rights has also been one of the adverse effects of the dam on the affected communities. Scholars like Downing (1996a) as cited in Cernea (2004b) suggested loss of human rights as one risk to be considered in dealing with the impoverishment risks of the IRR model. It is internationally and locally stated that internally displaced people has to be given protection in practicing their human rights and the protection has to also be directed to the ensuring of how the displacement process could result in the better management and protection of the human rights of the affected people. What has happened to the internally displaced people

across the world has been more often than not depressing and embarrassing to the signatory nations of the UN. Reports that have come out from particularly in areas where the mega scale development projects are implemented strongly suggest that there is a wide spread global breaching of the human rights of the affected communities (Cohen and Deng, 1998). Cohen and Francis identify that “without doubt, the protection of subsistence needs [food, water, clothing, and others] is one of the most important human rights issues for many of the displaced” (Ibid, P.100). Similar developments that result in the loss and breaching of the human rights of the affected communities of the Tekeze dam characterize the dam development process.

It is against this background that the 1986 Declaration of the UN General Assembly on the Right to Development makes it clear that: “every human person and all people are entitled to participate, contribute to, and enjoy economic, social, cultural and political development, in which all human rights and fundamental freedoms can be fully realized” (IDMC, 2009). Though this declaration calls for the protection of the human rights of people who repeatedly are debased and embarrassed by implementation of development projects, these development programs are put in place under the name of accessing development benefits to many people through the sacrifice of the few. Accordingly, four major human rights and social justice have been identified to see the better protection of the rights of the internally especially development displaced people: right to participation, right to life and livelihood, rights of vulnerable people and right to remedy (Ibid, p.3). Pertaining to the right to life and livelihood, the following words of an informant clearly sum up the conditions of the local affected people.

“This government was a father and a mother to us. We did everything what it told us to do. When it told us that a person’s human rights have to be respected and protected, we believed and accepted it. Nevertheless, when it built this dam it did not consult us whether it benefits us or not. It built the dam with no heed and respect to us. It built the dam using its power. Is not this a case of the breaching of the human rights of many individuals? It talks about the respect of human rights but it destroys its own beliefs. Man lives based on the fulfillment of four needs: health, food, transport and shelter. However, we have lost everything but shelter” (Wondimu, 2010).

These people, as the aforementioned recount shows, due to the special experience they had in the *Derg* period, they have taken the government as one of their own who worked a lot to redress their economic and social problems. They also believe in the tenets and principles of human rights protection as told to them by the government. But such on paper-put protection of the

human rights principles could not pass their litmus paper test. The government which prophesied and promised a lot to protect the human rights of its citizens, for the people of the affected communities, have finally shown its true face by utterly ignoring the human rights of the affected people, throwing it to dust. As thus, the locals pointed that they have lost faith in the government as it has made them lose their sole source of survival: Tekeze. They are very surprised to see that the government is not that much committed to protect human rights of its citizens on the ground as its commitment to talking (Wondimu, 2010).

The other human right issue that has been jeopardized by the dam development is the right to participation. That is, there has been utter absence of informed community consent. Research works conducted on the impact of dams on several dam-affected communities suggest that owners of a project and other concerned bodies have to give emphasis on ways by which the economic and social lives of the affected communities could be normalized. However, in the case of the Tekeze dam the Environmental Impact Assessment (EIA) seems to have failed to predict what future life the dam holds for the inhabitants of the affected areas. Though owners of the project claim that the feasibility study and the EIA documents were circulated to the concerned regional, zonal and *Worāda* administration bodies to make them get informed regarding the construction of the dam and the possible impacts of the dam on the people, how things have unfolded for the local population tersely shows that they did not take the necessary dam construction methods by which risks of impoverishment could be minimized and mitigation measures could be enforced well on the ground. This could all be done first by dragging down the plan of constructing the dam to public participation and consultation. The project owners did seem to have overlooked this necessary phase in that now the local populations strongly feel that they have been mistreated. Group discussants reveal that had the government initially made the local populations participate and consulted and had made them believe, they could have regarded the project as one of their own and things might have taken a different direction in that it may be possible to minimize the different risks of impoverishment which have now become materialized. Researches show that in many countries when development projects that could largely result in the disruption of local economic lives are to be implemented, making the would-be-affected-people participate in the decision making process through public hearing and reviews have been the hall mark of the early phase of dam construction. Bartolome et al. (2000) stresses that such public hearings and reviews to be effective tools of empowering the local populations to withstand any predictable economic and social shortfall caused by the dam have to be practiced on the appropriate time and context. Or put differently:

“Once the site of the dam and the purpose of the project are determined and defined by parameters of engineering cost, scheduling and the analysis of social and environmental impacts, the ability of information gathering through public hearings to significantly change the features of the project are reduced, flexibility on these matters is sacrificed” (Bartolome, 2000).

This report at the same time reveals that public hearings could be used as far to the point as they could be given with the opportunity to result in the better implementation of the project that in a sense could also be beneficial to the local population. Experiences in Nepal, Sirilanka and India show that the effective implementation of dam projects needs to be backed up by transparency through which public hearings and reviews could easily be put into effect. But most of the time dam projects have been bedeviled by many problems such as information on projects which is difficult to come and to get access to, difficulty to put facts and figures together, and enquiries met with stony silence. The inability of the concerned bodies and officials to come up with the necessary worked up reports on project implementation, human costs, Environmental Impact Assessment and mitigation measures is also another manifestation of the smaller degree of participation allotted to the affected communities.

In the case of the Tekeze dam project, public hearings and reviews that are largely done to tap information to help the effective implementation of the project are totally lacking from the first till the last stages. Surprisingly enough, the local informants lamented on the way the project owners have treated and how they have secluded them from participating in any level of decision making process. The project, it seemed, was designed and carried out by the project owners with little or no respect to the right of the local people. The feasibility study was not thoroughly studied as 80% of the dam is situated in one of the most rugged terrain and inaccessible mountainous areas of the country. This made it difficult, as to the argument of the project owners, to garner the necessary data that could greatly help them develop the necessary and appropriate mitigation measures and coping mechanisms for the local population to the problems that rose in time of the implementation of the project. The following two recounts by the informants of the affected communities clearly show the utter dearth of consultation on the part of the communities regarding the proposal, study and implementation of the Tekeze dam project.

“We became aware of what was happening when they (the officers of the project) came to measure the land to determine the compensation price. They never did consult us. It is the people that are the country, not the mountain. Doing what has to be done without consulting us is very much saddening. Without the people [and its

backing], everything is valueless. They built the dam for they thought that we could not do anything. Indeed, we have no power. We have got no power to get collision with the government. If it had consulted us about the dam, even we might not have cared about compensation. The government after building the dam, it told and still tells us that compensation is to be delivered. But are we children that it continues to tell us something which is not coming? Sadly, we have felt being ridiculed as children. They measured the land after it was impounded by water. We were not told to get ready for this moment. Hence, we were not given the chance to protect our cattle and goats. All this sadly happened for the government was too careless in informing us the impending grim reality. As a result the water covered our land before we took the necessary measure to save our farming and cattle wealth" (Yigzaw, 2010).

Similarly, an informant from *Bäläqa* notes that:

Here in AbäMärdanos it was said that there were some Chinese men. Our eyes saw what was happening but we did not know what was being done. No one told us that. We thought that a highway to Gondar was being built. When there was a blast, we asked if it was thunder and lightning or anything else. We knew nothing. We were at all not told. The project officers did not come when the feasibility study was conducted. It was after the completion of the dam that they came to us. This could be expressed as "throwing a stone after the monkey has gone". If we had been told when it was studied, we would have taken an alternative to cope with the impending reality. Local elders recount "the world would pass until the north got civilized" to show how much the government has written them off from any participation. They [the project officers and the office of the project management] did this because they think that we are backwards and know nothing. They told us that as the dam was going to get impounded we have to register our land. We said we had to be told when the project was proposed and studied to be conducted for if we lost our farm, we would lose our water and grass" (Mekonen, 2010).

The aforementioned recounts show how the local populations is dismayed to see the construction of the dam without being informed what fate the dam would entail to them. This stony silence of the project officers, informants stalwartly stressed, have robbed them the chance to take the necessary preparation in dealing with the inevitable realities that the dam would bring. Most surprisingly, the local men thought that a high way was being built when they saw some 'Chinese' men working in the construction. As Chinese contractors carry out many of road development projects in many parts of the country, it would not be surprising to hear the local populations saying that they saw Chinese men and they

thought a high way was being built to Gonder. Informants stressed that they did not go to the local kebele, *woräda* and zonal offices, as they did not expect that they were going to be victims of the project. They informed that it was only after the impoundment of the grazing lands and the *diffa* that government officials and project officers began to get in touch with the local populations (Mekonen, 2010). However, it is very difficult to get this information of the local populations as granted. These local people go on different time intervals to *Säqota* for marketing and it will be difficult not to think that they did not hear something about what was going on around the Tekeze River.

Considering that the information could be gathered while the construction was being carried out, the responsible bodies felt that they could easily come up with the necessary amends to the changes that would fall on the basic means of deriving economic and social survival for the people of the affected areas. What was most depressing for the local population is that their land was taken away without being consulted. They knew that their land had gone forever not to be reclaimed back when they saw that the water of the dam inundated the land. The affected people have been relegated to the level where they could play no role to the effective implementation of the project that could better ensure the introduction of contextualized coping mechanisms and mitigation measures and the acceptance of the project as one of their own.

For all such mismanagement and stony silence, the reaction of the peasants has been repeated accusation against the government in such a way that they needed to be informed beforehand so that they could at least take their own mitigation measures and coping mechanisms. Thus, the project has been a failure in terms of its inability to consult the affected people regarding what fate the dam have held for them.

CONCLUSION

This article tried to look into the different impacts the Tekeze dam in northern Ethiopia had brought on the affected communities. It strongly argued that some of the impacts the communities had faced had not been included and studied by Cernea's impoverishment, IRR model. Arguing that the communities practiced a wide spread rearing of cattle, this paper avers that no strong attention was given to the impact the dam would have on the cattle economy of the affected area. It skipped cattleness as a potential risk. Such a measure resulted in the negative perception the people of the affected area had toward the construction of the dam. Moreover, other risks, including loss of resilience, constrained community mobility, constrained access to education and loss of human right have been discussed as risks that the IRR

model has overlooked in its risk analysis as can be evidenced from the case of the Tekeze dam. This paper thus challenges the IRR model and the need for refining it along the economic and social realities of the affected communities of grandiose development projects such as dams.

Conflict of interests

The author has not declared any conflict of interest.

REFERENCES

- Bartolome LJ, De Wet C, Mander H, Ngaraj VK (2000). Displacement, Resettlement, Rehabilitation, Reparation, and Development. WCD Thematic Review 1.3. Cape Town. Available at: <http://siteresources.worldbank.org/INTINVRES/Resources/DisplaceResettleRehabilitationReparationDevFinal13main.pdf>
- Cernea M (2004a). Social Impacts and Social Risks in Hydropower Programs: Preemptive Planning and Counter Risk Measures, Keynote address, Session on Social Aspects of Hydropower Development United Nations Symposium on Hydropower and Sustainable Development, (Beijing, China, 27-29 October 2004).
- Cernea M (2004a). Social Impacts and Social Risks in Hydropower Programs: Preemptive Planning and Counter Risk Measures. In Social Aspects of Hydropower Development United Nations Symposium on Hydropower and Sustainable Development, 27-29 October 2004 (PPXX). Beijing, China.
- Cernea M (2004b). Impoverishment Risks, Risk Management, and Reconstruction: A Model of Population Displacement and Resettlement, Keynote address, Session on Social Aspects of Hydropower Development United Nations Symposium on Hydropower and Sustainable Development, (Beijing, China, 27-29 October 2004).
- Cernea M (2004b). Impoverishment Risks, Risk Management, and Reconstruction: A Model of Population Displacement and Resettlement, Keynote address, Session on Social Aspects of Hydropower Development United Nations Symposium on Hydropower and Sustainable Development, (Beijing, China, 27-29 October 2004).
- Cernea M (2005). Concept and Method: Applying the IRR Model in Africa to Resettlement and Poverty, In: Itaru O, Gebre Y (Eds), Displacement Risks in Africa: Refugees, Resettlers and their Host Population. Tokyo: Tokyo University Press, pp. 195-258.
- Cohen R, Deng MF (1998). Masses in Flight: The Global crisis of Internal Displacement. (Brookings institution press, Washington DC).
- Downing T (1996). "Mitigating Social Impoverishment when People are Involuntarily Displaced", In: C. McDowell (ed.), Understanding Impoverishment: The Consequences of Development-Induced Displacement, pp. 33-47. Oxford: Berghahn Books.
- Dwivedi R (2002). Models and Methods on Development Induced-Development: Review Article, in Development and Change, (Blackwell Publishers, USA) 33(4):709-732.
- Ethiopian Electric Power Corporation (EEPSCO) (2009). Tekeze Hydroelectric Power Plant. (Addis Ababa, Extreme Printing Press)
- Feleke T (1999). The Impact of Urban 'Development' on a Peasant Community Disposed by the Ayat Real Estate Development Project in the Vicinity of Addis Ababa. (Unpublished MA Thesis). Department of Social Anthropology, Addis Ababa University.
- Gebre Y, Itaru O (2005). Introduction: Displacement in Africa-Conceptual and Practical Concerns, In: Itaru O, Gebre Y (Eds), Displacement Risks in Africa: Refugees, Resettlers and their Host Population. Tokyo University Press. pp. 1-10
- Humphreys H, Coyne et B, Rust K & D (1998). Tekeze Medium Hydropower Project Feasibility Study. Addis Ababa.
- IDMC (2009). Development-Induced Displacement, Prepared by Internal Displacement Monitoring Center.
- Kassahun K (2001). Re-relocation and Dislocation of Communities by Dam Development: the Case of Gilgel Gibe Dam in Southwest Ethiopia. (Unpublished MA Thesis) Department of Social Anthropology, Addis Ababa University, Addis Ababa.
- Koenig D (2001). Toward Local Development and Mitigating Impoverishment in Development-Induced Displacement and Resettlement. (University of Oxford: Refugee Studies Centre).
- Mahapatra LK (1999). Testing the Risks and Reconstruction Model on India's Resettlement Experiences, In: Cernea, M. (Ed), The Economics of Involuntary Resettlement: Questions and Challenges, pp. 189-230. Washington, DC: World Bank.
- Scudder (1997). "Social Impacts" and "Resettlement", In: Asit K. Biswas (Eds), Water Resources: Environmental Planning, Management and Development, New York: McGraw Hill.

APPENDIX

List of interview and FGD informants

- Asfaw S (2010, February 15). On the Construction of Tekeze Dam (G. Andnet, Interviewer).
- Belay (2010, March 3). On nature of Impoverishment (Gizachew A, Interviewer).
- FGD-A (2010, March 12-13). The Impact of Tekeze Dame on the Community (Gizachew A, Interviewer).
- FGD-B (2010, March 15-16). The Impact of Tekeze Dame on the Community (Gizachew A, Interviewer).
- Folk-art. Folk poetry . *np*. Public, Sekota.
- Gebreselasse W (2010, March 3, at Debrebrhan Kebele). Impact of Tekeze Dame on the Community (Gizachew A, Interviewer).
- Kasa E (2010, January 28, at Selazegi kebele). The Impact of Tekeze Dame on the Community (Gizachew A, Interviewer).
- Lakew B (2010, March 10). The Impact of Tekeze Dame on the Community (Gizachew A, Interviewer).
- Mekonen B (2010, April 4, at Bäläqa kebele). The Impact of Tekeze Dame on the Community (Gizachew A, Interviewer).
- Merhawi A (7, 2010, January 7 at Säménbär kebele). The Impact of Tekeze Dam on the community (Gizachew A, Interviewer).
- Merhawi A (2010, February 7). The Impact of Tekeze Dam on the Community (Gizachew A, Interviewer).
- Merhawi A (2010, January 7). The Impacts of Tekeze Dam on the Community (Gizachew A, Interviewer).
- Wolde (2010, February 18). The Impact of Tekeze Dame on the Community (Gizachew A, Interviewer).
- Woldesenbet (2010, February 12). The Impact of Tekeze Dam on the Community (A. Gizachew, Interviewer).
- Wondimu T (2010, March 18, at Debrebrhan kebele). The Impact of Tekeze Dame on the Community (Gizachew A., Interviewer).
- Yigzaw T (2010, April 7, at Bäläqa kebele). The Impact of Tekeze Dame on the Community (Gizachew A. Interviewer).

Glossary of local terms

- ¹Qem: cattle.
- ²Fečer: goat.
- ³Bälebal: an Agew traditional leather coat produced from a goat's skin.
- ⁴Koreto: an Agew traditional shirt.
- ⁵Sezater, Shewena, Sizna, Akunti and Walṭent: Types of sharecropping in Wag.
- ⁶Macha: dowry or bride wealth.
- ⁷Daqaru: Divorce.
- ⁸Diffa: the flood-recessed land found along the course of the Tekeze River.

Full Length Research Paper

Determinants of Malawi's cotton exports from 2001 to 2013

E. Magombo¹, A. Edriss^{2*} and M. A. R. Phiri²

¹Ministry of Agriculture and Food Security, Malawi.

²Department of Agricultural and Applied Economics, Lilongwe University of Agriculture and Natural Resources, Bunda Campus, Box 219, Lilongwe, Malawi.

Received 7 December, 2016; Accepted 3 February, 2017

This paper analysed the determinants of Malawi's cotton exports, given the challenges faced by main traditional export crop which has rekindled interest in the development of cotton as a key export crop. The gravity model of trade was estimated following the Helpman, Melitz and Rubinsten (2008) framework. Using a balanced panel data, with the set of 36 countries that Malawi has exported cotton to for 13 years (2001 to 2013), the model was estimated to find the determinants of the extensive and intensive margins of Malawi's cotton exports. It was found that Malawi's GDP per capita, price, exchange rate, production index, similarity in continent and eligibility for African Growth Opportunity Act (AGOA) significantly affected the extensive margin of Malawi's cotton trade. It was also found that the per capita GDP, distance with trading partners and the exchange rate affected intensive margins of Malawi's cotton exports.

Key words: Agricultural trade, gravity model, cotton, panel data, Malawi.

INTRODUCTION

Malawi just like any economy, engages in trade to benefit from its gains. This is due to the widely accepted view that countries differ in their resource endowments, preferences, technological advancements, social and economic institutions and their capacity for growth and development. In this view, Malawi exports a range of commodities but her exports are highly concentrated. The major export commodities for the economy are agricultural since the economy is largely agrarian. The major export commodity for Malawi is tobacco; as such,

the agriculture sector is dominated by the production of tobacco. However, tobacco has been facing a number of challenges in recent times. This has led to the need for Malawi to diversify to other crops which can generate export revenues; one of such crop is cotton (Ministry of Agriculture and Food Security, 2006).

In the study period, the cotton sector ranked fourth as a foreign exchange earner for Malawi after tobacco, tea and sugarcane (Reserve Bank of Malawi, 2012). It has high potential for growth and increased investment in the

*Corresponding author. E-mail: abdikhalil@yahoo.com.

cotton sector would lead to an increase in the amount of cotton produced hence exports from the country. There are also many potential export markets for cotton and textiles within the region because of international agreements in the textiles and garment sub-sector and opportunities presented by the African Growth Opportunity Act (AGOA) of the United States of America (USA) (Chatima, 2007; Government of Malawi, 2006). As such, the government of Malawi set up the cotton production up-scaling initiative which has led to an increase in cotton production in some years (Reserve Bank of Malawi, 2012).

Malawi's economy is heavily dependent on commodity export such as cotton for foreign exchange earnings. As such, it is vulnerable to external shocks which in turn affect the volumes exported. In the local market, these shocks translate into low and unstable prices; which is one of the major challenges faced in the cotton industry. According to Gillson (2005), this scenario is caused by unpredictable fluctuations in the volumes of cotton produced and exported by major producing countries; and reductions in the costs of production of synthetic fibres. This has been worsened by the downsizing of the textile industry in Malawi since the early 1990's which has resulted in weak linkages between the cotton sub-sector, textile and garment production and domestic textile demand (RATES, 2003; International Monetary Fund, 2007). Hence, a large proportion of cotton produced in Malawi is exported as lint despite unstable world market prices. Moreover, one of the potential markets for Malawi's cotton exports was within the region and it has been adversely affected by the end of the multifibre agreement¹ (Coxhead, 2007). The end of the multifibre agreement has resulted in 39% decline in exports from African countries that wanted to utilise the opportunities presented by AGOA (Chatima, 2007).

The objective of this study is to analyse the determinants of Malawi's cotton exports. Specifically, the study aims to determine if different factors such as the national income, price of cotton, exchange rate, remoteness, distance, production index, similarity in continent and eligibility for AGOA have significant effects on the export volumes of cotton from Malawi. To the best of the authors' knowledge, no study has been done to empirically assess the factors that affect the exports of Malawi's cotton. The paper applies the gravity model to the disaggregated trade flows of Malawi cotton to find the determinants of the cotton exports (Dascal et al., 2002; Sarker and Jayasinghe, 2007; Yang and Woo, 2006).

¹ The Multifibre Agreements governed world trade in yarn, textiles and apparels from 1974 to 2004. They provided for bilateral treaties, which allowed developed countries to impose quotas on imports according to their own particular requirements (Naumann, 2006). The end of the Multifibre Agreement has adversely affected the smaller producers. This is because the end of the Multifibre Agreements has created stiff competition. The smaller producers are unable to compete effectively with the Asian giants in the markets where they benefitted from preferential trade agreements notably the United States of America (USA) and European Union (EU).

The Helpman, Melitz and Rubinstein (HMR) (2008) framework was used.

Unlike other previous studies that disregard zero trade flows which are very common in disaggregated trade data, our work incorporates the zero observations modelled as the decision to export or not (Anderson, 2011). Zero trade flows across countries are explained by heterogeneous firms which differ in terms of their productivity and there are fixed costs of exporting. In this set up, variable trade costs reduce the amount that exporting firms export, while fixed entry costs reduce the probability that a firm has decided to export. Thus, the model accounts for the self-selection of heterogeneous producers in a particular country exporting to international markets and zero trade flows are associated with high bilateral fixed costs of trade (Kandilov and Zheng, 2011; Helpman et al., 2008).

Background reviews

In a Historical Perspective of Cotton Trade in Malawi-Cotton is grown mainly by smallholder farmers and is a relatively important cash crop. Nearly 50% of cotton produced in Malawi is traditionally produced in drought prone areas of the country where cotton can provide a valuable source of cash when other crops fail (Kumwenda and Madola, 2005). The cotton industry has experienced a reduction in domestic demand for cotton lint as a result of a shrinking domestic textile industry especially since the 1990s. This has contributed to low cotton production volumes (Ministry of Agriculture and Food Security, 2006). Apart from the textile industry shrinkage of the 1990s, historical evidence shows that the sector has not grown very much. The growth in the cotton sub-sector has been static as evidenced by the insignificant difference in the area planted and production volumes before and after the structural adjustments programs in Malawi (Kenamu and Phiri, 2014).

In the period from 2001 to 2013, there were 11 major companies involved in marketing of seed cotton who were at the same time ginners. The structure of the seed cotton market was not competitive in nature and the market had a number of barriers that hindered entry into the business of buying seed cotton from the smallholder farmers. These included difficulties to access information markets and price fluctuations, legal and institutional hindrances and poor recognition of private traders (Mwatuwa, 2009). The ginning companies combined had a ginning capacity of 200,000 metric tonnes per annum which was underutilized due to low cotton production. Historically, a major proportion of ginned cotton used to be utilised within the country. However, since the shrinking of the domestic textile industry in the 1990's, the majority of ginned cotton is exported and sold on the international market with less than 5% used for domestic textile processing. The main international markets for cotton were the United Kingdom, Zimbabwe, Zambia,

Republic of South Africa, Tanzania and Mozambique (Chatima, 2007).

METHODOLOGY

The methodology segment elaborates on the theoretical and empirical models, as well as, the data used in the analysis.

The gravity model of trade

This section outlines the theoretical model that was used to estimate the determinants of export performance of Malawi's cotton. The gravity model was originally founded on Newton's physical theory which states that two bodies attract each other in proportion to their masses and inversely by the square of the distance between them. In international trade theory, the gravity model aims at explaining the trade flows and patterns between two economies by regarding each of them as an organic body that attracts each other in proportion to their economic size (GDP) and inversely to their distance (Chan-Hyun, 2001).

To incorporate the zero trade flows in the study, the Helpman-Melitz-Rubinstein (HMR) framework was used. It provides a model with heterogeneous firms, where firms differ in terms of their productivity and there are fixed costs of exporting. In this set up, variable trade costs reduce the amount that exporting firms export, while fixed entry costs reduce the probability that a firm has decided to export (Helpman et al., 2008). Thus, the model accounts for the self-selection of heterogeneous producers in a particular country exporting to international markets and zero trade flows are associated with high bilateral fixed costs of trade as below:

Let there be a set of countries J , where $j=1, 2, \dots, J$ and j 's utility function in time t be:

$$u_{jt} = \left[\int_{l \in B_{jt}} x_{jt}(l)^\alpha dl \right]^{1-\alpha}, \quad 0 < \alpha < 1 \tag{1}$$

Where B_{jt} is the set of commodities available for consumption in country j and $x_{jt}(l)$ is its consumption of the product l and α is the elasticity of substitution across products. Let Y_j be the income of country j which is equal to some expenditure level such that $u_j \equiv Y_j$ which gives the budget constraint. Maximizing utility subject to the budget constraint gives the demand for the product l in country j as:

$$x_{jt}(l) = \frac{\beta_{jt}(l)^{-\alpha} Y_{jt}}{p_{jt}^{1-\alpha}} \tag{2}$$

Where $\beta_{jt}(l)$ is the price of product l that consumers in country j face in time t , α is the constant elasticity of substitution defined as $\frac{1}{1-\alpha}$ and p_{jt} is the ideal price index defined as:

$$p_{jt} = \left[\int_{l \in B_{jt}} \beta_{jt}(l)^{1-\alpha} \right]^{1/(1-\alpha)} \tag{3}$$

The assumptions on the supply side are that in the world each firm produces a distinct product and so giving a monopolistic competition market structure and that the marginal cost for a firm in country j in year t selling in country i is: $\tau_{ijt} c_{jt} a_i$, where $\tau_{ijt} > 1$ is the variable cost resulting from different barriers of trade, c_{jt} is the marginal cost of production for a firm in country j in time t and a_i is a firm specific productivity measure hence different across firms in the same country. It is further assumed that a_i is random variable with distribution G_a on $[a_i, a_m]$ where $a_m > a_i > 0$ and this distribution function is the same for all countries. The profit maximising price for the monopolistic competition industry structure is:

$$p_{jt}(l) = \frac{\tau_{ijt} c_{jt} a_i}{\alpha} \tag{4}$$

Hence the profit for a firm from country j which sells in country i in time t is:

$$\pi_{ijt} = (1 - \alpha) \left(\frac{\tau_{ijt} c_{jt} a_i}{\alpha p_{it}} \right)^{1-\alpha} Y_{it} - f_{ijt} \tag{5}$$

Where f_{ijt} is a common fixed cost for a firm in country j in exporting to country i in time t . Hence, a firm in country j will export to country i only if $\pi_{ijt} > 0$, specifically, only the firms in country j with $a_i > a_{ijt}$ will export to country i , where a_{ijt} is defined as:

$$a_{ijt} = (1 - \alpha) \left(\frac{\tau_{ijt} c_{jt} a_i}{\alpha p_{it}} \right)^{1-\alpha} Y_{it} = f_{ijt} \tag{6}$$

Since a_i is a random variable, a latent variable W_{ijt} can be defined as

$$W_{ijt} = \frac{(1 - \alpha) \left(\frac{\tau_{ijt} c_{jt} a_i}{\alpha p_{it}} \right)^{1-\alpha} Y_{it}}{f_{ijt}} \tag{7}$$

Only when $W_{ijt} > 1$ will positive exports be observed from country j to i in time t . Taking logarithms on both sides of (7) gives:

$$\ln W_{ijt} = \ln(1 - \alpha) + (1 - \alpha) [\ln(\tau_{ijt}) + \ln(a_i) + \ln(c_{jt}) - \ln(\alpha) - \ln p_{it}] + \ln Y_{it} - \ln(f_{ijt}) \tag{8}$$

$[\ln(1 - \alpha) + (1 - \alpha) \ln(\tau_{ijt}) - (1 - \alpha) \ln(\alpha)]$ captures observable variations in exporter-importer characteristics, $[-(1 - \alpha) \ln p_{it} + \ln Y_{it}]$ captures exporter differences and $[(1 - \alpha) \ln(c_{ijt})]$ captures importer differences. Positive trade from country j to country i at the national level will only be observed when $w_{ijt} > 0$. Equation 8 is parameterised as follows:

$$w_{ijt} = k\gamma + \epsilon_i - \gamma a_{im} + v_{im} \tag{9}$$

Where k_{iM} are the observable variations in importer-exporter characteristics and γ captures the estimated coefficients, ζ_i are the importer differences, γd_{iM} is the entry cost which is a fixed cost paid by Malawi to export cotton to country i and v_{ij} is a composite error term such that $v_{ij} = u_{ij} - c_{ij}$ and c_{ij} is the country-pair time invariant heterogeneity and u_{ij} is a white noise error term. The model is estimated in two stages; in the first stage, a probit model is run to estimate the extent of firms' entry into the export market- the extensive margin. To do this, an indicator variable T_{iM} is defined as $T_{iM} = 1$ if $v_{ij} > 0$ and $T_{iM} = 0$ otherwise and let P_{iM} be the probability that Malawi will export cotton to country i . Then we can derive the following probit equation:

$$P_{iM} = \Phi(k_{iM}\gamma + \zeta_i - \gamma d_{iM} + v_{ij}) \quad (10)$$

Where k_{iM} includes the log of importers' and Malawi's per capita GDP in time t (Y_{it} and Y_{Mt} respectively), the spot exchange rate of the Malawi kwacha to the USA dollar in time t (EX_{Mt}), the production index of cotton in Malawi in time t (PI_t), a dummy variable representing eligibility for AGOA (AG_t) which is equal to 1 if both Malawi and country i are eligible for AGOA, a remoteness variable Rem_{iM} , the distance between Malawi and the trading partners (D_j) and a similarity in continent dummy variable ($Cont_t$) which is equal to 1 if both Malawi and the trading partner are in Africa, a variable for the farm gate price of cotton in Malawi in time t (P_t) and the production index of cotton in Malawi (PI_t).

Income is the most used variable in gravity models. The GDP provides a proxy for the size of the economy (Ghazalian et al., 2009; Huchet-Bourdon and Chepeta, 2011). It represents the income of the exporting and importing countries. The income of the exporting country (Malawi) represents its production capacity and the income of importing country represents the country's purchasing power. Both are expected to be positively related to trade flows (Dascal et al., 2002).

Remoteness of Malawi with respect to any trading partner j was measured by the weighted average distance between Malawi and all trading partners other than j , where the weights are the GDP of the trading partners. It provided a resistance factor and is expected to have a negative sign (Gomez-Herrera, 2010). The exchange rate shows the profitability of trade to exporters. It was expected to have either a positive or negative sign depending on the exchange rate movement (Dascal et al., 2002).

The production index measures the change in the production capacity. It was applied in the study on the basis that firms select themselves into export activities, and whether a firm elects to export to a market depends on its productivity level and the fixed costs of exporting to that particular market (Greenaway et al., 2009). The Laspyres index calculation method was used in the study. The production index was calculated as a ratio of the product of the volume and price to the base year's product of volume and price. It was expected that an increase in production would be positively related to exports.

In the second stage, a generalised least squares model was estimated to determine the intensive margin of the exports. The

positive trade values results of the first stage were used to estimate the unobserved share of firms selecting into the export market is run as:

$$x_{ijt} = \beta_0 + R_i - \gamma d_{iM} + \{\exp[\delta(w_{ijt} + v_{ijt})] - 1\} + \beta_{ijt}v_{ijt} + \epsilon_{ijt} \quad (11)$$

Where R_i are the individual importer effects and ϵ_{ijt} is an error term satisfying $E(\epsilon_{ijt} | T_{iM} = 1) = 0$. The part of the equation in the braces is the estimator for the share of firms that export to i . The probit fitted in the first stage gives the value for the latent variable w_{ijt} and the inverse Mill's ratio v_{ijt} .

Data type and sources

A balanced panel, with the set of 36 countries that have been Malawi's export destinations for cotton from 2001 to 2013 which was composed of 36 trading partners, was used for the estimation of the gravity model. This study was primarily based on secondary data sourced from the Ministry of Agriculture and Food Security, United Nations Conference on Trade and Development (UNCTAD) statistics, FAOSTAT and United Nations Commodity Trade (COMTRADE) statistics. The data collected included: volumes of cotton produced, domestic cotton prices, distance between Malawi's and trading partners' and GDPs and exchange rates of Malawi, cotton export values to particular destinations and destinations. Secondary data was opted for because the study required panel data for a period of 13 years which would not have been possible to collect during the period the study was conducted.

RESULTS AN DISCUSSION

This section presents the results of the gravity model which was applied in the study to find the determinants of the export performance of Malawi's cotton exports. The results of the gravity model estimation are presented in Table 1. The coefficients of the estimated probit model gave the expected change in the likelihood of Malawi exporting cotton to a particular county in a particular year between the years 2001 and 2013. To have more meaningful interpretations, the marginal effects of the probit estimation are reported in Table 1. The model had a Wald Chi-square value of 50.23 which was significant at 1%. This showed a joint significance of the variables in the model in explaining the factors affecting the selection of countries to which Malawi exports cotton.

The variables that were found to significantly affect the probabilities of exporting cotton to a particular destination were Malawi's per capita GDP, eligibility for AGOA, exchange rate, price, similarity in continent and production index. Eligibility for AGOA was used as the exclusion variable in the first level and it was found to significantly affect the probability of Malawi exporting cotton to a particular destination, suggesting that AGOA has opened up markets for Malawi's cotton within the region. It was also found that there was no correlation between AGOA and the residues of the second level

Table 1. Determinants of Malawi's export volumes.

Variable	Probit (ρ_{ijt})	Z-value	GLS (x_{ijt})	Z-value
GDP per capita partner	-0.87(0.7)	-1.25	0.59(0.66)	0.91
GDP per capita Malawi	3.91***(1.17)	3.35	-3.91**(1.86)	-2.1
Remoteness	-0.99(0.70)	-1.35	0.80(0.73)	1.1
Price	-4.17*(2.04)	-2.04	-0.29(2.42)	-0.12
Continent	-0.96*(0.58)	-1.67	-0.28(0.42)	0.68
Production index	2.66*(1.51)	1.76	0.72(1.58)	0.46
Exchange rate	2.16***(0.79)	-2.71	-3.27***(1.25)	2.63
Distance	-0.37(0.46)	-0.81	0.9*(0.48)	1.85
AGOA	0.84*(0.48)	1.76		
Constant	-0.58(6.73)	-0.09	11.37**(4.4)	2.58
Wald χ^2	50.23***		26.12***	
Number of Observations	465		128	

Standard errors in parentheses; asterisks denote: *significant at 10%, **significant at 5%, ***significant at 1%; marginal effects reported for the probit.

estimation with a correlation coefficient of 0.06 which satisfies the exclusion restriction (Behar and Nelson, 2012; Ergul, 2010).

In the second level, a generalised least square random effects model was used to estimate the factors that determine the volume of exports cotton from Malawi to a particular country between the year 2001 to 2013 (Mitze, 2010). A Bruesch Pagan Lagrangian Multiplier test for random effects was used to test the appropriateness of the random effects model. The results had a Chi-square value of 21.38 which was significant at 1% in favour of the random effects model.

The coefficient of Malawi's GDP per capita was expected to have a positive sign which would imply that an increase in income stimulates an increase in production which in turn stimulates increase in exports (Dascal et al., 2002; Pascal et al., 2009). The coefficient was significant and had the expected sign in the selection model. A similar effect was also observed in the marginal effect for the production index which was found to be significant and had the expected sign in the selection model. This implies that the probability of exporting cotton to a particular destination increases with an increase in the per capita GDP and production of cotton. The effect of Malawi's per capita GDP and the cotton production index on cotton exports is evidenced by the increase in the number of trading partners in cotton over the years for instance from 6 countries in 2001 to 18 countries in 2013.

The coefficient of the per capita GDP was however not as expected in second level estimation. It was negative, implying a decrease in the volume of exports per unit increase in the per capita GDP. Fratianni and Hoon-Oh (2008) also found a negative sign for the gross national product per capita in their assessment of the relationship between the size of regional trade agreements and

openness. The effect of the GDP on the export volumes could be attributed to the opposite movements of Malawi's per capita GDP and cotton export volumes. While there has been positive growth in the per capita GDP, there has also been an overall reduction in the growth of cotton exports in the past 20 years due to reduction in the domestic cotton industry and unstable prices which lead to negative adjustment in production. This is also evidenced by Lea and Hanmer (2009) who found that GDP growth does not lead to higher export incomes (hence volumes) due to the significance of exogenous prices on Malawi's exports.

The coefficient of price of cotton was significant in the selection model but it did not have the expected sign. It showed that the probability of Malawi exporting cotton to a particular destination decreased with a unit increase in price. This could be attributed to the influence of location on cotton prices since it costs money to move a bale of cotton, which increases if the bale is being moved from a landlocked country like Malawi to a different continent (International Trade Centre, 2007). Hence, it is more expensive to source cotton from countries like Malawi especially when the prices increase. Notably, the price had no significant effect on the export volumes. This is attributed to Malawi's small share of cotton exports in the world market which makes it a price taker. This may also be a result of the monopolist competition character of world cotton market. This is according to Gillson et al. (2004), who described the world cotton market as having particular spinners who value cotton from particular origins and have evolved blends to incorporate them. As such, small changes in prices will not induce changes in trade flows.

The coefficient of the distance was insignificant in the selection model. It is however significant in the second level and does not have the expected sign. This was also

the case with the coefficient of the similarity of the continent in the selection model. It was significant and negative. This effect of the distance and continent can be explained by the nature of the world cotton industry. The largest consumers of cotton in the world are China, India, Pakistan, Turkey, USA and Brazil which are far from Malawi and outside of Africa (International Trade Centre, 2007). There have been increased proportions of volumes of cotton exports from Malawi to some of these destinations such as China, India and Bangladesh over the study period. Another attributing factor to the effect of the distance could also be the significant expansion of cotton trading companies (merchants) who have increased the number of countries from which they source cotton (Gillson et al., 2004).

The coefficient of the exchange rate was expected to be either positive or negative. It was found to be significant in influencing both the probability and volumes of cotton exports. It was found to increase the probability of exporting cotton to a particular destination. This is in line with the notion that a depreciation of a currency leads to an improvement in the competitive position of the economy, thereby increasing exports destinations. On the other hand, it was found that there was a decrease in the volumes of cotton exported to a particular destination with depreciation in the exchange rate. Klein and Shambaugh (2006) also found a similar effect of an indirectly pegged exchange rate on the volumes.

The effect of the exchange rate on the volumes of cotton exports shows that Malawi's cotton sector has failed to utilise the terms of trade gain, if there have been any gain caused by the currency devaluation which was experienced during the study period (Dossani and Kaya, 2012; Kwalingana et al., 2012). This is attributed to agricultural composition of Malawi's GDP and the impact of external prices on Malawi's exports. The implications for the cotton sub-sector is that although devaluation has made Malawi's cotton exports relatively desirable for particular destinations, it has not trickled down to the supply side to induce an increase in production.

CONCLUSION AND RECOMMENDATIONS

The study analysed the determinants of export performance of Malawi's cotton. The HMR (2008) framework of estimating the gravity model of trade was used to find the determinants of export performance of Malawi's cotton. The model was estimated in two levels. In the first level, a probit model was estimated which was used to model the decision by firms to enter the export market. In the second stage, a generalised least squares model was estimated where positive trade value results of the first stage were used to estimate the unobserved share of firms selecting into the export market. The factors that were found to significantly affect the probability of Malawi to export cotton to a particular

destination were Malawi's GDP per capita, price of cotton, exchange rate, production index, similarity in continent and eligibility for AGOA. The factors that affected export volumes of Malawi's cotton to a particular destination in the study were Malawi's per capita GDP, distance with trading partners and the exchange rate.

It is recommended that there is need to address supply side constraints affecting the cotton industry such as improving productivity and infrastructure which will help to address the effects of the exchange rate on the volumes of exports by enabling the cotton sector to utilise terms of trade gains created by exchange rate movements. In the long-run, it is recommended that a vibrant cotton industry should be developed so that most of the cotton that is produced is processed within the country and exports should largely be composed of textiles and woven cloth. A vibrant cotton industry would help to increase the prices that farmers get since it would reduce the impact of location on cotton prices as well as the impact of exogenous prices on the cotton prices and the national income.

CONFLICTS OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Anderson J (2011). The gravity model. *Ann. Rev. Econ.* 3:133-60.
- Behar A, Nelson B (2012). Trade Flows, Multilateral Resistance and Firm Heterogeneity. International Monetary Fund, Working Paper No. WP/12/297.
- Chatima C (2007). An Analysis of Malawi's Trade Performance under the African Growth and Opportunity Act. Ministry of Industry and Trade, Lilongwe. From URL: http://www.trade.gov.mw/pdf/3%20Chatima%2020Malawi's%20trade%20performance%20under%20AGOA_draft.pdf Last Accessed: [12/0311].
- Coxhead I (2007). A New Resource Curse? Impacts of China's Boom on Comparative Advantage and Resource Dependence in Southeast Asia. *World Dev.* 35(7):1099-1119.
- Dascal D, Mattas K, Tzouvelekas V (2002). An analysis of EU wine trade: A Gravity model approach. *International Adv. Econ. Res.* 8(2):135-174.
- Dossani S, Kaya I (2012). Does Currency Devaluation Induce Trade in Malawi? From URL: http://www.researchgate.net/profile/Salman_Dossani/publication/235922919_Does_currency_devaluation_improve_trade_balance_The_case_of_Malawi/links/0912f51434563a0aee000000.pdf Last accessed: [20/12/2014].
- Ergul E (2010). Firm Heterogeneity and Political Economy of International Trade. Graduate Dissertation and Theses at Illinois. From URL: <http://hdl.handle.net/2142/15533>.
- Fратиanni M, Hoon-Oh C (2008). Expanding RTAs, Trade Flows, and the Multinational Enterprise. Kelley School of Business -Indiana University, Working Paper no 13.
- Ghazalian P, Larue B, Gervais J (2009). Exporting to new destinations and the effects of tariffs: The case of meat commodities. *Agric. Econ.* 40(2009):701-714.
- Gillson I (2005). Trade: How cotton subsidies harm Africa. Overseas development Institute, London. From URL: <http://www.odi.org.uk/resources/download/465.pdf> Last Accessed: [12/0311].

- Gillson I, Poulton C, Balcombe K, Page S (2004). Understanding the Impact of Cotton Subsidies on Developing Countries. MPRA Paper No. 15373.
- Gomez-Herrera E (2010). Comparing alternative methods to estimate Gravity Models of bilateral trade. Available at: <http://econpapers.repec.org/scripts/redir> [Accessed on February 26, 2011].
- Greenaway D, Gullstrand J, Kneller R (2009). Firm Heterogeneity and the Geography of International Trade. AgriFood Economics Centre, Working Paper No. 2009:2.
- Helpman E, Melitz M, Rubinstein Y (2008). Estimating Trade Flows: Trading Partners and Trading Volumes. *Q. J. Econ.* 123(2):441-487.
- Huchet-Bourdon M, Cheptea A (2011). Informal Barriers and Agricultural Trade: Does Monetary Integration Matter? *Agric. Econ.* 42(2011):519-530.
- International Monetary Fund (2007). Malawi Poverty Reduction Strategy Paper- Growth and Development Strategy. International Monetary Fund, Washington D.C.
- International Trade Centre (2007). Cotton Exporters Guide. International Trade Centre, Geneva, TC/P218.E/PMD/MDS/07-XI.
- Kandilov I, Zheng X (2011). The Impact of Entry Costs on Export Market Participation in Agriculture. *Agric. Econ.* 42(2011):531-546.
- Kenamu E, Phiri M (2014). Performance of Cotton Production in Malawi. *Sch. J. Agric. Sci.* 4(3):157-165.
- Klein M, Shambaugh J (2006). Fixed Exchange Rates and Trade. *J. Int. Econ.* 70(2):359-383.
- Kumwenda I, Madola M (2005). The Status of Contract Farming in Malawi. Food, Agriculture and Natural Resources Network. From URL: http://www.fanrpan.org/documents/d00691/Contract_Farming_Report.pdf Last Accessed: [10/09/12].
- Kwalingana S, Simwaka K, Munthali T, Chiumia A (2012). The Short-run and Long-run Trade Balance Response to Exchange Rate Changes in Malawi. *Journal of Development and Agricultural Economics*, Vol. 4(8): 221-232.
- Lea N, Hanmer L (2009). Constraints to Growth in Malawi. The World Bank Policy Research Working Papers, No. 5097.
- Ministry of Agriculture and Food Security (2006). Cotton Production in Malawi. Country report presented at the 65th International Cotton Advisory Committee Plenary Meeting. From URL: <http://www.backupfly.com> Last Accessed: [26/02/11].
- Mitze T (2010). Estimating Gravity Models of International Trade with Correlated Time-Fixed Regressors: To IV or not IV? MPRA Paper No. 23540.
- Mwatuwa H (2009). An Evaluation of Smallholder Cotton Marketing in Malawi: A Case of Salima and Balaka Rural Development Projects, Malawi. Egerton University, unpublished MSc thesis, Kenya.
- Pascal G, Larueb B, Gervais J (2009). Exporting to New Destinations and the Effects of Tariffs: The Case of Meat Commodities. *Agric. Econ.* 40:701-714.
- RATES (Regional Agriculture and Trade Expansion Support) Programme Centre (2003). Cotton-Textile-Apparel Value Chain Report for Malawi. RATES Programs Centre, Nairobi.
- Reserve Bank of Malawi (2012). Financial and Economic Review. 44(1). Reserve Bank of Malawi, Lilongwe. Available at: https://www.rbm.mw/documents/econ_reviews/Financial%20and%20Economic%20Review%20Volume%2044%20Issue%20Number%201%202012.pdf [Accessed on May 13, 2013].
- Sarker R, Jayasinghe S (2007). Regional Trade Agreements and Trade in Agri-food Products: Evidence for the European Union from gravity Modelling Using Disaggregated Data. *Agric. Econ.* 37:93-104.
- Yang C, Woo R (2006). Do Stronger Intellectual Property Rights Induce More Agricultural Trade? A dynamic Panel Data Model Applied to Seed Trade. *Agric. Econ.* 35:91-101.

Full Length Research Paper

Assessing challenges of non-farm livelihood diversification in Boricha Woreda, Sidama zone

Yohannes Yona^{1*} and Tafese Mathewos²

¹School of Environment Gender and Development Studies, Hawassa University, Ethiopia.

²Department of Geography and Environmental Studies, Hawassa University, Hawassa, Ethiopia.

Received 18 October, 2016; Accepted 27 January, 2017

This study was conducted to assess key livelihood strategies and to examine major socio-economic constraints that hinder households from engage in diversified activities, in two Peasant Associations of Boricha Woreda, Southern Ethiopia. From the two Peasant Associations, 110 households were selected through simple random sampling technique. Both primary and secondary data were collected to come up with dependable conclusion. Primary data were collected by conducting survey and participatory rural appraisal tools. The primary data was gathered through structured household questionnaire and further supplemented by key informant interview and focus group discussions. Quantitative data which was collected from primary sources were analyzed using SPSS 20.0 version and reported through descriptive statistics like mean, standard deviation, percentage and frequency distribution. In the study area, rural households engaged in portfolio of livelihood activities though farming activity taken as the major share (87%) followed by trade (68%) and other off-farm activities. However, the participation in diversified livelihoods is constrained by low awareness level of farmers to adopt modern technologies, lack of credit, weak extension services, lack of skill, wrong attitude of the local community, and household average income. Based on the findings, strengthening access of start-up capital to initiate small businesses through cooperatives and credit institutions, providing vocational training to increase households' skill to use locally available resources, improving access of rural infrastructure, strengthen the implementation of functional adult literacy program and increasing awareness level of the community through training were suggested as recommendations.

Key words: Assets, livelihood diversification, migration, non-farm.

INTRODUCTION

Livelihood diversification strategies have become important income generating activities for rural households in major developing countries. Although agriculture has remained the dominant livelihood strategy

for more than 85% of rural labor force in Sub-Saharan countries (World Bank, 2007), its productivity is one of the lowest and even showing a decreasing trend causing a decline in per capita cereal consumption Nandeeswara

*Corresponding author. Email: johnyona99@yahoo.com.

Rao and Bealu (2015). Because of rapidly growing rural populations and declining farm sizes, the rural employment problem needed to be addressed there as well (World Bank, 2008). This clearly shows that farming alone hardly provide a sufficient means of survival in rural Ethiopia due to increasing human population, climatic factors, and lack of money to purchase agricultural inputs. To this end, the important role of non-farm livelihood strategies to ensure livelihood security has been noted by many scholars (Workneh, 2006; Ansoms and McKay, 2010; Soltani et al., 2012, Assan and Beyene, 2013). Additionally, the important role of non-farm and/off-farming livelihood strategies in Ethiopia has been highly magnified due to the occurrence of recurrent drought that affect agriculture based livelihoods and increasing number of landless youths, who are barely absorbed in the rural labor market. Therefore rural livelihoods diversification can be accepted as desirable and a key focus of poverty reduction strategies in developing countries such as Ethiopia (Ellis, 2000; Carswell, 2002; Bezu et al., 2012). Again, the increasing importance of rural livelihood diversification in Ethiopia has drawn the attention of various scholars in recent years to target on positive impact of diversification as a means to expand peoples' choices, increase households' income, enhance their capabilities and assets (Assan and Beyene, 2013,) and reduce risks associated with rain-fed agriculture (Ayele, 2008). The proponents of diversification argue that it will help the rural economy to grow fast by increase investment on farm activities (Holden et al., 2004).

However, livelihood diversification smoothers risks associated with traditional agriculture, all households, and social groups do not have equal opportunities for engagement. Different factors such as experience, family size, educational attainment, level and physical assets of households can affect participation in diversification activities (Khatun and Roy, 2012). Lemi (2005) also reported that intensity of diversification is affected by the size of land holdings, value of livestock owned and level of income from crop production. He also pointed out that demographic factors, such as the age and gender of the household head, dependency ratio and number of female household members are determinants of participation. Supporting this, Degefa (2005), argued that the meaning and reason for livelihoods diversification is different for rich and poor households and for the households headed by women and men. This indicates that livelihood strategies and diversification are dynamic and sensitive to geographic, socio-economic and institutional settings which need area specific investigation (Ellis, 2000). In addition there were few studies on the challenges of rural livelihood diversification in the Woreda. This study therefore, attempted to fill this gap by examining the potential livelihood diversification activities in the Woreda; and the major challenges hindering diversification activities currently underway.

General objective of the study

The general objective of the study was to examine alternative rural livelihood strategies and socio-economic challenges of livelihood diversification in Boricha Woreda. More specifically, the study attempted to:

- i) Assess the major livelihood strategies/options/ practiced by the rural community in Boricha.
- ii) Sort out the major constraints faced by rural households with respect to livelihood diversification.

MATERIALS AND METHODS

Description of the study area

The study area, Boricha Woreda, is found in Sidama zone, Southern Nations, Nationalities and Peoples Region (SNNPR), which is located at 305 km south of Addis Ababa and 35 km south-east of Hawassa; the capital of the region and Sidama zone. The total area of the woreda is about 588.1 km² with the altitude between 1001-2000 masl. The woreda receives mean annual rain fall that ranges from 801 to 1000 mm. The mean annual temperature of the woreda is 17.6-22.5°C. The woreda has a total population of 280,419, out of which 267,872 are rural and 12,548 is urban population (SZFEDD, 2015). It is one of the moisture stress and sometimes food insecure areas of the zone. Farming system of the study area generally depends on rain fed agriculture and mixed farming system which involves both crop production and animal husbandry. Maize, haricot bean and teff are the major crops while cattle and shaot are dominant livestock type. High population density, fragmentation and declining land holding size, deforestation, declining soil fertility, small and unreliable rain fall and resulting food insecurity are major defining characteristics of the place under study (Bechaye, 2011; SZFEDD, 2015). According to the report of Agriculture and natural resource development office (2014), the increasing population reduced the average size of land owned by households to less than one hectare, and this forced 7,750 households of the woreda to seek food aid through Productive Safety Net Program. All these consequences of population pressure have jeopardized the sustainability of the traditional mixed farming systems and have adverse implications for household food security if it is not diversified with other activities (Abebe, 2013; Nigatu et al., 2013).

Research design

The study employed mixed study design with cross-sectional survey strategy which is important to assess the prevalence of practices, attitudes, knowledge and skill related with livelihood strategies of the study population at specific time (Ellis, 1999, 2000). During the study, both qualitative and quantitative approaches have been employed to collect the in-depth data. Qualitative methods are useful for improving the depth of our understanding of the local circumstance that households operate in, while quantitative tool help us to determine the breadth to which observed behavioral practice, resources, or problems are distributed within a population (Ellis, 2000).

Sample size and sampling procedures

Three stage sampling design has been used to come up with more

representative sampling unit and size. In first stage, Boricha Woreda was selected purposively because it is under the catchments of university's Technology Village and its accessibility. In the second stage, two peasant Associations (Dila Arfe and Shelo Elancho) were randomly selected considering the agro-ecological homogeneity of the woreda. Additionally, considering financial and time constraint of the authors (Ellis, 1999), a total of 110 households, which means 55 households from each peasant association, were selected through simple random sampling technique. Hence, the original list of household heads from kebele office for the year 2015 was the sampling frame.

Types and sources of data

This study was conducted by collecting necessary information from the primary and secondary sources. Sampled households, key informants and focus group discussion participants were the main sources for primary data while published and unpublished documents such as books, journals, office records and reports have been the key sources for secondary data.

Methods and tools of data collection

Household survey

The structured household survey has been mainly used to collect quantitative data from the selected sample households to generate information on the general socio-economic conditions. Most of the questions were close-ended and the few are open-ended for the sake of consistency and simplicity to analysis. The survey was handled by Development Agents (D.As) of the respective Kebeles' after taking one day training and orientation to make the questions clear under the close supervision of the researchers. To get additional in-depth data for further triangulation, four groups of focus group discussions were conducted with men and women groups, landless youths. Additionally, development agents, community leaders, relevant heads of woreda offices were interviewed to depict their efforts and degree of coordination in facilitating livelihood diversification. Further more; secondary data has been collected from relevant books, journals, articles, reports and publications of various levels of government bodies.

Data analysis and interpretation

To address the various objectives of the study, both quantitative and qualitative data analysis techniques have been considered. Data were entered in to computer after coding the variables. Then descriptive statistics such as mean, frequencies and percentages were computed by using the statistical packages for social scientists (SPSS/ version 20.0) software program. Then after, results were presented in tables, figures, and interpreted accordingly. Similarly, qualitative data were analyzed by describing (narrating) and interpreting the situation in detail and contextually.

RESULTS AND DISCUSSION

Demographic features of sample households

Age – Sex composition of sample households

Regarding the age of the respondents, more than 60%

were fall under the age ranges from 20 to 40 years followed by 12.7% under 51-60 and 3.6% above 60 years. When it is disaggregated by gender, 73.3% of female headed households fall under ranges between 20 -50 years and the remaining 26.7% is above 50 years (Figure 1). According to the survey, most of the respondents (76.3%) were grouped under productive age while only 3.6% (N=4) fall above 60 years. This implies that most of the respondents can pursue different livelihood activities either in their locality or through cyclical migration.

As indicated in the figure, majority of the respondents (86.4%) are male and the remaining 13.6% (N=15) are female headed households. The survey found that the numbers of female-headed households are very small. This implies that in the community, sometimes, male children are considered as the head of the household when they become divorced or widowed. In female-headed households, all the decisions such as allocating land, labor and other resources that determine the economic status of the given family are held by women. These responsibilities doubled the burden of women in both agricultural as well as non-agricultural activities. This suggests that headship of the households necessarily influences the livelihood strategies of women in Woreda.

Family size of respondents

The mean family size for the sample households was found to be 7 members. This is in line with national average fertility rate of 6 children per woman in the rural parts of Ethiopia in general (Susuman et al., 2014) and Sidama in particular (SFEDD, 2015). The large amount of family size could be an input to assign adequate labor to be engaged in different livelihood activities. This is because households with large family size may have more chance to pursue diversified livelihood activities in on-farm or off-farm activities to pool income from different sources.

According to key informants and focus group discussion participants, in the far past years, having many children was considered as prestige and the community members were encouraged even to have more than one wife to have many children. The community also gives more preferences for male children than females. Though the situation is being improved, there are some occurrences of polygamy and male preferences in rural areas of Boricha Woreda. It was found that large family size has negative impact on farm size, but creates favourable condition for non-farm livelihood diversification as to assign different members in different livelihood activities. Similarly, Tegegn (2001) found that education and family size influences household's diversification away from farming in Southern Ethiopia (Table 1).

There was competition for the farm labor between farm activities and non-farm commitments. However, households with large family size could easily solve this

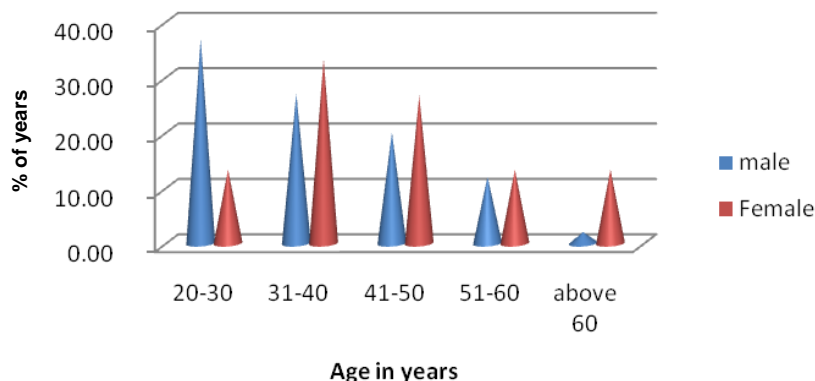


Figure 1. Age - Sex composition of households. Source: Household Survey (March, 2015).

Table 1. Distribution of respondents age and mean family size.

Age of household head (yrs)	Female family size	Male family size	Total family size family
20-30	2	3	5
31-40	3	3	6
41-50	5	4	9
51-60	5	5	10
Above 60	5	5	10
Average family size	3	4	7

Source: Household Survey (March, 2015).

problem by sharing the available labor among different livelihood strategies. Hence, the larger family size, the more non-farm activities the rural farm households likely to have and increased total income. The finding is consistent with that of Tegegn (2001).

Educational background of sample households

About 35.5% of the respondents could not read and write, while 21.8% were enrolled for grades 1-4, whereas, 23.6% completed grades 5-8, and the remaining 17.3% completed 9-12 grades. When the data is disaggregated in to gender wise, 60% of female headed households are illiterate, 26.7% are grouped under 1-4, followed by 6.7%, 8-12 grades respectively (Figure 2). The educational status of sample households was found to be encouraging when compared to other rural parts of the country. According to the Central Statistics Agency (CSA, 2014), 49% of females and 37% of males had never enrolled for school nationally. Similarly, Sidama zone education department reported (2014) that girls' enrolment and achievement was low especially for second cycle education due to early marriage, poverty, etc. The same data indicates, only 31.6% (N=30) males

are illiterate whereas 60% (N=9) females are illiterate. From this, one can easily concludes that as grade level increases, the number of educated female household heads decreases. The survey revealed that, male and female did not have equal access to education and training in the Woreda due to various socio-cultural barriers.

Major livelihood activities or strategies in the study area

Sustainable rural development requires multi-disciplinary approaches to poverty reduction. The agricultural focus is essential, but not sufficient for sustainable rural development due to constraints such as scarcity and degradation of agricultural land, weak extension services, lack of skill and training, low input supply and high price, lack of road network and unreliable rain fall (Figure 3) (World Bank, 2007). In addition to agricultural activities, the rural households should practice non-farm activities to improve their incomes (World Bank, 2008). Non-farm activities are very heterogeneous which include hand crafts, self-employed enterprises as well as wage employment in public or private organizations. In the case

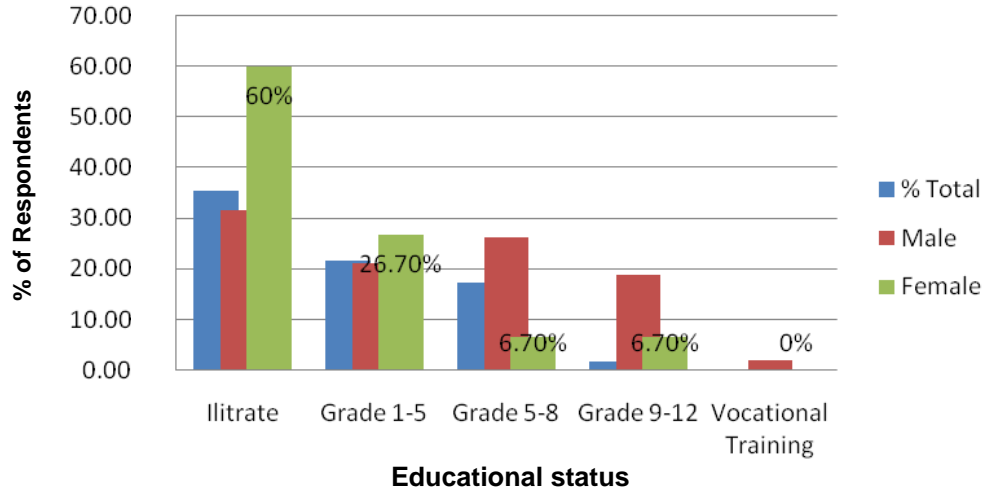


Figure 2. Educational status of household heads. Source: Household Survey (2015).

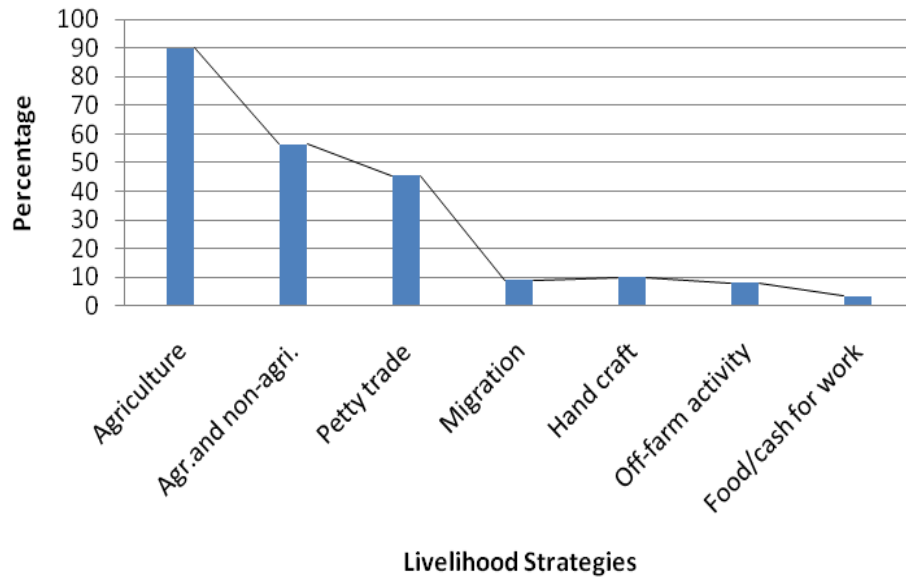


Figure 3. Percentage of households engaged in livelihood diversification. Source: Household Survey (March, 2015).

of Boricha Woreda, the most important non-farm activities are trade (live stocks as well as livestock products and crops followed by trading manufactured commodities), wage/salary in Governmental organizations as well as NGOs, Food stuff production and selling.

Agriculture

Agriculture is major livelihood strategy in the area. But about 56% of sample households are engaged in various non-farm activities as supplementary to agricultural activities. However, out of all households participated in non-farm activities, 45.5% were engaged in marketing

different types of agricultural products and consumer goods. This result coincides with the findings of Tegegn (2001) from Damot-Gale and Kachabira Woredas of Southern Ethiopia. According to him, trade was the most important non-farm livelihood activity in that area. The other portion of households engaged in different hand crafts, renting (hiring) oxen, pack animals and land.

Off-farm activities

Working as a wage labor was also common way of diversifying livelihood activities to improve living standard in the study area. Particularly, this mechanism was used

by the poor households with inadequate asset base or social networks to support them in times of food and income shortage. In times, when no agricultural activities exist /slack season/, working as a daily laborer serve as additional job opportunity. However, in the study area, only 9(8.2%) male headed households were engaged in wage labor especially in agricultural labor. According to FGDs and key informants interview participants, the society has negative attitude towards wage labor and wage laborers. So, the man who interested to engage in wage labor prefer to go to other cash crop growing areas such as Hawassa, rather than engaged in the study area due to fear of ridicule of the society. Therefore, in this area, lack of labor market is the most important constraint for off-farm livelihood diversification. As discussed earlier, the people do not need to be engaged in such type of employment due to fear of negative attitude of the society. In addition to agricultural wage labor, 3.6% of respondents engaged in FFW/CFW program, which is sponsored by Safety Net program. The beneficiaries of this program are mostly poor households who are selected by the community according to its own criterion. The unhealthy and elderly peoples benefited from the program freely without any contribution of labor.

Trade

Trade is the most important livelihood activity in the Woreda following the agricultural activities. As the survey revealed, out of all sample households, more than 50% of the sample household, were engaged in one or two non-agricultural activities to supplement the dominant activity, agriculture. Out of all non-farm economic activities, trade took the lion's share. This is because the majority of sample households are grouped under productive age as to actively participate in trading. The implication is that Shelo Elancho Kebele is located in proximity to the Woreda capital as to facilitate the engagement of significant amount of sample households in trading. The survey revealed that 45.5% of sample households out of all households who engage in non-farm activities were participants in various trading of agricultural products. In a similar manner, Carswell (2002) and Tegegn (2001) found that in Wolayita area, trade is a common diversification activity practiced by different income groups on different scales. The marketing of livestock and livestock products is concerned; Boricha Woreda has good potential for animal population both Cattle and Shoats (Goat). In addition, Yirba, Balela and Darara markets have been serving as a centre of exchange, for merchants who brought livestock to Sidama and Wolayita zones. However, the activity was very tier-some due to lack of transportation and lack of improved marketing system. They use pack animals (especially donkey-pulled carts) to transport small quantities from one market to the other. Selling of home-made food and drinks is the other source of income for a number of female-headed

households in the area.

Hand crafts

These categories of economic activities are the least developed and not recognized by the community understudy. As Figure 2, demonstrates that only 11 households (10%) were engaged in hand craft activities. According to the key informants and FGDs participants, major constraints of the sector are lack of demand by the community, lack of skill training to produce quality products and lack of start-up capital. On the other hand, the attitude of the society towards these professionals is not as such supportive. They consider them as minorities and caste while using all the products produced by the professionals. Thus, these constraints should be solved in order to secure livelihood of these people which in turn expands cottage industries in the rural area.

In addition to the finding of the household survey FGDs reports revealed that; lack of transportation, lack of time, lack of storage facilities and costly inputs were serious problems for non-farm diversification in the kebeles. This situation shade light that the activities need promotion to raise market demand as well as to build the capacity of the practitioners through provision of credit, inputs and cooperatives, to learn each other/pool knowledge and skills.

Migration

Migration has been identified as one of the coping mechanisms and diversification way by different scholars (Ellis, 2000). Regarding the situation of Boricha Woreda, only 9.1% (N=10) was involved in migration. The place of destination is concerned; and mostly youngsters migrate for coffee harvesting to Dale and Shebedino districts during off-season. In addition, some groups of youngsters go to Hawassa and Leku during Kiremt season. As the key informants report and the researchers' observation as well, the community under study was not as such mobile rather it was highly tied with kinship and family bonds. Remittance was found to be insignificant for the sample households in the study area. Out of all sample households only 7 household heads were reported as they are beneficiaries of remittance. This implies that migration and remittance covers the lowest portion of the income portfolio in the study area.

Constraints of livelihoods diversification in Boricha

Although rural non-farm sectors provide various significances for rural households, the opportunity is not equal for all rural households. Concerning the entry barriers to non-farm activities in Boricha Woreda, the

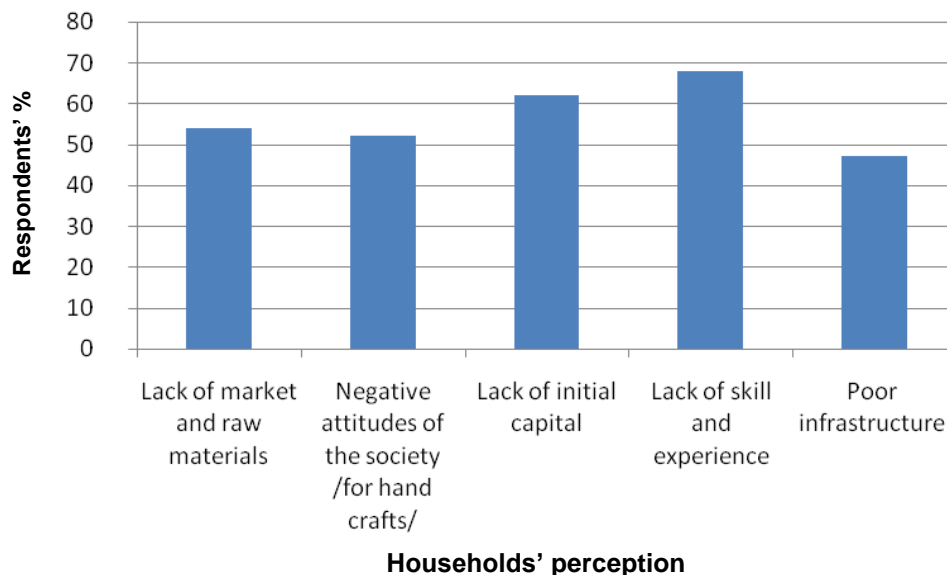


Figure 4. Households' perception on constraints of non-farm diversification. Source: Household Survey (March 2015).

Table 2. Access to Woreda market.

Do you ever benefited from Woreda capital market?	Number	%
Yes	35	31.8
No	76	68.2
Total	110	100

Source: Household survey (2015).

survey reported the various evidences. In this respect, lack of skill and experience (68%), lack of initial capital (62%), lack of market and raw materials (54%), negative attitude of the society (52%) and poor infrastructure (47%) respectively were reported as major challenges for non-farm diversification in the study area (Figure 4). In line with this, Bedemo et al. (2013) also reported access to credit and farm size as major challenges off farm livelihood diversification decision in western Ethiopia.

Lack of transportation as challenge for livelihood diversification

The economic importance of roads and access to market play a major role in motivating farmers to improve their productivity and to pursue different livelihood strategies. Majority of the Kebeles in the Woreda are not connected with the Woreda center as well as with the zonal capital. Out of the sample households, only 31.8% (N=35) are beneficiaries of the market from Woreda capital whereas, 68.2% (N=76) do not get benefits from the market of the

Woreda center because of long distance (more than 2 km) and lack of adequate means of transportation (Table 2).

Furthermore, the respondents also asked the major constraints that hinder to get benefits the marketing service of the Woreda capital. Out of total sample households, 60.9% (N=67) replied that lack of regular transportation and 30.9% (N=34) responded long distance from the town by taking two kilometers as a relative reference. However, the remaining 8.2% (N=9) reported as the road is not suitable for the journey to Woreda capital market. This implies that, lack of transportation is the determining factor for livelihood diversification in the Woreda (Table 3).

In a net-shell, lack of physical capital has been played negative role in the livelihood of the society in general and pursuing diverse activities in particular. So, expansion of rural infrastructure such as road, rural electrification and wireless telecommunication services would be strengthened to achieve the goal of household livelihood security as well as rural development.

The other and more promising prospect for diversification of livelihood for the population of the Woreda is

Table 3. Constraints of visiting Woreda capital by the sample households.

What is the major bottleneck for visiting Woreda market	Frequency	Percent
Lack of regular transportation	67	60.9
Long distance	34	30.9
The road is not suitable	9	8.2
Total	110	100

Source: Household survey (March, 2015).

Table 4. Distribution of households who benefited from FTC.

Do you have been benefited any training from FTC?	Number	%
Yes	9	8.2
No	101	91.8
Total	110	100

Source: Household Survey (March, 2015).

the upgrading of the Morocho-Dimitu road in to Asphalt level. This is because about 30% of the kebeles are crossed by this road and a project is on the way to start their actual work.

Inadequate skill / training

The importance of literate, skilled and healthy labor force with positive attitude and behavior in making farm and non-farm activities is now widely recognized. Although the survey revealed 35.5% of the sample household heads are illiterate, lack of vocational training found to be constraint of diversification. According to the BWARDO, lack of vocational skill training is a serious obstacle to the expansion of income source diversification in the Woreda. The key informants' interview further confirmed that illiterate farmers are mostly reluctant for the application of new technologies than the literate ones. This result is consistent with the finding of Tegegn (2001) which confirmed that non farm skill training significantly influences income diversification strategies. Households with low educational attainment give more attention for traditional beliefs and has wrong attitude towards handicrafts such as metalwork, wood work, weaving, pottery and so on. With regard to vocational skills training facilities, out of the sample household heads, only two respondents have vocational training. Although the government's objective was to transform rural economy by disseminating knowledge through training, as to increase productivity, and to make them competitive at market, the survey revealed that only 9(8.2%) household heads were benefited from the training. Some key informants also reported that there are serious

coordination problems from all levels of government to make the objectives of FTCs operational (Table 4).

From this, one can understand that lack of knowledge and vocational skill hinders the rural farm family from diversifying their income sources. The physical availability of Farmers' Training Canters (FTCs) does not provide any change in the Woreda understudy. Most of the FTCs are poorly designed, poorly constructed; and stand alone without door, window and allocated with in adequate plot of land for experimentation. This implies that any effort of rural development in general and capacity building should be coordinated and demand-driven.

In adequate access to financial capital

Most of the existing formal financial intermediaries in the study area are limited to urban centres. The bulk of rural people rely on the informal financial sectors (that is, iqqub, Iddir, private money lenders, and friends and relatives) for their credit requirements. The survey indicated that more than 50% sample households borrow money from informal institutions such as Iddir, relatives, and friends. The others have been benefited from traditional reciprocal money saving mechanisms called Equb. Only 22(20%) are borrowed money from formal financial institutions. The mean average money borrowed by the sample households' is 1273 Ethiopian Birr. This shows that majority of rural households in the study Woreda are not beneficiaries of formal microfinance institutions which are believed to solve the liquidity problems of rural population by many scholars. This indicates the urgency of intervention which solves problems as to improve the

access of financial capital and saving culture of the community under study.

Here again, the survey result is supported by the findings of the in-depth interviews. In case of identifying the major requirements to expand non-farm livelihood activities, according to the interviewees, the following results were reported. The key informants emphasized on the access to skill training including business management, access to initial capital including saving, access to raw materials (especially for hand craft sector), access to infrastructure (road, electricity, telecommunication which is highly capitalized from Dila Arfe). Almost more than half of the interviewees reported that all the above assets should be fulfilled to expand non-farm activities. The data revealed that more respondents had no access to credit and indicated different reason for not approaching formal lending institutions for loan. Approximately, 37% of the respondents reported that they do not know where they go to get credit, 29% had no collateral, 22% feared loans, and 3% said do not have skill to engaged in trade. In the same manner, Khatun and Roy (2012) found that poor asset base, lack of credit facilities, lack of awareness and training facility, lack of rural infrastructure, lack of opportunity in non-farm sector are major challenges for non-farm diversification. This implies that both accessibility and affordability problems of financial capital would be solved through supply side as well as demand side interventions to expand households' livelihood choices.

Conclusions

- 1) In the study area rural, farming activity took its major share although some of the households engaged in portfolio of livelihood activities such as trade, hand crafts, animal fattening, wage employment in cash for work/safety net programs/.
- 2) The engagement in to other activities is constrained by various socio-economic and institutional factors such as lack of job-opportunity, negative attitude of the community, lack of initial capital, lack of skill training, lack of market, lack of infrastructure (telecommunication, road, and electric power), lack of raw materials, low institutional capacity and lack of coordination of the BWARDO.
- 3) The finding indicates that the major source of finance for non-farm investment comes from own saving and loans from relatives, friends and money-lenders. Lack of flexible and affordable credit services and high interest rate are also the major problems of diversification in the woreda.
- 4) In general, lack of skill and training, lack of credit, inadequate infrastructure, low institutional capacity and lack of coordination among implementing bodies, wrong perception of the community towards hand crafts and limited entrepreneurial skill are the major constraints of rural non-farm livelihood diversification in the study area.

RECOMMENDATIONS

- 1) Successful diversification of rural livelihoods requires investment in human capital as to facilitate adoption of technologies that accompany investment and technological change in rural areas. Therefore, the issue of developing skill of rural community through Farmers' Training Centers by using Development Agents should be strengthened to expand the option of rural household's livelihoods.
- 2) Regional as well as local government bodies should play critical role in connecting rural communities with all weather roads in order to facilitate rural-urban linkages and its economic implications by constructing and maintaining feeder roads. The current trend of rural electrification, expansion of telecommunication services in rural kebeles as well as the expansion of road networks by the Federal Government through Universal Access Program/ URAP/ should be strengthened.
- 3) Any developmental intervention should consider the gendered differential access to key livelihood assets. So, first of all these socio-cultural barriers to access and ownership of livelihood assets for women should be considered and solved in order to expand the economic capacity of women through diversification. Therefore, gender considerations are needed to be emphasized in promoting rural employment opportunities.
- 4) Access to credit enables rural households to expand their livelihood options. Therefore, new strategy should be devised to strengthen and expand rural financial institutions that ensure access to credit for rural households as to engage in diversified livelihood activities. Furthermore, measures are needed to be taken to build the financial and managerial capacities of informal financial institutions, group-lending to raise credit, saving and establish insurance schemes. This can be done specially through facilitating condition for interested parties or establishment of credit providing institutions in the study area. In general, policy makers should consider diversified livelihood strategies that encourage various income generating activities, increasing access to credit and creating awareness and improving saving culture of the community which are vital to improve their livelihood.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Abebe T (2013). Determinants of crop diversity and composition in Enset-coffee agro forestry home gardens of Southern Ethiopia. *J. Agric. Rural Dev. Trop. Subtrop.* 114(1):29-38.
- Ansoms A, McKay A (2010). A quantitative analysis of poverty and livelihood profiles: The case of rural Rwanda. *Food Policy* 35(6):584-598.
- Assan JK, Beyene FR (2013). Livelihood Impacts of Environmental Conservation Programmes in the Amhara Region of Ethiopia. *J.*

- Sustain. Dev. 6(10):87-105.
- Ayele T (2008). Livelihood Adaptation, Risks and Vulnerability in Rural Wolaita, Ethiopia, PhD Thesis Environment and Development Studies, Department of International Environment and Development Studies, Norwegian University of Life Sciences, UMB, Norway
- Bechaye T (2011). Rural Household Food Security Situation Analysis: The Case of Boricha *Woreda* Sidama Zone. Msc Thesis. Addis Ababa University, Addis Ababa, Ethiopia 109p.
- Bedemo A, Getnet K, Kassa B, Chaurasia SPR (2013). Off-farm labor
- Bezu S, Barrett CB, Holden ST (2012). Does the Nonfarm Economy Offer Pathways for Upward Mobility? Evidence from a Panel Data Study in Ethiopia. *World Dev.* 40(8):1634-1646.
- Carswell G (2002). 'Livelihood diversification: increasing in importance or increasingly recognized? Evidence from Southern Ethiopia.' *J. Int. Dev.* 14:789-804.
- CSA (2014). Population Projection of Ethiopia for All Regions at Woreda Level from 2014 – 2017. Addis Ababa. Ethiopia.
- Degefa T (2005). Rural Livelihoods, Poverty and Food Security in Ethiopia: A case Study at Erensa and Garbi Communities in Oromia Zone, Amhara National Regional State, Norwegian University of Science and Technology, Doctoral Thesis,
- Ellis F (1999). Rural Livelihood Diversity in Developing Countries. Natural Resource Perspective Number 40. London: ODI.
- Ellis F (2000). Rural Livelihoods and Diversity in Developing Countries, New York, Oxford University.
- Holden S, Shiferaw B, Pender J (2004). Non-Farm Income, Household Welfare, and Sustainable Land Management in a Less-Favoured Area in the Ethiopian Highlands. *Food Policy* 29(4):369-392.
- Khatun D, Roy BC (2012). Rural livelihood diversification in West Bengal: determinants and constraints. *Agric. Econ. Res. Rev.* 25(1):115-124.
- Lemi A (2005). The Dynamics of Livelihood Diversification in Ethiopia Revisited: Evidence from Panel Data, Department of Economics University of Massachusetts, Boston.
- Nandeewara Rao P, Bealu T (2015). Analyzing Productivity In Maize Production: The Case of Boricha Woreda In Sidama Zone, Southern Ethiopia. *Int. J. Recent Sci. Res.* 6(10):6984-6989.
- Nigatu R, Eden M, Ansha Y (2013). Situational analysis of indigenous social institutions and their role in rural livelihoods: The case of selected food insecure lowland areas of Southern Ethiopia, DCG Report No. 73 October 2013, Addis Ababa Ethiopia.
- Soltani A, Angelsen A, Eid T, Naieni MSN, Shamekhi T (2012). Poverty, sustainability, and household livelihood strategies in Zagros, Iran. *Ecol. Econ.* 79(0):60-70.
- supply decision of adults in rural Ethiopia: Double hurdle approach. *J. Agric. Econ. Dev.* 2(4):154-165.
- Susuman S, Bado A, Lailulo YA (2014). Promoting family planning use after childbirth and desire to limit childbearing in Ethiopia. *Reprod. Health* 11:53.
- SZFEDD (2015). Sidama zone finance and economic development department Socio-economic Data, Hawassa. Report, unpublished
- Tegegn GE (2001). Non-Farm Activities and Production Decisions of Farmers: The Cases of Damotgale and Kachabira Woredas in SNPR of Ethiopia. Social Science Research Report Series- No. 15. OSSREA Addis Ababa.
- Workneh N (2006). Determinants of Small-scale farm Household Food Security: Evidence from South Wollo, Ethiopia. Addis Ababa University, Ethiopia. *Ethiop. J. Dev. Res.* 28:1.
- World Bank (2007). Capturing the Demographic Bonus in Ethiopia: Gender, Development, and Demographic Actions. Poverty Reduction and Economic Management unit Africa Region; Report No 36434 ET.
- World Bank (2008). Agriculture For Development: World Development Report. Washington DC.

The background of the entire page is a photograph of several Euro banknotes and coins scattered on a patch of green grass. The banknotes are mostly 50 Euro notes, and there are several 1 Euro coins. The text is overlaid on this image.

Journal of Development and Agricultural Economics

Related Journals Published by Academic Journals

- *Journal of Plant Breeding and Crop Science*
- *African Journal of Agricultural Research*
- *Journal of Horticulture and Forestry*
- *International Journal of Livestock Production*
- *International Journal of Fisheries and Aquaculture*
- *Journal of Cereals and Oilseeds*
- *Journal of Soil Science and Environmental Management*
- *Journal of Stored Products and Postharvest Research*

academicJournals