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FOREWORD

The Ethiopian Economics Association (EEA) and its Bahir Dar Chapter are happy to issue the proceeding of the Second Annual Conference on the Amhara Regional State Economic Development which was organized on the 14th August, 2010 at Amhara Regional State Bureau of Finance and Economic Development Conference Hall. EEA organized this important conference as one of its objectives of broadening its activities and coverage at regional level so as to contribute to the economic advancement of regional state through dissemination of economic research findings; promotion of dialogue on socio-economic issues; promotion of education in economics in higher learning institutions; enhancing national, continental and global networks of professionals and institutions; and advancement of the professional interests of its members.

In quest of its mission, EEA has been actively engaged in economic research, training, organization of International and National conferences and round table discussions on the Ethiopian economy and the dissemination of the results of these activities through its professional journals and various publications. It has also been engaged in providing professional opinion and reflections on many issues affecting the development of this country. As a result of these and other efforts of the Association, EEA has established itself as a truly independent source of socio-economic policy options and data base in Ethiopia for the Ethiopian Government, the Ethiopian people and the International Community at large.

The fact that EEA has organized the Second Annual Regional Conference at Bahir Dar with active involvement of the staffs of Economics Department of Bahir Dar University who run EEA Bahir Dar Chapter that has attracted so many and diverse participants and attendants is another evidence that EEA is vivacious. The Second Annual conference presentations and discussions thereof covered divers themes. These included: Decentralization and Intergovernmental Transfer; Social Protection; Land Use Practices; Impact of Rural Land Certification; Health interventions; Private Investment; and the role of civil society organization etc.

All papers which were presented at the Second Annual Conference were reviewed by external reviewers and Comments and suggestions including editorial comments were communicated to authors for improvement. Finally, those papers which

passed all the review and editorial process published in the Proceeding of the Second Annual Conference on the Amhara Regional State Economic Development.

I would like to take this opportunity to express my heartfelt gratitude, on my own behalf and on behalf of the Ethiopian Economic Association, to the many people and organizations that made the conference a resounding success. First and foremost, I thank the authors of the papers and the audience whose active participations made the second annual conference meaningful and dynamic. The Amhara Regional State Bureau of Finance and Economic Development deserve huge thanks for granting us the free use of its conference hall. The many professionals who dedicated their time to the conference and served as chairpersons deserve due thanks for their special contributions.

The staffs of the Economics Department of the Bahir Dar University which runs the EEA Bahir Dar Chapter and EEA deserve a special recognition for their enthusiasm and perseverance in managing the conference from inception to completion.

I would like to seize this moment to express our gratitude to the Consortium of Donors who have funded the conference and all other activities of EEA/EEPRI and maintained continued interest in our Association. These are: Friedrich Ebert Stiftung of Germany (FES), Embassies of UK (DFID), Ireland (DCI), Sweden (SIDA), the Netherlands, Norwegian Church Aid, the African Capacity Building Foundation (ACBF) and International Development Research Centre (IDRC) of Canada.

Finally, I would like to extend my sincere gratitude to H.E. Ato Degu Andargachew, V/President of the Amhara Regional State, for his opening remarks and continued interest in EEA's activities. I would like also to thank other officials of the regions and Bahir Dar University for their encouragement for the successful conclusion of the conference and for their continued support for the activities of EEA Bahir Dar Chapter.

Alemayehu Seyoum Taffesse (Phil. D)
President of the Ethiopian Economics Association

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SOCIAL PROTECTION IN AMHARA REGIONAL STATE: CURRENT SITUATION AND PROSPECTS FOR THE FUTURE

Amdissa Teshome[1] and Tafesse Kassa[2]

Abstract

Social Protection is an important tool for poverty reduction and promoting development. It ensures that the most vulnerable in society get access to social services and provided with the necessary income and material support.

Ethiopia has created fertile ground for social protection for its citizens. The right to social protection is enshrined in the Constitution of the FDRE. The Government has signed up to a number of UN Conventions and the AU Social Policy Framework that requires member countries to put in place a favourable policy environment for social protection. The new Growth and Transformation Plan (GTP) recognises the need for social protection in order to ensure that all citizens benefit from growth. In addition, there are numerous traditional support mechanisms that care and support for the most vulnerable.

Against this background, the paper examines current social protection provisions (both formal and traditional support mechanisms) in Amhara region; discusses some key issues relevant to social protection policy and strategy formulation. These issues include affordability, dependency and the role of traditional support systems. A number of recommendations are put forward.

First, a new concept, *social protection lens*, is proposed through which all development programmes and projects are tested for mainstreaming social protection. Second, the traditional support systems exist but are weakening due to various economic and social shocks. Therefore, it is recommended that the formal

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social protection system makes use of the vast network of traditional systems in order to enhance outreach.

Third, Ethiopia has about 30,000 health extension works and nearly 60,000 development agents to advance the health and agriculture agenda, respectively, but it has no agents to advance the social protection agenda. In the absence of these grassroots agents, it is impossible to monitor effective implementation of social protection programmes. Therefore, it is recommended that the regional government begins the process of training and deploying *social workers* or *social protection officers* that can work at grassroots level and fill this gap.

Fourth, *awareness* on social protection at all levels is key to successful implementation of policies, strategies and programmes. More recently, the media have started covering the situation of children, elders and persons with disabilities. This must be encouraged and scaled up. However, it should be handled professionally. Journalists should combine subject matter with effective communication.

Finally, *citizens' engagement* - social protection is both personal and professional issue. It affects present and future generations. Therefore, Federal and Regional Governments should engage citizen's to make constructive contribution to the social protection policy process. The bottom up process that MoLSA has started is a good practice to build on.

Key words: social protection, typology, safety nets, traditional support mechanisms, social protection lens.

Acronyms

ANRS	Amhara National Regional State
AU	Africa Union
BoLSA	Bureaus of Labour and Social Affairs
CSA	Central Statistical Agency
DFID	Department for International Development
FDRE	Federal Democratic Republic of Ethiopia
GTP	Growth and Transformation Plan
IGAD	Intergovernmental Authority on Development
ILO	International Labour Organisation
JeCCDO	Jerusalem Child and Community Development Organisation
MoARD	Ministry of Agriculture and Rural Development
MoLSA	Ministry of Labour and Social Affairs
PSNP	Productive Safety Net Programme
SSA	Social Security Agency

1. Introduction and methodology

This paper is a sequel to the paper presented at the first regional conference on Amhara economic development in August 2009. The first paper (Teshome, 2010) examined the potential of the Productive Safety Net Programme (PSNP) to lay a foundation for long term social protection. In this paper we take a step further and discuss existing social protection provisions both formal and non-formal, raise some critical issues affecting the design of social protection policy and strategy and look into the future prospect of social protection in Amhara regions.

The paper draws on the authors' previous work that involved key informant interviews with NGO managers working on social protection; Heads of Bureau of labour and Social Affairs; managers of traditional associations; review of various social protection interventions in Amhara and other regions; and reports of a series of regional consultations on social protection (August-December 2010) organised by the National Social Protection Platform and financed by the Intergovernmental Authority on Development (IGAD).[3]

In addition to these consultations, an inventory sheet was developed and sent to all regions through regional Bureaus of Labour and Social Affairs (BoLSA), UNICEF, WFP and the authors' own networks. The sheets were completed by seven BoLSA offices, including Amhara, which generated a total of 474 interventions (including 356 from Amhara). The data generated is neither complete nor statistically representative. The interventions varied considerably in terms objectives, cost, target audience and geographic coverage. Therefore, they are not weighted in any systematic way. Despite these limitations, the data are believed to give indicative directions on the development of social protection interventions in Ethiopia in general and Amhara region in particular.

[3] Adama, Hawassa and Bahir Dar were used as centres to which the neighbouring regions were invited. Therefore, key sectors (education, health, food security) and associations of persons with disabilities from all the nine regional states and the two City Administrations participated in these consultations. The authors would like to take this opportunity to thank these participant and other key informants for sharing their views.

The paper is divided into 5 sections. Section 1 provides definition and principles of social protection. Section 2 defines vulnerable groups that are eligible for different types of social protection. Section 3 is an overview of formal and non-formal social protection in Amhara Regional State. It also presents findings of an inventory of social protection intervention in the region. Section 4 identifies and discusses some critical issues that can influence the design of social protection policy and strategy at national and regional levels. The last section concludes and puts forward some recommendations.

2. Social protection[4]: definitions, principles and typology

2.1 *Definitions*

There are a multitude of concepts and phrases widely used (often interchangeably) in the academic as well as policy circles. These include, but not limited to, social security, social welfare, social safety nets, unemployment benefits, and pension schemes. However, social protection is emerging as an umbrella term because it captures, better than any single one of these instruments, the holistic protection citizens require.

Since social protection has moved up in the development agenda (Elis, et. al. 2009), there has been considerable interest in the concept as expressed by the numerous definitions in the academic and policy literature. Governments, donors, humanitarian agencies, regional organisations and individuals have provided definitions. Three definitions are provided as a reference for discussion.

> Social welfare refers to all the activities being undertaken by community with a view to facilitating the economic and social conditions that are conducive to a healthy life and a sustainable development as well as activities designed to meet the common needs" (MoLSA, 1996:51).

[4] There are a multitude of concepts and phrases widely used (often interchangeably) in the academic as well as policy literature. These include, but not limited to, social security, social welfare, social safety nets, unemployment benefits, social insurance, and pension schemes. However, social protection has emerged as an umbrella term for the simple reason that not a single one of these instruments can provide the holistic protection that citizens require.

> Social protection is "a set of responses by the state and society to protect citizens from risks, vulnerabilities and deprivations as well as strategies and programs aimed at ensuring a minimum standard of livelihood for all people in a given country, which entails measures to secure education and health care, social welfare, livelihoods, access to stable income as well as employment" (AU, 2006).
>
> All social support related interventions (schemes, projects and/programmes) whose focus is mainly to address the welfare of the very poor households (marginalized and most vulnerable) that are providing support (in the form of cash or in kind) so as to help the beneficiaries spend the received recourse on basic consumption goods, education and healthcare for family members, can be considered as social protection - ***Maheberawi Digaf*** or ***Maheberawi Tibeqa*** (key informant's definition, Amhara).

Teshome (2011) reviewed a number of such definitions and found that there are differences as well as commonalities between the definitions. Some differences are fundamental others are nominal. For example, the AU definition given above mentions the State as provider of social protection whereas the MoLSA definition makes no mention of the State. Other features include mentioning interventions and instruments of social protection; identifying target audience; underlining the purpose of social protection. For example, in terms of identifying target audience, the ILO definition is the most comprehensive. It states that social protection is for citizens that have lost income as a result of sickness, maternity, unemployment, invalidity, old age and death. Devereux and Sabates-Wheeler (2004) identify the poor, vulnerable and marginalised groups as targets for social protection.

Social protection schemes are designed to serve four broad purposes, namely, protective, preventive, promotive and transformative (Devereux and Sebates-Wheeler, 2004). The definitions also give some indication of the purpose of social protection. For example,

- facilitating the economic and social conditions for a healthy life (MoLSA, 2006)
- ensuring a minimum standard of livelihood for all people (Africa Union, 2005)

- assist the poor to manage/confront risk (World Bank; UNDP; UNICEF; Devereux and Sabates-Wheeler, 2004)
- protect consumption (DFID, 2005, 2006)
- alleviate extreme poverty (Pearson, et. al. 2010)
- protect citizens against loss of earnings (ILO)
- enhance social status and rights and reduce economic and social vulnerability (Devereux and Sabates-Wheeler, 2004)

From this comparison, it can be seen that definitions can really influence the design of social protection policies, strategies and programmes. On the other hand, lack of conceptual clarity often leads to confusion at grassroots level and hamper or slow down implementation. Section 3.1.2 below presents empirical analysis of trends in social protection that indicates target audience and purposes.

2.2 Principles

Principles by which social protection interventions are governed vary between formal and informal interventions and these are treated in the respective sections. However, there also some generic principles that could apply to both modes. Based on a review of 15 cases studies from Southern Africa, Ellis, et. al (2009:124) draw up what they call "Good Practice Principles" that social protection interventions should aim towards. For example, social protection programmes should:

- protect the most vulnerable but not to the extent of enfeebling their capabilities to engage in productive livelihoods, nor relegating them to 'victim' status;
- empower individuals and communities where it is feasible to do so;
- strengthen rather than weaken community level cohesion and institutions;
- target intended beneficiaries successfully, and avoid as far as possible exclusion and inclusion errors;
- ensure cost efficiency in delivery, and cost effectiveness in achieving sustainable long term outcomes;
- support rather than undermine local markets;
- ensure predictability and continuity in project or programme funding and coverage;
- establish rights to certain types of social transfer that are inviolable in law;

- monitor outcomes, not just activities and outputs, so that proper evaluations can be conducted regarding sustained schemes impacts on the wellbeing and livelihoods of recipients.

To these one may add:

- encourage graduation from the programme not dependence on it for life;
- ensure sustainability of the programme except for certain temporary interventions motivated by economic, social and political crises;
- design appropriate institutional arrangements; and
- adopt integrated and synergetic approach.

The case studies presented later, meet one or more of these principles. For example, the PSNP protects the most vulnerable and also has put in place a graduation mechanism so as not to create dependency. By adopting "cash first" principle, the programme also supports rather than undermine local markets.

2.3 A typology for social protection

A typology of formal social protection may consist of social services (education and health); social insurance; social legislation; and social assistance. The latter may further be divided into basic health services, social transfers and universal education (Pearson, et. al. 2010). In Figure 1, this basic typology is expanded to include the informal social protection with four components - burial societies, saving and credit, asset transfers and human capital development. In Section 3, the components of this typology are examined in detail with practical cases.

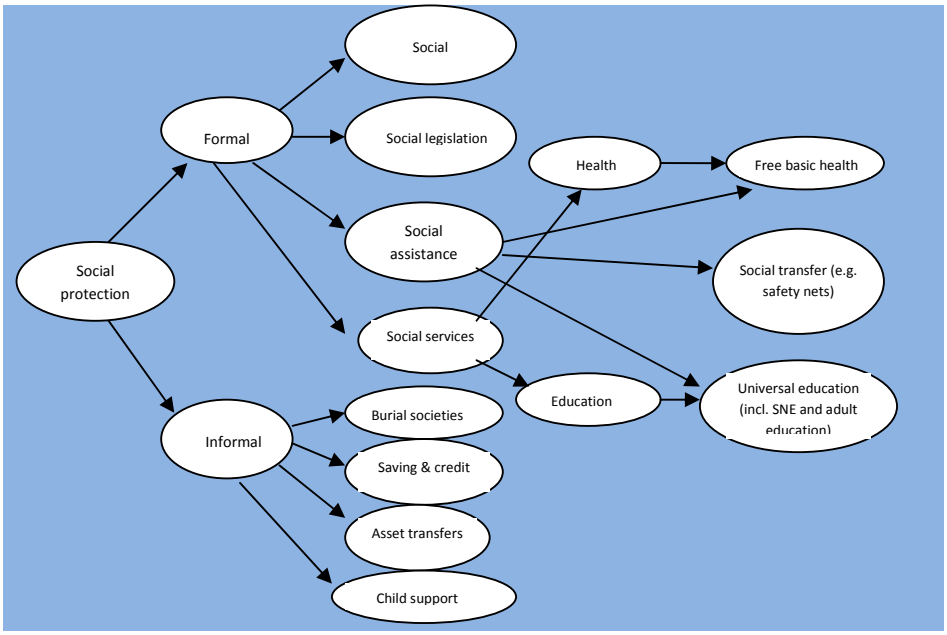
3. Potential vulnerable groups in Amhara

Vulnerable groups are individuals or communities that are exposed to certain shocks and who are likely to face a risk of disaster or reduced income or loss of asset. A review of policy documents, legal documents and other literature generated the following list of vulnerable groups:

- Street children/homeless;
- Beggars
- Orphan children
- Outcasts/minority groups/the socially excluded ;

- Persons with physical and mental disabilities;
- Poor pastoralists;
- Internally Displaced Persons/refugees;
- Urban poor;
- Persons living with HIV/AIDS and other chronic illnesses;
- People working in the informal sector including the self employed;
- Elders;
- Landless rural residents and re-settlers;
- Chronic and transitory food insecure
- Labour migrants;
- Alcoholic and drug addicted persons.
- Unemployed/underemployed youth
- Female headed households

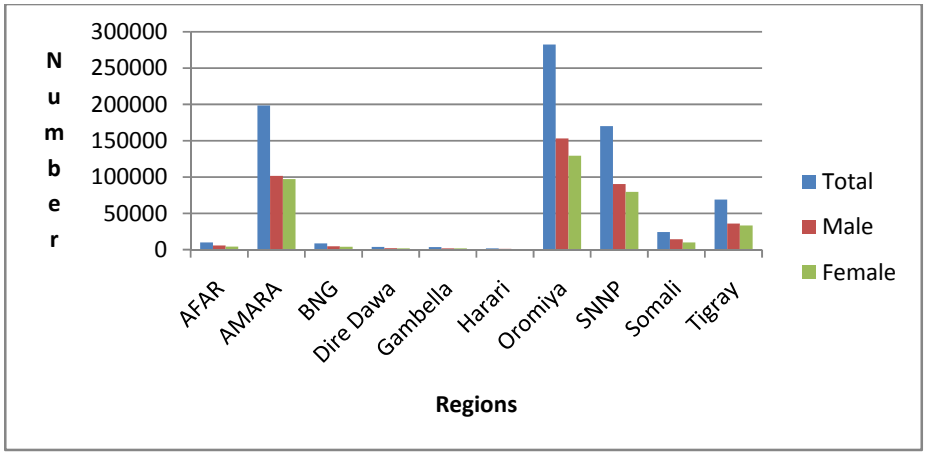
Figure 1: **Typology of social protection**



Source: An expanded version of Pearson, et. al. (2010)

How many are these vulnerable people? It is not easy to obtain the exact number and this has serious implication for social protection intervention. If we don't know how many they are, how can we protect them? In the previous paper (Teshome, 2010), estimations were made using national and global averages.[5] In this paper, the official statistics (CSA, 2007) for Amhara is used to provide figures for two vulnerable groups – persons with disabilities by age and sex and orphans.[6] Accordingly, Figure 2 shows that there are about 200,000 persons with disabilities in Amhara almost equally divided between men and women. In absolute terms, Amhara has the second largest persons with disability, which is to be expected given the size of the population.

Figure 2: Number of persons with disabilities by sex and region



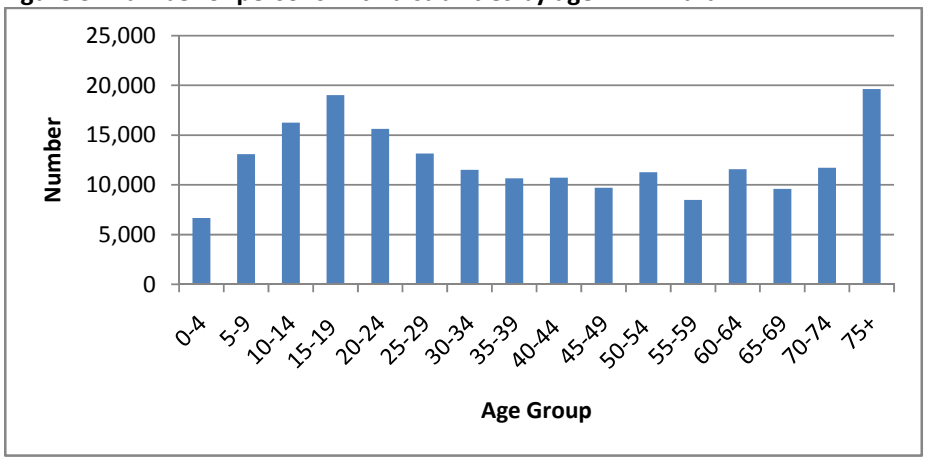
Source: Based on CSA (2007)

[5] It was estimated that 44.8% are children below 18 years; 10% persons with disability; and 3-4% elders. This generated 8 million children under 18; 1.8 million persons with disabilities; and under 1 million elders which generated a potential vulnerable group of over 10 million (56 % of the population). This does not mean all these are eligible for social protection. It depends on their capacity to cope with shocks. However, some, particularly government bodies, consider this estimate to be on the high side. The CSA data used in this paper is also believed to underestimate the vulnerable groups such as orphans and persons with disabilities. CSA recognises this situation and has developed a National Statistical Strategy that is designed to generate more realistic data for this group.

[6] Definition of disability is not straightforward. For a summary of legal definitions past and present, see Teshome 2011 (Table 6) and the CSA (2007) has its own definition of disability and orphan-hood for statistical purposes.

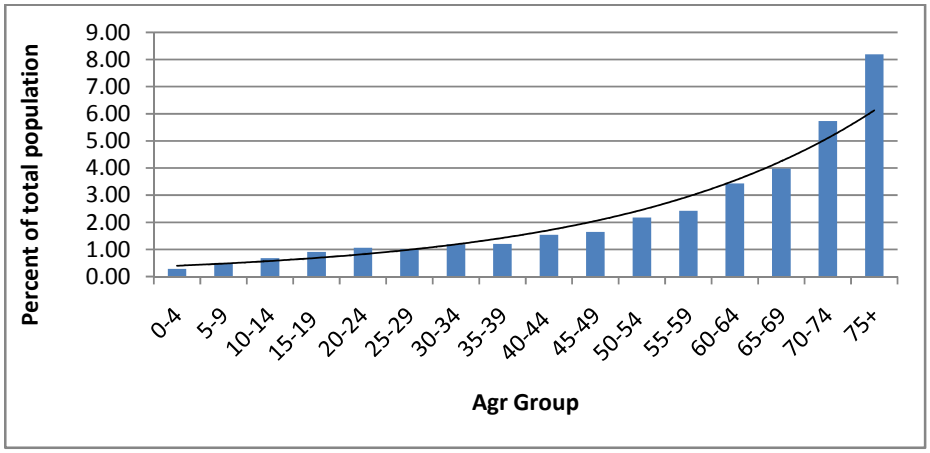
Figure 3 shows persons with disabilities by age group. In absolute terms, the number of children with disabilities increases up to the age of 15-19 and then declines. As the population gets older, the number of disabilities increases and peaks at around 75. Percentage wise, the proportion of persons with disabilities increases with age (Figure 4). Therefore, when old age is combined with disability, the situation worsens with important targeting implications.

Figure 3: Number of persons with disabilities by age in Amhara



Source: Based on CSA (2007)

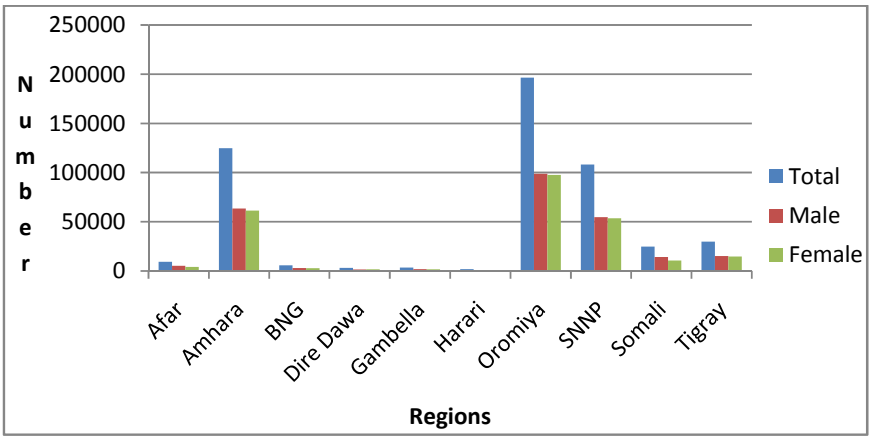
Figure 4: Persons with disabilities as percent of total population by age – Amhara



Source: Based on CSA (2007)

Orphans are children under 18 years of age who have lost one or both of their parents. As shown in Figure 5, in absolute terms, Amhara has the second largest number of orphans compared to Oromiya. The number of orphans is divided almost equally between boys and girls.

Figure 5: Number of orphans by region and sex



Source: Based on CSA (2007)

3. Social protection in the Amhara Region

3.1 Legal and policy framework

The vulnerable groups defined above are taken care of either through formal or informal social protection mechanisms or both. Formal social protection is provided by institutions (government, NGO/CSO) and is subjected to or guided by international conventions, national legal and policy frameworks. These include, but not limited to:

- Various UN Conventions on the Rights of the Child, older persons, women, and persons with disabilities;
- ILO Convention on rights of employees; decent work; and employment protection;
- The African Charter on the Rights and Welfare of the Child;
- The AU Social Policy Framework;
- The Federal Constitution;

- The Revised Family Law;
- Labour law FDER;
- The Developmental Social Welfare Policy;
- National youth policy;
- Women policy;
- The Growth and Transformation Plan.

Ethiopia has ratified almost all of the UN and AU conventions and domesticated them into national laws. For a comprehensive review and gap identification of the legal and policy framework see Teshome (2011); and for an assessment of the inclusion of older persons in national policies see Bihonegn and Adnew (2009).

3.1 Formal social protection provisions

3.1.1 Cases

Case 1: Social Security System

As shown in Figure 1, a social security/insurance system is one of the pillars of social protection. In the Ethiopian context, government employees (civil servants, the Police and members of the armed forces) at regional and federal levels are eligible for social security.[7] It has been in place since the early 1960s following an ILO declaration on decent work for all citizens. It is administered by the Social Security Agency (SSA). The Agency has a regional office in Amhara and in some cases zonal offices.

Social security provisions include old age pension, invalidity allowance, and survivors' allowance. The old age contributory pension currently extends to about half a million public sector employees at national level. Until recently, the scheme has been financed by employee contributions of 4% of basic salary and employer contributions of 6% for civilians and 16% for the military. In view of the recent drive to encourage savings and insurance schemes, the government increased its own

[7] This is commonly known as pension scheme but it is not. It is a contributory scheme that employees and employers contribute to a social fund that the beneficiary withdraws on a monthly basis upon retirement or terminating employment for various reasons. Within social protection circles, pensions are non-contributory. A nationally agreed amount is paid out to senior citizens over 60 or 70 or 80 depending on the country's financial capacity.

contribution from 6% to 10% and employee contribution from 4% to 6%. The total package is expected to reach 16% for civil servants and 20% for armed forces (up from 16% previously).

The minimum payment is currently Birr 160 (US$11.85) per month which can give an indication of the level of transfer that a social protection scheme may consider. The government pledged to align payments with inflation as far as possible and recently offered an increase in pension payment of up to 80% (the lower level beneficiaries got the highest increments).

Despite being a pioneer in social security system in Africa, Ethiopia's social security schemes remained narrow in scope and coverage. The largest proportion of citizens has no protection except the informal support mechanisms, which are declining in significance given the changing environment (see Section 3.2 below). More specifically, there is no benefit system for those employed in the formal and informal private sector. In order to address this gap, in 2002 a project was initiated to extend social insurance coverage to the formal private sector, and to promote micro-health insurance schemes in the informal sector. The objective was "to design a social security scheme income maintenance during loss or reduction of income due to age or other conditions of inability to work" (SSA 2005). Although studies were conducted and strategies designed, policy was not drafted and no legislation was passed. This left a substantial proportion of the working age and retired population uncovered by formal social security provisions. However, following the launch of the GTP, the government has decided to extend the social security system to the private sector – initially the formal private sector. It is anticipated that this will be managed by a separate agency.

It is widely know that Ethiopians employed by the donor and NGO community have their own contributory provident fund which can be withdrawn at any time they need it. Although this fund is much higher than the government contributory social security scheme, it is a high risk strategy in the sense that if the employee withdraws and spends the funds, he or she is left without any protection and will have to start all over again. In order to avoid this situation, the government has invited these employees to join the new public initiative on a voluntary basis. In a series of public

announcements on the new initiative, the government has emphasised "voluntarism" in order to avoid anxiety on the part of non-state sector employees. Back in 2002 when the idea of creating a social security scheme for the private/non-state sector was floated, some employees withdrew their funds because they were uncertain of the implication of transferring it to public sector scheme.

Table 1 summarises the components of social insurance in Ethiopia including the type of coverage, regulatory framework, source of funds and qualifying conditions. These are by and large applicable to Amhara region.

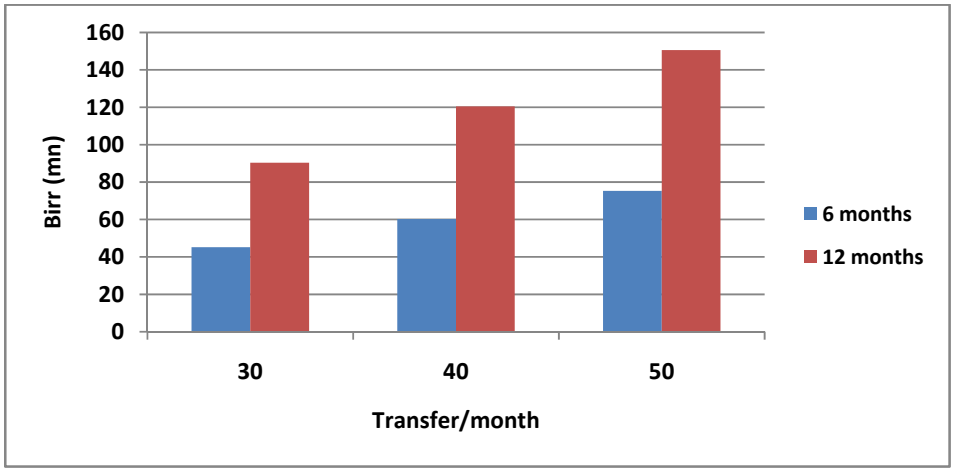
Case 2: PSNP

The Amhara National Regional State (ANRS) is one of the regions severely affected by drought over the last 3-4 decades and 2.5 millions rural people are considered chronically food insecure and benefiting from the PSNP. It is therefore the largest social protection programme in the region. The programme provides employment for the able bodied or labour rich households and direct (unconditional) support for the labour poor households that have no external support. These include elders, persons with disabilities, and female/child headed households. By and large, the target group for PSNP are in line with above definition of vulnerability.

A number of lessons can be drawn from the PSNP for the design of social protection (e.g. targeting, food/cash management, transfer levels and duration of transfers). For the purpose of this paper, the level and duration of transfers is considered. The government started the programme with Birr 6 per day for 5 days a month (Birr 30 a month for six months) and later increased the payments to Birr 8 per day and then to Birr 10 per day due to increased cost of living. The duration largely remained the same. Figure 6 shows the transfer scenarios for the estimated 250,000 direct support beneficiaries of the PSNP in a given year. At Birr 30 per month, the current direct support beneficiaries receive Birr 45 million for six months. If the duration increases to 12 months, which a potential social protection programme is likely to do, then the amount paid out doubles to Birr 180 million. At Birr 50 per month, the

transfer would amount to Birr 75 million for six months and Birr 150 million for 12 months.[8]

Figure 6: Estimated cost of direct support



Source: Teshome, 2010

Case 3: Integrated Urban Community Based Child Care

Non-government organisations have been playing important role in increasing access to education for children from poor families and remote and inaccessible areas. Some NGOs also provide tutorial support for children from poor families because parents or guardians are too poor to provide a suitable environment, facilities and materials for the child to succeed in education. Poor families often leave in crowded houses for the children to study after school and ultimately may drop out or fail.

[8] These are at the back of the envelop calculations using monthly PSNP transfers, duration and number of beneficiaries. They are not based on data collected through surveys or any other means. However, the fundamental argument that PSNP can form a solid foundation for long term social protection remains valid regardless of the source of data.

Table 1: Social Insurance Provision in Ethiopia

Type	Regulatory framework	Coverage	Source of Funds	Qualifying condition	Benefits
Old Age, Disability, and Survivors	First 1963 amendments in 1974, 1975, 1996, 1999, 2003, 2004, and 2006.	Public-sector employees only, including military and police personnel and employees of government-owned enterprises.	Insured person: 4% of basic salary; Employer: 6% (civilian) or 16% (military) of payroll.	Old-age pension: Age 60 with at least 10 years of service and contributions. Early pension: Age 55 with at least 25 years of contributions (civilian personnel); aged 45 to 55 (depending on rank) with at least 10 years of contributions (military personnel). Eligible survivors are the widow(er), children younger than age 18, and dependent parents.	The pension is equal to 30% of the insured's average monthly basic salary in the last 3 years before retirement, plus 1.125% (civilian) or 1.5% (military) of the insured's average monthly basic salary for each year of service exceeding 10 years. The minimum monthly pension is 160 birr. The maximum monthly pension is equal to 70% of the insured's average monthly basic salary. Survivor pension: 50% of the deceased's monthly pension is paid to the widow(er). The pension ceases on remarriage. Orphan's pension: Each eligible orphan receives 20% of the deceased's pension; 30% for full orphans. Dependent parent's pension: Each eligible parent receives 15% of the deceased's pension; 20% in the absence of other eligible survivors.

Type	Regulatory framework	Coverage	Source of Funds	Qualifying condition	Benefits
Sickness and Maternity	No statutory benefits are provided. However, the public service amendment proclamation (2002) and the labour proclamation (2003) require employers to provide paid sick leave and paid maternity leave.	Same as above	No requirement	Medical certificate for sickness and childbirth	The public service amendment proclamation (2002) and the labour proclamation (2003) require employers to provide (i) paid sick leave for up to 3 months: 100% of earnings is paid for the first month; thereafter, 50% of earnings. (ii) paid maternity leave for up to 45 days after childbirth; thereafter, paid sick leave may be paid in the event of complications arising from childbirth.
Work Injury	First 1963 and amendments in 2003. The labour proclamation (2003) allows for the provision of private insurance for public-sector employees.	Same as above	See source of funds under Old Age, Disability, and Survivors, above.	There is no minimum qualifying period	Temporary disability: A lump sum is paid equal to 45% of the insured's monthly basic salary multiplied by 5 years times the assessed degree of disability. Permanent disability pension: The pension varies from 45% to 70% of the insured's monthly basic salary, according to the assessed degree of disability. Survivors benefit same as for survivors of old age.

Source: SSA & ILO 2005 (cited in Devereux and Teshome, 2008)

There ample examples of such provisions in the Amhara region. For the last 25 years the Jerusalem Child and Community Development Organisation (JeCCDO) has been supporting vulnerable children in selected urban centres of Amhara, Oromiya, Dire Dawa, and SNNPR. Some of the components of the integrated interventions are:

Orphan and vulnerable children support – this comprises of three linked activities and aims at tackling challenges of low family income. It focuses on orphans and their guardians, as well as unemployed youth in the target community. The programme incorporates psychosocial support, re-integration of OVCs and unemployed youth into the community through provision of appropriate training. The project also implements guardian economic empowerment through training in various business skills and providing start up capital for small business.

Education – under this component, the Alternative Basic Education, functional adult literacy, tutorial programme, school capacity development, school clubs and community library are supported.

Health – the health and environmental sanitation programme is aimed at ensuring improved living conditions as a result of improved environment, sanitation and health conditions. Its major activities are garbage collection, HIV and AIDS prevention, family planning and reproductive health, and establishment of community water and sanitation facilities (water points and latrines).

Urban agriculture – this component aims to enable poor communities to produce enough agricultural produce for primarily for home consumption and for market to generate income. Participants are trained in the production and marketing of crops or vegetables of their choice, provided with the necessary gardening tools and asset transfer such as poultry. The urban agriculture is based on bio-intensive gardening that does not require lots of land and uses no chemical fertiliser. These interventions have been subjected to internal and external evaluation and have established that the objectives have been met.

CASE 4: UNICEF/BoLSA cash transfers

UNICEF is the lead UN agency for the welfare and protection of children. To this end, it implements a range of cash transfer programmes to promote the education of children in collaboration with the Bureau of Labour and Social Affairs (BoLSA). As shown in Table 2, at the time this data was collected (2010) there were 18069 children/guardians benefiting from these interventions. On the average, 60% of the

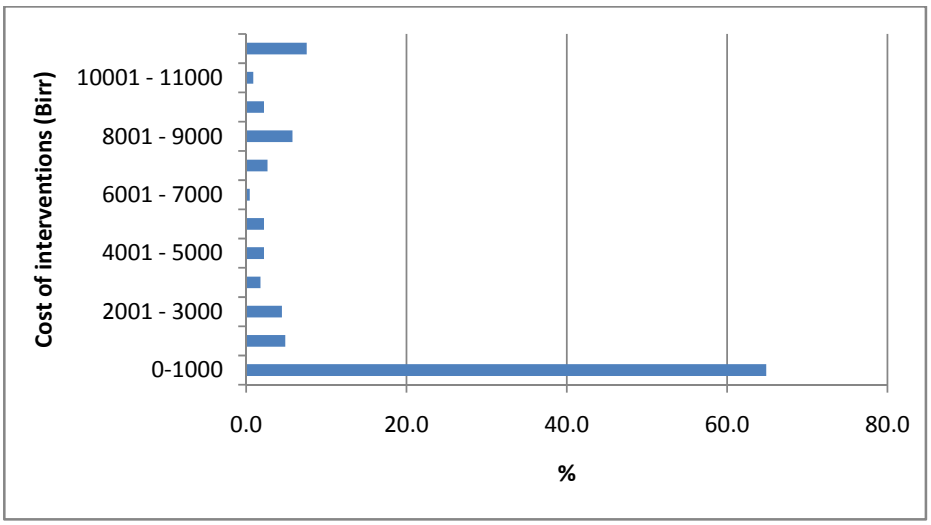
beneficiaries were female. The largest beneficiaries (over 13%) were in Bahir Dar the Capital of Amhara Region, and lowest beneficiaries (less than 1%) were in South Wollo zone (excluding Dessie Town).

Table 2: UNICEF/BoLSA cash transfer beneficiaries

Zone/city	Beneficiaries			% of Total	% Female
	Male	Female	Total		
West Gojam	293	627	920	5.1	68.2
Bahir Dar	878	1504	2382	13.2	63.1
Gondar	888	1276	2164	12.0	59.0
North Gondar	354	569	923	5.1	61.6
South Gondar	456	796	1252	6.9	63.6
Debrebrehan	412	722	1134	6.3	63.7
North Wollo	605	679	1284	7.1	52.9
Kombolcha	258	483	768	4.3	62.9
Dessie	973	1153	2126	11.8	54.2
Oromiya	479	551	1030	5.7	53.5
Wag Hamra	525	793	1318	7.3	60.2
Awi	400	810	1210	6.7	66.9
North Shewa	82	128	210	1.2	61.0
South Wollo	54	109	163	0.9	66.9
East Gojam	482	703	1185	6.6	59.3
Total	7139	10903	18069	100.0	60.3

Cash transfer projects such as these can generate important lessons for the design of social protection programmes in the region and nationally. One key lesson is the level of transfer per beneficiary per annum. It was found that the minimum cash transfer was about Birr 300 per year and the maximum was Birr 665,717 for a full child scholarship/sponsorship. More importantly, the distribution of the cost data showed that over 60% of the interventions transferred up to Birr 1000 per beneficiary per year and less than 10% of the projects transferred just over Birr 11,000 per beneficiary (see Figure 7).

Figure 7: Percentage distribution of cash transfer interventions in Amhara (n=224)[9]



3.1.2 Trends in formal social protection interventions

Source of data – As indicated in the introduction, an inventory sheet was developed and sent to all regions through MoLSA, UNICEF, WFP and the author's own networks. The sheets were completed by seven BoLSA offices, including Amhara, which generated a total of 474 interventions (including 356 from Amhara). The data generated is neither complete nor statistically representative. The interventions vary considerably in terms objectives, cost, target audience and geographic coverage. Therefore, they are not weighted in any systematic way. Despite these limitations, the data is believed to give indicative directions on the development of social protection interventions in Ethiopia in general and Amhara region in particular. Figure 8 summarises the data for all the regions. The analysis below focuses on Amhara region.

Target groups: The inventory sheet generated nine categories of beneficiaries. These are obtained by simply tallying the beneficiary groups mentioned for each intervention. A given intervention is likely to have more than one beneficiary group.

[9] Out of the 356 social protection interventions obtained from Amhara, only 224 provided detailed information on transfer levels.

The Amhara inventory generated about 356 social protection and related interventions and 43% of the beneficiaries of these interventions were children making them the largest single beneficiaries group. Community based interventions accounted for 38.5% (see Figure 9).

Figure 8: Distribution of social protection interventions obtained from BoLSA offices (n=474)

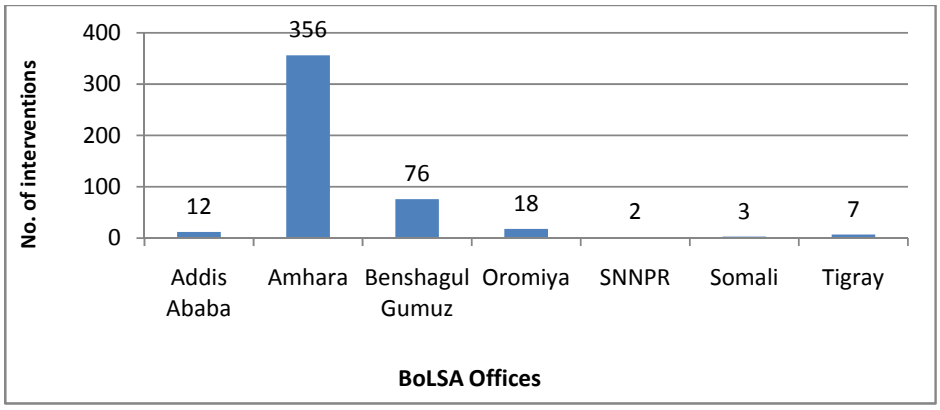
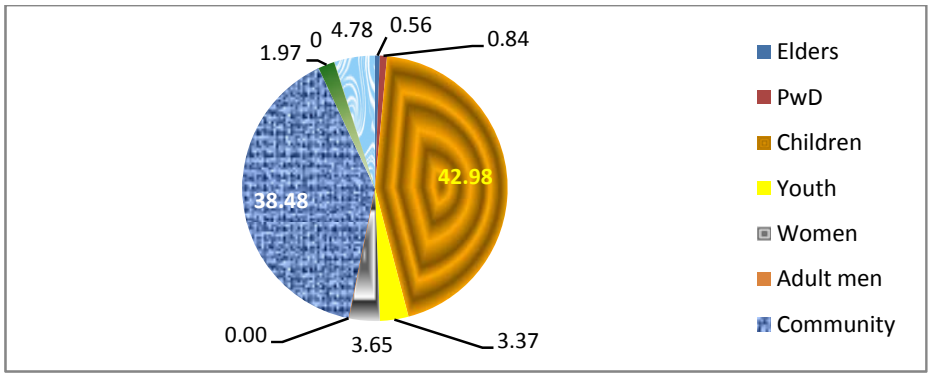


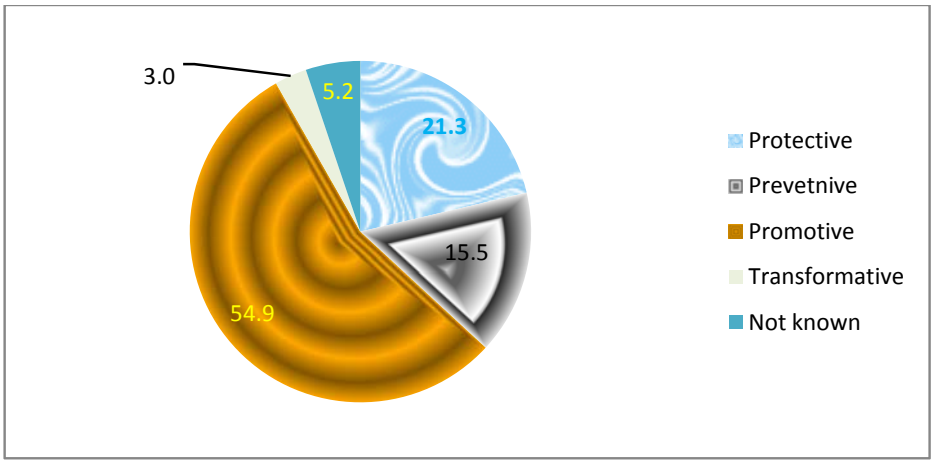
Figure 9: Share of the major beneficiary groups – Amhara (n=356)



Types of interventions: as stated earlier, social protection schemes are designed to serve one or more of the following purposes: protective, preventive, promotive and transformative. Data generated from the inventory indicated that in Amhara Region more than half of the social protection interventions (54.9%) were of promotive type (see Figure 10) which included mainly education and training. This is consistent with

the finding that the majority of the beneficiaries were vulnerable children since they require education and training to develop into productive citizens. It is also worth noting that 21.3% were protective type interventions. The national level inventory found that the majority of social protection measures were of protective type (Teshome, 2011).

Figure 10: Share of intervention types – Amhara (n=356)



3.3 Non-formal/traditional support systems

Ethiopians are among the most giving peoples in the world. The motives for giving are largely religious[10] but also have social dimensions. For example, the draft Policy on Disaster Risk Management (MoARD, 2010) states that Ethiopian citizens have a generous tradition of helping each other in time of crises and communities are the primary responders to crises. Some child focused NGOs also acknowledge the role of traditional support mechanisms in caring for children and other vulnerable groups. In a study for the International Food Policy Research Institute (IFPRI) Kumar (2010) found that "network size", an indicator of traditional support mechanism, for rural female households and male headed households is 8.61 and 11.41, respectively. This is substantially higher than average family size. Male headed

[10] It is worth noting that during religious festivities both Christian and Muslim religious leaders urge followers to remember the poor, destitute and the chronically ill and share whatever they have.

households have higher network size than female headed households indicating that men have better opportunities for networking.

Unlike the formal social protection provisions that are governed by national and international conventions, the non-formal support mechanisms are community-based and largely governed by customary laws. In Amhara region, these range from a total communal co-existence (e.g. Awra Amba) to associations, small groups and individual support. Brief description of some traditional support systems is provided based on key informant interviews and review of the literature.

i) ***Awra Amba village*** – this is a small village between Bahir Dar and Gondar with a population of 400 people, 96 households. It was established in early 1970s and is based on egalitarian principles and communal work. That is, there are no differences between men and women division of labour, no poverty, all children go to school and the village has a home for the elderly. They are taken care of. There is no begging and no untoward attention paid to any visitor. If someone cannot build their house on their own, the others help them. Those that have greater knowledge or education will help to educate children or anyone wishing to learn (*Selamta*, July-September, 2007).

ii) ***The extended family*** – this is the most common form of support to vulnerable groups such as children, older persons, and persons with disabilities. In the case of children under 18 years of age, it is a legal obligation for parents and guardians to ensure children are brought up in a stable home. In other cases (e.g. caring for older persons) it is a moral obligation and duty to care for them within the home.

iii) ***Mahiber*** is a kind of get together around an event such as days dedicated to the Saints (e.g. St. Mary Day 21st of each Ethiopian Calendar Month). In its traditional form, it involves festivities around religious events and has contributed to social harmony. It is often used for conflict resolution. If two members quarrel, they can easily be reconciled in the name of the Saint they have gathered around.

In its modern form, Mahiber is also becoming a kind of Alumni formed by people coming from the same area or have gone to the same school. In the latter case,

if one of the members faces economic crisis beyond his or her capacity, the members contribute and give lump sum money to solve his or her immediate problem. If the head of the family is chronically ill or goes to jail for any reason, the Alumni provides monthly cash to the spouse and children until the head of the family recovers or is released from jail.

iv) ***Iqub*** is a saving group in which members contribute certain amount in a fixed period of time (weekly or monthly). The collected money is given to members through a lottery system. However, if a member faces some economic crisis or needs money to fulfil some social obligations, then he or she may be given priority. In urban areas such as Addis Ababa, traders use it to mobilise capital in a short period of time without the bureaucracy and collateral requirements associated with formal baking system. Social capital (trustworthiness, behaviour) is the collateral in the traditional *iqub.*

v) ***Idir*** is the most commonly cited traditional support mechanism. This is a membership-based society whose principal mission is to facilitate decent burial service at the end of member's life. Almost every Ethiopian is guaranteed of decent funeral thanks to the *Idirs*. Although this remains the core mission of *Idirs*, more recently some have broadened their scope to include supporting vulnerable members such as people living with HIV and AIDS and orphan children. The support includes building/maintaining houses for the patients, taking them to the clinics, paying for the educational materials and uniforms for the children, clothing and health care. Communicating with the Kebele Administration on behalf of the patient to secure residence. On rare occasions, the *Idir* may give regular cash transfer per month but as the number of HIV/AIDS patients increased it is often difficult to sustain such support.

vi) ***Betaseb guba'e*** – this is a family get together designed to help each other in time of difficulty and share information on the wellbeing of network of families. It is also used to introduce new generation of family members to each other so they can continue the tradition.

vii) ***Awraj*** – this is a situation where a relative pledges to take responsibility for hosting a given number of wedding attendants (e.g. a tent full of attendants, attendants coming from a given area) in order to share the burden of wedding expense.

viii) ***Muday*** – this is a contribution towards rehabilitating a family that has incurred considerable wedding cost. Each wedding attendant gives some money

and this is kept in a traditional container called "Muday". Where possible each donation is recorded and the book kept safely so that the host can use it for future reference to pay back. There is no fixed contribution and when its turn comes to pay back, this family may not give the exact amount donated to it. If it is a better of family, it may double or treble the contribution.

ix) ***Dabo/Jigi*** – this is a labour based support mechanism. Neighbours are mobilised to support labour poor families in time peak agriculture season.

x) ***Child support*** – there are different forms of traditional child support. The principal one is *gudifecha* largely an Oromo tradition but also practiced elsewhere as adoption. Better off families often take one or two children (often boys) from a poor family (often a relative) and bring them up like their own. It may take two forms: First is an extreme case where natural parents actually give up the right of parenthood. The child may not visit his or her natural parents and to avoid any homesickness distance is usually one of the criteria. The further away from home the better!

The second is to give a child form a poor family to a better off family for the sole purpose of education it. It does not involve any legal procedure and the child is free to visit his/her parents or go back permanently at any time. In this case, the nearer to home the better!

4. Future directions

The Government of Ethiopia has embarked on a revision of the existing Developmental Social Welfare Policy which has been in place since 1996.[11] The new policy and strategy is expected to serve as a framework for regional social protection programmes. What are the key issues and challenges that the new policy might face? A few critical issues are discussed below.

[11] The regional consultations concluded that the policy is out of date both in terms social protection thinking and practice. A number of conventions have been proclaimed since the policy came into force which means that it is not in line with these provisions. For example, conceptually, the definition of social welfare is not in line with the AU framework that Ethiopia has ratified.

4.1 Is social protection affordable?

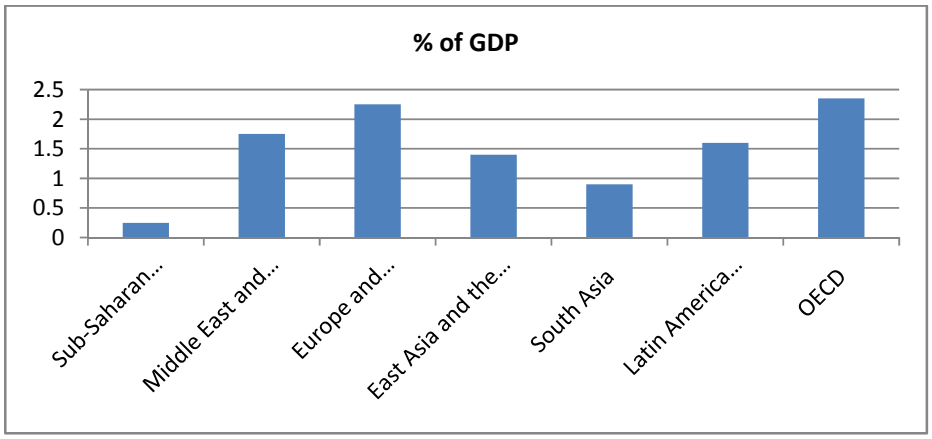
There are several contentious issues surrounding affordability of social protection in developing counties and Ethiopia is no exception. Historically, the developed countries of today introduced social protection in the midst of economic crisis or poverty – not in time of plenty – recognising that the most vulnerable needed protection to stop them falling into destitution. For example, France and Germany introduced in the 19th century; USA in 1935; UK in 1948 and Japan in 1947. This indicates that these countries recognised that not investing in social protection is more expensive in the long term than that actual cost of social protection. Presently, several African countries are implementing a variety of social protection programmes as part of their growth and poverty reduction strategies (Southern Africa cases are well documented in Ellis, et. al. 2009).

Ethiopia has been investing in pro-poor sectors (agriculture, education, health, water, and infrastructure) since the mid-1990s and the annual budget allocation to these sectors has reached 64% in 2007/08 (MoFED, 2008). In addition, there are considerable efforts by the non-state actors to reach out to the most vulnerable. However, in order to ensure these investments actually benefit the most vulnerable, there is a need for direct investment in social protection systems, structures and programmes. It is worth noting that Ethiopia has about 30,000 health extension works and nearly 60,000 development agents to advance the health and agriculture agenda, respectively, but no agents to advance the social protection agenda. In many developed and developing countries where social protection programmes are implemented, social workers are an essential part of the programme. Ethiopia has none except some NGOs who deploy “community facilitators”.

Spending on social transfers in sub-Saharan Africa has been low compared with other parts of the developing world (see Figure 11). This is a clear indication that there is the potential to increase spending. In the context of Ethiopia, HelpAge International (Hatendi, 2010) simulated the cost of non-contributory pension of Birr

86/month[12] for old persons of 60+, 65+, and 70+. The result in all cases is ≤ 1% of the GDP (see Table 3). Investment in older people has multiplier effect. Given the HIV/AIDS pandemic they are left to look after the chronically ill parents and their children (orphans) when they eventually die.

Figure 11: Spending on social assistance



Source: DFID, 2005

Table 3: Estimates of non-contributory pension payments at Birr 86/month

Age group	Population (2010)	Pension payments (billion Birr)	% of GDP
60+	3,933,047	4.27	1.06
65+	2,587,277	2.81	0.70
70+	1,700,248	1.85	.046

Source: Hatendi (2010)

In view of this underinvestment in social protection, it has been suggested that developing countries can afford to allocate 2-8% of their GDP without significantly affecting other investments. The AU and ILO recommend 2.5% and 8% respectively. It is important to note that social protection is not about transfers only. It is also about:

[12] As shows earlier, the maximum payment under PSNP is Birr 50/month for six months. Therefore, the HelpAge estimates are considerably higher than current PSNP transfer levels for direct support beneficiaries.

- providing security for the labour force thereby encouraging it to produce more and create wealth;
- equipping the unemployed youth with skills so they can go back to work; and
- encouraging citizens to plan for the future (promoting savings, insurance schemes)

These measures are largely about putting in place systems and structures that allow citizens to think about their and their families' future. Furthermore, according to DFID (2005, 2006), investment in social protection:

- can be cost effective way to reduce poverty and hunger;
- increase human capital development (beneficiaries spend more on education and health);
- is critical element in ensuring equitable growth;
- contributes to an effective state (tackling poverty, inequality and exclusion).

Therefore, the question is not whether social protection is affordable but whether Ethiopia can afford not to invest in social protection.

4.2 Is dependency a real or imagined concern?

Another issue often raised in social protection discourse is that social transfers may lead to dependency. A person is dependent on transfers when he or she cannot meet immediate basic needs in the absence of the social transfer. Dependency syndrome is a condition where social transfer beneficiaries modify their social and economic behaviour in anticipation of food aid or cash transfers (Devereux, 2010). It is clear from these definitions why policy makers may be concerned about dependency. The public, particularly in urban areas, is also aware of individuals and families who change their appearance and health status in order to continue begging. This has led some observes to conclude "begging has become a lucrative business".

However, as demonstrated in Section 3.1.2 of this paper, social protection serves four important purposes (protection, prevention, promotion and transformation) that do not necessarily lead to dependency. If designed and targeted well, social

protection protects those who really need protection (i.e. dependent on someone). The other three are clearly pathways out of dependency and 'graduation' from social transfers. Strictly speaking, the level of social transfer is rarely high enough for people to depend on it. For example, people weigh the benefits and costs of working for Birr 50/month and if they can find better wages elsewhere, they move on. Therefore, it is not social protection *per se* that promotes dependency but the design and targeting of the programme.

4.3 What would be the role of traditional systems?

This is an important issue that the future social protection policy and strategy should address. There is no doubt that traditional support mechanisms have helped millions of children go to school and kept them off the street; kept millions of older people off begging. Presently, money transfers from the Diaspora are by and large an extension of the traditional social protection.

More recently this valuable asset has been under scrutiny. How strong has it really been and how strong is it now? What about the rights issue? What would the relationship between formal transfers such as PSNP and traditional mechanisms?
These are fundamental research questions that this paper could not address fully. However, it is important to shed some light based on existing evidence. Most informal social transfers are 'poor-to-poor'. Members of the *iqub* in a typical rural or urban village are poor. Although they continue to survive as they did for centuries, they hardly take-off and develop into, for example, micro-finance. The same could be said of *idirs*. The majority of them continued with the age old function of burying people and hardly attempting to save them.

Strictly speaking, the traditional support systems have not been as strong as portrayed. If they were, we would not have had beggars. Begging is not a recent phenomenon which sprung out of recent economic hardships. It has been a way of life for centuries initially concentrating around religious institutions and gradually spreading into urban streets. A conservative estimate puts the number of beggars in Addis Ababa in 2007 at 93,000 which was only 20,000 in 1987 (Hiruy, 2010). Key informants with considerable travel experience around Africa indicated that the

number of beggars on the streets of many African cities is considerably lower than Addis Ababa. This was attributed largely to the strength of traditional support systems. If one sees someone from his or her village begging, then he or she will mobilise resources to take that person off begging.

It is unfortunate to report that in some cases, the opposite is practiced in Ethiopia. In Addis Ababa, an NGO known as Keberaregawian Gibresenay, carried out a study on the situation of older persons and found that in some cases the so-called extended family support system was not treating older persons in a dignified manner. They are often abused, forced to go out and beg, and then the money taken from them.

Despite these limitations, traditional support systems will continue to exist. What then should be the relationship between formal and informal systems? Experience from Ethiopia and other countries suggest that the formal and informal systems could co-exist and create synergy. Devereux (2009) observed that cash recipients in Ethiopia and Zambia revived savings clubs which provide self- and mutual insurance against livelihood shocks. In Amhara, it was found that community based structures were used to transfer resources to the most needy. *Idirs* and CBOs have started providing support to orphans and other beneficiaries. Information from the regional BoLSA office indicated in 2009, these local institutions collected and distributed a total of Birr 1.7 million for 3828 beneficiaries. They are serving as cost effective way for the formal cash transfer programme to reach the most vulnerable. This is an important lesson that the new social protection policy and strategy could build on.

5. Conclusions and recommendations

5.1 Conclusions

Ethiopia has embarked on the revision of its Developmental Social Welfare Policy which is expected to serve as the framework for regional social protection programmes. The revision was preceded by a mapping and gap analysis of existing social protection legal and policy framework, programmes and projects. The mapping report was used as a basis for regional consultations and awareness rising covering all the Regional States and the City Administrations. This is a truly bottom

up policy process that could be a model for other government institutions planning to carry out similar policy revisions.

The policy revision process is expected to align the national policy and strategy with the AU Social Policy Framework and other relevant conventions. This would at least mean bringing the conceptual gap into line with the international standards of definition of social protection. As noted at the beginning of the paper, the local definition puts pressure on the community to provide social protection for the vulnerable while the AU definitions puts the State at the forefront of social protection provider for citizens. This is also consistent with other literature that considers the State the principal duty bearer.[13]

The number and range of vulnerable groups in Ethiopia in general and in Amhara in particular is overwhelming. For example, the Amhara Region has the second largest persons with disabilities and orphans in the country. Some of these are taken care of by informal and formal social protection mechanisms. The latter includes the Social Security System, the PSNP, MoLSA/UNICEF cash transfers and other non-government interventions.

These programmes have the potential to provide important lessons for the design of social protection programmes. Setting the appropriate level of transfers is one key lesson that can be drawn. For example, until recently, the minimum Social Security payment was Birr 160 per month (Birr 1920 per year). PSNP began with transferring Birr 180 per beneficiary for six months (an equivalent of Birr 360 per year) which is close to the minimum cash transfer by UNICEF. PSNP raised its provision to Birr 300 per six months (equivalent to Birr 600 per year) due to inflation.

Although the inventory carried out was not statistically representative, the social protection interventions in the region by and large targeted the most vulnerable groups such as poor children (43% of interventions) and poor communities (38.5%).

[13] Duty bearers are individuals, communities, state or non-state organisations that are responsible by law or custom to respond to the needs of citizens in general and the most vulnerable in particular. There are five levels of duty bearers – *principal* duty bearer (the State); *primary* (e.g. family, community, teachers, and nurses); *secondary* (institutions such as schools, hospitals); *tertiary* (e.g. NGOs/CSOs) and *external* are the donors, humanitarian agencies that have no direct contact with right holders.

The majority of interventions (nearly 55%) were of promotive type and 21.3% protective interventions. This is an encouraging trend with important policy implications. It addresses the dependency concern that government other stakeholders might have. Promotive social protection does not promote dependency but is one of the pathways to graduation.

Traditional support mechanisms existed since time immemorial and likely to continue to exist in the foreseeable future. However, they are weakened by various economic and social problems which call for the strengthening of the formal social protection.

Looking into the future, the paper discussed three critical issues pertinent to the design of the new social protection policy and strategy. These are affordability, dependency and the future role of traditional support mechanisms.

In the first instance, the paper cited several previous works to demonstrate that social protection is affordable to developing countries like Ethiopia. Sub-Saharan Africa has been spending the lowest of all regions which is an indication of potential for increased spending. It has been estimated that these countries can spend anything between 2-8% of their GDP without affecting other sectors.

Dependency is a genuine concern but it is more a function of bad design rather than social protection itself. If designed and targeted well, social protection has the potential to reduce poverty and promote growth.

As stated above, traditional systems are here to stay for the foreseeable future and complementary co-existence with formal social protection is inevitable.

5.2 Recommendations

Considerable progress has been made in the social sector programmes such as education and health. However, there still remain children and adults with disabilities; people in remote and inaccessible areas that are excluded from benefiting from these progress. Therefore, implementing agencies should develop *social protection lens* in order to monitor the progress towards reaching out to the socially excluded. It is a tool used to ensure that all social and economic

development programmes are mainstreaming social protection. It is an umbrella lens for gender, geographic and social exclusion, children, and unemployed youth, to mention but few.

Social protection lens allows determine whether the vulnerable groups identified in this paper are included or excluded from the development process. The lens asks, for example, what proportion of persons with various disabilities has access to education? How many schools for the blind are there? How many of our schools are conducive for persons with physical disabilities? Similar questions need to be asked in health. What conditions should older persons have to meet to access the waiver system? How deterrent are these conditions?

The current momentum on social protection requires a strong and visionary institutional set up that can advance the agenda of social protection, put in place systems that the next generation can build on. The Regional BoLSA should strengthen its presence at grassroots level in order to monitor and tackle existing and any emerging social problems. To this end, the Bureau should recruit and train *Social Workers* who can advance its agenda in the same way health extension agents and development agents are advancing the health and agriculture agenda, respectively. It is well known that Ethiopia has about 30,000 health extension works and nearly 60,000 development agents to advance the health and agriculture agenda, respectively, but no agents to advance the social protection agenda.

A clear strategy should be in place on the role of *traditional support mechanisms*. In the short to medium term integration with the formal system is inevitable in order to increase outreach in a cost effective way. However, in the long term, the formal system should prepare to take over the bulk of social protection provision.

Awareness on social protection is generally low. Citizens should be aware of exiting legal and policy frameworks on social protection. There are encouraging signs that the media, radio in particular, have started raising issues relating to the rights of children and older persons. This should be managed and run by journalists trained in social issues. Journalists should combine knowledge of social work with effective communication. Finally, social protection is both personal and professional issue. It affects present and future generations. Therefore, both Federal and Regional

Governments should *engage citizens* so they can make constructive contribution to the social protection policy process. The bottom up process that MoLSA has started is a good practice to build on.

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FISCAL DECENTRALIZATION AND INTERGOVERNMENTAL TRANSFER: ASSESSEMNT AND EXPERIENCE FROM AMHARA REGION

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Acronyms

ANRS	Amhara National Regional State
ADB	African Development Bank
BoFED	Bureau of Finance & Economic Development
CDF	Community Development Fund
CSA	Central Statistical Authority
DAs	Development Agents
DW	Deep Well
EFY	Ethiopian Fiscal Year
EPRDF	Ethiopian People's Revolutionary Democratic Front
FTC	Farmers Training Centre
FDRE/HoF	Federal Democratic Republic of Ethiopia/House of Federation
GoU/LGC	Government of Uganda/Local Government Commission
HDW	Hand Dug Well
IFAD	International Organization for Food and Agricultural Development
LIG	Local Investment Grant
LGs	Local Governments
LPS	Local Public Services
MEFF	Macro Economic and Fiscal Framework
MDGs	Millennium Development Goals
MoARD	Ministry of Agriculture and rural Development
PBS	Protection of Basic Services
PASDEP	Plan for Accelerated and Sustainable Development to End Poverty
PIP/PEP	Public Investment Program/Public Expenditure program
PSCAP	Public Service Capacity Building Program
PSNP	Productive Safety net Program
SARDP	Sida Amhara Rural Development Program
SNNPR	Southern Nations Nationalities and Peoples Region
SDPRP	Sustainable Development and Poverty Reduction program
ToT	Turnover Tax
UNDP	United Nations Development Program
UNECA	United Nations Economic Commission for Africa
WoFP	Woreda Finance and Plan

1. Introduction

1.1 Background

Many countries in the world, including sub-Saharan Africa, had experienced different forms of government and economic management motivated by political and economic reasons. During the cold war period, for instance, countries of the socialist block had advocated centralized form of government while others favoured more of economic liberalization. The collapse of centralized planning has triggered the evolution of a decentralized form of government and economic management. These countries have undergone through what is known as the second wave of decentralization further catalyzed by the democratization and globalization processes.

Since the recent past, Ethiopia had experienced centralized and unitary form of government during the imperial and the unpopular military regimes. It has, however, embarked on a federal system of government spearheaded by the Ethiopian Peoples 'Revolutionary Democratic Front (EPRDF) coalition in 19991. As enshrined in the Federal constitution, nine regional states (including two city administrations) established in 1995 of which the Amhara regional state is one. Regional states are autonomous to administer their internal affairs in the political, economic and social arena. They are entrusted with the power to draw their own development plans and budget within their jurisdictions following the national policy and strategy frameworks. The country has been implementing several reform programs, inter alia, the public sector reform program is worth mentioning.

Regional states are mandated to levy and collect taxes within their geographic remit. They are, however, dependent on transfers or subsidies by the federal government. Nearly 45- 80% of their annual budget comes from the federal government in the form of unconditional transfers (G/Egziabher et al., 2010). Less than a fifth of their annual expenditure requirement is covered by own revenues. Similarly, local governments are largely dependent on regional government transfers.

To deepen the democratization process, district level decentralization policy has been launched since 2002, primarily in four regions of Ethiopia (i.e. Tigray, Amhara,

Oromiya and SNNPR). Although the transfer of unconditional block grant has been experimented since the establishment of Regional states to lower level administrative echelons (zones and woredas) based on statutory transfer formulae or what is known as 'qemer', the Amhara region has embarked on a unit cost need-based approach to allocate block grants to local governments (LGs) so as to facilitate budgeting for service delivery results (Catherine and Mohammed, 2006, p. iii).

The aim of the grant transfer is to redress vertical and horizontal fiscal imbalances, promote participation, improve service delivery, foster development efforts and poverty reduction, and ensure accountability and transparency at local level (BoFED, 2009).

The Amhara region is pioneer in this respect to implement the district level decentralization policy and exercise block grant transfer to LGs. It adapted unconditional block grant transfer in the annual budget allocation system, initially to administrative zones (including nationality zones) and later on devolved to woredas and city administrations. Administrative zones are created simply to serve as a bridge between the region and woredas.

Prior to the woreda decentralization program, a tri-parameter formula comprising of population size, poverty and development level (I-distance), and index of revenue generation capacity have been designed with associated weights (Maito and Andrew, 2008, p.19). Nonetheless, the formula has been criticized on the basis that population size is found to be the single most dominant variable undermining all others. One of the limitations of this formula was the fact that it failed to properly estimate recurrent expenditure requirements of LGs and densely populated towns (Catherine and Muhammed, 2006). Especially districts adjacent to urban centres had been suffering from critical budget shortages as wage payments dominate (BoFED, 2009). Cognizant of this fact, the regional government introduced a more robust approach with the conviction that it could accommodate recurrent expenditure requirements of both urban and rural districts at equal footings. Designing a credible, transparent and fair region-woreda transfer formula is thus the *modus operandi* of the district level decentralization program. Eventually a unit cost need based approach has been evolved and experimented since the launching of the woreda decentralization program.

The unit cost need based approach, however, entails massive data requirement and multiple cost drivers to estimate recurrent expenditures. To estimate capital expenditure needs, proxy indicators continue to serve. The objective is to narrow the intra-region development disparity and expand public service delivery. Despite this, the grant transfer formula is not free from critique. There are some concerns and limitations. Examining of these concerns and/or limitations of the incumbent grant transfer system so as to further improve it is timely and relevant. Furthermore, the current transfer system is not a finished business, but a project that has to be updated from time to time and refined with changing socio-economic and political circumstances (FDRE-HoF, 2009, p.9). In the following section statement of the problem is articulated.

1.2 Statement of the problem

From the foregoing highlights it is clear that there are challenges and issues surrounding the transfer exercise. As stated earlier, a number of cost drivers and assumptions are being congested in the application of the transfer formula. The corollary is that it becomes somehow blurred to be clearly understood by district councillors and lacks simplicity and transparency (Catherine and Mohammed, 2006). Woreda councillors are tempted and understood the formula as a panacea to all budget shortfalls and as a guarantee to secure more subsidies while the intention is just to ensure allocation fairness (interview with a senior expert at BoFED). Notwithstanding the efforts made so far by the Bureau of Finance and Economic Development (BOFED) to improve the data quality, the most critical challenge sustaining and undermining the formula is the fact that there is lack of reliability and availability of data from an impartial body (Yehualashet 2005, p.30).

The formula has been applied across the board to determine expenditure requirements of woredas and city administrations, though the regional government has recently initiated specific purpose grants to the later one. So far, on average 10-15 woredas, especially those adjacent to urban centres have been entangled with budget shortfalls relative to their minimum recurrent expenditure requirements (interview with the regional council budget standing committee). Some are even unable to pay salaries for employees leave alone to set aside capital outlays. The corollary is most woredas panic to find local solutions, for instance, selling of local

assets like eucalyptus woodlots, Kebele rented houses (e.g. Woreta city administration), borrowing some cash from the regional government reserve fund in return to be reimbursed from the following fiscal year budget. There is weak local capacity (e.g. WoFP offices) and no clear accountability mechanism to guide the efficient and effective utilization of the grant.

This assessment tries to explore and gather some evidences to the following queries related to sub-national transfer. What are the theoretical bases for the current intergovernmental transfer system in Amhara region? To what extent the current grant transfer formula and its application is simplistic to be easily understood by grant recipient LGs? Which factors are attributable to the current allocation shortfalls encountered by some LGs? What are the strengths and weaknesses and/or issues observed in the current transfer system? What recommendations could be suggested to further guide and improve the existing transfer system in the region?

1.3 Objective

The main objective of this assessment is to document and share some experience from the Amhara region block grant transfer experiment and ensure more fairness, transparency & efficiency to further improve poverty reduction outcomes.

The specific objectives aim at:

- Clarifying the grant allocation principles,
- Reviewing the appropriateness of the present allocation system,
- Assessing the poverty sensitivity of the grant system and type of data used in the allocation,
- Elaborating the budget cycle and expenditure pattern, and
- Suggesting recommendations for further improvement.

1.4 Methods

1.4.1 Source of information

This assessment is carried out mainly based on secondary source of information gathered from BoFED. Relevant literatures on fiscal decentralization and

intergovernmental transfers have been reviewed. The main source of information for this assessment is a government document titled "The 2002 EFY woreda and city administrations block grant formula and budget ceiling." It is presumed that there is big unanimity between the previous transfer proposals and the present one prepared by BoFED. There has not been much change observed in the current unit cost need based as well as proxy indicator based transfer approach applied over the years.

Pertinent experts from BoFED and the budget and public accounts standing committee of the Regional council's speaker of the house have been consulted. The 16th regular congress of the Amhara national regional state council held recently in Bahir Dar that has dwelt on the relevant agenda item (i.e., "the 2003 EFY grant allocation formula and budget administration proclamation") also serves as additional input. Moreover, unstructured questions prepared and relevant information gathered from few selected woreda finance and plan offices through various means including discussions and information availed via fax. Sample woredas included Gozamin, Bahir Dar Zuria, Dessie Zuria and Albiko. These districts were purposely selected based on proximity to zonal capitals, food security status, and population size. The first three woredas are adjacent to urban centres while the last one is a rural, pocket and drought prone woreda. For the purpose of examining intra-region horizontal and vertical fiscal gaps, 10 woredas were randomly selected based on specific parameters (i.e. remoteness, proximity to urban centres, food security status, and potential for private investment).

1.4.2 Analysis

More of descriptive type of analysis has been followed in tandem with employing quantitative and qualitative information. The available data are tabulated to analyse spatial and temporal variations. Percentages and average values have been computed to make some comparisons like the share of transfers at different tiers of governments and sectors. A SWOT analysis has been made to some extent to identify the strengths and weaknesses of the current grant transfer system.

1.5 Scope and limitations

The scope of this assessment is bound to only to the fiscal dimension of decentralization. More attention is given to the unconditional block grant transfer system established in the region. Other forms of intergovernmental fiscal transfers such as borrowing, specific purpose and equalization grants are not examined at length rather highlighted. In addition, the assessment is carried out mainly based on secondary source of information available at BoFED. No primary data has been systematically gathered at grassroots level. Only few woredas have been considered, though it is believed that most of the issues have been somehow covered.

1.6 Organization of the paper

This paper is organized in four sections. Following this introduction, the second section reviews conceptual issues on the rationale for decentralization in general and fiscal decentralization and intergovernmental transfers in particular. The third section examines the experience of the Amhara Region-woreda unconditional block grant transfer system. Background information about the region, legal basis and institutional set up of the current decentralization system is highlighted. The current block grant transfer formula is revisited in light of conceptual issues pinpointed in section two. The regional budget cycle and expenditure pattern of local governments (LGs) in general are highlighted to better understand the poverty sensitivity of the transfer equation. The transfer of specific purpose grants, especially for municipalities and the food security program is briefly highlighted. Finally, some conclusions and recommendations are made.

2. Review of literature

2.1 What is decentralization?

Decentralisation is a broad concept and has been 'understood by different people to mean a good many things' (Mawhood, 1993:1). It is an "umbrella term for a number of related policy reforms, in which central government agencies transfer rights and responsibilities to local institutions" (IFAD, 2001:192). It has different forms and the common comparisons are made between political or democratic decentralisation

(devolution), administrative decentralisation (de-concentration of the bureaucracy), and fiscal decentralisation (Manor, 2000).

Democratic decentralisation is "…the transfer of resources and power (and often, tasks) to lower level authorities, which is largely or wholly independent of higher levels of government and which are democratic in some way and to some degree (Manor, 1999:6)." Furthermore, it refers to a situation where local governments are elected and accountable to the respective constituencies and have the power to make decisions such as resource allocation. The following section shades some light on the rationale for decentralization.

2.2 Rationale for decentralization

Different regimes may have different reasons to experiment with decentralisation (Manor, 1999). Some may initiate decentralisation as an option, frustrated by the poor performances of excessive centralisation particularly in planning and administration (Rondinelli and Nellis, 1986:3).

In the 1980s, decentralisation has been advocated as a solution to the burden of development problems mainly associated with governance and administration and as a means to improve poverty reduction outcomes (James et al., 2001:1, Rajasekhar, 2002). Decentralisation was considered as one solution to effectively utilise limited resources, as many countries faced sever financial constraints due to unbalanced terms of trade. These countries were also forced to adopt decentralisation policies to respond to the dynamic changes in the international development strategies and donor preconditions (Rondinelli and Nellis, 1986:3).

Proponents of the liberal approach advocate decentralisation, mainly as an ideal means to ensure better organisational performance in effectively and efficiently delivering public goods and services. Furthermore advocates of public choice approach promoted decentralisation from the perspective of its ability to provide alternative choices for citizens in their public service demands (Siddiquee, 1997: 47, Osmani, 2000).

Further extending the argument, Bossuyut and Gould (2000:1) stress that "…democratic decentralisation can aim at empowerment of the citizens that can create political 'space' for people to participate in an effective manner in decision-making." Local government proximity to people broadens accountability of elected members for their actions and policy outcomes. This argument was further concurred by Mohan and Stokke (2000:25) that "decentralisation holds up the promise of a revitalisation of the local in terms of accountability and choice."

There are, however, some **tradeoffs** for effective decentralisation to happen. The first is the reluctance of politicians and bureaucrats at higher levels to completely refrain from traditional top-down influence or relinquish power to the lower levels. The second is the inability of the marginalized one to make their voices heard in the face of elite domination of the traditional power structures (Osmani, 2000:22). Put in other word, limited local capacity to provide public services to the growing demands of the population undermines the outcomes of decentralization. Even there can also be costs, associated with weaker capacity to provide services on the part of governments at local levels (World Bank, 2002:108). Administrative responsibilities may be transferred to local levels without adequate financial resources and make equitable distribution or provision of services more difficult. Decentralization may itself lead to destabilizing levels and composition of overall public expenditures and public debt (Olympios, 2003:4).

For decentralization to be successful Olympios succinctly suggests **five conditions.** These are:

- Link local financing and fiscal authority to the service provision responsibilities and functions of local governments. Therefore, fiscal buoyancy and revenue generating is a prerequisite.
- The local community must be informed about the cost of services. In other words, participatory budgeting is important as the famous case in Porto Alegre,
- Mechanism by which the community can express its preferences- credible incentive for people to participate,
- System of accountability, and
- The legal and institutional framework (structure of service delivery responsibilities and the intergovernmental fiscal system).

The following section provides a bird's eye view coverage on conceptual issues in fiscal decentralization in general and intergovernmental transfer in particular.

2.3 Some conceptual issues in fiscal decentralization

The system of resource allocation, both financial and administrative, is one of the key variables that determine the impact of decentralisation (Crook and Sverrisson, 2001). It is noted by UNDP that: fiscal decentralization is perhaps the core components of decentralization. To carry out decentralized functions effectively adequate level of revenues, locally or transferred is essential. Fiscal decentralization could have different forms, viz. self financing (cost recovery), co-financing (co-production), expansion of local revenues, intergovernmental transfers and borrowing. Intergovernmental fiscal relations and fiscal decentralization deal with how public expenditures and revenues are organized between teirs of governments in the national polity (UNDP, 2005:2).

Local governments to be able to fully deliver the potential benefits of decentralization need to be fiscally empowered; i.e. how much control and authority they exercise over the use and management of devolved financial resources measured against basket of local services for which they are responsible, level of local taxes, and grant resources to finance local public services. In the absence of appropriate set of legal and institutional arrangements for local governments and a system of incentives, fiscal decentralization is mute. Fiscal decentralization involves key principles viz expenditure assignment, revenue assignment, intergovernmental fiscal transfers and sub-national borrowing in case local governments face revenue shortfalls (ibid.).

Expenditure assignment is the division of functions and responsibilities between levels of government. This is recognized by existing constitutions of a country if there is a complete devolution. Goods and services benefiting the entire nation, income redistribution polices, and government activities that involve spill over effects are supposed to be financed by central governments not by local governments (UNDP, 2005, p.3).

Revenue assignment is a function of expenditure assignment. Despite this, in most countries local governments cannot feasibly be assigned to revenue sources commensurate to their expenditure assignments. Revenue assignment to local governments is guided by such principles as stable source of revenue, easy to administer, easy to separate the tax base between different local jurisdictions; local taxes broadly correspond to the benefits received by local residents. Revenue decentralization might cause fiscal inequalities, as wealthier regions being able to collect more revenues than poorer ones (Lopcit, p.4). A critique made against decentralisation is that it hardly mitigates intra-regional disparities or disparities within localities (Manor, 1999). This is so because resource-poor localities cannot match the resources of the prosperous ones. In China, for instance, where certain provinces and local bodies were left to self-finance, the social sector in relatively poor provinces suffered from lack of funding (World Bank, 2001a: 107).

Crook and Sverrisson (1999) argue that locally generated revenues are often inadequate to meet expenditures demanded by local governments. Many local governments in developing countries are dependent on central funding for most of their activities. In the case of Ethiopia it is clear that "… the most important source of financing of the Regional and woreda level governments is the block grant transfer from the next higher level of government (Marito and Andrew, 2008, p.18)." The following section highlights on issues surrounding intergovernmental transfers.

2.4 Intergovernmental transfer

Intergovernmental transfer entails the shift of general revenues from taxes collected by the central government for general or specific uses (UNDP 2005:5). It is mainly targeted to assure fiscal adequacy to sub-national governments for the purpose of funding public services. The term grants or local government subsidies or subventions are interchangeably used. In this paper, for the sake of convenience, the term transfer and subsidy are considered interchangeably.

The purposes of transfers are to ensure: vertical fiscal balance (balance between fiscal needs and resource available), horizontal fiscal balance (fiscal balance at same level of government), funding of specific national priorities, and the effects of inter-

regional spill over or externalities are counteracted. It also serves as a mechanism to control the activities of local governments by central authorities (Ibid,).

Furthermore, Larry and Paul, (2001:23) note that there are different transfer mechanisms and policy choices to be adhered in intergovernmental transfer. These include:

- determination of the total size of the transfer pool,
- the distribution of the resources between qualifying local governmental jurisdictions, and
- guidelines and conditionality imposed for the use of funds that are transferred to the local levels.

The various approaches to allocate transfer pools include, inter alia, the following.

- tax sharing which is elastic but counter equalization across eligible jurisdictions.
- objectively defined formula which is common and more transparent but with limitations such as lack of timely and adequate data; some times there is a tendency to meet too many objectives with a single transfer and so many indicators are added to the formula that its overall effects are not clear as the case of Ethiopia.
- cost sharing (total or partial matching) and
- ad-hoc decisions. In the later case there is, however, great uncertainty on the part of the grant recipients and it is subject to arbitrary, subjective, and non-transparent allocations (Ibid, p.26).

Warner, et al., (2003, p.16) further suggest that the steps to determine block grant allocation formula include:

- formulation of policy objectives,
- collect relevant data,
- allocate towards sector funds,
- determine allocation factors (including weights),
- simulate transfers and
- analysis statistically to verify the weaknesses and strengths of the allocation.

According to the Ugandan Local Government Commission (2003, p.vi) the major **guiding principles** in the design of a transfer formula to be:

- Providing revenue adequacy,
- Preserving budget autonomy,
- Enhancing equity and fairness, stability (predictable transfers), simplicity and transparency, incentive compatibility, focus on service delivery (demand side than supply side),
- Avoid equal shares,
- Avoid sudden large changes,
- Grants should be announced in a timely manner corresponding to the local budget cycle.

Applying a formula effectively, however, requires that appropriate data are available and that local governments should not be able to manipulate the values of the factors included in the formula (Larry and Paul, 2001:23). The Ugandan LGC (2003, p.172) identifies the following desirable characteristics of allocation factors: accuracy, regularly update, independent source, free of local manipulation, reflects needs/demands, and avoid double counting. The Amhara region-woreda block grant transfer equation will be examined in line with the above principles and characteristics.

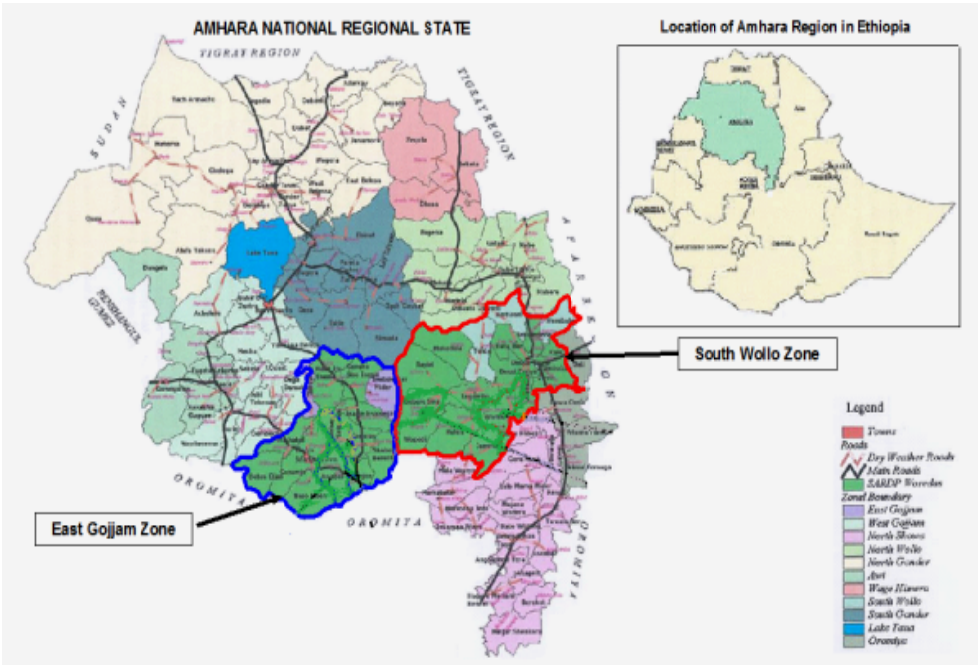
3. Fiscal transfer in Amhara region

3.1 Background

The decentralisation policy in Ethiopia is evident in a number of pertinent proclamations. A proclamation for the establishment of regional governments, revenue sharing between the Federal and Regional governments, and the 1995 constitution are the most prominent ones. Proclamation No.7/1992, the first legal basis for the establishment of regional transitional governments, has brought a transformation in both the local and central government system of the country (Mandefro, 1998). This proclamation provides for the establishment of initially fourteen and later on nine, as there was merger of some regions in the South, self-administering regional governments including the two major cities of Addis Ababa and Dire Dawa.

The Amhara National Regional State (ANRS) is a member state to the federal government comprising an estimated population of about 18 million and 170 thousand sq. km. area (BoFED, 2006). Three tiers of government do prevail as enshrined in the regional constitution. As explicitly indicated in Article 45 of the Regional constitution there are three tiers of governments viz the regional state, district and Kebele level administrative units. The region is sub-divided into 10 zones, (including three nationality zones), 128 rural Woredas (including Argoba special woreda), 38 city administrations (15 are accorded an urban status since recently), more than 3200 Kebeles which are further sub-divided into sub-kebeles (neighbourhoods) and *Gots (see the following map & figure)*.

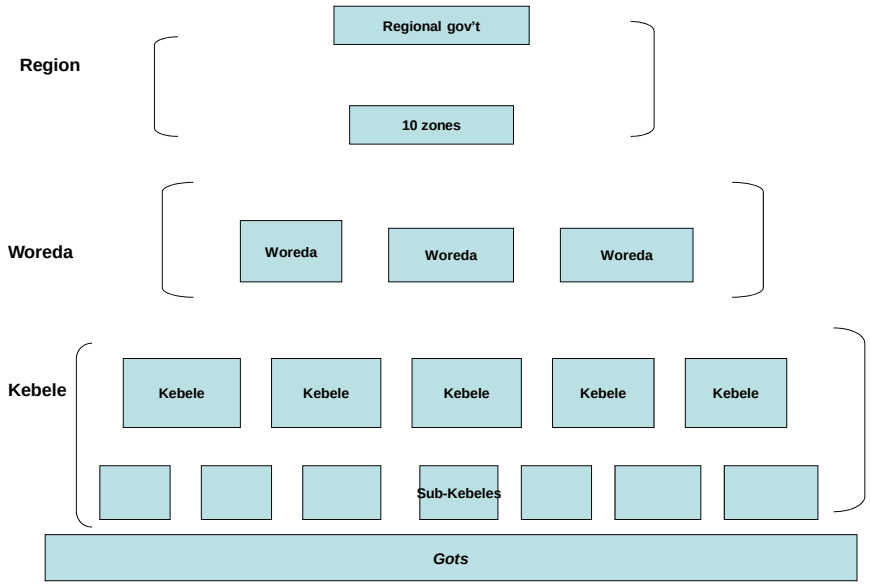
Figure 1.



A *Woreda* is the basic or lower unit of government representing an average population of 100,000 while a *Kebele* is inhabited by 5,000 people (World Bank, 2001b: 78). Zone is an administrative hierarchy created to serve as a bridge between the region and Woreda. As part of the local government, Himira, Awi and Oromiya nationality zones have established their own councils (ANRS proclamation. 2/1995).

Besides, a city administration or municipality represents local governments in small and large urban centres. In order to make urban centres contribute to the overall development effort, the regional government has issued a revised version of city administration proclamation that provides the legal framework for the establishment, reorganization and redefinition of the powers and duties for, and define a high degree of planning, administrative and financial autonomy to municipalities and cities (ANRS, proclamation No. 91/2003).

Figure 2. Tiers of government



Regional states are dependent, to no a smaller extent, on federal transfers for their expenditure requirements. Federal block grant covers 45 to 80% of the Regional expenditures in the form of transfer (G/Egziabher, et al. 2010: ii). There are two types of transfers, i.e. general purpose (block grant) and specific purpose grants. The general-purpose grant is untied and provides discretion on the use of financial resources to local governments. The objectives of specific purpose grant in Ethiopia are to fulfil the goals of national priorities which otherwise could not be attained by other tiers of government due to spill over effects and that encourage performance improvement (Marito and Andrew, 2008, p.18). The criteria of allocation of the grant

depend on the nature of the sectors objectives and the condition for effective implementation of the envisaged federal program.

Prior to the woreda decentralization reform, regional governments distribute subsidies to zones and *Woredas* in a variety of ways, some using formulae that partially mimic the federal transfer such as with the Amhara and SNNPR. According to the World Bank (2001c: 38), transfer distribution from zones to *Woreda* was 'always discretionary and followed no objective formula.' The common variables considered in determining the amount of transfers to *Woredas* include ongoing expenditure commitment, performance of the *Woreda* in the previous year related to project implementation, and the quantity of extra budgetary financing likely to be available to the *Woreda* from sources outside the purview of the *Woreda.* But after the woreda decentralization, the Amhara region has been following a unit cost need based approach which will be discussed elsewhere in the relevant section. The following section shades some highlight on intra regional allocation of functions.

3.2 Intra regional allocation of functions

The regional constitution is the legal framework that proclaimed the powers and responsibilities of the legislative, executive and judiciary of the regional government structure. Responsibilities devolved to regions include, inter alia, the formulation and execution of economic and social development policies and standards; overseeing land and natural resources, collection and mobilisation of revenues assigned to regions, and the maintenance of public order (article 52 of proclamation 1/1995). Functional allocation between tiers of governments is better understood in the following statement.

> *"The definition of functions is evolving, although across Regions the trend is toward decentralizing basic service delivery functions to the woredas and assigning higher order functions-such as provision of hospital care-to regional governments. Tertiary services, such as tertiary education, standard setting, and operation of specialized hospitals, remain the responsibility of the federal government (Mrito and Andrew, 2008, p.15)."*

The Woreda and Kebele councils are the highest decision making body within their jurisdiction. These sub-regional levels of government have the power to run and develop their own socio- economic affairs. They perform mainstream functions in their own viz approving budgets, formulating and executing development plans, conserving and developing natural resources, maintaining law and order. Woredas and kebeles, are assigned with tasks mainly related to basic public service delivery. The following box details the main functions of local governments (i.e. woredas and Kebeles). To what extent local governments have fulfilled their assigned functions through own revenue remains an issue. The following section, therefore, examines the revenue capacity of the government of the Amhara region.

Box 1. Local government functions

The Ethiopian decentralization process accords an important role to the lowest unit of the government structure (i.e. the Wereda) in the areas of planning and decision-making. The major constitutional powers and duties of the Wereda council include: approval of the wereda social service, economic development, and administrative plans and programs; levying and collection of land use taxes, agricultural income revenues and other local taxes; utilizing the Wereda's sources of revenue, excluding such other revenues allocated and administered by the region; preparation and approval of the Wereda budget; construction and maintenance of lower grade rural roads; administering primary schools, and junior health institutions within the Wereda; directing basic agricultural development activities, administering and protecting the natural resources of the Wereda. The Kebele administration has the following functions. These include: preparation and approval of annual community development plans, ensure collection of land use fee and agricultural income tax, involve in participatory budgeting process, participate in development activities, and settle disputes through social courts.

(Source: the Federal and ANRS constitutions).

3.3 Revenue capacity of the government of the Amhara region

Based on data gathered from the Regional Revenue Authority, there is indeed significant increase in actual revenue collection over the last six years, except for the

year 2006. This might be due to lack of tax payers' compliance and their reluctance to pay taxes, especially in cities. The highest annual increase has been recorded in the year 2007/08 & 2008/09. On the other end, the lion's share (70%) of the revenue comes from taxable incomes while the balance is secured from non-tax incomes (see Table 1).

Despite the fact that there is an absolute increment in revenues collection in the region, it still remains to be lower compared to the soaring expenditure requirements and the vast potential. The revenue generated from within the region covers only a maximum of 20 per cent of its annual expenditure requirement (BoFED, 2009). This implies that there is high vertical imbalance and the region depends largely on transfers injected by the federal government.

Table 1: Amhara region revenue collection by source (2005-2010) (Million Birr)

Year	Direct tax	Indirect tax	Non tax income	Total	Annual growth rate %
2004/05	246.8	66.0	116.6	429.4	-
2005/06	224.1	35.1	123.3	382.4	-10.9
2006/07	266.9	84.7	106.3	457.9	19.7
2007/08	379.9	59.6	166.1	605.6	32.2
2008/09	589.3	100.2	163.3	852.8	40.8
2009/10	NA	NA	NA	1,000.0	17.2
2010/11	980		228.8	1,208.8*	20.8

Source: BoFED, Development Indicators of Amhara Region 2007/08; ANRS Revenue Authority, p.114. * planned; NA data not available

To foster the tax collection and administration capacity of the region, the regional government has initiated the tax reform program since 2002. A preliminary study has also been conducted to make assessment of the revenue potential of the Amhara region (James et al., 2005). Recently, the regional council in its 16th regular congress has endorsed 1.2 billion Birr revenue to be collected in the current fiscal year under reference.

In the same token, local governments are assigned by the constitution to collect agricultural income tax, land use tax and taxes from commercial activities. The lion's share of the Woreda's revenue, however, comes from the agricultural tax. In most

rural Woredas, taxes from commercial activities are not significant. The major contributor for other tax income is tax from salaries. ToT within a specified range, rental income tax, licenses and fees from services rendered at districts provide alternative sources of revenue. Despite this some woredas have complaints about the way annual revenue targets are set by the Regional government tax authority. Targets have been set annually for each woreda without adequate in-depth assessment of the potentials of each woreda in a participatory manner (e.g. discussion with Bahir Dar Zuria woreda finance and plan office).

On the other hand, the expenditure requirement of Woredas is considerable, as they are responsible to provide basic public services such as primary education, health care, water supply and sanitation services. Although there are considerable improvements made year after year *Woredas* depend, largely, on subsidies by the regional government for their budgetary requirements. For instance, Debre Tabor, Ebenat, and Farta *Woredas* covered only 16.6, 32.9, and 23.1 per cent of their aggregate expenditures, respectively from their internal revenue sources during the years 1993-1995 (UNECA, 1998:290). Even in recent years this scenario has not been much abated as can be revealed in the following table, except for Metema woreda.

To encourage Woredas to efficiently collect internal revenues, the regional council has proclaimed local governments in this case Woredas to utilize the revenue collected exceeding the estimated endorsed revenue targets which later on shall be reported to BoFED and notwithstanding the approval of the regional council in its ensuing congress (Proclamation No 115/2005, art 6).

Be that as it may, there is significant disparity in revenue generation capacity of local governments in the region. In 2002 EFY, for instance, Boyeda, a remote rural woreda, and Metema, high potential woreda for investment, have amassed Birr 1.9 million and Birr 8.7 million revenues, respectively. Nonetheless, the former has been able to cover only 10.1% and the later 45.5% of its annual expenditure in the year considered.

Though the unconditional block grant is the overwhelming transfer system, there are however, other forms of grants transferred directly from the federal government to the regional government and beneficiary woredas. These include, among others,

specific purpose grants such as the food security program and the productive safety net program (PSNP), and the public sector capacity building program (PSCAP). These specific grants are considered as off budget sources distributed to the region, woredas and kebeles based on vulnerability status determined by the MoARD, now the MoA. Woredas are also encouraged to mobilize local resources in the form of labour, material and cash from the community. This is a guiding principle to be adhered by all actors involved in the development process. The grant transferred is just meant to serve as an engine to ignite the local development process. A case in point is that community activities supported by SIDA Amhara rural development program (SARDP), particularly related to Community Development Funds (CDF), are co-financed by the community up to and more than 35% of the total investment cost (Kebede, 2010, p.107).

Table 2: Revenue collection, allocated budget & share of own revenue (%) in selected rural woredas of Amhara region (2001-2002 EFY in Million Birr)

Woreda	2001 EFY			2002 EFY			Remarks
	Revenue	Budget	% of own revenue	Revenue	Budget	% of own revenue	
Beyeda	1.7	17.4	10.0	1.9	18.1	10.5	Remote
Gozamin	4.4	23.4	18.8	4.9	23.9	20.5	Near urban
Enemay	6.8	26.1	26.1	7.0	33.0	21.2	Surplus
Dera	3.4	29.1	11.6	5.7	27.9	20.4	Surplus
Legambo	5.1	24.9	20.5	5.1	23.9	21.3	Food insecure
Awabel	3.9	21.5	18.1	5.0	21.5	23.2	Surplus
Misrak Este	6.2	30.9	20.1	6.3	30.1	20.9	Surplus
Albuko	2.0	17.6	11.4	2.7	18.9	14.2	Food insecure
Metema	7.9	22.1	35.7	8.7	19.1	45.5	Investment area
Bahir Dar Zuria	4.3	36.4	11.8	5.4	37.5	14.4	Near urban
Average	4.6	25.0	18.4	5.3	25.4	20.8	

Source: BoFED (2009, p.40) 2002 EFY woreda and city administrations block grant formula and budget ceiling, Bahir Dar (Unpublished). Remark is by the author.

Be that as said, there is indeed considerable fiscal gap and inter-woreda (horizontal) fiscal imbalance which should be redressed through subsidies or transfers. The following section explores the experience of the Amhara State Region-woreda unconditional block grant transfer equation.

3.4 Unconditional block grant transfer

3.4.1 An overview of past trends

Unconditional block grant transfers to LGs have been experimented using a formula more or less in a similar fashion like that of the federal government. Before the woreda decentralization in 1994 EFY, the indicators and weights inbuilt in the formula were varied. For instance, in 1990 EFY & 1991 EFY recurrent commitments deserved 80% and 35% weights of the total, respectively. In 1995 EFY, population and inverse levels of development accorded 70% and 20% of the total weight, respectively. The remaining 10 % was accorded to own revenue generation. In the subsequent fiscal year, there has been slight change and population accorded (65%) and own revenue generation (15%), which appeared to be designed to support fairness, equality and efficiency, respectively (James, 2003, p.12). It is apparent from the table below that over half of the regional transfer allocation was based mainly on population size. This explicitly reflects policy makers' need for an allocative mechanism that is easily applicable (transparent) and demonstrates a fair criteria (ibid).

The main shortcomings include, inter alia, expenditure requirements of LGs were estimated using solely proxy indicators (i.e. more focus has been given to capital investment needs than recurrent needs). Besides, the share of allocation factors or weights was accorded in an arbitrary manner. As a corollary this has undermined unit costs or actual recurrent expenditure requirements of LGs. The share of some LGs, especially city administrations, falls short of funding the minimum expenditure requirement (e.g. salary). There has also been weak linkage with development policies. Besides it has hardly accommodated the urban and rural woredas at equal footings (James, et al., 2003). The authors further argue that "…none of the three current variables (population, level of development, own revenue) explicitly provide money for the existing infrastructure and their related costs." Cognizant of this fact, effort has been exerted to refine the formula and systematize the data collection process to the extent possible. Hence, a new block grant allocation formula was designed and introduced. The approaches inbuilt in the formula include a unit cost

need based and proxy indicator based. While the former is aimed to estimate recurrent budgets the later is meant to estimates capital investment requirements.

Table 3: Region-woreda unconditional block grant transfer allocation indicators and related weights (%) (1990-1995 EFY)

Indicators	1990 EFY		1991 EFY	1994 EFY	1995 EFY
	Recurrent	Capital			
Population	-	60	50	55	70
Development disparity	10	25	10	30	20
Revenue collection	10	15	5	15	10
Recurrent commitments	80	-	35	-	-
Total	100	100	100	100	100

Source: BoFED

N.B. Due to Ethio-Eritrean war the budget allocation formula in 1992 and 1993 EFY was skipped.

3.4.2 The current block grant transfer equation

BoFED has been consistently exerting efforts to refine and ease the current grant allocation formula and data tracking exercise. It has designed a revised form of transfer formula to rectify shortcomings observed in the old formula. The objective is to better accommodate expenditure requirements of local governments and substitute the incremental budget allocation approach by a more transparent and need based general purpose grant transfer allocation formula that may allow more autonomy to local governments in their budget allocation exercise (Marito and Andrew, 2008, p.23). Despite several efforts made, the grant formula continues to be commented and it lacks simplicity. For one thing it entails a number of cost drivers, assumptions and known for its massive data requirement. Despite these shortcomings, BoFED has claimed that the revised grant formula has enabled the region to have fairly allocated unconditional block grants based on regional standards, principles, objectives and reflecting government policies and priorities (BoFED, 2009).

3.4.2.1 Objectives and guiding principles

The **objectives** of the current grant formula are to:

- create the required fiscal capacity to enable districts deliver minimum standard basic services in line with their expenditure assignments.
- foster fiscal capacity of districts in order to enhance self financing abilities,
- narrow down inter-woreda development disparities, and
- realize a block grant system directly linked to development targets set by the regional and local governments.

The main **principles** adhered during the design of the block grant transfer formula include:

- create adequate fiscal capacity to finance basic expenditure needs,
- promote efficiency and effectiveness,
- allocate stable and growing share to lower levels of administrative echelons,
- maintain equity by providing more emphasis to districts with relatively lower revenue capacity and high expenditure needs,
- transparency and adhering to clear-cut objectives, and
- provision of unconditional block grants.
- With respect to protection of basic services (PBS) which is advocated by many donors, some more principles like **'fairness'** and **"additionality**" are amplified (BoFED, 2009).

To what extent these principles are systematically reflected in the design and application of the current block grant transfer system is further examined in the appropriate section.

3.4.2.2 The current fiscal transfer process

Once these guiding principles and objectives are articulated, the following step will be to determine the total available resource pool. Capital and recurrent expenditures are determined based on the regional fiscal framework which is not yet well matured. James (2003, p.4) suggests eight steps to be followed in the process of fiscal transfers. Included are: policy objectives (SDPRP), national MEFF (macro economic and fiscal forecast-resources), ANRS MEFF (yet to be developed), PEP/PIP (allocation by spatial and sectors programs, focussing woreda block grant

formula), budget (preparing capital/recurrent spending), approval of budget (iterative process), and expenditure (procurement and payments). The regional government has been trying to stick to the above steps.

Although it will be further elaborated later, the total annual budget of the region in 2002 EFY has increased to 5.8 Billion birr with an annual growth rate of 17.2% over and above the preceding fiscal year. Similarly in 2003 EFY, the regional state council has approved Biir7.004 billion annual budget. Notwithstanding this unprecedented increase, the Region is largely dependent on the federal government transfer. Of the total annual budget, own revenues covered only 16% and the balance (4.1%) comes from external loan and assistance for the same period. Similarly in 2003 EFY, 78.5 per cent of the regional budget comes from the federal treasury while 1.7 % comes in the form of external loans and grants, implying a declining trajectory. Internally generated revenues are estimated to cover only 19.7 per cent. This, of course, includes internal revenues to be collected and expenditures to be made by hospitals, prison administrations etc which sums up Birr 172 million (for details, please see Table 4).

Dividing the available resource pool between levels of government is determined following the regional fiscal framework, policies and strategies in harmony with levels of functions. Hitherto the share of recurrent and capital allocations is rationally determined by the regional administration council often to be 75% and 25%, respectively. This ratio has been serving unabated almost for the last one and half decade (BoFED, 2009).

Own revenue and external funding in the form of loans and grants are included in the overall resource envelop. The region has also been applying 15 percent offset in the budget allocation system to balance the share of LGs earmarked as on-the-budget loans and grants. The objective is just to maintain fairness in the allocation of resources. In other words, 15% of targeted international aid to a woreda is subtracted from the block grant and redistributed to all eligible woredas based on the distribution equation (James, 2003, p.13). However, there have been allegedly some uncertainties in the timely and smooth flow of donor funds such as ADB. This has to some extent jeopardized the timely expediting of approved annual plans and budget by LGs. Cognizant of this fact, the regional government has decided to ban such offsetting practice effective as of 2003 EFY.

Table 4: Approved Budget by Source: - 1998 - 2002 EFY (In Billion Birr)

2003		Budget Source	1998		1999		2000		2001		2002	
In Br	In %		In Br	In %	In Br	In %	In Br	In %	In Br	In %	In Br	In %
6.880	98.2	Treasury	1.904	89.1	2.487	93.8	3.765	97.3	4.789	96.2	5.533	95.8
5.500	78.5	Federal Subsidy	1.519	71.1	2.082	78.5	3.32	85.8	4.189	84.2	4.628	80.2
1.208+ 0.172	19.7	Region Revenue	0.385	18.0	0.405	15.3	0.445	11.5	0.6	12.1	0.905	15.7
0.121	1.7	External Sources	0.232	10.9	0.164	6.2	0.106	2.8	0.188	3.8	0.240	4.2
0.009	0.1	Loan	0.014	0.7	0.023	0.9	0.015	0.4	0.034	0.7	0.041	0.7
0.112	1.6	Assistance	0.218	10.2	0.141	5.3	0.091	2.4	0.154	3.1	0.200	3.5
7.004	100		2.136	100.0	2.651	100.0	3.871	100.0	4.977	100.0	5.773	100.0

Source: BoFED (2009, p.40) 2002 EFY woreda and urban administrations block grant formula and budget ceiling, Bahir Dar (Unpublished).

Once the overall resource envelop is determined, the following step will be how to fairly distribute the budget share of LGs. So far, the unit cost need based and proxy indicator approach combined has dominated the grant transfer scene in the region. The following section details how the unit cost need based approach works.

3.4.2.3 The unit cost need based approach

This approach has been followed since the on-set of woreda decentralization policy mainly to determine recurrent expenditure requirements while the proxy indicator approach is to estimate the capital investment requirements of local governments. In reality, however, the efficacy of these approaches has been marred by immense data requirements and entails a lot of assumptions. The unit cost analysis has been exercised considering priority sectors sensitive to poverty reduction outcomes and their spending share. The priority sectors include: education, health, agriculture, and water supply. All other public bodies come under what is known as general and administration sector. The performance target of each sector is presumed to increase by 5% flat rate over the preceding fiscal year (BoFED, 2009). This is applicable to sectors irrespective of the prevailing external and/or internal factors.
In a more broad sense, the major cost drivers incorporated in the block grant transfer equation embraces:

- Service delivery standards,
- Number of technical and support staff necessary to run a minimum standard service,
- Average salary and running costs,
- Desired level of service delivery & performance targets.

The required data from LGs is computed by BoFED to estimate recurrent expenditures presumed to finance the existing stock of services. Nevertheless, several adjustments have been made to get averages and standardize the minimum and maximum levels of wage payments, staff size, etc. The main concern, however, is the fact that the quality and reliability of the available data submitted by local governments is often found to be inferior (BoFED, 2009). Despite the fact that the required data is supposed to be endorsed by LG cabinets and signed by chief administrators, there is no guarantee about its reliability and consistency. In a nutshell the data base management system at woreda level is rudimentary. Besides,

there is no inbuilt mechanism yet to triangulate and cross check the socio-economic data from a neutral body, albeit BoFED has tried to some extent to x-check the woreda data with that of the Bureaus.

The respective process owner at Gozamin WoFP office has unfolded that line sectors are not sensitive to update and maintain consistency of required data. There is no clear accountability mechanism for any likely manipulation of the value of factors in the formula. Except for population and area factors, the required disaggregated data is not easily available from CSA. The data base management capacity of the woreda Finance and Plan office (WoPF) is found to be weak (interview with Dessie Zuria WoPF).

3.4.2.4 Sector specific cost drivers

Quite a number of cost drivers are incorporated in the formula so as to estimate recurrent expenditures. Over the last few years the same type of indicators and cost drivers have been applied. As an illustration, the 2002 EFY sector specific cost drivers are depicted as follows. It should be noted that there is no significant difference as such between the type of the existing and the preceding fiscal years' allocation indicators and associated values, except slight adjustments are made.

1. Education:

1.1. Standards: student teacher ratio considered is (1:50). If the ratio is less than 50 and more than 60, it is adjusted to 50 and to 70, respectively.

1.2. Average teacher salary: actual data from each woreda is considered with no adjustment.

1.3. Operating cost: for grades 1-8, Birr 12.5 /student and for grades 9-10, Birr 20/student is presumed with a further adjusted of 75% of the standard. For woreda education sector office, 15% of the total recurrent expenditure is taken into account. In addition, Birr 60,000 and Birr 20,000 are considered as maximum and minimum required running cost, respectively.

1.4. Administrative staff size and salary: the minimum staff size required in the formula for primary, secondary and woreda education sector office is 2, 6, and 5, respectively. The woreda data is taken at face value, if the staff size is more than indicated. For the average salary of the woreda education sector office, the actual salary expended by each woreda is taken into account with slight

adjustment. However, the monthly salary should not be exceeded Birr 2,319. Birr 1, 664/ month is assumed for every other support staff per each education institute.

1.5. Performance target: 5% annual growth rate of the eligible student population is considered for each LG.

2. Health

2.1. Standards: Average service coverage standards considered are 1:25,000 for health centre, and 1:5,000 for health post & upgrading. The maximum number of people to be served is determined based on either national standards or total number of patients registered as service takers by each LG. However, this figure should not exceed the total population size of each LG.

2.2. Average salary of health personnel: the highest monthly salary recorded is for Kemise (Birr 1,685) and the lower is for Lalibela city administration (Birr 342).

2.3. Operating cost and procurement of medicine: for health centre, Birr 210,000 and Birr 100,000 are assumed for operating cost and purchase of medicine, respectively. For health post & upgrading, Birr 25,000 and Birr 15,000 are considered, respectively. In both cases, 50% of the standard expenditure is assumed. Besides, for woreda health sector office, 15% of the total recurrent expenditure is calculated. However, the maximum salary shall not exceed Birr 50,000 and the minimum not to be lower than Birr 15,000.

2.4. Support staff size and average salary: number of staff for health post & upgrading, health centre, and woreda health sector office is supposed to be minimum 1, 6, and 5, respectively. If there are woredas exceeding the minimum threshold, the woreda data is directly taken. Average staff salary for a woreda health sector office is calculated based on data gathered from each woreda with some adjustment to Birr 1,573/month. If no adjustment is made, the woreda data is directly considered. For sectoral institutions, if adjustment is made on that of the woreda figure, Birr 596/month is considered. If, however, no adjustment is made, the woreda figure remains to serve the purpose.

2.5. Performance target: 5% annual increase of the maximum number of service recipients is considered. The maximum number of patients is calculated based on either the report made by woreda sectors or national standards.

3. Agriculture and Rural Development

3.1. Standards considered: A rural household to DA ratio is calculated based on the total projected number of rural households and number of DAs deployed in each rural woreda.

3.2. Average salary of DAs: the maximum monthly salary is assumed to be Birr 1581 for Sekota town and the minimum Birr 573 for Debre Tabor city administration.

3.3. Operating and related costs: 15% of the total recurrent expenditure of the Woreda Agriculture & Rural Development sector office and staff salary, excluding DAs & vet technicians. This is further adjusted not to exceed Birr 400,000 annually. The standard operating cost for each woreda vet clinic is assumed to be Birr 16,400 and for local or *Tabia level* vet clinic Birr 5,480. The maximum cost is further adjusted not to exceed Birr 60,000 and the minimum to be not less than Birr 15,000.

3.4 Staff size and average salary:

3.4.1. For staff size and average salary, data submitted by each woreda is directly taken. The average staff size is assumed to be 53, if the woreda data is not accounted. However data is directly taken from city administrations with no adjustment. For the woreda vet clinic and *Tabia* clinic, 2 and one vet technician are considered, respectively. If it is more than the specified number, the woreda data is simply considered.

3.4.2. Woreda Agriculture and rural development sector office: if the staff size is amended, Birr 1,082/month is assumed and for vet clinics, Birr 1,105/month is considered. Otherwise the woreda data is directly considered with no change.

3.5. Performance targets: 2.28% annual growth rate of the total rural households and 1% of the livestock population over and above the preceding year is considered.

4. Water supply

4.1. Standards considered: for spring development 1,000 inhabitants, for motorized spring 2,000 inhabitants, for HDW 400 inhabitants, for shallow well 1,000 inhabitants and 3,500 beneficiaries are supposed to be served by a deep well. The maximum service coverage is either taken from the woreda data or calculated based on service coverage standards.

4.2. Operating costs: 15% of the total recurrent expenditure per Woreda water desk and staff salary is considered. This is, however, adjusted not to exceed Birr 20,000 and should not be lower than Birr 10,000.

4.3. Staff size and salary:

4.3.1. Staff size: the figure from each woreda is directly considered with some adjustment. Therefore, the minimum threshold staff size is assumed to be 5, if a LG has lower than 5 staff members.

4.3.2. Average salary: this depends on whether or not adjustment is made. Therefore, if adjusted, Birr 1,305/month for every other staff and if not, the woreda data is directly considered.

4.4. Maintenance costs:

4.4.1. Minor maintenance: standard costs are assumed to each water supply scheme. Hence, for spring development, motorized spring, HDW, SW and DW, Birr 450, Birr 2,000, Birr 450, Birr 2,000, and Birr 3,000 are presumed, respectively. The cost for minor maintenance is calculated based on potential service coverage standards. However, the maximum should not exceed Birr 75,000 and the minimum to be below Birr 10,000.

4.4.2. Preventive maintenance: it is assumed that the cost of preventive maintenance for spring development, motorized spring, HDW, SW, and DW to be Birr 225, birr 1,000, Birr 100, Birr 1000, and Birr 1,500, respectively. However, the maximum should not exceed Birr 30,000 and the minimum to be not below Birr 5,000.

4.5. Performance target: an annual growth rate of 5% of the total beneficiaries over the preceding year is supposed. The maximum result is either directly taken from woreda records or calculated based on potential service coverage standards.

5. Administration and general service:

Administrative service coverage is not calculated based on standard coverage as it is found to be difficult. It is thought, however, that the cost variation across woredas might be significant. It is also understood that as the lion's share of the woreda budget is earmarked to recurrent expenditures, the discretionary role of woredas in allocating the block grant might have a repercussion on expenditure patterns. Besides, the objective of a unit cost need based approach is to estimate recurrent expenditures. Therefore, LGs in favour of administrative sectors might secure more budget than those who are in favour of poverty sensitive sectors which is indeed contrary to one of the allocation guiding principles (BoFED, 2009). To minimize such

undesirable outcomes and precedence some adjustments have been made as deemed necessary.

5.1 Recurrent costs (salary and operating)

5.1.1 Staff salary: The personnel of all other sectors falling under the general and administration category, average monthly salary and annual salary of staff are calculated. Otherwise, the data from each LG is taken. Effort has been exerted to rectify data discrepancy, if at all discovered.

5.1.2 Operating cost: Certain adjustments have been made to correct cost estimates, if found below or above the average, to sustain a balanced and standard service delivery. Hence, to estimate the average operating cost, 15 % and 10% of the total recurrent budget is considered for those shares exceeding 15% and below 10%, respectively. The per capita expenditure is calculated on the basis of recurrent expenditure requirements and divided by the total projected population for each woreda. To estimate the total expenditure requirements, the final result is multiplied by the existing population size.

Table 5: No. of indicators applied to estimate recurrent costs

Sector	Major indicators	Sub- indicators
Education	5	-
Health	5	-
Water	5	4
Agri.& RD	5	2
Administration	2	2
Total	22	8

Source: BoFED, 2009

From the foregoing discussions, it is apparent that the unit cost need based formula is poverty sensitive, though the share of administrative and general service category remains to be significant.

3.4.2.5 Proxy indictors

Local governments require capital outlays necessary to expand minimum standard public services to the ever increasing population and minimize the prevailing development disparities. As already indicated elsewhere in this paper, the expenditure requirement of woredas for capital investments is calculated based on

proxy parameters. The balance (i.e.25% of the total local government annual resource envelope) is earmarked for capital outlays to be determined based on proxy variables. Therefore, the capital budget requirement of each local government is calculated as follows.

- The key cost drivers are coverage of social services such as health, education (enrolment rates), water supply, and veterinary service). The lower the coverage, the higher will be the budget share for a particular LG. For such variables as student enrolment and student classroom, etc., inverse values or indexes are considered.
- Number of institutions are divided by total population and multiplied by average values.
- Weights are attached arbitrarily to each poverty sensitive sector. Accordingly, the share of education, health, water supply and agriculture is like 35%, 30%, 15% and 20%, respectively. However, specific weights have never been updated since the last eight years.
- The capital budget formula is, therefore, (education index x 0.35) + (health index x 0.30) + (water index x 0.15) + (agriculture index x 0.20).

It is evident from the above table that the highest weight accorded is for education followed by health, agriculture and water sectors. This explicitly shows that the formula is poverty sensitive, although rural road related indicators are not apparent.

Table 6: Summary of proxy indicators & weights (%) to estimate capital expenditures (2003 EFY)

No.	Selected sectors	Proxy indicators	Weight in %
1.	Education		35.0
		1.1. Student class room ratio	17.5
		1.2. Gross enrolment ratio	17.5
2.	Health		30.0
		2.1. Primary health care coverage	30.0
3.	Agriculture & RD		20.0
		3.1. No. of Vet clinics in rural kebeles	20.0
4.	Water		15.0
		4.1. potable water supply coverage	15.0

Source: BoFED, July, 2002 E.**C.**

3.4.2.6 Unconditional grant transfer exercise to nationality zones:

The transfer allocation exercise to nationality zones (i.e. Himira, Awi and Oromiya) used to be incremental. However, since 2003 EFY, the budget transfer has been experimented based on a formula that comprises four major indicators associated with corresponding weights. These indicators include:

- population of the administrative zone,
- distance of zone capitals from Bahir Dar,
- distance of woreda capitals from zone capitals, and
- the area/land size of each zone.

The proportion between salary & operating cost is decided to be 55% & 45% of the total budget allotted to the nationality zones, respectively. To estimate operating costs, the corresponding weights for each indicator is assumed to be 11.25%, though it is not clear why it is determined to be the same. Once the share of zone dept's & LGs budgetary allocations are known, the respective nationality zone councils are supposed to approve it and notified to the respective LGs in their jurisdiction.

3.4.3 Strengths & weaknesses of the current block grant transfer

To reiterate, the region-woreda unconditional block grant transfer formula has been advancing initially from a simple three parameter to a more complex unit cost need based approach. It is therefore claimed by many that the current transfer formula is superior to its predecessor, though a lot remains to be improved (BoFED, 2009). The strengths, weaknesses and related issues are depicted in the following sub-sections respectively.

3.4.3.1 Strengths

- The fact that the formula is largely dependent on mainly national/regional standards and actual costs, it renders relatively better fiscal capacity to local governments.
- Most of the indicators are poverty sensitive that foster policy and budget linkages. LGs have tried to adhere to national and regional policy directions and overall poverty reduction strategy frameworks while preparing annual budgets and set priorities.

- The current region-woreda block grant transfer system is sensitive to spill over effects.
- The formula estimates recurrent expenditure requirements for both rural and city administrations at equal footings. Besides, the regional government has initiated transferring specific purpose grants to urban centres.
- Effort has been exerted to make data tracking and triangulation more of participatory and up-to-date. LGs are directly involved to submit the required data for each year.
- LGs are motivated to utilize extra revenues collected exceeding their annual targets set by the regional Revenue Authority. The intention is to stimulate them improve their efficiency. There are, however, some concerns that LGs might plan below capacity anticipating more grant transfer or subsidy.
- Direct donor intervention has been considered in the formula. In this respect, 15% offsetting has been exercised. In addition, protection of basic services/ local investment grants (PBS/LIG) are considered in the transfer envelop. In 2002 EFY, for instance, there has been 18 pilot woredas in the region benefiting from LIG. Nearly 5-7 million birr has been set aside exclusively for capital expenditures for each pilot woreda.

3.4.3.2 Weaknesses and related issues

- The transfer formula entails extensive data requirement. There is no inbuilt mechanism to avoid deliberate or unintentional manoeuvring of the value of factors of variables as the data is directly grabbed form each jurisdiction. There is no yet neutral regional body to offer the required data, except that of CSA particularly related to population and area related data. Also, the format requires salary expenditure data to be tracked directly from payrolls. This is, however, found to be tedious and there are possibilities where salaries might be paid before June.
- The recurrent unit cost calculations made based on as many indicators as 22 major & 8 minor is not simple as such to be easily grasped and discerned by grant recipients. The number of sub-indicators (cost drivers) applied in the formula is quite overwhelming. This might undermine the transparency and/or simplicity of the effect of the grant transfer formula. Put succinctly, it can be understood that:

"…it is generally better to explain 90% of the variation in expenditure needs by use of 5-6 criteria than to explain 97% with 30 criteria. Instead the experience from many countries show that it might be sufficed to have 7-10 criteria to explain most of the variations in expenditure needs (GoU LGC, 2003:35).

- There is no indicator representing area and number of kebeles. There are cases where smaller and bigger woredas (in terms of area & population size) secured more or less the same amount of budget. For instance, the number of Kebeles in Gozamin and Debre Elias is 26 and 16, respectively. No one is sure about the boundary adjustments made in neighbouring Kebeles is considered in the overall grant allocation effort (interview with Gozamin WoFP).
- There is no representative indicator as such that explicitly shows the current formula is gender sensitive.
- Cost drivers related to accessibility are not incorporated though LGs are responsible to expand road density and maintenance issues. Also road is one of the poverty sensitive sectors, though it is strongly argued that it is assumed to be zero cost as village level road construction and maintenance is often accomplished by community labour.
- There is no indicator representing revenue capacity of LGs, although it is argued that in the absence of revenue assignment between the Region and LGs, this indicator might not be relevant.
- Estimating capital costs for agriculture and rural development is represented only by number of vet clinics. However, this indicator might not be sufficient. The demand for FTCs might be equally representative to the sector as the increase in the coverage of agricultural extension services through FTCs is equally valid and easy to track the required data.
- It is apparent from the incumbent unit cost need based approach that it involves a number of presumptions in the absence of standards. For instance, to calculate operating costs, 15% of total recurrent expenditure is considered. Here, it seems not plausible as to the foundation of taking such specific percentage. Moreover, it is not apparent whether or not some costs are adjusted based on prevailing inflation rates (Uganda LGC, 2003). Moreover, explanations are not made as to why there are few outliers.
- Although standards or potential service coverage has been considered as benchmark, it appears tricky that the reality could be otherwise. The actual

coverage might vary depending on accessibility, ruggedness of terrain, population density, availability of the required staff and equipment.

- Average wage related costs are considered while some LGs are actually paying maximum wages. This might disfavour LGs paying relatively high salary (interview with the budget standing committee of the regional council).
- LGs are pressed by Bureaus to accommodate new staff recruited at region level such as teachers and health personnel without considering the capacity of LGs & earmarking complementary budget. There is also unnecessary competition among LGs instigated by regional Bureaus without taking into account their fiscal capacity. For instance, student teacher ratio is considered as one criterion to rank LGs in their performance to achieve quality of education. As a result LGs are tempted to fill all vacant posts without paying due attention to its budgetary implication for the coming academic year.
- Staff size saturated in city administrations and even in some rural woredas adjacent to urban centres due to imposed transfers & recruitments with high salaries. A number of woredas, especially those surrounded by urban centres, have encountered persistently with critical budget constraints. Gozamin woreda, for instance, has encountered budget shortages estimated to about Birr 600,000 in 2002 EFY to cover salary payments. This has happened mainly owing to the fact that staff size has saturated in few sectors such as education. As the woreda is very close to D/Markos town, there is a tendency by long serving staff to live close to urban areas than staying in remote woredas. The same is true with Bahir Dar Zuria woreda and Bahir Dar city administration. Hence, the challenge is LGs might suffer from lack of capital expenditures as the lion's share of their budget is committed to wage related payments.
- Although there is positive trend in the proportion of budget share in favor of LGs, there are, however, some concerns on the part of LGs that they are often unable to pay per diems for field workers while this is not the case at region level.
- Though there are observed improvements in the incumbent budget transfer (e.g. in 2003 EFY), the grant allocation formula exercised by the nationality zones were used to be unsystematic. They have got their share after estimations were made to each woreda and the expenditure requirement of the zone administration was added.

- Allocating seed money has been followed as an approach by the region mainly for regional capital outlays. However, this has overstretched allocation of scarce resource of the regional government as it might cause unnecessary competition among bureaus tempted to secure more budget for the ongoing projects at the expense of other priorities. This might be further exacerbated as the efficiency of sector bureaus has been improved year in year out.
- Sectoral and spatial allocations at LG level are not guided by objectively defined approaches, rather accomplished in an ad hoc manner. The main concern is that some sectors which are not yet cabinet members might be marginalized while allocating resources.
- Similarly, there is no clear indicator and objectively defined formula to allocate budget to regional Bureaus, albeit this is easier said than done.
- Unrealistic revenue target setting and absence of revenue potential assessment by the respective authority.
- Inadequate number of staff to prepare allocation grants formula. After the implementation of the so called business process reengineering (BPR), a section is created at BoFED with a responsibility to coordinate the budget subsidy & administration process having four experts. It seems implausible to merge the two functions. Besides, at woreda level there is only one expert who is in charge of coordinating and consolidating socio-economic data required to apply in the formula.

3.4.5 Review of the planning process & budget cycle

3.4.5.1 The planning process

The basis for the planning process in the region is stipulated in pertinent provisions of the Regional constitution. The planning approach is said to be bottom up whereby various actors are supposed to be involved, though it is felt that the coordination of the process is cumbersome and onerous.

It is clearly stipulated by the federal constitution that article 50(4) requires the states to grant “adequate power” to the lowest units of government “… to enable the people to participate directly in the administration of such units.” It is succinctly stated in article 89(6) that ‘’…government shall at all times promote the participation of the people in the formulation of national development policies and

programs; it shall also have the duty to support the initiatives of the people in their development endeavours." It is further underlined that participation in planning enables citizens' views to shape official policy (Crook and Manor, 1998).

The preparation of sub-national budget plans has double pronged dimensions as an overarching planning framework i.e. first, setting of priorities and goals and second managing funds. As already stated elsewhere in this paper, the administrative hierarchy of ANRS is cascaded down to the government team level in order to broaden the direct participation of the local community in the planning, implementation and monitoring and evaluation process of the socioeconomic development endeavour. The priority needs of the community are gathered at this very grassroots level and submitted to the '*got*' and then to the sub kebele level planning team. The elected members from development teams supported by development agents facilitated the planning process. In order to facilitate the planning process, the planning and resource mobilization team is organized below the kebele level.

With the support of development agents (Das) a plan drafting committee prioritizes and draws up the sub-kebele proposals and is submitted to the Kebele administration for consideration. After the review by the Kebele council's development committee draft sector proposals are submitted to the kebele Council for its review, and subsequent submission to the Woreda council for final endorsement. In parallel, the respective sector offices after compiling and reviewing Kebele proposals, submit their recommendations to the woreda cabinet for further scrutiny and approval by the woreda council after synchronizing it with that of the Kebele proposal.

The final approved woreda plan will be submitted to the zone administration simply for its follow up and oversight. Since the recent past, each Woreda has tried to prepare and implement a five-year strategic plan. This has helped as a framework to prepare annual plan of operation and budget. However, it should be consistent with the overall regional and national policy directions and strategies. Before the woreda decentralization policy was effected, Beyene (2000:134) argues that"…though the plan proposal starts from the Woreda level and have some resemblance to bottom-

up process of planning, sectoral representation plays a major role in forwarding proposals upward with little or no participation of the people."

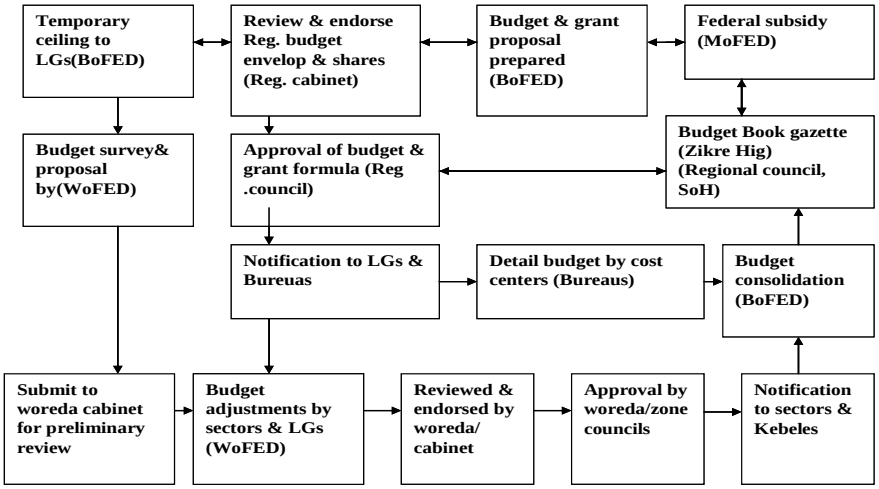
BoFED is responsible to prepare and submit the draft regional plan document to be discussed and approved by the regional cabinet and then by the regional council. After the regional cabinet approves the annual development plan, each Bureau is responsible to prepare detail operational plans and budget. The regional government is trying to guide the planning process in line the current reform programs. The overall budget cycle of the Amhara region is briefly discussed in the following section.

3.4.5.2 The overall budget cycle of the Amhara region

The budget process starts by providing LGs with temporary ceilings for planning purpose until the final block grant is approved by the regional council and notified by BoFED. The regional expenditure envelope is determined based on the Federal subsidy and own revenues. The federal subsidy is notified mostly at the end of the third quarter or beginning of the fourth quarter. Regional states often know the actual subsidy end of June, though MoFED tries to communicate BoFEDs temporary ceilings beforehand until the House of Federation (HoF) approves the grant transfer formula.

LGs with a technical support rendered by WoFP offices and based on temporary ceilings notified requested line sectors to prepare their detail recurrent and capital budget proposals. Once the approved block grant amount is notified, line sector offices are supposed to make adjustments based on actual ceilings and submit final budget proposals to be reviewed by woreda cabinets and further be approved by Woreda councils.

Figure 1: The Regional Budget cycle



At higher level the regional council is the main body responsible for the appropriation of the region's budget. BoFED is responsible to prepare a draft block grant proposal based on priorities of the region to be approved by the regional cabinet and through it by the Regional council. After the regional administration council has approved the ceiling of Regional and woreda level budget share as well as the capital and recurrent budget share, BoFED tries to prepare proposals on grant formula and budget proclamation for final approval by the Regional council. Once the council has endorsed the grant formula and draft budget proclamation, each rural woreda and city administrations would receive their respective share for further planning and budgeting as well as approval by the respective woreda councils and nationality zone councils in the case of Himira, Awi and Oromiya zones. Local governments have started to post approved budgets in public places for accountability and transparency.

Allocation of budget for sector Bureaus is, however, based on proposals and trends. The respective umbrella Bureaux are tasked to allocate annual budgets to subordinate sector Bureaux and they in turn prepare recurrent and capital budget proposals to be submitted to BoFED. At the Woreda level, sector offices submitted their recurrent and capital expenditure proposals to WoFP offices for further consolidation. The consolidated Woreda budget along with that of zones will be

submitted to BoFED through its zone branch offices. Finally, once the regional annual budget book is prepared, BoFED will submit it to the speaker of the house of the regional council to be gazetted by Zikre Hig. However, strict adherence to the budget calendar at all levels remains an issue (interview with the budget standing committee of the regional council).

The Amhara Region Budget Calendar

Item No.	Level of plan/budget cycle	Schedule	Responsibility
1.	***Preparations by the executive body***		
	1.1. pre-budget preparation	Up to 30, February	All public bodies
	1.2. allocations to tiers of gov'ts based on approved formula	Up to 10, March	BoFED
	1.3. Plan & budget call	Up to 10, March	BoFED
	1.4. Plan & budget call by plan & finance branch offices	Up to 25, March	Nationality & WoFP offices
	1.5. Preparation of plan & budget	25 march-15, May	Public bodies at all levels
2.	***Approval by the legislative body***		
	2.1. Approval of region & woreda resource share and grant formula	Up to 30 February	Regional council
	2.2.Aaprroval of annual plan	Up to 30, May	Regional council
	2.3. Approval of budget	Up to 30, May	Regional council
3.	***Implementation by executive body***		
	3.1. Budget notification	Up to 5, June	BoFED
	3.2. Endorse approved budget	Up to 20 ,June	LGs
	3.3. Notification of approved budget	Up to 30, June	Nationality zone/WoFP offices
	3.4. Submit allocated budget for consolidation by BoFED	Up to 20 July	Nationality/ WoFP offices
	3.5. Execution of declared budget	Starting 1st July	Public bodies
	3.6. Submit monthly financial & progress report	Starting 30, July	Public bodies
4.	***Accounts audit & follow up***	-	-

Source: BoFED

3.4.6 Budget allocations and expenditure patterns

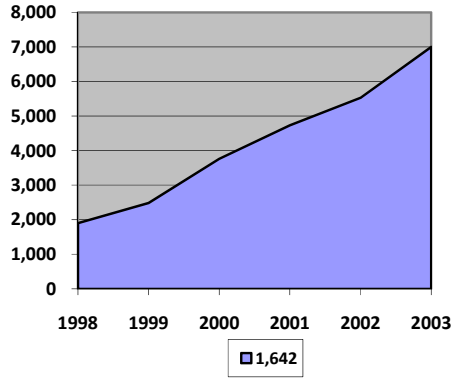
As most LGs cover on average less than 20 % of their annual expenditures from own revenue; the regional government is responsible to transferring significant amount of budget to LGs. The following table shows that there is an increasing trend in the budget allotment (i.e. from 70% to 74%) of LGs from the total available resource pool

in 1997 - 2002 EFY. For Region level expenditure assignment, 24% of the total resource pool is earmarked and 2% is set aside as reserve fund for unforeseen and emergency circumstances. This varies from year to year depending on the total available resource pool. In 2003 EFY, the share of local governments, Regional bureaus, and contingency budget is 73.2%, 23.6% and 3.1% of the total annual approved budget, respectively (see Table 7). This shows that there is slight decrease in the overall share of local governments and an increase in the contingency budget compared to the preceding year. But it should be noted that in case there is some shortfalls on the part of local governments the regional government is pressed to borrow cash to those woredas facing deficits from the contingency budget. LGs are of course obliged to settle such borrowings from their subsequent fiscal year subsidy.

Table 7: Budget allocation by tiers of governments; (1997 – 2003 E.F.Y) (In Billion Birr)

Details	1997 E.F.Y.		1998 E.F.Y.		1999 E.F.Y.		2000 E.F.Y.		2001 E.F.Y.		2002 E.F.Y.		2003 E.F.Y	
	Birr	%	Birr	%	Birr	%	Birr	%	Birr	%	Birr	%	Birr	%
Local Government	1.15	70	1.333	70	1.843	74	2.821	75	3.518	74	4.085	74	4.914	73.2
Regional Bureaus	0.443	27	0.533	28	0.609	24	0.874	23	1.145	24	1.348	24	1.58	23.6
Contingency	0.049	3	0.038	2	0.039	2	0.07	2	0.075	2	0.100	2	0.21	3.1
Total	1.642	100	1.904	100	2.487	100	3.765	100	4.738	100	5.533	100	7.004	100

Source: BoFED



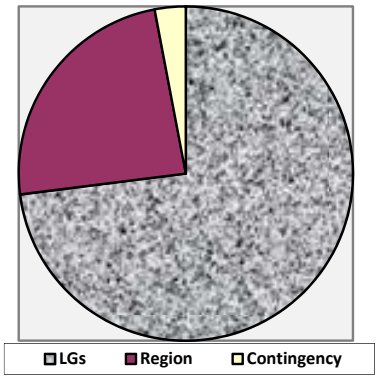


Table 8 below depicts that in 2002 EFY, 55 per cent of the annual budget is allocated to rural woredas in the form of unconditional block grants, 1.9% for local investment grant, 0.7% for nationality zone councils, 0.5% for newly reorganized towns, and 7.1% for urban development fund in the form of purpose specific grant. There are also other categories of allocations where the Regional government has committed itself to earmark specific purpose grants for specific activities. These are related to regional expenditure assignments; inter alia, procurement of vehicles to be distributed to woredas and Bureaus alike according to priorities, and procurement of machineries for Rural Roads Authority, revolving fund for agricultural extension packages, and construction of six colleges, capacity building and the construction of 30 rural hospitals. Besides, 1.8% of the annual budget is earmarked as contingency for unforeseen circumstances.

The actual expenditure pattern of each level of government is more important than planned ones as local governments are allowed to flexibly reallocate their budgets according to changing circumstances. Empirical evidence form previous studies show that the overall trajectory of recurrent budget allocations in *Woredas* is skewed towards agriculture, education, and health sectors. In Awabel woreda of Amhara region, for instance, allocations for agriculture, education, health, and administration used to be 26.8, 52.5, 4.4 and 8.7 per cent, respectively (World Bank, 2001c: 49). In remote *Woredas*, it has been observed that administrative infrastructures dominated the budget share scenario at the expense of social sectors, though this might be partly explained by the absence of administrative

facilities in the mentioned *Woredas*. Compared to other expenses, administrative overhead costs are significant in some *Woredas* partly reflecting the relatively higher expenditure requirements of local councils to running meetings and similar undertakings (ibid). The following tables show the recent allocation trends by function, sector and actual expenditures at woreda level.

Table 8: Detail Budget allocations of the Amhara Region (2001 and 2002 EFY)

Particulars	2001 EFY Expenditures		2002 EFY Expenditures		Changes %
	Birr (billion)	%	Birr (billion)	%	
Bureaus budget ceiling	1.1	25.4	1.3	24.2	19.1
Woreda block grant share	2.83	59.2	3.0	54.9	7.1
Nationality administrative councils	0.035	0.7	0.038	0.7	8.6
Local investment Grant (LIG)	0.05	1.1	0.107	1.9	111.7
Vehicle procurement	0.15	3.1	0.08	1.4	-
Machinery procurement for ARRA	0.24	4.9	0.11	2.0	-
Machinery procurement for city administrations	0.06	1.3	0.06	1.1	-
Revolving fund	0.025	0.5	0.03	0.5	20
Newly reorganized towns establishment	-	-	0.03	0.5	-
Regional capacity building	-	-	0.065	1.2	-
Six colleges construction and educational materials purchase			0.075	1.4	
30 rural hospitals construction			0.075	1.4	
Urban development fund	0.2	4.2	0.4	7.1	97.5
Contingency at region level	0.075	1.6	0.1	1.8	33.3
Total	**4.8**	**100**	**5.5**	**100**	**15.5**

Source: BoFED (2009, p.40) 2002 EFY woreda and urban administrations block grant formula and budget ceiling, Bahir Dar (Unpublished).

Table 9: Woreda level adjusted budget vs. expenditure (1998-2001 EFY) (Million Birr)

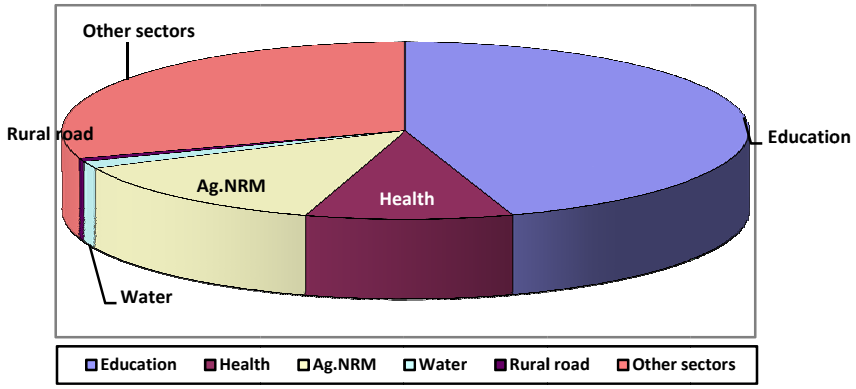
EFY	Recurrent Capital adjusted budget	+Recurrent Expenditures					Capital Expenditures		
		Adjusted budget	Salary	Operating	Total	%	Adjusted budget	Expenditure	%
1998	1,379.8	1200	884.5	245.5	1,130	94.1	179.8	89.5	50
1999	1604.6	1407	1093	287.9	1380.9	98.2	197.6	97.1	49.1
2000	2375	2118	1730	433	2163	102	257	202.1	78.6
2001	3635.2	2854	2202	742	2944	103	781.2	552.4	70.7
Average	2248.7	1894.8	1477.4	427.1	1904.5	100	353.9	235.3	66.5
% share			65.7	19.0	84.7			10.5	

Source: BoFED, Annual Accounts Reports

Table 10: Expenditure patterns by sector (1998-2001 EFY) (Million Birr)

Sector	1998		1999		2000		2001		Average	
	Expenditure	%	Expenditure	%	Expenditure	%	Expenditure	%	Expenditure	%
Woreda Total	1219.5	100	1478	100	2364.1	100	3496.4	100	2140.6	100
Education	595.5	48.8	708.7	48	1124.7	47.6	1422.3	40.7	962.8	45
Health	120.1	9.8	138	9.3	245.9	10.4	328.6	9.4	208	9.7
Ag. NRM	204.7	16.8	220.8	14.9	320.1	13.5	396.8	11.3	285.6	13.3
Water	10.0	0.8	16.2	1.1	32.3	1.4	50.9	1.5	27	1.3
Rural roads	4.8	0.4	7.7	0.5	10.5	0.4	22.5	0.6	13.4	0.6
Other sectors	284.4	23.3	386.6	26.1	630.6	26.7	1275.3	36.4	643.8	30.1

Source: BoFED Annual Accounts Reports



The above chart revealed that the woreda expenditure pattern is more in favour of education, agriculture and health sectors accounting for 45%, 9.7%, and 13.3%, respectively. However, rural roads and water sectors accounted for relatively very negligible amount over the periods considered. The share of the administration and general sector is even higher, though a number of administrative and justice related sectors are considered together. Moreover, the average actual share of recurrent expenditures for the years 1998-2001 EFY was higher than the actual capital outlays (i.e. about 84.7%) of the total adjusted budget. This implies that LGs are constrained by limited capital outlays to expand public services in their jurisdiction unless they mobilize local resources.

What kind of other alternative funding do local governments received from the federal government? In Amhara region there are what is known as specific purpose gnats transferred by the Federal government such as the food security program, productive safety net program (PSNP), and public sector reform program (PSCAP). What are the allocation parameters experimented in the transfer of such types of grants to Regional governments and beneficiary districts? The following section highlights on the transfer of purpose specific grant in Amhara region, particularly related to special support to urban development and the food security program.

3.5 Specific purpose grants

3.5.1 Special support to urban development

The regional government has been piloting the transfer of specific purpose grants to city administrations with the objective to strengthen the socio-economic development endeavour of cities in the region and ultimately improve the living standards of residents and foster urban rural linkages.

The guiding principles include fairness, transparency, and purpose specific. Specifically, it aims at supporting urban centres promote investments, narrow development disparities, employment creation, and contribute to the achievement of anticipated national urban development goals.

In this respect, about 23 towns which are accorded an urban status well before 2001 EFY are eligible for this type of grant. The main purpose of the grant is to finance

capital projects mainly to expand intra city road networks through promoting labour intensive constructions using cobble stones, to pay compensations which are beyond the capacity of municipalities, and to purchase machineries like two crashers.

In 2002 EFY, a total of Birr 200 million has been committed and transferred to 23 urban centres. The towns are categorized into two groups. Under the first category 12 leading towns are grouped together. Overall, Birr 170 million was allocated, of which Birr 10.5 million was earmarked for the procurement of two crashers while Birr 159.5 million distributed to the respective municipalities based on allocation criteria. Under the second category 11 intermediate towns were grouped and a total of Birr 30 million allocated and distributed to each town based on allocation parameters.

The relevant indicators include: population size, rank of towns, number of residential houses per 1000 household heads, and intra-city road density per square km. The required data have been gathered from each town, despite the quality is found to be inferior (BoFED, 2002 E.C.). Nonetheless, the population and area related data were obtained from BoFED based on projections especially for that of population. The 2001 EFY data has been employed to estimate allocations for the following fiscal year. The population size of each eligible town was divided by the aggregate population size of all towns in the specific category and this yields the percentage share of each town. On the other hand, the inverse of the number of residential houses per 1000 households and the inverse of intra-city road density per square Km were considered.

With respect to the rank of towns, first, numbers from 1-4 were specified to each category. Bahir Dar, Dessie and Gondar stood first; Debre Birhan, Kombolcha, Woldiya, Debre Tabor and Debre Markos second; Injibara, Finote Selam, Kemise, and Sekota third and the remaining 11 towns were ranked fourth. The rank of targeted towns in each category was calculated in relation to the total sum of the respective numbers from 1-4. As to the associated weights given, population and rank of towns deserved 50% and 40%, respectively while the number of residential houses and road density deserved only 5% each (BoFED, 2001 E.C.).

Similar to the allocation of unconditional block grant transfer, the major challenge observed in this respect is poor data quality submitted by municipalities. Although it is too early to comment on the efficacy of the allocation parameter, it can be safely stated that there seems to be double counting when considering population size as a major indicator and residential houses in relation to household size in parallel. More to that, the associated weights affixed to each factor seem to be disproportionate and no indicator is applied to represent efficiency objectives, despite attempt has been made to address the issue of fairness. Without undermining the above limitations, the grant transfer equation is believed to be poverty sensitive as the lion's share of the budget has been earmarked to the expansion of intra-city road networks using cobble stones which is labour absorbing than other activities.

3.5.2 The Federal Food Security Program

In Amhara region, about 2.5 million people are reported to live in chronically food insecure situation (MoARD, 2009). To ensure the food security status of this segment of the population, the government has launched a comprehensive food security program since a decade ago. The second round food security strategy (1998-2002 EFY) is a recent phenomenon initiated to ensure the food security status of about 2 million chronically food insecure people and improve the resilience of 2.9 million vulnerable citizens that fall under transitory food insecurity.

The strategy comprises supply side of and demand side of food security, and building resilience as major pillars. Under these pillars, household asset building and public works are the major interventions comprising of modern agricultural inputs, water harvesting structures, small scale irrigation, economic diversification, and agricultural package related trainings, credit and purchase of technologies, and resettlement schemes.

Allocation of specific purpose grants to beneficiary woredas depends, to a large extent, on vulnerability status of the population in drought prone areas. However, the grant is released based on efficiency and fixed obligation grant basis. Hence, grants are release on quarterly basis upon submission of progress reports. The Amhara Region is one of the major recipients of the federal food security purpose specific grant. The grant is transferred in the form of cash and in kind. In 1999 EFY,

for instance, a total of Birr 631.2 million has been transferred to the Region to expedite planned activities. The lion's share of the grant was further channelled to beneficiary woredas. In this respect, Birr 406 million, (64.3 % of the total), has been released from the federal government. For the remaining components, viz. resettlement, region level and carried over activities, birr 121.2, birr 87.3, and birr 16.6 million has been committed, respectively. The budget utilization status, however, is reported to be unsatisfactory. For instance, in 1998 E.C., only 39% the total committed budget was reported to be utilized (FSCDPO, 1999 E.C.).

3.5.3 The Productive Safety Net Program (PSNP)

The productive safety net program (PSNP) is one of the major components of the food security program launched to support 64 woredas and a total of 2.5 million chronically food insecure people. Out of the target beneficiaries, 62.4% are cash and food mix recipients while the rest are only cash recipients (MoARD, 2009:1). The major program budget components include: transfer, capital and administrative, overall management, public works, and contingency. The federal government transfers the budget annually based on certain guiding principles and allocation formula.

It is clear that the allocation is mainly based on vulnerability, i.e. people who are affected by the drought, especially related to transfers. For other components, arbitrary but seemingly reasonable percentage points are considered which are calculated in relation to what is known as the base cost (see the following box).

Box: PSNP cash transfer allocation

I. Woreda level resources:
- Cash transfer = client numbers x the cash wage rate x 5 days of work x6 months; (this is then used to calculate the base program costs (total value of transfersx1.25).
- Contingency budget= 5% of base program costs:
- Capita budget (for public works) =15% of base program costs,
- Administrative budget,= 5% of base program costs

II. Regional level resources:
- Regional contingency budget=15% of total woreda base program costs
- Regional management budget=2% of total woreda base program costs

III. Federal level resources:
- Federal management budget=1% of total woreda base program costs+ total regional budgets,
- Capacity building budget= costs of capacity building requirements from regions and woreda based on need.

Source: MoARD, (2010, p.69) Program Implementation Manual 2010.

As can be clearly seen in the following table, over the last six years (1997-2002 EFY) a total of Birr 3.2 billion has been transferred to the region from the federal government, of which beneficiary woredas received the lion's share, i.e. 88.4% of the total cash transferred. Moreover, in terms of component wise allocation, transfer, capital and administration, contingency, capacity building and LPS accounted for 58.8%, 20%, 14.7%, 1.9% and 4.6% of the total budget, respectively. Hence there has been considerable amount of transfers made to targeted woredas embraced by the food security program. In this respect, however, it is argued that the availability of such resources to few woredas (for legitimate reasons linked to the program design) significantly affected the inter-woreda pattern of overall resource envelopes and of per capita spending (Catherine and Mohammed, 2006, p.iv).

Table 11: PSNP cash received from Federal government and disbursement to woredas (1997-2002 EFY) (In million Birr)

Year (EFY)	Total cash received from Federal	Total cash disbursed to woredas	%	Transfer	Capital & admin.	Contingency	Capacity	LPS
1997	233.2	226.5	97.1	180.2	53.0	-	-	-
1998	289.8	255.6	88.2	90.7	39.8	13.3	-	146.1
1999	507.5	446.9	88.1	277.9	156.4	73.1	-	-
2000	607.4	534.7	88.0	391.8	141.8	70.6	3.2	-
2001	755.5	696.5	92.2	466.8	76.4	157.0	55.2	-
2002	809.2	670.2	82.8	475.5	174.3	158.3	1.2	-
Total	3,202.6	2,830.4	88.4	1,883.0 (58.8%)	641.7 (20.0%)	472.2 (14.7%)	59.6 (1.9%)	146.1 (4.6%)

Source: FSCDPO

4. Conclusions and recommendations

4.1 Conclusions

The devolution of power to local governments within the framework of the federal system has paved the way for LGs to improve service delivery to citizens. The expenditure and revenue assignments of each level of government are clearly spelt out in the respective constitutions. However, sub-national and local governments are, to a large extent, dependent on transfers from the centre. So far the Amhara region covers only less than 20 percent of its annual expenditures from own revenue sources while the balance comes from the federal government in the form of mainly unconditional block grant transfer. There is also what is known as horizontal fiscal imbalance across jurisdictions.

In order to redress the vertical and horizontal fiscal imbalances, expansion of the tax base and tax assignments of lower level governments and fostering their tax administration capacity is crucial. This is, however, a long term project. Therefore, intergovernmental fiscal transfer is the immediate solution to ensure adequate fiscal capacity to LGs provides minimum standard services to citizens. Allocation fairness, efficiency, and poverty sensitiveness, etc of any governmental transfers are an all time concerns. In this respect some lessons could be drawn from the Amhara region grant transfer experiment so as to share to other regions and/or improve the existing grant transfer system per se.

In order to create fiscal capacity to LGs, the Amhara regional state has designed and implemented a block grant transfer system that has evolved over time, but not free from its own limitations. After the woreda decentralization policy has been launched, the Region has introduced a unit cost need based approach to determine the recurrent expenditure requirements for LGs. There are quite a number of cost drivers incorporated in the formula to determine the recurrent expenditure requirements of LGs. These performance indicators are mainly linked with poverty sensitive sectors viz education, health, agriculture and rural development, and water sectors.

Moreover, capital expenditure requirements of jurisdictions are determined using proxy indicators for selected poverty sensitive sectors. The compound index of each sector with relative weights attached to each parameter has been applied to determine the capital expenditure needs of LGs. Local governments received their annual budget in the form of block grant transfer (recurrent plus capital) from the regional government with the objective to ensure minimum standard public service provisions. In this respect what is crucial is not only the transfer of block grants per se but also proper sector allocations and efficient utilization of scarce resources. Overall, from the analysis made so far, it can be inferred that the current unit cost need based and proxy approaches are, to a large extent, poverty sensitive and adhered to most allocation guiding principles. However, the approach entails extensive data requirements. This is further exacerbated by the application of a number of indicators and presumptions that have complicated the transfer equation to become more intricate and undermine its simplicity and transparency. The absence of strong data base management system and weak capacity at local governments is indeed a big concern. Hence, more effort should be exerted towards further refining the current grant transfer system and updating the data requirement.

4.2 Recommendations

As the current block grant transfer system is not yet refined, it requires continuous effort to further improve it. Therefore, the following recommendations are suggested to guide the fiscal decentralization and intergovernmental transfer process in the region.

- The most determinant factor in the sub-regional block grant transfer is not only correlated with the allocation equation per se, but also with the quality, reliability and timeliness of the socio-economic data. Therefore, the data management capacity of LGs including BoFED should be fostered. Besides, data generated by woredas should be properly monitored and as much as possible gathered from independent sources. A strong monitoring mechanism should be put in place to track reliable data from line sectors.

- As much as possible BoFED should strive to reduce the numbers of allocation indicators from the current 30 to on average 7-10 indicators with strong persuasive effect to determine both recurrent and capital expenditures.
- So far the grant formula is prepared annually and the entire process is indeed time consuming and tedious. It is therefore recommended that the block grant transfer formula should serve at least for three to five years once it is developed.
- Estimating recurrent and capital expenditure requirements separately and merging as block grant is not plausible to give more autonomy to LGs as the lion's share of their expenditure goes to recurrent costs (e.g. salary). Therefore, it might sound convincing to adapt the revised and recently endorsed version of the federal government grant transfer formula which is determined mainly based on fiscal capacity and fiscal needs. However, the absence of revenue assignments between the region and LGs in practice as well as fairly large number of woredas in the region might be a challenge to collect the required data within short period of time and determine revenue potentials.
- A model transfer formula should be designed for LGs and Bureaus to make sure that there is a fair distribution of resources for intra woreda and Bureau and to ensure linkages between policy and budgets.
- A clear monitoring and evaluation system should be designed and put in place in order to improve the effectiveness of the utilization of transfers. Strong adherence to budget discipline should be reinforced.
- Recruitment of staff should be left to the discretion of LGs and regional Bureaus should refrain from imposition of staff transfer and recruitment with no complementary budget.
- The institutional capacity of LGs should be strengthened through short term trainings, exposure visits, and hiring additional staff. Local governments should establish a strong planning wing to systematically gather socio-economic data and conduct impact oriented surveys.
- Appropriate, fair, and transparent transfer distribution formula or targeting mechanism should be designed in order to address the most disadvantaged woredas and marginalized groups. Moreover, the allocation indicators should be more sensitive to gender equality.

- The revenue generation capacity of local governments should be systematically build to foster self esteem.
- The vulnerability status of food insecure woredas should be updated in order to determine the right share of resource requirements of each woreda. In addition their capacity to efficiently utilize the allocated budget should be reinforced.

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PATTERNS AND DETERMINANTS OF INFANT AND CHILD MORTALITY RATES IN ETHIOPIA: SOME REFLECTIONS FROM REGIONAL-LEVEL PANEL DATA

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Abstract

The health condition of infants and under-five children is the most sensitive indicator of socioeconomic development. Recently, Ethiopia has registered improved infant and child health. However, the gains in improved health outcomes are not uniformly shared across the different regions in the country. The main purpose of this paper is, therefore, to shed light on the patterns and changes of infant and child mortality rates in Ethiopia. Using panel data, the results indicate high inter-regional disparities in both infant and child health outcomes. The estimation results reveal that inter-regional variation in infant and child health outcomes is due to significant cross-regional differences not only in health physical infrastructure and human capital but also in urbanization and per-capita public spending on health.

Keywords: Infant and child health; regional disparities; Ethiopia.

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1. Introduction

In most countries, improving child health is a high priority. In 2000, 189 member countries of the United Nations adopted the Millennium Development Goals (MDGs) among which child health has a prominent place. More specifically, countries set a common target of achieving the goal of reducing infant and child mortality by two-thirds between 1990 and 2015 (United Nations, 2000). Existing evidence shows that child health has seen significant improvements around the world. Despite some improvements, however, progress towards the envisioned goal is undermined by the lack of equitable access to and utilization of health services (Anand and Barnighausen, 2004; De Costa *et al*., 2009). According to the United Nation's (United Nations, 2006) recent estimate, over 10 million children had died in 2004 before celebrating their fifth birth day and half of these deaths occurred in Sub-Saharan Africa.[2] Strikingly, these deaths were preventable or easily curable.

In Ethiopia, between 1999/00 and 2007/08, infant mortality rate (IMR) and under-five mortality rate (U5MR)[3] declined from 110 to 77 and from 161 to 123 deaths, per 1000 live births, respectively (MoH, various issues). Despite these improvements, however, mortality rates are still quite high compared with most neighboring countries[4] (World Bank, 2009). Furthermore, disparities in mortality rates have become more pronounced across regions[5] and over time. In 2007/08, for instance, the IMR varied from as high as 94 deaths in Amhara region to as low as 45 and 67 deaths per 1000 live births in Dire Dawa and Tigray regions, respectively. However, there exists virtually no empirical evidence on the sources of these discrepancies. In particular, we do not know whether or not the existing discrepancies in infant and child health outcomes are amenable to public health policy interventions. Various studies elsewhere have documented the social and economic costs of health inequality across nations and its persistence over time.

[2] Given that Sub-Saharan Africa region accounts only 20% of the world's young children (United Nations, 2006), mortality rate of this magnitude implies that the region has more serious child health problem than anywhere else.

[3] The terms "child mortality rate" and "under-five mortality rate (U5MR)" are used interchangeably throughout the paper.

[4] For instance, child mortality rates in Eritrea, Kenya and the Sudan are, respectively, 74, 121 and 89 per 1,000 live births in 2006 (World Bank, 2009).

[5] Ethiopia has a federal political structure with 11 regional states including two city administrations, namely Addis Ababa and Dire Dawa.

As pointed out in Sen (1998), mortality rates are better measures of wellbeing. Infant and child mortality rates are also the most important indicators of effects of changes in socioeconomic development in general and provision of health care services in particular in a given society (Hakobyan and Yepiskoposyan, 2009). Thus, studying the effect of health and non-health factors on regional level health outcomes would provide useful information for health care planning and management. In particular, the findings of this study offer empirical evidence regarding where policies have worked or failed, and where improvements are still needed, and the associated factors contributing to these states of affairs.

The main purpose of this paper is to analyze the determinants of inter-regional variation in infant and child mortality rates in Ethiopia. The data we use for our analysis come from a regional-level panel dataset spanning 9 years (1999/00-2007/08). We employed a fixed effects model for our data analysis.[6]

This paper shows that regional disparities in infant and child health outcomes are high and the gaps are not declining over time. Interestingly, the disparities can be reduced through appropriate health sector interventions as observed variations in mortality rates across regions are associated, among others, with supply of health resources. The paper finds that better infant and child outcomes are strongly associated with physician density, real per capita public health spending, and the rate of urbanization. Furthermore, the number of nurses and density of health centers both do play a beneficial role to improve infant health outcomes.

This paper makes several contributions to the literature. First, to the author's knowledge this study is the first one to analyze cross-regional determinants of child health outcomes in Ethiopia. In this respect, the empirical evidence obtained from this study would be useful for policy makers and social planners in the country. Second, the study contributes to the emerging body of literature on the determinants of health outcomes within low-income countries at the sub-national level.

[6] For data source see Section 3.3.

The paper is structured as follows. Section 2 presents an overview the Ethiopian health system. Section 3 provides the empirical specification, types of data and data sources, and hypotheses of the study. Results and discussion of the study are provided in Section 4. Finally, Section 5 concludes the paper with some policy implications.

2. Background to Ethiopian health system

Ethiopia has one of the highest health problems in the world (World Bank, 2005; Lindelow and Serneels, 2006). Most of the country's health problems are directly associated with poverty and approximately 38.7% of the country's population live below the poverty line in 2004/2005 (MoFED, 2006). Recent estimate shows that about 60-80% of the country's health problems are due to preventable infectious diseases (MoH, 2005). However, recent experience show the country spends very little on public health care (UNECA, 2007)[7] and most of the public health care expenses are covered with health aid funding (Getnet, 2009).[8] Moreover, the country has one of the lowest physician to population and nurse to population ratios in the world (Lindelow and Serneels, 2006).

The current health policy was formulated and adopted in 1993. It puts at its center equitable and accessible primary health care in the country. In 1997, the country launched the first Health Sector Development Strategy (1997-2002). In 2003, the country introduced an innovative community-based health intervention known as health extension program (HEP). Impact assessment of the HEP indicates that it has significantly increased utilization immunization and insecticide treated bed nets among children (Assefa *et al*., 2009).

In Ethiopia the supply and distribution of health services is decentralized to regional states. Regional states have the legal power to employ human resources required to deliver the health care services to their inhabitants. The Federal Government of Ethiopia is mainly responsible for the formulation and implementation of health

[7] For instance, per capita public expenditure was 5 US Dollars in 2003 for Ethiopia in contrast to 44 US dollars for Africa as a whole (UNECA, 2007).
[8] By 2006/07, external assistance in the form of health aid accounted for nearly 70% of the country's total health expenditure (Getnet, 2009).

policies and programs.[9] The structure of the Ethiopian health system has four-tiers, namely a primary health care unit, a district hospital, zonal hospital and specialized hospital (MoH, 2005).

3. Methodology

3.1 Empirical specification

As noted earlier, the main focus of this paper is to explain inter-regional variation of IMR and U5MR in Ethiopia by using data collected over 1999/00-2007/08 period. Panel data estimation techniques are employed for our data analysis. The basic panel model for this study is specified as

$$y_{it} = \alpha + x_{it}\beta + \mu_i + u_{it}$$

where y_{it} is IMR or U5MR, both expressed in natural logarithm; x_{it} is a vector of independent variables; μ_i is a vector of region-specific fixed effects which capture time invariant unobserved or unobservable regional characteristics; u_{it} is a random error term and i indexes Regions (11 Regions) and t denotes time periods (9 years) as indicated earlier.

There are several methods to estimate a panel data model. However, in this paper we estimate a random effects (RE) and fixed effects (FE) models, which are the most widely used panel data estimation methods in applied economic research (Wooldridge, 2002). The RE model provides a weighted average of the between and within estimates and assumes that there is no correlation between the random error term and the explanatory variables. In contrast, the FE model accounts for unobserved region-level heterogeneity and also allows the correlation between the error term and the explanatory variables (Wooldridge, 2002). The choice between the two models is made by applying a Hausman's specification test (Hausman, 1978).

[9] See World Bank (2005) for a detailed description of Ethiopia's health system.

3.2 Measurement of variables and hypotheses

Infant and under-five mortality rates, each per 1000 live births, are the dependent variables. As stated before, we use the Region as our unit of observation and of analysis for this study. Our aim is to explore the determinants of both infant and under-five mortality rates using regional level characteristics. In general, the determinants of regional-level health outcomes can be classified into three categories, namely, health infrastructure variables, socioeconomic and demographic variables, and regional/location or geographic variables.

Health infrastructure variables: A population's health among different geographical units within a given country is closely determined by availability of health inputs (Zhang and Kanbur, 2005; Fang *et al*., 2010). In this respect, previous studies have used availability of health facilities and medical personnel as relevant proxies for analyzing the effect of health inputs on health outcomes (Cremieux *et al*., 1999). Evidence from previous studies also indicates that the number of physicians and nurses are key health inputs which have significant impact on the effectiveness of a given health systems (Anand and Barnighausen, 2004; World Bank, 2004).

To capture this effect, we incorporate health human resource and facility related variables. First is the number of physician per 10,000 populations. Higher values of this variable indicate better access or higher quality of health care as it may decrease waiting time and long queue. Second is the number of nurses per 10,000 populations with expectation of a similar effect on health outcomes. Whereas human resources are important for improved effectiveness of a given health system, it is also well recognized that the availability of adequate health facilities is essential for improved provision of health services. In Ethiopia, per capita availability of health facilities is one of the lowest even by African standards. In this regard we use two variables, namely the number of hospital beds per 10,000 populations and the number of health centers per kilo meter square our explanatory variables.

Previous studies have reported mixed findings regarding the effect of public spending on health outcomes. For example, studies by Filmer and Pritchett (1999), Shanda *et al*., (2004) and McGuire (2006) found weak relationship between public

health spending and mortality rates using cross-national data. On the other hand, studies by the World Bank (World Bank, 1995) for the Philippines and Deolalikar (1995) for Indonesia indicate that the effects of public spending on health status are positive. However, these reported a more pronounced effect of public spending for health outcomes of the poor than the non-poor in both countries. Using a cross-country data, Gupta *et al*. (2003) also report that public spending on health per capita has a strong and negative effect on child mortality. Cremieux *et al*. (1999) have tested the relationship between public spending on health and mortality rates in Canada using provincial level data. They found that to reduce provincial level male and female mortality rates.[10] In line with the latter findings, we expect that regional infant and child mortality rates are inversely associated with regional level real per capita public health spending.

Socio-demographic variables: Even though availability of health services is necessary, it is not sufficient to improve health outcomes by its own. Utilization of available health care depends on individual decisions which is in turn is affected by one's ability to use (see e.g. Uchimura and Jutting, 2009; Abay *et al*., 2007; Xie and Dow, 2005; Barham and Maluccio, 2009). Some studies (e.g. Kim and Moody, 1992) also reported that compared to health resources, socioeconomic resources play even greater role for better health of the population. In Ethiopia, previous household level empirical studies and descriptive statistics indicate that low levels of income and education and long distance to health facilities are major demand-side impediments of access to modern health care (Collier *et al*., 2002). In the literature, Schultz (1993) also finds higher mortality rates for rural areas compared to urban centers. In our paper here, we use gross primary school enrollment, and urbanization rate[11] variables to capture regional differences in demand for health care and expect that both variables exert a favorable impact on mortality rates.

Geographic and region specific variables: Ethiopia has diverse agro-ecology, geography and multi-ethnic population. As elsewhere, geography has an important

[10] In this regard, Cremieux *et al*. (1999) emphasize that data heterogeneity, which is an inherent problem in international studies, is an important reason for the lack of strong relationship between public health spending and health outcomes in most of the previous studies.

[11] The share of urban population in Ethiopia has historically been very low. At the present, about 85% of the country's total population resides in rural areas.

role for health in Ethiopia. For instance, malaria, which is among the major causes of childhood mortality and morbidity, is more prevalent in the low-lands and warmers areas. On the other hand, the highlands are more densely populated and has relatively better infrastructure such as roads and schools. Clearly these variables do play critical roles for health of a population. However, since we do not have data on these variables we cannot directly use them in our analysis. To deal with this problem, we have incorporated into our model 10 region-specific dummy variables in order to account for unobserved heterogeneity.

3.3 Data

The empirical data we use for this paper were extracted from different sources. The data on health outcomes (infant and child mortality rates), health inputs (human resources, health facilities, and expenditures) and share of population residing in urban areas were extracted from the annual "Health and Health Related Indicators" publication of the Ethiopia's Ministry of Health. We used per capita public health expenditure expressed in constant 2000 Ethiopia birr[12]. We adjusted the total public health expenditures expressed in current Ethiopian Birr using consumer price index (CPI=100 for year 2000) and divided these by the total population living in the respective regions. Data on primary gross enrollment rates were obtained from the annual "Education Statistics" abstract published by Ethiopia's Ministry of Education. The data about area coverage of the Regional States were extracted from the Ministry of Foreign Affairs website. Our unit of observation and data collection is the Region and the data collected refer to the years 1999/00-2007/08, inclusive. The time period has been selected on the basis of data availability.

Sub-national data offers several advantages and provide more reliable results as compared to national level data, which are commonly employed for cross-national comparisons (Mitchell *et al.*, 2008; Cremieux *et al.*, 1999; Costa-Font and Pons-Novell, 2007). First, identical definitions and methodology are followed for data collection and aggregation across the regions. For instance, different categories of health workers such as physicians, nurses and others workers, each working across

[12] Birr is Ethiopia's official currency and in November 2009 the exchange rate was approximately 1 US dollar = 12.55 Ethiopian birr.

different regions in Ethiopia are defined in consistent manner and do hold similar trainings, qualification, and roles. However, in the case of cross-national comparisons, the qualifications, trainings, and roles of each health worker may be different for different countries and hence are unlikely to be comparable across countries (Speybroeck *et al*., 2006; Anand and Barnighausen, 2004). As they note, explaining cross-national health status using national level number of health workers is thus prone to error. Second, different regions in a country, as is the case ours, deliver health services under one national health policy environment. Third, all health expenditures across the regions are measured in a single currency unit, which is Ethiopian birr in our case.

4. Results and discussion

4.1 Trends and patterns of infant and child mortality rates

As shown in Table 1, between 1999/00 and 2007/08 national level IMR and U5MR have declined by 5% and 4% per annum, respectively.[13] However, as anticipated these figures mask regional disparities in the distribution of these indicators (see Table 2).

As can be noted from Table 2, the regionally disaggregate data show that progress in improving infant and child health outcomes is heterogeneous. The two regions in which both IMR and U5MR have most improved are Tigray and Dire Dawa. The four regions in which both IMR and U5MR are still larger than the national average are Amhara, SNNPR, Benishangul Gumuz and Gambella. Moreover in Gambella and Amhara regions mortality rates have generally deteriorated or continued to have stagnated. On average, IMR and U5MR for Gambella increased, respectively, by 1% and 4% per annum between 1999/00 and 2007/08. The descriptive data also show that in 2007/08, the highest IMR was observed in the Amhara region.

[13] Annual improvement rates were computed using Ordinary Least Squares technique (Gujarati, 2004). In particular, we regressed separately the IMR and U5MR, which are expressed in natural logarithms, on a time variable and a constant term. Annual growth rate is obtained by taking the antilog of coefficient of the time variable and subtracting one from it.

Table 1: Trends in infant and child mortality rates

Indicators	Year		Average reduction rate (%)
	1999/00	2007/08	
IMR	110	77	5
U5MR	161	123	4

Source: Ministry of Health database; and author's calculations.

Our descriptive results also reveal that disparities in IMR and U5MR across regions are not only substantial but also widening over time. In fact, the coefficient of variation grew from about 15% in 1999/00 to 21% in 2007/08 for IMR, and from around 16% to 23% for U5MR over the same period.

Table 2: Trends in regional disparities in child health outcomes

Regions	IMR			U5MR		
	99/00	2007/08	Avg. rate of reduction (%)	99/00	2007/08	Avg. rate of reduction (%)
Tigray	116	67	7	171	106	6
Afar	112	61	8	167	123	3
Amhara	109	94	1	159	154	-1
Oromiya	111	76	5	163	122	3
Somali	96	57	6	139	93	5
Benishangul Gumuz	131	84	6	196	157	2
SNNPR	121	85	4	179	142	2
Gambella	92	92	-1	132	156	-4
Harari	106	66	6	156	103	5
Addis Ababa	72	71	3	100	136	1
Dire Dawa	107	45	8	157	72	5
Min.	72	45		100	72	
Max.	131	94		196	157	
Max./Min.	1.82	2.09		1.96	2.18	
CV in %	14.73	21.11		16.35	22.69	

Source: Author's calculations. CV stands for coefficient of variation (i.e., standard deviation divided by the mean of the variable). Average rate of reduction was computed using ordinary Least Squares method using time series data for nine years for each region.

4.2 Health and non-health factors of child health outcomes

This Section presents the descriptive statistics including the mean values and standard deviations of variables the health and non-health explanatory variables used in the econometric analysis. As shown in Table 3, most of the variables manifest considerable variability across regions and over time during the study period considered. On average, between 1999/00 and 2007/08, there have been 0.49 physicians per 10,000 inhabitants. However, this figure masks huge variability in the density of physicians both over time and across regions. As shown in Table 4, the number of physicians declined from 0.64 to 0.36 per 10,000 inhabitants over the same period. Compared to physicians, the density of nurses was larger and also almost doubled over the same period. By 2003/04 Ethiopia had launched its health extension program and by the end of 2007/08 the program had been operational in all regions except Addis Ababa.[14]

Interestingly, non-health factors also show both inter-temporal and cross-sectional differences. Primary gross enrollment ratio, for instance, grew from around 60% in 1999/2000 to over 90% in 2007/08. As can be seen from Table 4, dependency ratio had been increasing over the same period. In this respect, the ratio of the maximum and minimum dependency ratios increased suggesting the widening gap in wellbeing among regions.

A closer look at Table 4 also reveals important results regarding the distribution of physicians and nurses over time. Even if its availability has decreased in absolute terms, the regional distribution of physicians has become more equitable over the study period. Interestingly, the regional variation in the number of physicians per 10,000 population is smaller than the variation for the number of nurses per 10,000 population. Additionally, the regional distributions of nurses and of hospital-beds have become more unequal. In other words, the ratio of the maximum to the minimum values substantially increased for both hospital-bed and nursing variables suggesting the widening gap in health sector resources across regions.

Over the study period, real public health spending per capita has increased by more than 30% suggesting increased government commitment in the financing and provision of health care. Interestingly enough, its regional distribution has also

[14] By 2008/09 Ethiopia's Ministry of Health introduced the program to urban areas with some modification.

become more equal over the same period. As can be noted from the table, the ratio of the maximum to the minimum spending per capita was ten in 1999/00 and it decreased by half by 2007/08.

Table 3: Summary of explanatory variables between 1999/00 and 2007/08

Variables	Observations	Mean	Std. dev.	Min.	Max.
Number of doctors per 10,000 population	99	0.491	0.689	0.055	3.117
Number of nurses per 10,000 population	99	3.571	3.113	0.601	13.645
Presence of the health extension program	99	0.343	0.477	0	1
Number of hospital beds per 10,000 population	99	5.305	7.567	0.689	35.306
Number of health centers per square kilometer x 1,000	99	5.6	0.014	0.04	54.00
Real per capita public health expenditure in Ethiopian birr	99	0.25136	0.20688	0.0382	1.0007
Share of urban population	99	30.76	30.691	7.65	100
Primary gross enrollment rate	99	79.281	37.055	8.3	161.4

Source: Author's computation.

Table 4: Trends in explanatory variables between 1999/00 and 2007/08

Variables	1999/00				2007/08			
	Mean	Std. dev.	Min.	Max.	Mean	Std. dev.	Min.	Max.
Number of physicians per 10000 population	0.642	0.889	0.107	3.117	0.361	0.559	0.075	1.96
Number of nurses per 10000 population	2.762	2.520	0.788	8.117	4.562	3.75	0.601	12.727
Presence of health extension program	0	0	0	0	0.90	0.301	0	1
Number of hospital beds per 10000 population	4.614	5.675	0.721	19.759	5.208	9.671	0.816	33.971
Number of health centers per square kilo-meter X 1000	5.00	0.013	0.04	44.4	6.00	0.015	0.8	52.00
Real per capita public health expenditure in Ethiopian Birr	0.164	0.129	0.0413	0.398	0.382	0.212	0.144	0.779
Share of urban population	29.85	32.11	7.65	100	31.73	31.926	8.9	100
Primary gross enrollment rate	60.42	30.71	8.3	96.2	92.52	32.79	26.2	121.4

Source: Author's computation.

4.3 Econometric estimates of infant and child mortality rates

The previous sub-sections have provided descriptive evidence on spatial and inter-temporal variation in infant and child mortality rates in Ethiopia. From a statistical point of view, this variability of the mortality data would create an important and necessary condition for the application of panel econometrics techniques in our paper (Nerlove, 2002). Thus, in this section we implement a panel data analysis of IMR and U5MR at the regional level. Before fitting our econometric model we verified that our data do not suffer a multicollinearity problem.[28] Moreover, we followed White/Huber standard errors estimation procedure to obtain unbiased and efficient parameter estimates. All estimations were conducted using Stata version 9.0 computer software (Stata Corp, 2005).

The estimated results are presented in Table 5.[29] Our panel data analysis was estimated using both fixed effects (FE) and random-effects (RE) models. In both models, the values of the F-test and Wald test statistics are highly significant providing evidence against the null hypothesis that IMR and U5MR are not related to the explanatory variables included in the models. In other words, both the FE and RE models confirm that mortality rates are closely related with a host of both health and non-health explanatory variables.

As stated earlier, it is an essential task to check whether the estimated coefficients using the RE and FE are systematically different or not (Greene, 2000). Applying the Hausman's (Hausman, 1978) specification test we found that the FE model is preferable for both IMR and U5MR. Thus, the FE model will be our main reference when interpreting the estimation results below.

As anticipated, we find that the variables representing human resources for health (physicians and nurses) play important roles for reduction of infant and child

[28] We used the Variance Inflation Factor (VIF) procedure to check for multicollinearity among the explanatory variables. Computationally, $VIF = 1/1 - R_k^2$ where R_k^2 is obtained by regressing each explanatory variable on the remaining explanatory variables. A VIF value larger than 10 is usually taken as evidence of the presence of high level of multicollinearity (Gujarati, 2004).

[29] Coefficients of the regional dummy variables are not reported for space considerations. However, these estimates can be obtained from the author upon request.

mortalities. In particular, a larger number of physicians are significantly associated with lower IMR and U5MR. Moreover, we find the impact of the number of physicians on IMR is stronger than that of the number of nurses. An increase in the number of physicians and nursing staff, each, by one person per 10,000 population tends to decrease IMR by 0.20% and 0.3%, respectively. Increasing the number of nursing staff also has a favorable effect on child mortality rate even though its effect remains statistically weak. In general, our findings related to the role of human resources for the health sector is consistent with previous research findings based on the analyses of both cross-country (see e.g., Anand and Barnighausen, 2004) and within country (see e.g., Mitchell *et al*., 2008; Cremieux *et al*., 1999) data.

As anticipated, public spending on health has beneficial effect for health outcomes. Our results indicate that infant mortality rates are significantly lower for regions in which real per capita public health expenditures are larger. The strong effect of this variable on IMR is especially relevant given the lack similar evidence from cross-national data (see e.g. McGuire, 2006; Shanda *et al*., 2004; Filmer and Pritchett, 1999). Our finding is consistent with Cremieux *et al*. (1999) who used panel data evidence to document the statistical significance of public spending on health for better health outcomes. Our results also show that the effect of regional public health spending has beneficial role to U5MR reduction even if its coefficient is statistically weak. Keeping all other factors constant, health center density is negatively and strongly related with IMR. This finding is also consistent with our a *priori* expectation.

As expected, an increase in the share of population residing in urban[30] areas is strongly associated with lower IMR and U5MR. In other words, keeping all other factors constant, a ten-unit rise in the share of regional population residing in urban areas is estimated to reduce IMR and U5MR, respectively, by 1.1% and 0.8%. On the other hand, increased primary gross enrollment ratio is associated with increased IMR. However, this effect is not statistically significant.

[30] Besides enhancing better access to information and health services, urbanization may also be associated with access to better nutrition and sanitation, both of which are important determinants of infant and child health in Ethiopia.

Table 5: Determinants of regional-level infant and child mortality rates

Variables	IMR		U5MR	
	RE model	**FE model**	**RE model**	**FE model**
Number of physicians	0.056	-0.203*	0.083**	-0.217*
per 10,000 population	(0.044)	(0.125)	(0.042)	(0.134)
Number of nurses per	-0.002	-0.027*	0.003	-0.02
10,000 population	(0.015)	(0.015)	(0.018)	(0.019)
Presence of health	-0.199***	-0.07	-0.064*	0.022
extension program	(0.035)	(0.051)	(0.038)	(0.044)
Number of hospital beds	0.009*	-0.003	-0.0002	-0.017
per 10,000 population	(0.005)	(0.011)	(0.006)	(0.014)
Number of health center	-9.647***	-21.6**	-7.881**	-12.809+
per square kilo meter	(2.757)	(8.648)	(3.220	(8.543)
Real per capita public	-0.006***	-0.005**	-0.004	-0.003
health expenditure	(0.189)	(0.277)	(0.249)	(0.379)
Share of urban	-0.003*	-0.109***	-0.003**	-0.078**
population	(0.001)	(0.037)	(0.001)	(0.039)
Primary gross	0.003***	0.001	0.002*	-0.0003
Enrollment rate	(0.001)	(0.002)	(0.001)	(0.001)
Constant	4.523***	8.209***	4.936***	7.732***
	(0.046)	(1.146)	(0.042)	(1.181)
Number of observations	99	99	99	99
F-test		23.90***		12.28***
Wald test	129,465.51***		161,642.29***	
R^2 (within)	0.45	0.6	0.16	0.36
R^2 (between)	0.83	0.55	0.77	0.53
R^2 (overall)	0.62	0.26	0.53	0.34
Hausman test: χ^2 (random vs fixed effects)	36.31***		46.98***	
Mean of variance inflation factor = 3.5				

Note: ***, **, * and + significance at the 1%, 5%, 10% and 15% levels, respectively. Figures in parentheses are robust standard errors.

5. Conclusions and policy implications

Recent years have witnessed some progress in the reduction of IMR and U5MR in Ethiopia. The national level IMR and U5MR, respectively, have declined by 5% and 4% between 1999/00 and 2007/08. However, while these progresses have been rapid, the country's infant and child mortality rates are still quite high compared to that of most neighboring countries. Moreover, the health service delivery system in the country has not been uniformly effective across regions. Indeed, the reduction in infant and child mortality rates has been quite uneven across regions within the country. From a policy perspective, the regional health disparity in infant and child health outcomes is an important concern. Among other things, it not only obstructs current well-being and quality of life but it also undermines future economic growth and social development of a region in particular and the country as a whole. Thus, identifying the sources of these disparities is an important first step towards an informed policy decision making to improve health outcomes for the whole population. However, for Ethiopia, there has been a shortage of empirical evidence that explains regional differential in IMR and U5MR. Thus, the main purpose of this paper has been to fill this information gap by explaining regional infant and child mortality rates using a region-level panel data covering 1999/00-2007/08. The analysis has been carried out by using both RE and FE models to address the panel nature of the data. However, the Hausman test result indicates that the FE model was more suitable than the RE model for our panel data analysis.

The estimated results provide several interesting outputs. First, we found that infant and child health outcomes were strongly sensitive to the availability of skilled health professionals and health facility. For instance, a one unit increase in the number of physicians and nurses per 10,000 population, respectively, resulted in a reduction of infant mortality rate by 0.2% and 0.03%. Similarly, a unit increase in the number of physicians per 10,000 population has similar beneficial effect to child mortality. Second, our estimation results provide suggestive evidence that increasing real per capita public health spending is important to infant and child health outcomes. Increased real per capita spending, for instance, by 10 Ethiopian Birr would tend to decrease IMR by 0.05%. Third, the share of population living in urban areas has strong effects on both infant and child mortality rates.

On the basis of the above findings it can be noted that much of the observed regional disparities in IMR and U5MR could be reduced through public policy interventions which aim at increasing the supply of health resources while at the same time equalizing their distribution across regions. More specifically, the paper wants to emphasize the following points. First, availability of physicians and nurses is plays a key role reducing infant and child mortality across regions. Thus, policy makers should make continued efforts to increase the supply and retention of physicians and nurses across the regions. In this regard, regional health bureaus may need to design and implement geographically differentiated human resource strategies to attract and retain key health professionals into their regions. Second, our findings underscore the need for increased per capita public health spending. At present the Ethiopian government's health spending is less than the average of Sub-Saharan Africa. Third, infant and child mortality rates are lower where the share of urban population is larger. This implies that a rural transformation through urbanization is beneficial for improved health outcomes.

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CURRENT LAND USE PRACTICES AND POSSIBLE MANAGEMENT STRATEGIES IN SHORE AREA WETLAND ECOSYSTEM OF LAKE TANA: Towards Improving Livelihoods, Productivity, and Biodiversity Conservation

Ayalew Wondie Melese [1]

1. Introduction

Wetlands comprise 6% of the earth's land surface (Maltby, 1986, WCMC, 1992). 1% (345,000 km^2) of Africa's landscape is covered by wetlands (Finlayson & Moser, 1991). Healthy ecosystems are a fundamental requirement for sustainable development and biodiversity conservation. Biological resources support human livelihoods, and make it possible to adapt to changing needs and environmental conditions. Wetland livelihood systems provide multiple services, satisfying the needs of the local community while providing fundamental ecological services for the larger catchment population. Fishery, livestock husbandry, small scale agriculture and wetland biomass harvesting are the main livelihood activities for people living in river and lake regions. The eco-tones between lakes and terrestrial ecosystems are crucial for protection of the lake ecosystem against anthropogenic impacts. The transition area has the same function for a lake as the membrane has for a cell: it prevents, to a certain extent, penetration of undesirable components into the lake.

Besides its multifunctional values such as habitat, water quality, flood and erosion control, wetlands are the most productive ecosystem in the world. For example, papyrus in tropical Africa can produce 143 tonnes per hectare as compared to maize

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and sugar cane (60 -70 tons per hectare). In Ethiopia, wetland covers about 2% (13,699 km^2) (Tesfaye 1990, Hillman and Abebe 1993). With the exception of coastal and marine related, all forms of wetlands are represented in Ethiopia. More than 50 % of these wetlands are major lakes (7,444 km^2) and the rest are swamps and marshes (EWNRA, 2009).

The trade-off between environmental protection and development is most acute in fragile ecosystems such as wetlands. Wetlands are of value because they play an important role in maintaining environmental quality, sustaining livelihoods and supporting biodiversity. However, recently the wetland biological resources have been severely affected due to both natural and human elements, resulting in a decline of the wetland system's ecological functions and self-restoration ability. This decline is associated with a decrease in the area of the body due to sedimentation, local water pollution, and a general reduction in biological quality. Furthermore, demographic changes and increasing poverty have led to more invasive activities which have damaged the overall resource values. Nowadays, rain fed agriculture is increasingly unreliable due to erratic rainfall. Therefore, poverty related pressures; encroachment and misguided development schemes have led to environmental degradation that has compromised basic ecosystem services (e.g. fish habitat, chemical and sediment retention). If this trend continues, the future livelihoods and food security of millions of people will be at risk.

Lake shore areas are highly productive and their macrophytes are a very important component in the trophic component. In addition, macrophyte vegetation serve as ecological buffer zone which moderate changes in the shore area of the lake by regulating nutrient, sediment flow and recycling. The various macrophyte species in the shore areas are not distributed at random; each has its microhabitat, and especially on water level gradient. This study has investigated the current status of Lake Tana shore area in relation to land use activities so as to evaluate the changes of buffering functions associated with threats to the wetland resources and recommended appropriate management options. Specifically the study tried to characterize/classify/ specific habitats on the basis of land use and nature of the landscape throughout the whole lake shore; mapped the area coverage of each habitat in the lake shore area; identified major macrophyte type both at community

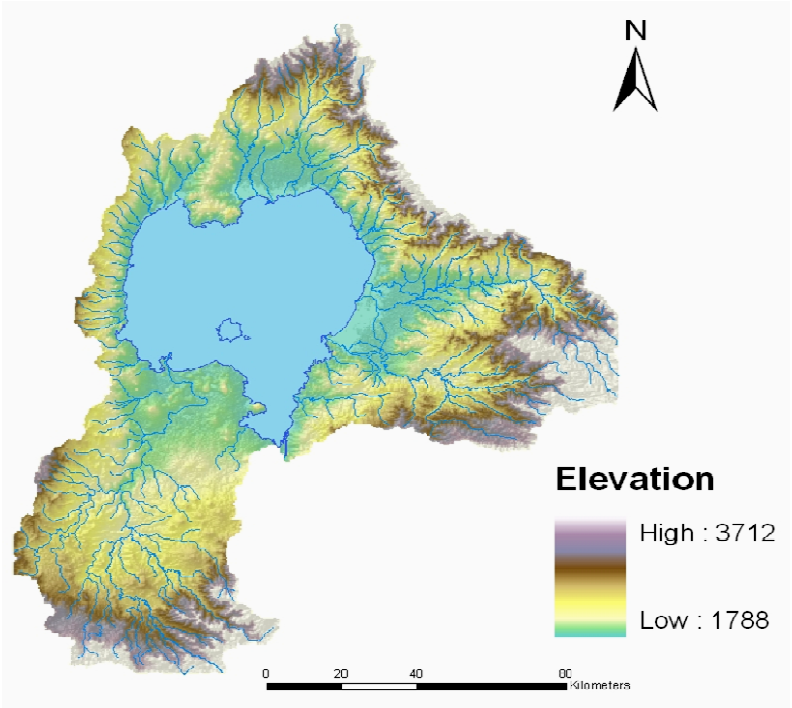
and species level; and identified zonation of aquatic vegetation along a hydrological gradient and major anthropogenic threats and impacts in the lake shore area.

2. Methodology

2.1 Description of the study area

Lake Tana, Ethiopian's largest lake is geographically situated in the north-western highlands of the country and is the origin of the Blue Nile (Fig.1). It is formed from blocking of volcanic activity in the upper Blue Nile. Lake Tana is a shallow, turbid, mixed and meso-oligotrophic lake. About 65% of the catchment is seasonally flooded extensive wetland. The catchment area of the lake has a dendritic type of drainage network. Five major permanent rivers, Gelgel Abay (Small Blue Nile), Gumara, Rib, Megech and Dirma, as well as more than 30 seasonal streams feed the lake, whereas the Blue Nile River is the only out flow from Lake Tana.

Figure 1: Map of Lake Tana catchment



Source: IWMI, 2008

Lake Tana has emerged as one of the global top 250 lake regions most important for biological diversity (Lakenet, 1999). The lake and its catchment is known for its rich biodiversity like more than 300 bird species (Shimelis Aynalem, 2008, Nega Tassie, 2007; Negash Atnafu, 2009); above 26 species of fishes (de Graaf, 2000 Abebe Getahun, 1999); 85 and 25 species of phytoplankton and zooplankton, respectively (Ayalew Wondie and Seyoum Mengestou,2007; Eshetie Dejen et al., 2003). It is also the major world cultural and archaeological sites. Moreover, the catchment has critical national significance as growth corridor in the region and country as well. These include vast water resources potential for irrigation; enormous potential to develop hydroelectric power (including exporting it to neighboring countries); rich potential for development of high value crops such as rice, high potential for livestock production; high potential for ecotourism and other livelihood strategies outside farming.

In the last 2 decades human population pressure associated with climate change and merging development schemes, the lake have shown a decline in its wetland system's ecological functions and self-restoration ability. Besides agricultural and urbanization impacts, the interest for hydropower and irrigation starts during the construction of regulatory weir of chara chara at the outlet, then proceeded by diversion of Tana-Beles (operating) and damming of inflowing rivers such as Megech, Rib and Gumara (under-construction).

The commercial fishery consists of an endemic flock of large *Labeobarbus* spp. (Cyprinidae), *Oreochromis niloticus* (Cichlidae), *Clarias gariepinnus* (Clariidae) and *Varicorhinus beso* (Cyprinidae). In Lake Tana, fishery activity is highly affected by habitat degradation as compared to resource depletion

2.2.2 Sampling and data collection

The study was conducted during both dry seasons (April–May 2008) and wet seasons (October–December 2008). On the basis of landscape type and land use activities, four major habitats were selected. Water level, water transparency and nutrient concentration were measured during sampling period. In addition, temperature, conductivity and dissolved Oxygen concentration were estimated.

Habitat area coverage in percent was delineated using Google earth satellite image and evaluated by ground observation during field survey using GPS. In total, 4 habitat zones (16 transect) were identified based on land use and nature of landscape along the lake. (1) **Sand beach** dominated by sand mining, fish landing sites and pasture land. (2) **Rocky Bank:** shore area forest dominated in coffee, fishing, fuel wood, and monastery.(3) **Muddy Bank** (**farm land):** including sediment loaded river mouths dominated by pastureland, Teff and Maize cultivation. Vegetation type is more of annual and exotic weeds. (4) **Urban** shore area characterized with various shoreline developments such as recreation, boating and manufacturing.

Zonation of aquatic vegetation along a hydrological gradient was estimated using field site observation. Macrophytes were collected by digital camera photos in the field and species identification was made using standard keys (Prescott 1962).

Questionnaire interview, focus discussion and personal observation were employed to understand the perception of local communities (farmers, fishers, etc), shoreline developers, extension agents and local governors on the level of degradation and its impact in the shore area. Age, level of education, absence/presence or size of farmland, number of livestock and household size as influencing factors was taken and analyzed.

Sampling procedures and sample sizes were made considering nature habitat and vegetation community type and but not political boundaries such as zones, woredas and Kebeles. Multistage purposive sampling which represent each of the major livelihood system was made as follows (Table 1).

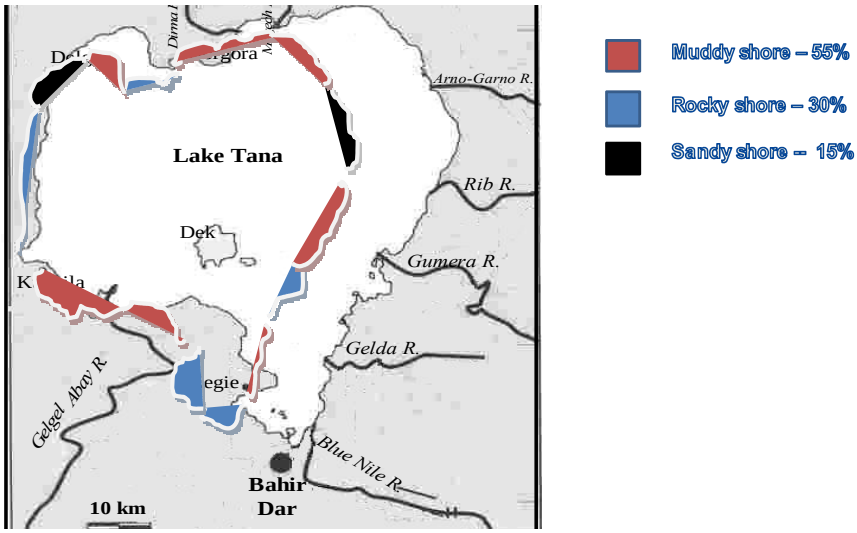
Table 1. Sampling procedures and sample sizes for socioeconomic survey in the study area

Habitat	Representative sites in a habitat	Livelihood/occupation category in each site	Sample size/respondants/ in each category
Sandy	Delgie	Farmers	10
		Fishers	5
		Extension agents	2
		Local governors	2
	Enfranz	Farmers	10
		Fishers	5
		Extension agents	3
		Local governors	3
	Zegie	Farmers	8
		Fishers	5
		Extension agents	2
		Local governors	2
Rocky	Dengel Ber	Farmers	8
		Fishers	5
		Extension agents	2
		Local governors	2
	Korata	Farmers	8
		Fishers	5
		Extension agents	2
		Local governors	2
	Dembia shore area (Dirma-Megech watershed)	Farmers	10
		Fishers	7
		Extension agents	4
		Local governors	4
Muddy	Fogera shore area (Rib-Gumara Watershed)	Farmers	10
		Fishers	7
		Extension agents	4
		Local governors	4
	Gelgel Abbay shore area	Farmers	10
		Fishers	7
		Extension agents	4
		Local governors	4
Urban	Bahir Dar City	Shoreline developers	10
		City administration	5
		Relevant governmental institution	5

3. Result and Discussion

Three habitats which have distinct characteristics were identified. **Sand beach** dominated by sand mining, fish landing sites and pasture land. **Rocky Bank:** shore area forest dominated in coffee, fishing, fuel wood, and monastery. Urban shore area was also included here. **Muddy Bank** (**farm land):** including sediment loaded river mouths dominated by pastureland, Teff and Maize cultivation. Vegetation type is more of annual and exotic weeds (Fig 2).

Figure 2: Map of habitat characterization in Lake Tana shore area



Shore line vegetations and other communities

Three dominant plant communities were identified so far throughout the shore area of the lake, namely: Tree (e.g. *Syzgium guineense)* and shrubs dominated in rocky shore areas, *Scirpus* and Polygonium species dominated in the north and east shore area, and Papyrus and *Typha* dominated in the south-western gulf shore area of the lake.

A total of over 50 species belonging to over 15 families were recorded in Lake Tana shore area (Appendix 1). Only 2 submerged and floating macrophytes and 15

emergent ones were recorded in the northern part (8 transects) of the lake. 3 and 10 more species of submerged and emergent species were recorded in the south western zones, respectively. Therefore the south-western zone is found to be in a better condition as compared to north-eastern zone. This is because of population pressure and accessibility of infrastructures which results overall degradation of the environment.

Among environmental variables, water turbidity (clarity), Lake water level, turbulence and nitrogen concentration were the most important (Table 2). In Lake Tana water level from the shore area declined during dry season exposing from 0.5 – 1 km distance from the lake. During this season exposed soils were cleared of emergent vegetation and put down to agriculture.

Table 2: Mean spatial and temporal variation in physic-chemical parameter of the lake /emergent (submerged and floating)/ shore areas.

Parameter	Wet season							Dry season						
	Z	K	DM	RG	GA	D	BD	Z	K	DM	RG	GA	D	BD
Temperature (^{0}c)	22	23	25	24	23	26	24	23	24	26	24	24	26.5	24
Depth (m)	0.5	0.6	0.4	0.3	0.8	0.6	0.7	0.4	0.5	0.2	0.1	1.4	0.4	1.2
Dissolved Oxygen (mg/l)	4.0	4.5	3.5	3.6	5.0	4.4	3.8	5.0	5.8	3.7	3.9	5.5	4.6	4.0
Conductivity (µS/cm)	201	228	241	245	251	230	287	198	220	233	244	250	235	289
pH	6.8	6.5	7.1	7.3	7.8	7.0	6.5	6.7	6.8	7.3	7.4	7-6	6.9	6.9
SRP	0.8	0.7	0.6	0.7	0.9	0.6	0.9	0.9	0.95	0.6	0.5	0.7	0.5	0.7
NO_3-N	0.7	0.6	0.9	0.8	1.5	0.9	1.2	0.6	0.4	0.4	0.3	0.8	0.5	1.0

Note: Z-Zegie, K- Korata, DM-Dirma-Megech shore area, RG- Rib-Gumara shore area, GA- Gelgel Abbay,
D- Delgi, BD- Bahir Dar City

In spite of the dynamics in abundance and diversity with seasonal changes, vegetations are quite different in substratum selection. The survey indicates most submerged macrophytes grow in the south-western part of the Lake where there is no wind current and urban fringes. Similarly in Lake George, papyrus forms large fringing floating swamps, and it flourishes in water with conductivity of 200 µS (Maclean et al., 2004)

Since there is no significant spatial difference in the major physico-chemical parameters among different sides of the lake water; habitat substratum and land use activities are the major operators. In spite of the limited presence and number of the submerged and floating macrophytes recorded, they are quite different in their habitat selection. Unlike *Ceratophyllum* species, where we can get throughout the lake shore, which has wide range of tolerance, *Nymphea* species grow best in habitats that have wind protected (calm condition), shaded and higher clarity areas.

In shallow calm shallow depth in the shore area of the lake, especially at the river mouths, head of blue Nile river and pocket sites at the west zone, *Pistia spp (*water lettuce) and *Sagittaria spp* (common arrowhead) are common.

The occurrence and abundance of *Scirpus spp* in the north and east habitats was explained that this species is known to be tolerant of shallow water and waterlogged soils as compared to *Typha and Cyperus sp.*

Water level fluctuation is considered by many authors that the most important factor that controls the distribution of shoreline and aquatic vegetation (Springuel et al. 1990, 1991; Ali, 2004). The present study revealed that these same factors also play together with anthropogenic activities, an important role in governing the distribution of the shoreline vegetation. In Lake Tana aquatic ecosystem, it seems likely that the stress is produced by high turbidity due to sedimentation process and direct conversion of shore area to agricultural and other purposes. In addition, population pressure, low level of awareness, lack of wetland regulation and enforcement are the most important factors.

Zonation varied both spatially and temporally. During dry season where water level was declined and increased water clarity the zonation from deep water was

Nymphacae – Potomageton and Ceratophyllum – emergent vegetation (e.g. papyrus). Papyrus and other emergent plants were floating on the surface even in the deep water zone (Figure 3).

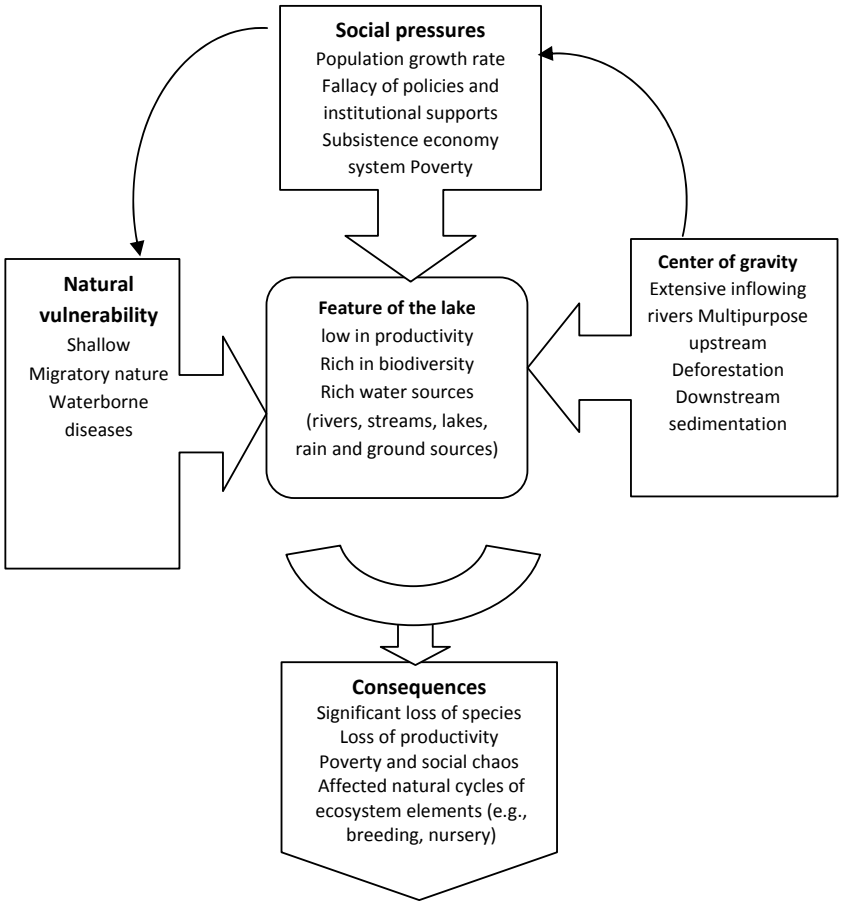
Figure 3. Vegetation zonation of the fringes of Lake Tana

Socioeconomic survey results showed that high concern among older ages/positive perception in the conservation although they are ignorant zonation of buffer zone and ecological role. Surprisingly, birds and other wildlife considered as pests, especially by younger generation. This is because more than 50% of the young (below 30 years) was landless and develop interest to exploit whatever there.

Fishers have better perception towards the cause for the decline of their fish resources *(Tilapia and Labeobarbs)* is habitat alteration (60% of them) when compared to fishing technology (30% of them), marketing (10%). However, less priority and attention were given by local governors and extension agents to the management of the lake and shore area vegetation as well. Even in most woredas, The local administrators distributed the buffer zone and grazing areas to landless young people.

Generally the combined biophysical conditions (e.g. silted, shallowness, climate change) and socioeconomic activities (cultivation, urbanization, sand mining) carried out in/near the lake pose problem with its survival. Therefore, it is possible to put the overall input and its output of the system by the following diagram (Figure 4).

Figure 4: Conceptual framework and its consequence in the Lake Tana Ecosystem



4. Conclusion and Recommendation

4.1 Concluding remarks

In general, threats of Lake Tana shore areas stability are agriculture, industrial pollution, and over-harvesting of wetland resources. Before two decades papyrus

had been encircled completely the lake. This study found out that not only Papyrus reed (Am. Dengel), but also other native vegetation, breeding ground of most fishes are highly removed and converted to grazing and farmland. In addition, poor linkage among institutions, lack of coordination, limited capacity to manage and monitor project and program activities, the fast growing towns associated with in appropriate waste disposal system and the low regeneration capacity of the inflowing rivers to neutralize toxicity or dilute the waste material (due low volume rivers) has increased the potential that the lake resources are endangered.

4.2 Recommendation

- Delineation of protected buffer zones of the lake shoreline on the basis of habitat character and ecological services
- Monitoring of vegetation communities with a high degree of ecological preservation is needed.
  - Change in land use/cover using remote sensing and GIS analysis
  - Detailed field survey/inventory on Biodiversity and socioeconomic activities
- Encourage the already existing knowledge in the sense of wise use utilization vs conservation
- Support developmental research which will be brought environmental friendly investment i.e alternative livelihoods such as finger pond farming, cage culture, forage harvest. In general need to develop integrated aquatic farming systems
- Use of opportunities such as the positive attitudes of the elders, fishers and irrigation associations, graduate research, Civic societies (e.g. EEA, EFASA) and Current higher global attention of the environment to develop management tools
- An integrated watershed management approach of the Lake and its surroundings rather than focusing only on the Lake; The integrated watershed management is good opportunity to apply the win-win approach
- Lake Tana is the home to commercial fish and globally threatened intact flocks of cyprinds. Currently supports dense and poor populations. The efforts needed to meet the needs of an additional million people over the next decades will be immense. The water level of the lake over the last 10 years, it has dropped by about 1-2 m. This condition (not invasive water hyacinths) have caused difficulty

to shipping and the fishing industry. Furthermore, the high silt load has had noticeable impact.

- Appropriate wastewater management system especially in urban and sub-urban areas including Bahir Dar City should be developed, instead of direct dumping to the receiving water bodies, by using waste stabilizing ponds at the municipal level which work for recycling, energy source, and should be linked to the creation of jobs, poverty alleviation and community participation.
- It is clear that the development of the Lake's resources can only be meaningful and sustainable when the following principles are met: *precaution, prevention, integration and public participation*. We have to work together to increase awareness of the costs of inaction i.e. of the price economies to be paid for lax environmental management and ecological degradation.
- A number of potential management and policy challenges that may significantly affect the aquatic system and fisheries in the lake. Measures to try to restore and stabilize the fish ecology in the lake might have unforeseen effects, because the huge, complex ecosystem is not understood completely. Attempts to develop innovative aquaculture, dams, irrigation and hydropower schemes might have unforeseen effects on the ecosystem, as did the introduction of exotic species in the past. The scale of any proposed aquaculture needs to be limited until the requirements and impacts of the system are well established.

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Appendix I:

Trees and shrubs in Riparian ecosystem of the Lake

Trees

Scientific name	Local name
Mimusops kummel	Eshe
Syzgium guineense	Dokima
Cordia africanus	Wanza
Ficus vasta	Warka
Sapium elliptium	Arboji
Albiza sp.	Sessa
Acacia sp	Girar
Croton macrostachyus	Bisana
Ficus ovata	Boza
Ficus sycomorus	Bamba
Ficus thoningii	Chibiha
Mangifera indica	Mango

Shrubs

Caparis tomentosa	Gimero
Phoenix sp.	Zenbaba
Phytolaca dodecandra	Endod
Vernonia amaygidalina	Girawa

Appendix 2: Aquatic vegetation (Emergent, Floating and Submerged)

Growth Form	Common name	Scientific name
Rush	Rush	*Juncus spp*
	Soft rush	*Juncus effuses*
	Needle Rush	*Juncus roemerianus*
Sedge	Bulrush/stiff, grassy foliage	*Scirpus spp*
	Soft-stem bulrush	*Scirpus validus*
	Flat sedge/umbrella plant	*Cyperus spp*
	Papyrus	*Cyperus papyrus*
		Cyperus odoratus
	Sedge- carex	*Carex spp*
	Beakrush	*Rhynchospora spp*
	Spikerush	*Eleocharis spp*
		E. geniculata
		Eleocharis obtuse
	Cattails	*Typha latifolia*
	Red Ludwigia	*Ludwigia repens*
	Primrose-willow	*Ludwigia leptocarpa*
		Ludwigia spp
	Water pennywort	*Hydrocotyle ranunculoides*
	Water spinach	*Ipomoea aquatica*
	Pondweed	*Potomageton sp*
Grass	Common reed	*Phragmites australis*
	Common arrowhead	*Sagittaria latifolia*
Others		
	Water fern	*Salvinia minima*
Aquatic Herbs	Bladderwort	*Utricularia spp*
(True aquatics)		*Utricularia vulgaris*
	Common duckweed	*Lemna spp*
	White *w*ater lily	*Nymphaea odorata*
	Coontail	*Ceratophyllum demersum*
	Water lettuce	*Pistia stratiotes*
Poaceae	Common reed	*Phragmites australis*
(Grass family)Cyperaceae	Beakrush	*Rhynchospora spp*
(Sedge family)	Bulrush	*Scirpus spp*
	Carex	*Carex spp*
	Spikerush	*Eleocharis spp*
	Rush	*Juncus spp*
Lentibulariaceae		
(Bladderwort family)	Bladderwort	*Utricularia spp*
Lemnacea		
(Duckweed family)	Common duckweed	*Lemna spp*
Nymphaceae		
(Water lily family)	Water lily	*Nymphaea odorata*
Typhaceae		
(Cattail family)	Cattail	*Typha latifolia*
Arundinodidae	Reed	*Phragmite spp*
Juncaceae		
(Rush family)	Rush	*Juncus spp*

PRIVATE INVESTMENT IN ETHIOPIA: *TRENDS AND PROSPECTS*

Ambachew Mekonnen

1. Introduction

Investment is an act of current spending for expected future return. Investment expands the productive capacity of a nation and plays a crucial role in economic growth and development process. Investment has been regarded as one of the primary engines of growth (Wade, 1989, P. 71, UNCTAD, 2001, P. 1) and the proposed solutions to SSA economic and geographic disadvantages (Sachs, 2005, P. 273). It seems why almost all nations try to motivate the internal and attract foreign investment. However, investment performance varies across borders and over time. Hence, what determine investment spatially and temporally remains a vital question.

Following our previous studies where investment is found to be a positive determinant of economic growth and trade performances of SSA economies, the existing paper is intended to extend the search for investment determination with a case study of one SSA country, Ethiopia. This case study targets at addressing a question *'how investment could be favored in Ethiopia*?' Therefore, as its objectives, the study focuses, primarily, on assessing the trend and identifying the main determinants of private investment, secondarily, on examining the dynamic links between investment, trade and growth, &, lastly, on drawing policy directions that could favor investment.

The paper is organized as follows. The next section overviews the general socio-economic situation; section three reviews related literatures; section four describes the investment performance of the country; section five presents the theoretical frameworks and discusses estimation results while section six concludes the study.

2. Literature Review

2.1 Investment and its growth implications

Investment has been regarded as crucial for growth since the formal onset of economics by the optimistic classical economist Adam Smith (1776). The belief of economists including the views of classical optimists and pessimists, Thomas Malthus (1798), David Ricardo (1817), and Karl Marx (1847), Keynesian, neoclassical and endogenous growth theorists has been consistently the same in that the level of income and living standard of nations is a function of investment and capital accumulation. With the exception of neoclassical view, all the above blocks of thinking agree that economic growth depend on the rates of saving, investment and capital accumulation.

Thirlwall (2003) explains the main essence of Smith's models as "The growth of output and living standards depends first and foremost on investment and capital accumulation. Investment in turn depends on savings..." (P. 127). Despite its prediction on the independence of steady state growth on the rates of saving and investment, neoclassical model also emphasises the importance of saving and investment in determining the level of per capita income and living standards in the long run (Jones, 2002, P. 32, Thirlwall, 2003, P. 143, Sorensen and Whitta-Jacobsen, 2005, P. 77, Romer, 2006, P. 18-19). Sorensen and Whitta-Jacobsen (2005) assert "According to the Solow model, policies to make a nation richer should mainly be policies that can increase the investment share of GDP and bring population growth under control, or policies to improve technology" (P. 87). The new growth theory, on the other hand, adheres that in the long run savings and investment ratios influence growth, positively. The general set of implications of endogenous growth theory is societies that save and invest more will grow faster in the long run (Barro, 1991, P. 429, Plosser, 1992, P. 67).

In general, all growth models extending from the classical to the contemporaneous neoclassical and endogenous growth thoughts have given crucial roles to saving and investment in determining, at least, the level of per capita income and standard of living (neoclassical), or the rate of growth of output and living standards albeit in varying approaches and degrees of emphasis. That seems why economic theories

underscore the requisite of investment to growth and development. In emphasizing the importance of investment in the process of growth, Bellemore (1964), for instance, explains the role of investment as a vital one. According to him, the greater the production and employment of capital goods, the greater the capacity to produce goods and services. The economic essence of investment is attached to capital formation. The process of capital formation is self-generating. A larger stock of capital goods will allow greater production, and greater production will produce a potentially larger surplus to be saved in capital goods and so on. This is the manner in which the productivity of workers and the level of living could be improved (P. 1). Furthermore, in their applied research paper on the Namibian economy, Shiimi and Kadhikwa (1999) say the effects of investment on economic growth are two-fold. Firstly, it generates part of aggregate demand in the economy stimulating production of investment goods which in turn leads to high economic growth and development. Secondly, capital formation improves productive capacity; investment in new plant and machinery raises productivity growth by introducing new technology which could also lead to faster economic growth (P. 4).

After recognizing the strategic significance of investment in the process of improving human life, the immediate question that comes into mind is how it could be financed? In addressing it, economists emphasise on the importance of domestic saving. After his extensive analysis, Arthur Lewis (1965) says "…investment is necessary for economic growth. From this it follows, in a passive sense, that saving is necessary to growth, because investment has to be matched by saving." (P. 213-214). However, part of Lewis' emphasis and Bellemore's (1964) idea on national saving as the only source of domestic investment seem obsolete. In today's integrated world, domestic saving is not the only source of investment. International capital mobility has been increasing dramatically in that a country may finance part of its domestic investment via capital imports or it may invest part of its savings abroad by capital exports.

However, saving is one of the main sources of investment financing of countries. Saving is the deferral of consumption possibilities to the future by spending less than the total income available while investment is the use of current income to accumulate capital assets and thereby expand productive capacity. Businesses invest in factories, commercial buildings, machinery, equipment, inventories and some

intangible types of capital assets such as corporate knowledge, human capital and customer goodwill. Consumers invest in housing and financial assets. Governments invest in infrastructure such as roads, ports, schools, hospitals, museums and defence assets. Saving with banks and other financial institutions facilitates the flow of funds to investors and makes investment possible. The cumulative circular causation of saving-investment-growth, thus, could be explained as a continuous self-generating and self-reinforcing process in that one perpetuates the other resulting in a virtuous (vicious) circle of growth (poverty) if the process is positive(negative). Hence, promoting investment by raising the propensity to save, particularly for developing countries, is regarded as a panacea for many economic problems.

2.2 Investment Financing

Investment could be financed either by domestic savings or international capital inflow. In the prevailing world, domestic saving and international capital are becoming nearly perfect substitutes. International capital flows can take place either in the form of foreign direct investment (FDI) or portfolio investment (PI). Nonetheless, this review focuses on the first two forms of investment financing, i.e. domestic saving and FDI.

2.2.1 Domestic Saving and Investment

Saving is the source of investment and capital accumulation. It is, hence, one of the basic determinants of prosperity and wealth of nations. From the perspective of devoting resources to the production of capital goods in the context of developing countries, Thirlwall (2003) says “saving is necessary to fund investment.” According to him, there are three groups in a society that contribute to national savings such as households, businesses and government. Household and business saving is referred to as private saving while government saving is sometimes termed as public saving (P. 484-485). Antonin Basch (1964) explains the latter as “government saving, defined as surplus on current account, has assumed growing importance as a possible source of public investment in the developing countries.” (P. 1).

However, imbalances between the amount saved and the need for investment capital of nations of the world have been a persistent feature in that savings in developing countries have been below their investment need while advanced countries have been generating surplus savings. As of 1999, the world's domestic saving and gross domestic investment have been estimated to be 23% and 22% of GDP, respectively. When it is disaggregated into different groups of countries, gross domestic saving and gross domestic investment were 22% and 21% of the respective GDP in high income, and 26% and 24% in the middle income countries. In Sub-Saharan Africa, the percentage of gross domestic saving to GDP accounted about 14% while gross domestic investment was 17% of GDP (Thirlwall, 2003, P. 489). From this survey, we can understand that high and middle income countries had surplus saving while Sub-Saharan African countries had a shortage of saving below their investment. The deficit in Sub-Saharan Africa amounted to about 3%. In the same year, the gross domestic saving and gross domestic investment as a percentage of GDP of Ethiopia have been estimated to be 4% and 19%, respectively, signifying the huge imbalance in that the country faced a 13% current account deficit. It was also far greater than the average deficit in Sub-Saharan Africa (Ibid, 487). The same sort of survey has been done by the same author (2006) in that, as of 2002, the gross domestic savings as a percentage of GDP of the world as a whole (20%) is balanced to the gross capital formation as a percentage of GDP (20%). However, when it is disaggregated into countries of different income groups, the balanced pattern in developed, higher savings in middle income, narrowing but still lower savings in Sub-Saharan Africa and strikingly widening gap in Ethiopia have been revealed; i.e. ratio of savings to gross capital formation in high-income (19:19), middle-income (27:23), low-income (19:20), Sub-Saharan Africa (17:18) and Ethiopia (2:21) (Ibid, 2006, P. 406-408). Thus, domestic savings have not been sufficient to finance the domestic investment need in Sub-Saharan Africa generally and in Ethiopia more critically. Domestic saving is very far below the investment financing need of the country. Most of the investment in Ethiopia seems foreign (loan and aid) financed. This tells us huge portion of investment in the country is not private but public. In 1999 and 2002 the share of private gross investment in GDP accounted only about 4.81 and 4.45 percent, respectively (data from PWT6.2, 2006).

This could be because of low propensity to save and dominance of subsistence life as LDCs are trapped into a vicious circle of poverty; and, inadequate institutional

facilities and efforts to mobilize at least up to their potential. Shortly, it could be because the economies of LDCs are not industrialized. This reasoning is consistent with Lewis' argument. According to Lewis (1954), LDCs save so little not because of they are so poor, but, because their capitalist sector is so small (Thirlwall, 2006, P. 191). However, so long as development is closely related to industrialization and capitalist sector basically refers to the industrial and exchange sectors, justifying the low savings of LDCs either because of poverty or small capitalist sector is a roundabout to the same thing. This saving-investment imbalances call inter-temporal international capital flows from surplus to deficit countries either in the form of loan or FDI. In developing countries, aid is also the other form of financial inflow. Governed by either profit seeking activities as in the former or international cooperation and developmental concessions as in the latter scenarios, international financial flow has been in a continuous motion in varying forms with varying intensities.

The other important point to be noted is the allocation and efficient use of this scarcely available resource. In underlining the significance of administering savings and investment, Sorensen and Whitta-Jacobson (2005) say "Because of its emphasis on capital accumulation, the basic Solow model strongly suggests that a good system for handling savings and channelling them into productive investment is important for prosperity." (P. 82).

If we consider the case of Ethiopia a little in detail from its inter-temporal saving and budget constraint, the need for public investment and the use of foreign funds are justifiable. The recent engagement of the country into a massive loan financed investment on infrastructure with special focus on roads, telecommunications, energy, air ports, large-scale irrigation and the like development schemes justifies the widening gap between savings and investment needs, huge surge of foreign fund and the strategic use of the resource on the provision of public goods. The provision of public goods in turn could motivate the investment zeal of the private sector and ignite the potential of the whole economy. Related to aid financed infrastructural development experience of Ethiopia, Joseph Stiglitz (1998) says

> *The experience of Ethiopia emphasizes another determinant of optimal deficits, the sources of financing. For the last several years Ethiopia has run a deficit of about 8 percent of GDP. Some outside*

> *policy advisers would like Ethiopia to lower its deficit. Others have argued that the deficit is financed by a steady and predictable inflow of highly concessional foreign assistance, which is driven not by the necessity of filling a budget gap but by the availability of high returns to government investment. Under these circumstances-and given the high return to government investment in such crucial areas as primary education and physical infrastructure (especially roads and energy) - it may make sense for the government to treat foreign aid as a legitimate source of revenue* (P. 5).

Hence, the recent experience of Ethiopia in using funds could be appreciable provided that public investment is determined to economic and social overhead capitals that could improve the long-run productivity of the whole economy and the attractiveness of the country for investment.

2.2.2 FDI as a complementary source of investment and its flow

FDI comprises activities that are controlled and organized by firms (or groups of firms) outside of a nation where their principal decision makers are located. In the context of the manufacturing sector, FDI is conventionally thought of in terms of branch plant or subsidiary company operations that are controlled by parent companies based in another country.

Policy makers and academics contend that FDI can have important positive effects on a host country's development effort. In addition to its international business element, FDI can be a source of valuable technology and know-how while fostering linkages with local firms which can help jumpstart an economy (Alfaro, 2003, P. 1); supplements domestic saving in financing the productive capacity building effort of the host economy. FDI is a direct source of capital formation and provides a direct addition to domestic investment (Thirlwall, 2003, 485).

From its historical perspective, the growth of private foreign direct investment (FDI) in the Third World was extremely rapid during the 1960s & 1970s. It was at its highest in 1968 (31% of total FDI) but it sharply declined to under 17 percent at the end of 1980s and concentrated in only a few destinations in the latter period. In

1989, almost 75 percent of FDI flows went to only 10 countries: Brazil (12%), Singapore (12%), Mexico (11%), China (10%), Hong Kong (7%), and Colombia (3%) (Todaro, 1994, P. 527). According to UNDP (2005), in 2002, a mere 12 countries accounted for nearly 85 percent of the total non-oil FDI in the developing world: China (36.8%), Brazil (12.4%), Mexico (10.9%), Czech Republic (7%), Poland (3.1%), Slovak Republic (3%), Malaysia (2.4%), India (2.3%), Peru (1.8%), Colombia (1.5%), Chile (1.3%) and Vietnam (1%). UNDP justifies the pattern as not an accident; "these are countries with especially favourable coastal locations, large domestic markets or proximity to large markets, and reasonably salubrious climatic and agronomic conditions. On the other side, the Sub-Saharan countries receive only 4.3 percent of the world's FDI flows and the LDCs only 2.5 percent." (P. 47). This reveals the large share of FDI received by Asian countries, the sharp drop-off in Latin America, and the minuscule share flowing into Africa in general and to Sub-Saharan Africa and LDCs in particular.

2.3 Survey of empirical studies on the determinants of investment

A number of studies have been conducted on the rise and fall of domestic investment and the flow of FDI in different countries. Many are devoted at drawing the trend and identifying the main determinants of both domestic investment and FDI. Despite variations and differences in relative influences, factors appearing in many of the studies are more or less similar. In their studies on the main determinants and the linkage between domestic investment and FDI, Shiimi and Kadhikwa (1999, P. 9-13, on Namibia), Astatike and Assefa (2005, P. 3-8, on FDI in Ethiopia), and, Ndikumana & Verick (2008, P. 4, on Sub-Saharan Africa) have come out with much similar lists of factors affecting both domestic and foreign direct investment including natural resources, initial level of PCGDP, GDP growth, GDP per capita, economic structure (industrialization), surrounding market, expected return, human capital, domestic saving, labour inputs, access to credit and foreign exchange. Trade-related factors (openness, trade connection, export orientation, trade liberalization, degree of competition), macroeconomic stability (inflation, exchange rate volatility and BOP deficit), infrastructure, investment climate, corruption and red tape, efficient institutions, legal system, and lag effects of private investment, public investment and FDI are also in the list of the identified

determinants. Nonnemberg and Mendoca (2004) have surveyed a number of studies in searching for determinants of investment. From the survey as well as their own empirical analysis, they found that the size of the market, the rate of GNP growth, economic stability, the degree of openness of the economy, human capital, administrative bottlenecks as well as several other institutional variables as the main determinants (P. 5-8). Similarly, Lee (2003) has surveyed empirical works by Linn (1980), Schneider & Frey (1985), Culem (1988), Torrisi (1988), Edwards (1990), Froot & Stein (1991), Wheeler & Mody (1992), Goldberg (1993), Lucas (1993), Tsai (1994), Campa & Goldberg (1995), Blonigen & Feenstra (1996), Blonigen (1997), Billington (1999) and Crowley & Lee (2003). Based on his survey, Lee has shown that most of the results of different studies have come out with contradictions. In most of the studies, GDP and GDP growth measuring size of domestic market and openness are found less controversial in influencing the flow of FDI positively while labour costs, trade barriers, exchange rate and trade balance variables have exhibited fragile properties in different studies. In justifying the contradictory findings of different studies, Lee has also mentioned problems of endogeneity and omitted variable bias as plausible reasons (P. 3-9). However, after his empirical analysis with an attempt of correcting for the above problems by including some other potential variables and using new measures of government barriers and policy indices, using a panel data from 127 developing countries over the period 1995-2000, Lea (2003) has reached at the same conclusion in that a country's market size, openness to trade and government policy liberalization are crucial factors of foreign investment (P. 18).

As annotated on the abstract of Solarte's (1997) PHD dissertation, although many economists uphold the possibility that generous domestic credit under appropriate conditions will result in increase of output, creation of excessive domestic credit may lead to inflation problems. According to him, efficient financial markets and the decisive role of the government seem to have influenced positively the effectiveness of domestic credit as an output-stimulating variable in the Japanese Post-War periods while the absence of the above features in Colombia explains the ineffectiveness of domestic credit in stimulating output. Hence, domestic credit could have investment promoting and output spurring effects if it is well managed; otherwise, it could have a negative pass-through effect on investment via its inflationary outcome.

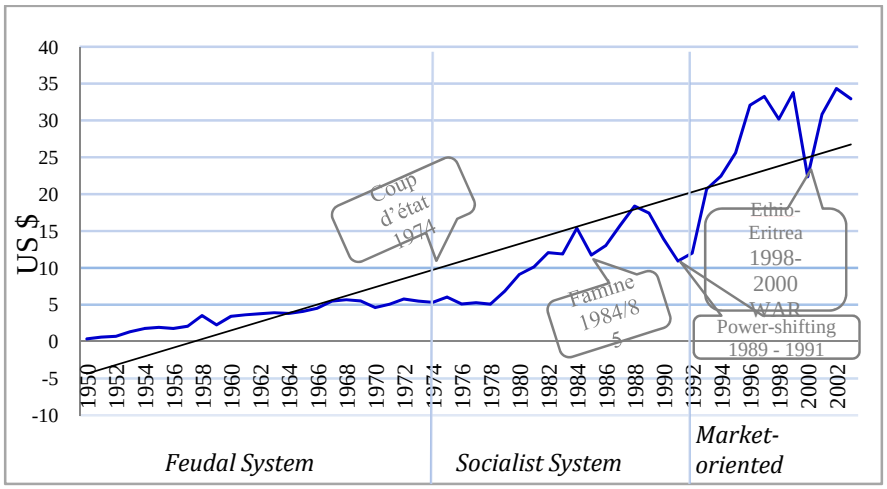
According to the studies reviewed, the main determinants of investment are found to include market size, resource availability, degree of openness and liberalization, human capital, macroeconomic stability, political stability, policy variables, investment climate, lag effects, incentive packages, risks involved, infrastructural and institutional facilities, among others. In any attempt to investigate problems in the investment performances and come out with remedial suggestions, one can investigate subsets of the above to identify the main ones within a certain spatial and temporal horizons.

Thus, the next sections explore the long-term private investment performance of Ethiopia targeting at identifying the main determinants and quantifying their respective weights of influences. Understanding the Ethiopian investment process is important as its economy still remains agrarian. But, to the best of my knowledge, the Ethiopian investment and its constraints have not been well researched. Therefore, this study contributes to the investigation of the trends and main determinants of investment in Ethiopia, and tries to address the question of *what measures should be taken to promote investment in Ethiopia*?

3. Performance trend of investment in Ethiopia

Investment is regarded as one of the engines of growth and prosperity of nations. Since it mobilizes idle resources, be it material or human, investment has special importance for developing countries. Ethiopia, as a developing country, needs a huge surge of investment from both domestic and external sources. More or less, various investment policies have been designed and implemented since long time ago. However, the private investment performance trend of Ethiopia has been very low for a long time since 1950. Figure 2 indicates the long-term performance of private investment in Ethiopia. In per capita terms, private investment has never been above 35 US$ until 2003. It also shows that its performance has been below the full trend for 30 continuous years (1964 -93). Below trend performances are mostly associated with either political chaos or natural disasters.

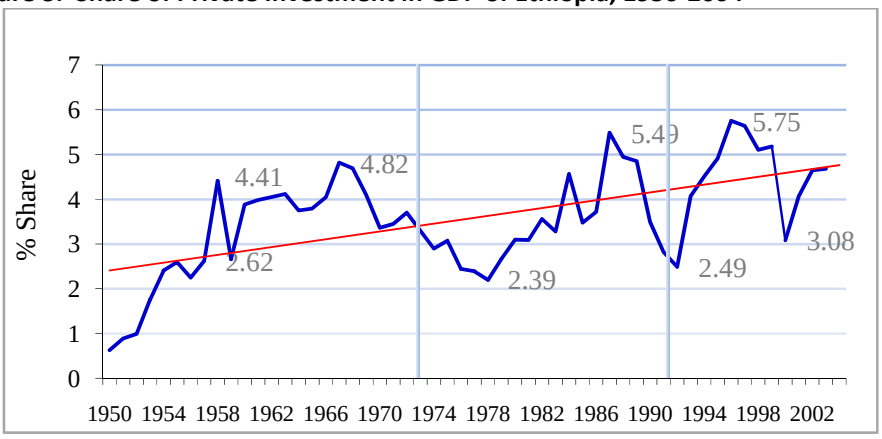
Figure 2: Trend of Gross Private Investment Per capita, at 2000 Constant price, 1950 - 2003



Source: PWT Version 6.2 (RGDPPC & Share of GINV in RGDPPC)

The share of private investment in GDP and its contribution to the development process of the country have been at their extreme low levels. Its contribution to GDP has never been above 6 percent. In the period considered, its highest contribution to GDP was recorded to be 5.75% in 1996 while its lowest is 2.82% (1991). Figure 3 displays the fluctuation of the percentage share of investment in GDP around its flat time-trend with a slight rise in its contribution since 1993.

Figure 3: Share of Private Investment in GDP of Ethiopia, 1950-2004



Source: PWT Version 6.2

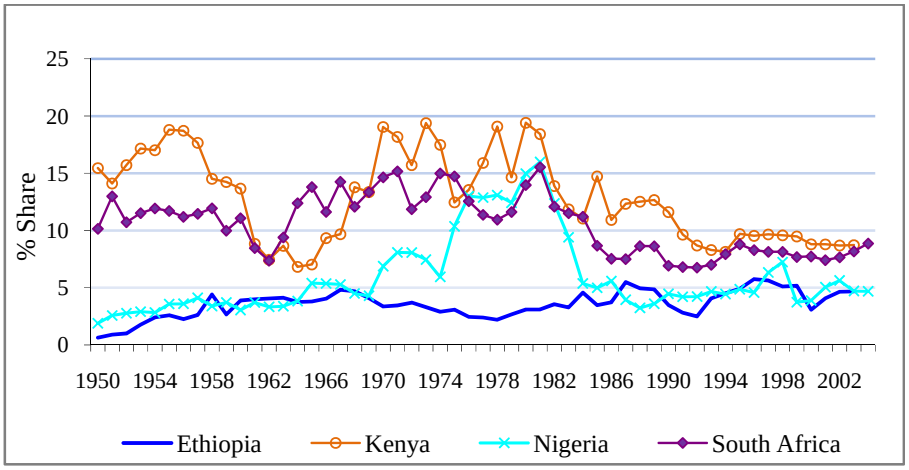
According to Figure 3, the share of gross investment to GDP was below its trend in the pre-1984, 1985-1987, 1990-1994 and 2000-2001 periods. In fact, the investment share of GDP could fall because of either the deterioration of investment performance (numerator) or the improvement of the whole economy (denominator). However, the above periods of below-trend performances coincide with the chaotic situations of the country either because of policy measures such as nationalization or outbreak of extensive war or severe drought. The pre-1984 period is known for its vindictive nationalization & expropriation of privately owned enterprises, houses and other properties. As of 1983, the number of nationalized enterprises was 159 (Taddesse, 1992, P. 143). Years 1985-1987 represent the period following the 1984/85 Ethiopian famine where as the period 1990-1994 and 2000-2001 are periods comprising years of extensive wars that overturned the socialistic regime and the Ethio-Eritrean border wars, respectively. Hence, it could be reasonable to mention, the devastating famine of 1984/85, the nationalization and repressive policy measures of the pre-1991, the power-shifting extensive/intensive civil war and its hangover after 1991/92 and the 1998-2000 Ethio-Eritrean border war as some of the major causes for the deteriorated investment performance of the country, below-trend and below its international comparators for most of the period since 1950.

Compared with three SSA countries, i.e. Kenya, Nigeria and South Africa, the Ethiopian private investment share of GDP has been found to be the least of all for the whole period considered with a special evidence of equivalence to that of Nigeria in the pre-1971 and the post-1985. However, the equivalence is due to the declining share of investment in GDP of Nigeria; not because of improvements in Ethiopia. Perhaps reflecting the de-industrialization process that hit the region, de-capitalization is the general trend in all comparators since 1981 (see Figure 4).

The pre-1996 low investment performance pattern is also reflected by the overtime trend and fluctuations of the percentage share of the stock of FDI to GDP (Figure 5). The figure shows the low percentage share of the stock of FDI to GDP of Ethiopia which had been below average of the world, developing, African and East African countries and that of Kenya almost up to 1996 and its sharp rise in the post-1996 period surpassing all in the 2003-2004 period. It seems due to this fact that UNCTAD

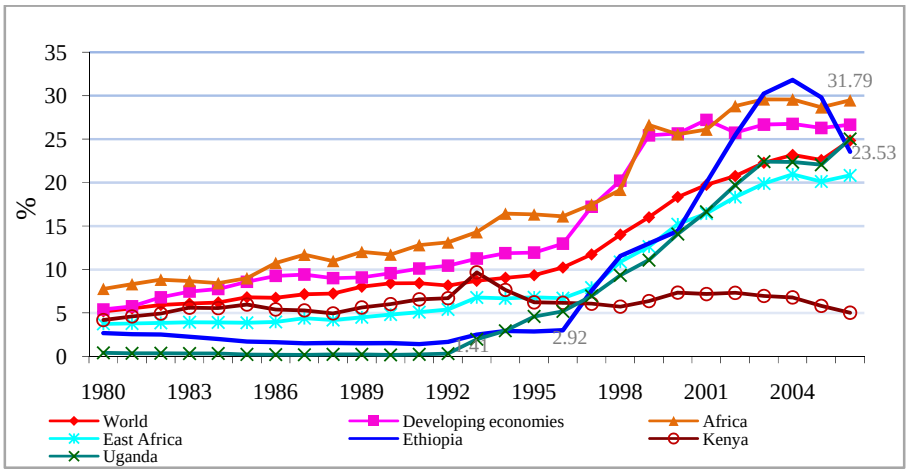
(2002) has classified Ethiopia in a group of countries with 'low potential but high performance to FDI'.

Figure 4: Private Investment Share of GDP, International Comparison, 1950-2004



Source: PWT Version 6.2

Figure 5: Stock of FDI/GDP (%), International Comparison, 1980-2006



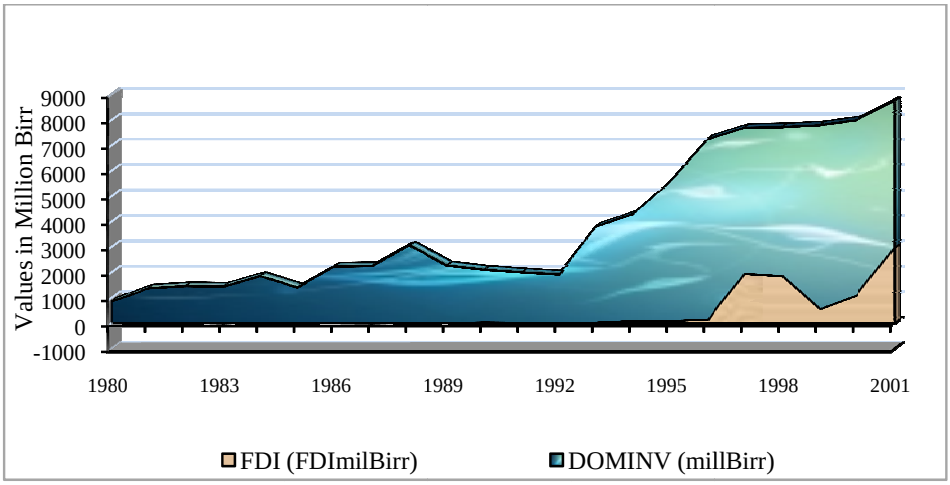
Source: UNCTAD, FDI on-line database, 2007

The rise of the share of the stock of FDI in GDP had slowed down in the period 1998-2000 followed by its revival reaching a peak in 2004 until it sharply contracted in the years since 2005. The great event in 2005 was the national election held on 15 May,

2005 resulting in an unprecedented "vote-claiming" political turbulence that lingered for the subsequent few years since the overturn of the socialist regime. The decline in the share of the stock of FDI in GDP is attributed to the aftermath of the political unrest triggered by the result of the 2005 election.

Nonetheless, the dominant form of investment in the country is domestic investment. Figure 6 illustrates the overtime value-trends of domestic investment and FDI. Until 1994, even for the subsequent two years, the role of FDI relative to the total investment, measured with national currency, Birr, had been negligible. Its role, with little improvement since 1994, has exhibited significant swing since 1996. Marked as a point of inflection, 1991 is assumed as a year of reference for the policy shift from the pre-1991, inclusive, to the post-1991. Domestic investment has tended to rise since 1992 while FDI did since 1996 despite the 1998-2000 war had caused it to slump again (see Figure 6).

Figure 6: Contribution of Domestic Investment and FDI to Total Investment of Ethiopia, 1980-2001



Source: IMF, IFS database, 2005 (DOMINV & Ex/Rate), UNCTAD, FDI on-line database, 2007 (FDI in $) and Own Computation (FDI in Birr)

From all the above facts and Figures, we can deduce that the dominant feature of Ethiopian investment is the domestic one with the rising role of FDI since 1996. However, during and after the Ethio-Eritrea border war, FDI had also fallen to its

trough in 1999 followed by its revival after 2000 until in sharply contracted following the 2005 election. The overtime investment performance trend can be broken into three distinct patterns; i.e. annual gross private investment, in per capita terms, amounting below 10 US$ (1950-1981), between 10 to 20 US$ (1982-1993) and above 20 US$ (post-1993). Year 1991, marked the end of the socialist era and the beginning of the transition towards the liberal/market oriented system, is clearly identified as the starting point in time for the revival of private investment in Ethiopia. The relatively better investment performances of the post-1992 period, noting the severe declines in 1998-2000 and the post-2005 few years, might have some sensible reasons linked with the policy stances of the respective regimes, stability, increased openness/liberalization moves, improved investment climate and other macroeconomic and institutional factors. Identification of the main determinants will be dealt in the subsequent econometric sections.

From the descriptive analyses, we have observed that Ethiopian investment has been extremely weak as signified by its low values and share of investment to GDP. Gross private investment has been sluggish in the period 1950-1992 while it was reviving since 1993. Domestic investment is found to be the main facet of total investment, while FDI had been negligibly low until its slight resurgence in 1994-1995 and considerable swing since 1996.

We perceive also that the 1975-90 and 1998-2000 intense wars, the pre-1984 nationalization, & the socialist orientation of the whole 1974-1991 have with no doubt devastated the seeds of investment in the country. The evil consequences of the 2005 national election have caused the stock of FDI to fall sharply for the subsequent few years. Hence, 1991 has been characterized as a year of reference for the induced policy shift. Based on his extensive descriptive analysis, Ambachew (2008) has reported the observed co-movements of both domestic investment and FDI to some representative variables of political instability, macroeconomic instability, market size, infrastructural facilities and trade liberalization measures. In addition, he has also noted that foreign reserve, exchange rate, domestic credit, inflation, real GDP and number of telephone subscribers (so lately) have shown relatively faster rises since 1992 (P. 52-53).

Thus, it is presumed that political and macroeconomic instabilities might have affected the growth of domestic private investment as well as FDI adversely while openness and liberalization, growing income and infrastructural facilities seem influenced them positively.

4. Empirical analyses on the main determinants of investment in Ethiopia

4.1 Theoretical background of investment behavior

In explaining investment behavior, a few theoretical models are at work in different literatures underpinning studies on investment decisions and serving as points of departures for their variants and extensions. Among those, the Accelerator, the Liquidity, the Expected Profits also known as the Cash Flow or Tobin's q and the Neo-classical models of investment behavior have wider coverage in investment literatures.

The *Accelerator theory* of investment, as proposed by Carver (1903), Aftalion (1909), Bickerdick (1914) and Clark (1917) in its rigid version, and subsequently developed by Chenery (1952), Koyck (1954), Leeuw (1962) and Evans (1967) into its flexible version, explains that investment decision of a firm is determined by changes in demand for its produces (Song *et al,* 2001, P. 229). In accelerator theory of investment behavior, desired capital (K_t*) is proportional to output (Y_t) expressed as $K_t^* = \alpha Y_t$ (as in the Aftalion-Clark simple or rigid version); and, actual capital, $K_t = \alpha\mu Y_t$ (as in Chenery and Koyck flexible version), where α is the desired capital-output ratio and μ is a constant parameter of adjustment (Jorgensen and Siebert, 1968, P. 694). The main implication of the model is that investment expenditure of an investing firm is proportional to its output while its output is a function of demand.

The *Liquidity theory* of investment behavior developed by Meyer and Kuh (1957) and Quesenberry (1958) proposes desired capital to be proportional to the internal fund (liquidity, L_t) available for investment, i.e. $K_t^* = \alpha L_t$, where L_t is profits after taxes plus depreciation minus dividend paid, and α is the desired ratio of capital to the available internal fund (Ibid, P. 694).

The *Expected Profits (Cash Flow) theory* of investment formalized by Grunfeld (1960) explains desired capital as a proportion of the market value (V_t) of a firm, $K_t^* = \alpha V_t$, where α is the desired ratio of capital to market value of a firm. Tobin (1969) has also proposed a model regarded as a generalization of the *Expected Profits model* in which investment expenditure is related to the ratio of the market value of business capital assets (V_t) to the replacement value (δ_t) of those assets. This ratio is known as Tobin's q, where $q_t = \left(\frac{V_t}{\delta_t}\right)$. As to the model, a value of q that is closer to 1 or greater encourages investment while a lower value of q discourages it.

The *Neoclassical theory* of investment behavior developed by Jorgensen (1963) as advanced by Hall and Jorgensen (1967) equates desired capita stock to the value of output deflated by the price of capital services (c_t) including or excluding capital gains, $\left(\frac{q_t - q_{t-1}}{q_t}\right)$: $K_t^* = \alpha \frac{P_t Y_t}{c_t}$; where P_t is a constant wholesale output price index, $c_t = \left(\frac{q_t}{1-u_t}\right)\left[(1 - u_t w_t)\delta + r_t - \frac{q_t - q_{t-1}}{q_t}\right]$, q_t is the investment goods price index, δ is the rate of capital replacement, r_t is the cost of capital, u_t is the rate of taxation of corporate income, w_t is the proportion of depreciation at replacement cost deductible from income for tax purposes (Jorgensen and Siebert, 1968, P. 695 - 697, Song *et al*, 2001, P. 230). At the core of this model is the importance of the value of output in influencing investment decisions; thus, it is regarded as a version of the flexible accelerator model (Salahuddin and Rabiun, 2008, P. 21-22).

Thus, attracted by its generalization and its proposition on the proportional relation of investment expenditure with demand for products, a modified version of the flexible accelerator theory of investment behaviour is dominantly at work in studies designed to identify determinants of investment in the developing world. For instance, Wai and Wong (1982), Blejer and Khan (1984) on the determinants of private investment in developing countries, Ramirez (1994) on public and private investment in Mexico and others have employed the modified version of the flexible accelerator investment model with the incorporation of different macro characteristics of developing countries in both time series and panel data analyses.

Hence, for its generalization & emphasis on demand side factors, we follow the practice of employing the flexible accelerator model augmenting with characteristics presumed to constrain the investment performances of SSA as a theoretical foundation of our attempt to identify the main determinants of investment with a

case study on Ethiopia. Thus, the flexible accelerator model has been discussed as follows as a basis of the subsequent specification of the empirical model.

4.2 The model of flexible accelerator investment behavior

The simple (naive) accelerator theory proposes the idea that investment responds immediately and entirely to changes in demand conditions to close the gap between the desired stock of capita (K_t*) and the existing stock of capital goods left from the previous period (K_{t-1}).

$$I_t^* = K_t^* - K_{t-1} \qquad (1)$$

However, demand shocks may not be permanent; instead of responding to the demand shocks instantaneously and entirely, a firm, adaptively, may require to adjust its capacity gradually. Thus, desired investment (I_t*) would be only a fraction (α) of the size of the change in demand ($Y_t - Y_{t-1}$).

$$I_t^* = \alpha(Y_t - Y_{t-1}) \qquad (2)$$

Where α is a constant desired capital-output ratio $\left(\alpha = \frac{K_t}{Y_t} = \frac{K_{t-1}}{Y_{t-1}} = \ldots \frac{K_{t-n}}{Y_{t-n}}\right)$

Moreover, actual investment (I_t) of a firm may not fully cover the desired level of investment (I_t*) instantaneously due to reasons like the supply constraint of the capital goods industries, delivery/installation lags and etc. Hence, actual investment (I_t) which amounts the size of a change in capital stock (K_t-K_{t-1}) is a certain fraction ($0<\mu<1$) of the desired investment,

$$I_t = K_t - K_{t-1} = \mu I_t^* \qquad (3)$$

Where μ is a constant parameter of adjustment calculated as a ratio of actual investment to desired investment $\left(\mu = \frac{I_t}{I_t^*} = \frac{I_{t-1}}{I_{t-1}^*} = \ldots \frac{I_{t-n}}{I_{t-n}^*}\right)$ *and n is the number of lags.*

With repeated substitution and iteration, capital stock at period t can be retrieved as a certain fraction ($\mu\alpha$) of the accumulation of declining fractions of output of the past *n* lag periods, where *n* = 0, 1, 2,....,∞.

$$K_t = \mu\alpha \sum_{n=0}^{\infty} (1-\mu)^n Y_{t-n} \qquad (4)$$

Analogously, capital stock at t-1 can be derived as

$$K_{t-1} = \mu\alpha \sum_{n=0}^{\infty} (1-\mu)^n Y_{t-n-1} \qquad (5)$$

Recalling equation (2), actual investment at period t is given by $I_t = K_t - K_{t-1}$. By replacing eq (4) in place of K_t and eq (5) in place of K_{t-1}, the actual investment function can be derived as:

$$\boldsymbol{I_t = \mu\alpha \sum_{n=0}^{\infty} (1-\mu)^n (Y_{t-n} - Y_{t-n-1})} \qquad \boldsymbol{(6)}$$

Thus, equation (6) is the general representation of the flexible accelerator model of investment. According to the model, (i) actual investment at time t (I_t) is a constant fraction (μ) of the desired investment which, in turn, is a fraction ($\boldsymbol{\alpha}$) of past changes in output or aggregate demand; (ii) desired investment is not determined solely by the current change in output but also by earlier changes in output; (iii) the constant ratio of actual to desired investment, *a number between 0 and 1, (0<μ<1),* implies that when the exponent $n \to \infty$, $(1-\mu)^n \to 0$, i.e. geometrically-decaying distributed lag effects. This in turn entails the earlier the output change, the less is its effect on the current desired investment justifying the consideration of the recent.

However, the unrestricted lag structure of the flexible accelerator model tends to cause multi-collinearity problem in estimations, generates misleading results and makes empirical characterization of the time structure of investment implausible (Jorgensen and Siebert, 1968, P. 687, Song *et al*, 2001, P. 229). In addition, many potential determinants such as wage rates, interest rates, taxes and other

macroeconomic and investment climate indicators are not included in the determination of investment, which is difficult to justify on both theoretical and practical grounds (Song *et al*, 2001, P. 229). Because of such intrinsic shortcomings, the model is applied with modifications and inclusion of different sets of variables in various studies. As part of our modification, if we disregard all the lags (n = 0), the model would be simplified into:

$$\boldsymbol{I_t = \mu\alpha\,(Y_t - Y_{t-1})} \qquad (7)$$

4.3 Single equation specification on the determinants of investment

According to the flexible accelerator theory of investment behaviour, actual investment is a function of changes in demand or output.

INV = f(GDP)

However, the model is usually employed with modifications; i.e. simplifying the lag structure and inclusion of other characteristics to which researchers are interested in explaining investment. Following this practice, we have also considered other variables in addition to *demand*; i.e. *trade, return to capital, infrastructure, macroeconomic instability/uncertainty, political instability, and FDI.* This modification renders us to expand the functional form as:

INV = f(GDP, return, trade, inflation, infrastructure, , ….. Dw)

However, there are a few difficulties and further interests that would not be handled by a straightforward estimation of the above functional representation of investment behaviour in the case country; i.e. *separating the effects of return to K, effective demand and government activities.* The details of the difficulties and the approaches followed to tackle them are discussed as follows.

Under perfect capital market assumption, the rate of return to capital is captured by real interest rate in line with Keynesian Marginal Efficiency of Investment theory. However, this and other assumptions underlying the standard model typically are unlikely to hold in developing countries where the financial sector is

repressed/controlled (Oshikoya, 1994, P. 583, Asiedu, 2002, P. 110). According to Blejer and Khan (1984), while the rates of return on investment in developing countries typically tend to be quite high, real interest rates on loans are kept low by governments for a variety of reasons. They say also "It is interesting to note that, in the currently popular models of financial development, an increase in interest rates, by increasing financial savings, raises rather than lowers private investment" (P. 386). Inclined to this idea, Sakr (1993) has found negative but insignificant estimate for real interest rate in determining private investment in Pakistan (IMF Working Paper, P. 10). Shortly stating, these arguments imply that real interest rate particularly in developing countries fails to account for the return to capital. Asiedu (2002) has also annotated the difficulty of finding an appropriate measure of the return on investment in developing countries and tried to mitigate it by assuming that the marginal product of capital is equal to the return on capital. According to her, this implies that investment in capital-scarce (poor) countries yields a higher return and proposes the use of the inverse of real per capita GDP to proxy return on capital, expecting inverse relationship between real GDP per capita and investment (P. 110 -111). Following these theoretical and practical arguments, the use of the inverse of per capita GDP is the approach proposed as a roundabout to capture the return effect.

However, the use of the inverse of per capita GDP as a proxy for the return on capital in an empirical work that base the accelerator theory of investment where demand is mostly proxied by GDP could seem reasonably strange. Despite the emphasis of the accelerator theory on demand for products, there are also other problems intrinsic to the use of GDP identified from both theoretical and empirical sides of the argument.

From the theory side, the inseparability problem of the marginal efficiency of investment (MEI) and the accelerator theories of investment still remains open while employing GDP is the usual practice to represent demand. Vernor Smith (1961) explains that the micro-founded expression of investment demand as a function of the rate of interest, the rate of change of output and the level of output demonstrates the inseparability of "marginal efficiency" and "accelerator" theories of investment behaviour (P. 16). The approach followed by Asiedu to proxy the return to capital by the inverse of GDP per capita based on the Law of Diminishing

Marginal Returns to Scale (LDMR) compounds the complication in using GDP as a measure of demand only. "The Law of diminishing return implies that the marginal product of capita is higher in the less productive (i.e. in the poorer) economy" (Lucas, 1990, P. 92).

According to MEI theory, investment demand and interest rate are inversely related. On the other hand, assuming other factors remaining constant, a change in income causes the demand for money and then interest rates to change in the same direction (Geithman, 1971, P. 115). Therefore, increase in GDP could have an adverse pass-through effect on investment via increased interest rate as opposed to the accelerator principle. In addition, according to the LDMR, the richer is a country, the higher is the K/Y ratio and the lower is the return to additional capital (investment). This is a second contradiction to the prediction of the accelerator theory of investment. Therefore taking the proposition of the three principles into account, one can expect that the net effect of GDP on investment to be positive (if the demand effect > the MEI + DMR effects) or negative (if the reverse happens) otherwise zero if the contradicting effects cancel-out one another.

Empirical works have also been reporting mixed evidences. As discussed above, one of the reasons for different empirical works that employed per capita GDP as a proxy for market to provide mixed results seems the inseparability problem of the MEI, return and accelerator effects. For instance, Lee (2003, P. 18), Nonnenberg & Mendokca (2004, P. 5) have found a positive effect of per capita GDP or its growth; Edwards (1990), Jasperson, Aylward and Knox (2000) came out significantly negative estimates while Loree and Guisinger (1995), Wei (2000) and Hausman and Fernandez-Arias (2000) report insignificant results (in Asiedu, 2002, P. 110). Kahai (2004, P. 48), Jenkins (2010, P. 53) and others have also reported insignificant results. In testing his postulate on the positive effect of the growth of GDP on private investment on 8 low and middle-income SSA countries, Oshikoya (1994) also has come out with mixed results; i.e., significantly positive (low-income group & 4 countries) and negative (1 country) and insignificant (middle-income) (P. 587).
According to the above arguments, estimating negative coefficients for GDP or per capita GDP does not mean that the demand effect is negative. It could rather be indicating the outweighing positive effect of the return to capital. But, this reality does not seem to be well checked and documented. Therefore, for reliable

estimation, it is worthwhile to give attention to disentangle the two effects, i.e. the positive demand and the return effects, justifying our attempt of proxying the return to capital by the inverse of per capita GDP.

But, the aforementioned attempt could be fruitful if the impact of demand is effectively controlled. Motivated by our particular interest to investigate the effects of different components of demand (private consumption and government spending), in addition, we tried to bring demand into the regressions in disaggregate/components instead of aggregate demand. In doing so, due attention has been given to the independent influences of *private consumption and government expenditures.* This approach could also help us to remove the investment component from GDP and alleviate the danger of obtaining spurious results.

The use of private consumption to represent demand is consistent with the special emphasis of the acceleratory theory on consumer demand in determining private investment. In his basic text book, John Sloman (2003), for instance, explains the four main determinants of investment to include '*increased consumer demand, expectations, the cost and efficiency of capital equipment and the rate of interest*'. According to him, investment is required to provide extra capacity which is only necessary if consumer demand increases; the bigger the increase in consumption demand, the more investment will be needed. At this point, it would be important to quote his emphasise on consumer demand in explaining investment via accelerator principle. He says "*the relationship between investment and increased consumer demand is examined by the accelerator theory". (P. 474).* He provides further explanation on the magnificent role of consumer demand in determining investment decisions (P. 484-485). This idea is a continuation of the theoretical articulation of Paul Samuelson (1939). According to Samuelson (1939), *the introduction of the relation that assumed induced private investment to be proportional to the time increase of consumption accounts for the novelty of the conclusions reached* in Professor Hansen's development of a new model sequence which combines the multiplier analysis with that of the acceleration principle or relation (P. 75). In revisiting Samuelson's multiplier-accelerator model that combined the newly arrived Keynesian multiplier analysis with the older principle of acceleration, Professor Westerhoff (2006) has also mentioned the emphasis of accelerator theory on

consumption component of demand as follows: *"The accelerator principle states that induced investment is driven by changes in consumption, respectively by changes in national income"* (P. 89).

Therefore, the use of private consumption as a measure of demand, the inverse of per capita GDP as proxy for return to K and the separate treatment of government spending is advantageous to achieve our intention of disentangling the three different effects that would have not been done by using aggregate GDP as a measure of demand; i.e. to test our expectations on the positive demand effect, mainly captured by private consumption, the net crowding-out effect of government spending, & the positive effect of return to capital.

Therefore, learning from other works and based on the objective of the research, this study employs the simplified version of the flexible accelerator investment model augmented with the inclusion of variables that could reflect domestic market (private consumption, government expenditure and lagged investment and FDI performances), political stability (war dummy), macroeconomic stability (inflation, & foreign reserve), and trade openness and liberalization measures (export + import to GDP ratio or a dummy variable). Hence, the general functional form of the model is formulated as:

$$INV = f(CONS, GOVE, RETURN, OPEN, INF, TELE, ..., DW) \quad (8)$$

Where, CONS is private consumption, GOVE - Government Expenditure, RETURN is the return to capital (the inverse of per capita GDP), OPEN - the ratio of the volume of export and import to GDP (proxy measure of openness) or DLIB - Liberalization Dummy (0 for pre-1991 and 1 for post-1991), INF - inflation (proxy measure of macroeconomic instability-1), FXRES - foreign exchange reserve (proxy measure of macroeconomic instability-2), TELE – number of telephone lines and mobiles per 100 people (proxy measure of infrastructure), DW - Dummy for political instability (1 for politically turbulent and war years and 0 for relatively peaceful years) and other variables.

Based on the above functional representation, a multivariate ARDL(*p, q*) model is proposed

$$y_t = \mu + \sum_{j=1}^{p} \theta_j y_{t-j} + \sum_{i=1}^{k} \sum_{j=0}^{q} \beta_{ij} x_{i,t-j} + u_t \qquad (9)$$

$$u_t \sim iid\,(0, \sigma^2)$$

Where, y stands for investment, $\sum_{i=1}^{k} x_i$ *is a vector of k explanatory variables (determinants of investment), i=1, 2,...,k.*

$$\sum_{i=1}^{k} x_{it} = x_{1t} + x_{2t} + \ldots + x_{kt}$$

***μ** – a constant term, **θ** and **β** - the coefficients to be estimated and u - the random error term while t is a time identifier.*

With the help of the estimation of the above specification, we attempt to test the main hypotheses stated as whether demand augmenting and trade liberalization policies, improved infrastructural facilities, macroeconomic and political stabilities improve the private investment performance of Ethiopia.

4.4 Variables and data

In identifying the main determinants of investment, this empirical analysis focuses on some of the factors such as demand (consumption and government expenditures), return to capital (proxied by the inverse of real GDP per capita), trade policy (trade openness and liberalization), macroeconomic stability (inflation or foreign reserve), infrastructure (telephone density) and political instability (war dummy constructed based on the historical data obtained from Armed Conflict online database). In general, annual time series data sets covering the past five decades (1950-2003) with a total of 54 observations and two sub-periods, i.e. 1965-2003 & 1970-2003 are used, complementarily. Except for the expenditure components of GDP, all the data series are given in ratio scale. The GDP data series is given in 2000 constant US dollar price adjusted for Terms of Trade (TOT) changes while its components, i.e. consumption, government expenditure and investment, are given in percentage shares. Hence, multiplying the corresponding shares and GDP and then dividing by 100 generates the annual real dollar value of the variables, adjusted for TOT that could be employed for the analysis.

4.4.1 Data characterization

The underlying data collected/generated are all value data of gross private investment (INV), foreign direct investment (FDI), private consumption (CONS), government spending (GOVE), macroeconomic variables such as foreign reserve (FXRES) & inflation (INF), measure of openness (OPEN) and alternative measures of income like real per capita GDP (RGDPPC) and growth of per capita GDP (grgdppc). In addition, two dummy variables have been defined to represent dichotomous characteristics of the period into war years of 1962-1990, 1998-2000 and other politically turbulent years (values of 1) versus the relatively peaceful years of 1950 - 1961 & 1991-97 (DW) (values of 0) and liberalization move (DLIB) of the country in that DLIB is assigned to have 0 values for the pre-1991 inclusive and 1 for the post-1991 years. Except GDPPC growth and the dummies, all the data series have been transformed into log levels to dampen short-run fluctuations and skewed distributions in the realizations of the stochastic process.

As the variables defined above are typical time series, they may involve non-stationary or unit root process. Working with a non-stationary time series is that the mean, variance and covariance are not time-invariant leads a researcher to end-up with a spurious regression superficially looking good fit but seldom reflecting the true relationship between the variables of interest. Hence, to tackle such problems, stationarity tests have been undertaken prior to using the data to construct a model. This is done by the informal graphical diagnostic and the formal Unit Root tests of stationarity by using the Augmented Dickey Fuller (ADF) tests.

(i) Graphical Examination of the Data

As a first step, informal graphical diagnoses are visualized in the following figures plotting graphs, autocorrelation and partial autocorrelation correlograms of the log levels of each series and their first-difference counterparts for the series with full data availability for over the whole sample period. If a stochastic process is purely random, its value series is non-trending and its autocorrelation at any lag greater than zero is zero. However, according to Figure 7, all the variable series are trending upward persistently with high fluctuation in logarithmic value of foreign exchange reserve followed by real per capita GDP and trade openness variables. The

corresponding ACF represented by the autocorrelation correlograms reveal the persistent correlation between successive lags of the log-levels series indicating the non-stationarity of the processes. Hence, all the variables seem to exhibit non-stationarity (unit root) problem. However, one common feature of the correlograms as displayed in the lower panel of Figure 7 is that they start at a very high value at the first lag and taper off to the 6th lag signifying the declining correlation as the time distance widens.

Figure 7: Plots and Autocorrelation Functions (ACFs) of the Log-transformed data

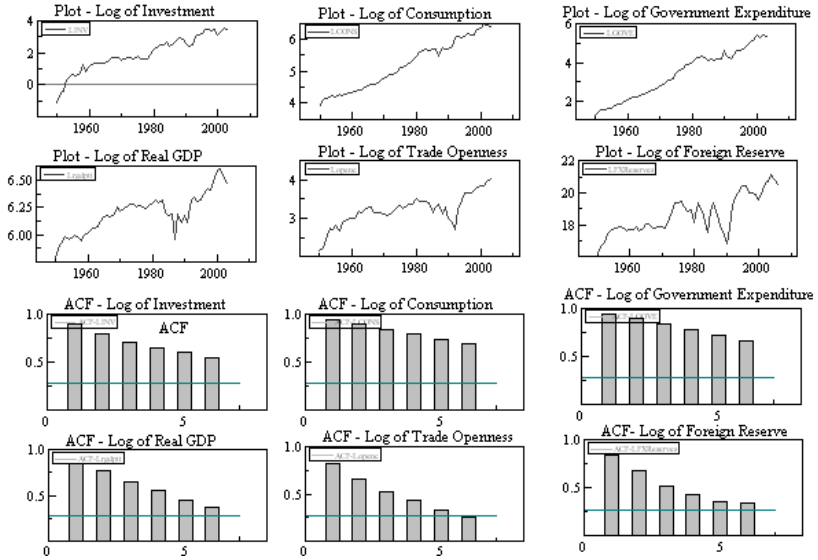
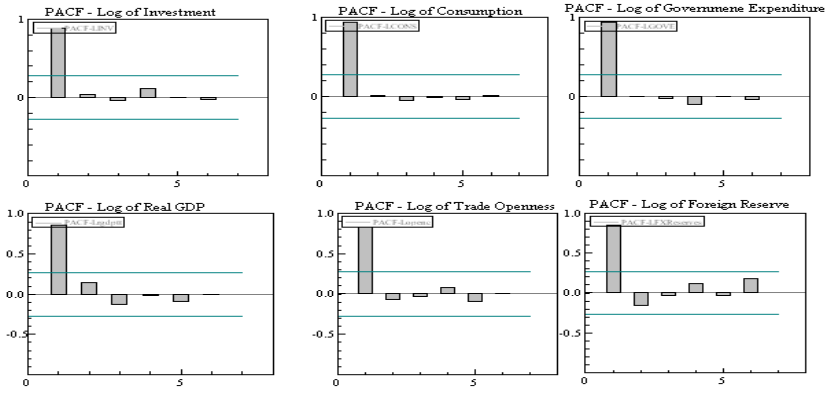
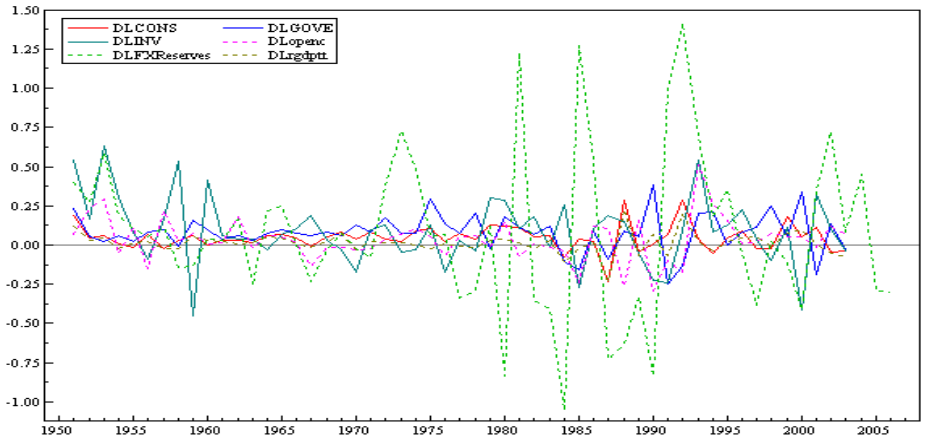


Figure 8: Partial Autocorrelation Functions *(PACFs with 0 ± 2√T error bands)*



Furthermore, as indicate in Figure 8, the correlograms of the corresponding partial autocorrelation functions (PACF) reveal that only the autocorrelation of the first lag seems dominant and significant for all the variables that exhibit persistence. All the bars representing partial autocorrelation beyond the second lag, inclusive, are shown to remain within the 95% confidence interval or the error band of approximately $0 \pm 2/\sqrt{T}$ where T is time in years. This implies that, for the log-levels series, the persistence is strong and significant only for one period.

Figure 9: Plotting Plots of the First-Differences (Growth Rates) of the Data



This idea is also backed by the non-trending plots of the first-differences of all the variables. However, we should note that the variation of the first-difference of the log of foreign exchange reserve seems time-variant which could have adverse implications on some of the required data proprieties, i.e. normality and constant variance.

Thus, we can judge at a glance that the levels data from all these variables exhibit clear upward trend signifying persistence and non-stationarity while all their first-differences seem stationary. Nonetheless, it is insufficient to conclude on the stationarity of the series solely by looking at their plots. In addition, there are other variables that are not considered in the graphical diagnosis due to limited data availability. Thus, following the judgment based on the graphical diagnosis, a comprehensive and formal Unit Root test of stationarity has to be conducted.

(ii) Unit Root Test of Stationarity

The formal Unit Root test of stationarity has been conducted on the present and 4 lag values in that the ADF statistics are used at 5% and 1% significance levels as developed by Dickey and Fuller (1979) on the full range of variables. The ADF test is taken for its desirable property of taking short-run dynamics into account based on the following autoregressive regression that contains lagged differences with the optional inclusion of a constant, or a constant & trend:

$$\Delta y_t = \alpha + \mu t + (\beta - 1) y_{t-1} + \sum_{i=1}^{p} \gamma_i \Delta y_{t-i} + \varepsilon_t$$

In this test, the null hypothesis is that *'the underlying time series is non-stationary ($\beta - 1$= 0 implying a unit root)'* against the alternative hypothesis of *'the time-series is stationary ($\beta - 1$<0)'*. Hence, rejection of the null hypothesis implies stationarity of the series under consideration. As indicated in Table 3, the ADF test on the levels data series does not reject the non-stationarity hypothesis at both 1% and 5% significance levels, except on logFDI *(fdi)* at 0-lag with constant & trend while it does for the first-differences of all the variable series except tele/100 which only its second difference is stationary.

Table 3: Unit Root test Results with *Constant*, and *Constant and Trend* Ho: *Non-stationary*

Varibles	t - ADF With Constant					t - ADF With Constant and Trend				
	Lags					Lags				
	0	1	2	3	4	0	1	2	3	4
Inv	-1.023	-0.880	-0.861	-0.964	-1.049	-3.658*	-3.186	-3.127	-2.995	-2.840
Cons	-0.384	-0.204	-0.009	-0.044	-0.180	-3.249	-2.771	-2.514	-2.621	-2.994
Gove	-0.666	-0.593	-0.580	-0.522	-0.597	-2.170	-1.823	-1.821	-1.759	-2.141
Fxres	-1.430	-1.775	-1.491	-1.217	-1.200	-2.622	-3.260	-3.026	-2.705	-2.890
Open	-0.980	-0.890	-1.131	-0.843	-0.834	-1.898	-1.838	-2.262	-1.853	-1.899
Rgdppc	-1.565	-1.001	-1.091	-1.087	-1.364	-2.484	-1.714	-1.859	-1.912	-2.419
Cpi	-1.108	-0.968	-0.987	-1.061	-1.924	-1.366	-1.968	-1.771	-2.768	-2.631
tele/100	3.102	1.655	1.629	1.814	1.529	2.192	-0.536	-0.867	-1.540	-1.527
Fdi	-2.844	-1.461	-0.684	-0.705	-1.116	-3.911*	-2.464	-1.777	-1.540	-1.873
Export	-1.426	-2.097	-1.737	-1.573	-1.753	-1.625	-2.169	-1.767	-1.540	-1.656
Import	-0.943	-0.415	-0.503	-0.327	-0.283	-2.369	-1.806	-1.934	-1.762	-1.734
Δinv	-8.517**	-5.852**	-5.088**	-4.683**	-4.147**					
Δcons	-8.553**	-6.077**	-4.298**	-3.152**	-3.177**					
Δgove	-8.232**	-5.328**	-4.301**	-3.090*	-2.893					
Δfxres	-6.131**	-5.250**	-4.899**	-4.018**	-4.747**					
Δopen	-7.238**	-4.329**	-4.468**	-3.801**	-3.356**					
Δrgdppc	-9.785**	-5.149**	-4.003**	-2.880**	-2.510**					
Δcpi	-4.517**	-3.904**	-2.429	-2.565	-2.965*					
Δtele/100	-1.279	-0.898	-0.320	-0.783	-1.194					
Δ^2tele/100	-6.600**	-5.257*	-3.195*	-2.495	-2.080					
Δfdi	-9.330**	-6.93**	-3.967**	-2.411	-2.418					
Δexport	-3.888**	-3.780**	-3.357*	-2.637	-2.787					
Δimport	-6.769**	-3.897**	-3.345*	-2.788	-2.835					
Grgdppc	-7.849**	-3.719**	-2.738	-1.874	-1.575	-7.944**	-3.807*	-2.828	-1.882	-.565
Critical Values (-3.57)	5 %	(-2.92)			1 %	5 % (-4.16)	(-3.50)			1 %

Note: 1. *Lower case letters indicate the natural logarithmic levels of the data. 2. Since the stationarity test of CPI and Tele/100 is based on the 2nd data set (1965 -2003), and, that of FDI, export, import and the growth of real GDP per capita is based on the 3rd data set (1970-2003), the indicated critical values (calculated from the 1st data set, 1950 -2003) may slightly differ from the actual critical values used. In that case, the levels of significance indicated by the asterisks should be taken. 3. All the ADF statistics for log of return & its 1st-difference (not reported) are exactly similar to those for real per capita GDP.*

The Unit Root test of stationarity is not altered by the alternative inclusion of a constant or a constant & trend, for almost all the variables. Hence, we characterize the data series as all except tele/100 are integrated of order 1, I(1), while tele/100 is integrated of order 2, I(2).

(iii) Cointegration Test

Despite the fact that each of the variables exhibit non-stationarity, the linear combination of the variables could produce stationary process. If that is so, the variables are said to have cointegrating relationships. Therefore, it also needs a formal test of cointegration. Cointegration test could be conducted following either the Johansen (1988, 1990, 1995) VAR or the Engle-Granger (1987) single equation residual-based approaches. However, Johansen's VAR approach is data intensive placing limits on the number of variables and the lag length to be considered particularly in a short time-series data of this sort. Because of this, our cointegration test employs the two approaches. But, because of the above reasons, in using the Johansen test, only the main five variables with the inclusion of up to three lags are considered. Johansen's Likelihood Ratio (Trace) cointegration of I(1) test is a test of the rank of cointegration or the number of cointegrating vectors; i.e. *null "r ≤ p"* with the following steps:

$$Trace\ Statistic\ (\eta_r) = -T \sum_{i=r+1}^{M} ln[1-\lambda_i]$$

Where r is the rank of cointegration;

T is the number of usable observations;

M is the number of endogenous variables; and

λ_i is the next eigenvalue (λ_{r+1}).

The trace test ~ χ2(M – λ) with M – λ degrees of freedom.

A Trace Statistic greater than the χ2 Critical Values leads into the rejection of the null "r ≤ p"

The Johansen Trace test results are summarised in Table 4. The results suggest the existence of one cointegrating relationship between the variables when the dependent variable is considered while there is no cointegrating relationship amongst the regressors. The implication of the test results is the existence of short-run and long-run relationships that could only be identified with the employment of

Error Correction Model (ECM) as introduced by Phillips (1954, 1957), used by Sargan (1964), popularized by Hendry (1984), and linked to the theory of cointegration by Engle & Granger (1987) (Hassler and Wolters, 2006, P. 59).

Table: Cointegration Test results

H0: Co-integrating Rank, r ≤ p, (where p = 0, 1, 2,....M-1)

	With Investment and Regressors		Among Regressors only	
Null Hypothesis	**Trace Statistic [Prob]**	***Decision***	**Trace Statistic [Prob]**	**Decision**
r = 0	76.575 [0.012]**	*Reject H0: r = 0*	42.695 [0.140]	*Do not reject*
r ≤ 1	40.363 [0.212]		18.889 [0.512]	*There is no*
r ≤ 2	18.430 [0.545]	*The number of*	7.208 [0.560]	*cointegration*
r ≤ 3	6.878 [0.598]	*Cointegrating*	0.062 [0.803]	*among the*
r ≤ 4	2.436 [0.119]	*vectors is 1.*		*regressors.*

The number of lags used: 3 (Following Greene, 2002, P. 659)
Variables considered are Investment, Consumption, Government Expenditure, Foreign reserve and Trade Openness (all in natural logs) using data for the full sample period.

Hence, based on the stationarity and cointegration test results, the model to be estimated is specified as a multivariate single equation ECM of the form

$$\Delta \boldsymbol{y_t} = \boldsymbol{\lambda \hat{\xi}_{t-1}} + \sum_{\boldsymbol{j=1}}^{\boldsymbol{p-1}} \boldsymbol{\alpha_j \Delta y_{t-j}} + \sum_{\boldsymbol{i=1}}^{\boldsymbol{k}} \sum_{\boldsymbol{j=0}}^{\boldsymbol{q-1}} \boldsymbol{\gamma_{ij} \Delta x_{i,t-j}} + \boldsymbol{\varepsilon_t} \quad (\mathbf{10})$$

$$\varepsilon_t \sim iid\,(0, \sigma^2)$$

$$\hat{\xi}_t = (y_t - X\beta)$$

$$\hat{\xi}_{t-1} \text{ is the error correction term } (ECM)$$

$$For \text{ a dependent variable } y \text{ and a vector of } k \text{ explanatory variables}, X, i.e.,$$

$$\sum_{i=1}^{k} x_{it} = X = (x_{1t}, x_{2t}, \dots, x_{kt})$$

Following Pesaran and Shin (1999), various information criteria have been employed to determine the lag structure of the proposed ECM model with the inclusion of up to 3 lags. The test results have been summarised as Table 5. In using an information

criterion, the selection rule is that the lag length that minimizes the criterion is the optimal. Hence, according to the test results, the inclusion of the 1st lag is supported by all except SC criterion. But, SC statistic is minimized at zero-lag suggesting static specification. Hence, we decided to begin from the inclusion of the first lag of all the variables as a general unrestricted version of the proposed ECM model.

Table 5: Test results on the lag structure of the ARDL Specification *(all in first-differences, sample period: 1950-2003)*

Lags	No.	With no log-likelihood constant				When log-likelihood constant			
	Obs	AIC	SC	HQ	FPE	AIC	SC	HQ	FPE
3	50	-3.135	-2.217	-2.785	0.047	-0.297	0.621	0.053	0.810
2	51	-3.169	-2.487	-2.908	0.043	-0.331	0.351	-0.070	0.741
1	***52***	***-3.277***	-2.826	***-3.104***	***0.038***	***-0.439***	0.011	***-0.266***	***0.650***
0	53	-3.112	**-2.889**	-3.026	0.045	-0.274	**-0.051**	-0.188	0.761

Dependent Variable: Investment; Regressors considered: Lagged Investment, Consumption Return, Government Expenditure, foreign reserve and Trade Openness

Hence, the unrestricted version of the selected ECM model becomes an ARDL(1, 1)

$$\Delta y_t = \lambda\hat{\xi}_{t-1} + \alpha_1 \Delta y_{t-1} + \sum_{i=1}^{k} \gamma_{i0} \Delta x_{i,t} + \sum_{i=1}^{k} \gamma_{i1} \Delta x_{i,t-1} + \varepsilon_t \qquad (\mathbf{11})$$

where

λ *is the coefficient (speed) of adjustment,*

α_1, γ_{i0} *and* γ_{i1} *are the short-ran coefficients,*

ε *is a random disturbance term assumed to be iid, and*

β_i *is the long-run parameter computed as*

$$\beta_i = \frac{\gamma_{i0} + \gamma_{i1}}{1 - \alpha_1}$$

4.4.2 Statistical summary of the data

The statistical summary of the data has been organized in the form of Table 6 so that we can compare the mean of the first-differences (growths) of the variables from

the full and the shorter sub-sample periods. The summary statistics indicate that: (i) the average growths of private investment, real per capita GDP and trade openness have shown deceleration, while that of private consumption and political instability dummy has increased. The implication of the latter is that the post-1970 period was politically more turbulent than the pre-1970. (ii) Indicated by the standard deviations, FDI is the most volatile variable followed by foreign reserve, import, export and investment, in that order (see appendix 1 for the correlation matrix of the variables).

Table 6: The Statistical Summary of the Variables in their first-differences

		SP I (1950 -2003)		SP III (1970 - 2003)				
Variables	Description	Obs	Mean	Obs	Mean	St.Dv.	Min	Max
The first difference of the logs of								
Δinv	Gross investment	53	0.086	33	0.059	0.192	-0.41	0.54
Δfdi	Foreign Direct Investment, FDI	-	-	33	0.145	3.781	-8.13	10.09
Δrgdppc	Real GDP Per capita (Adj. TOT)	53	0.013	33	0.008	0.079	-0.23	0.22
grgdppc	Growth of Real GDPPC (CS)	53	0.016	33	0.014	0.085	-0.21	0.27
Δcons	Private consumption	53	0.046	33	0.049	0.097	-0.23	0.29
Δgove	Government expenditure	53	0.078	33	0.078	0.146	-0.25	0.38
Δreturn	Return to capital	53	-0.013	33	-0.008	0.079	-0.22	0.23
Δopen	Trade openness	53	0.035	33	0.027	0.149	-0.29	0.51
Δexport	Real Export value	-	-	33	0.016	0.286	-0.76	0.76
Δimport	Real Import Value	-	-	33	0.050	0.300	-1.13	0.88
Δcpi	Consumer price Index	-	-	33	0.065	0.087	-0.1	0.31
Δfxres	Foreign exchange reserve	53	0.085	33	0.085	0.631	-1.06	1.41
Δtele100	Telephone per 100 inhabitants	-	-	33	0.058	0.074	-0.08	0.25
Δ^2tele100	2nd difference of tele100	-	-	32	0.005	0.050	-0.11	0.12
DLIB	Liberalization dummy	54	0.226	34	0.353	0.485	0	1
DW	War dummy	54	0.660	34	0.794	0.410	0	1

4.5 Single equation ECM estimation results and discussion

In estimating the above specification, the *General-to-Specific* (*Gets*) model selection procedures developed by Krolzig and Hendry (2001) have been employed using the data from the full sample (1950-2003) and two sub-sample periods, 1965-2003 & 1970-2003. The classification of the sample periods is dictated by the availability of the required data for some of the variables of interest. Following the steps outlined in Krolzig and Hendry (2001, P. 837), our model selection process starts from the General Unrestricted Model (GUM) and proceeds by eliminating statistically-insignificant variables with the help of diagnostic checks until the specification is simplified into the final/terminal model where all the variables are significant.

With the application of these procedures, one final model for each has been selected for the full (1950-2003) and the second (1965-2003) sample periods while two independent GUMs are estimated with all significant variables in the second sub-period (1970-2003). According to Krolzig and Hendry (2001), if all variables are significant, the GUM is the final model, and the algorithm stops (P. 837). Hence, the discussion rests on the results from the selected/terminal models while the others are also reported for comparison. However, the corresponding estimates in different specifications, in most instances, are observed to be the same in sign and closer in magnitude. The desirable properties of the reported estimations such as *normality, no autocorrelation, homoscedasticity* and *correct functional form specifications* have been supported to hold by the corresponding diagnostic tests. The test results have been reported in the lower panels of the result tables. The estimates are interpreted as average elasticity parameters indicating the average responsiveness of the growth of private investment to a 1 % change on the growth of a variable. The results of the estimations and diagnostic tests have been organized in the form of Table 7 in such a way that the upper panels display the estimated parameters and the corresponding P-values in asterisk (*) while diagnostic test results are displayed in the lower panels. Under this section, results from the estimation of four distinct specifications have been discussed. The discussion focuses on the short-run coefficients while the long-run solutions have also been reported in appendix tables 2 (A) & (B).

So, what the evidences tell us about the main determinants of private investment in Ethiopia?

According to the dominant features of the estimated short-run elasticity coefficients, private investment in Ethiopia is evidenced to be favored by domestic demand, the return to capital, trade openness and liberalization measures, infrastructure, FDI and lagged foreign reserve. The results also cast evidences on the negative determinants to include unfavorable macroeconomic environment, government activities and political instability. The magnitudes of the respective influences and their statistical significance have been detailed as follows.

Domestic demand is one of the strong positive determinants of private investment in Ethiopia. In all of the eight specifications it enters, either represented by private consumption or real per capita GDP growth, it attains all positive coefficients. However, the magnitude and significance of the estimates are found to vary with the coverage of the sample periods in that its influence is evidenced to be higher in the recent periods. According to the selected models, on average, a 1 percent change in the growth of domestic demand stimulates private investment to grow faster by 0.54 percent, ceteris paribus, with only marginal significance when the sample period covers 1950-2003. But, when the estimation is undertaken on the two sub-sample periods, 1965-2003 & 1970-2003, all the estimates turn significant at 5 percent significance levels in that three out of the four elasticity coefficients fall in a range of 1.1 to 1.3 percent signifying the elastic response of private investment to the change in domestic market. This range encompasses the estimates of the two selected terminal models rather as lower and upper boundaries. These boundary estimates are obtained with the alternative representation of demand by private consumption in the 1965-2003 and by the growth of per capita GDP in the 1970-2003 sample-periods. Despite the small gap between the two estimates obtained for two different sample periods, the higher magnitude of the coefficient of consumption growth is consistent with the emphasis of accelerator investment theory (Samuelson, 1939, P. 75, Sloman, 2003, P. 474, 484-485, Westerhoff, 2006, P. 89) and to the results and discussions in Bhaduri & Marglin (1990, P. 376), Haas & Schipper (1998, P. 423-425) and Lim & McAleer (2002, P. 203).

The next order positive determinant of private investment supported by the estimated evidences is the return to capital represented by the growth of *the inverse of real per capita GDP*. In spite of its application in published works (Asiedu, 2001, for instance) and the absence of a better alternative measurement for return in developing countries, our use of this proxy is with skeptics and hence, follows cautionary steps; i.e. inspecting the behaviors of its coefficients and the sensitivity of others when estimated with the inclusion and exclusion of demand (particularly consumption) and other variables over the three sample periods. From such attempts, we observe a pattern that the magnitude and statistical significance of the estimated coefficients for the return proxy are independent of variations in specifications but dependent on the time span the sample covers. When it is estimated for the full sample period (1950-2003), its coefficients turn insignificant whether consumption is included or excluded. But, when it is estimated for two sub-sample periods, the magnitude of all the estimated four coefficients fall in a range of 0.95 to 1.2 regardless of the exclusion of consumption. However, the strength of the estimates improves as the sample period shortens to the recent, i.e. the estimates become insignificant for the sample period (1950-2003); only marginally significant (2 out of 3) when the sample period is shorted by excluding the earlier 15 years (1965-2003), and strongly significant when the sample period further shorted into 1970-2003. In addition, the magnitude of the coefficients in the terminal models of the two sub-sample periods, the first with simultaneous inclusion of consumption and the latter with its exclusion, are estimated to be almost equal at about 1.2 implying the elastic response of private investment to changes in the return to capital. According to the estimate, a 1 percent increase in the growth of return to capital could result into an average increase in the growth of private investment in Ethiopia by about 1.2 percent.

The third order positive determinant evidenced with the employment of three optional measures is trade openness and liberalization policies: *Vamvakidis' openness measure (trade to GDP ratio), real export and import separately, and trade liberalization dummy*. The openness variable has entered with strongly significant positive coefficients in all of the six specifications estimated on the full sample period. The estimates turn strongly significant and their magnitudes fall in a range of 0.7 to 0.87 for its current and 0.42 to 0.61 for its one-period lag representations. In accordance to the estimates in the final model (6^{th} specification), a 1 percent change

in the growth of trade openness provides a momentum for private investment in Ethiopia to grow faster by about 0.85 percent in the current year and 0.5 percent in the subsequent year. From these results, we draw a conclusion that the effect of openness to trade on private investment in Ethiopia is positive and persistent. This conclusion is also supported with the alternative inclusion of real export and import values (specification 11) with an intention to realize from which part does the dominant positive effect of openness emanate? The estimated elasticity coefficients of real export (0.22) and import (0.5) are statistically significant at 5% and 1% significant levels, respectively. From the results we deduce that the response of private investment to the same order of changes in real imports is greater than that to real exports. The attempt has also been extended with an alternative inclusion of a dummy variable of liberalization (DLIB) holding dichotomous values: *zero for the pre-1991 and 1 for the post-1991 periods signifying its suppression in the former and boost in the latter*. The liberalization dummy has strongly significant coefficients both in its current and lag representations as indicated in the 10^{th} specification where all the other openness measures are excluded. The striking behavior of the liberalization dummy is its strongly negative coefficient in the current and its strongly significant positive coefficient of its lag. This is similar to Greenaway's *et al* (1998) findings of the "*J-curve*" effect of liberalization on growth interpreted as the first impact of liberalization is negative and its positive effect starts a year after i.e. its positive effect lags (P. 1556). Consistent to this finding, our estimates cast evidences for that the immediate impact of trade liberalization is retarding by half (coeff. ≈ -0.49) while it accelerates the growth of private investment in the subsequent year by the same order of magnitude (coeff. ≈ 0.48). However, our attempt to see the sensitivity of the coefficient by taking only its lagged representation in the 11^{th} specification comes out with a negative coefficient with a magnitude of $1/4^{th}$ of its magnitude in the 10^{th} specification. But, it should not be interpreted as a contradicting result; rather, it is indicating the fact that it is picking the immediate negative impact left uncontrolled when the current representation is removed from the regression. Hence, for reliable estimations, their simultaneous inclusion is recommended. Thus, the impact of trade on investment is found also positive and strong; but, liberalization measures could have negative repercussion in the first instance while its positive effect lags. In addition, the implementation of these optional proxies has given us an opportunity to observe the immediate positive effect of the trade-outcome measures while an immediate negative

followed by lagging positive effects are evidenced from the use of a dummy variable for years of trade liberalization policy.

In spite of similar patterns, there is an interesting *one-year difference* between the speeds to switch from its significantly negative to its significantly positive effect evidenced in Greenaway's *et al* (1998) where results behaving significantly negative for the current, insignificant for the 1st lag and significantly positive for the 2nd lag are reported and our results. However, the differences seem to stem on the employed dependent variables in that per capita GDP growth is their dependent variable while ours is the growth of private investment. Thus, if trade contributes to income growth through its effect on investment as evidenced in Wacziarg (2001, P. 422), a one-year further lagged positive effect of trade liberalization on income growth or a one-year faster lagged positive effect of liberalization on investment growth seems a plausible patter of outcomes.

The fifth positive determinant, weakly evidenced, is infrastructure proxied by the number of telephone lines and mobiles per 100 inhabitants. However, we remember that this proxy variable is I(2). Therefore, the estimation of this variable and the interpretation of its coefficients need some cautionary steps. So, the cautions we take are: firstly, to exclude it from the estimations of the full sample; secondly, to take its first-difference into the regressions albeit non-stationary following Wilkins' *et al* (2003) remedial recommendation that suggests the estimation of a non-stationary series in regressions where all the other variables are stationary (P. 78). However, the estimations following this approach do not produce a significant estimate for Δtele/100. Hence, we pass into the third step. With an intention to interpret the result as a measure of the response of investment growth to accelerated change in the growth of infrastructure, the estimations of the last specification with the inclusion of Δ^2tele/100 yields a coefficient of 1.02 statistically significant at 95 percent confidence level. This coefficient is interpreted as the response of the growth of private investment in Ethiopia is proportionate to the accelerated growth in infrastructural facilities. However, we do not believe that infrastructure is well represented by the number of telephone lines. In spite of its application in many similar empirical researches for its easy data availability, studies argue that telephone lines fail to take into account the potential and the reliability of infrastructure (Asiedu, 2001, P. 111, Astatike and Assefa, 2005, P. 15).

The estimates also provided supports to the complementary role of FDI and the lagging positive effect of foreign reserve albeit weak. According to the estimates, a 1 percent positive change in the growth of FDI perpetuates domestic private investment in Ethiopia to grow faster by about 0.03 percent in the current & 0.02 percent in the next year that could be interpreted as its multifarious contribution to domestic investment; i.e, knowledge/technology transfer, competition, additional demand & *etc*. But, the coefficients are the smallest of all the estimated positive effects.

Hence, from the positive side of investment determination, we claim to provide strong evidences for the considerable influences of domestic market, return to capital, and trade openness & liberalization measures in that order of magnitude while infrastructure, FDI (small magnitude) and lagged foreign reserve are weakly supported to have positive impacts in the process of promoting private investment in Ethiopia (see Tables 7, A & B for short-run coefficients).

Table 7. Single Equation *ECM* Estimations, (Dependent Variable: *Growth of Investment) (Coefficients of Short-Run Relations and Speed of Adjustment)*

(A) Sample Period I

Regressors		Sample Period I (1950-2003)					
		1	**2**	**3**	**4**	**5**	**6**
Parameter Estimation	Constant	0.124**	0.123***	0.151***	0.150***	0.124***	0.133***
	Δcons	0.673	0.625	-	-	0.554*	0.540*
	Δcons_1	-0.267	-	-	-	0.094	-
	Δretrun	0.146	0.195	-0.496	-0.350	-	-
	Δreturn_1	-0.624	-	-0.698	-	-	-
	Δopen	0.699***	0.875***	0.653**	0.874***	0.760 ***	0.850***
	Δopen_1	0.424	0.454**	0.615***	0.553***	0.484*	0.492**
	Δfxres	-0.095*	-0.090*	-0.082	-0.072	-0.108**	-0.105**
	Δfxres_1	0.050	-	0.031	-	0.035	-
	Δgove	-0.633**	-0.645***	-0.762***	-0.706***	-0.733***	-0.718***
	Δgove_1	-0.419	-0.424*	-0.586**	-0.521**	-0.407*	-0.460**
	Δinv_1	-0.208	-0.240**	-0.218*	-0.232*	-0.222*	-0.235**
	ECM	-0.305***	-0.290***	-0.230***	-0.215**	-0.264**	-0.271***
Diagnosis Testing	R^2	*0.55*	*0.54*	*0.53*	*0.50*	*0.54*	*53*
	DW	*1.96*	*1.97*	*2.08*	*2.07*	*1.99*	*1.97*
	Obs.	*52*	*52*	*52*	*52*	*52*	*52*
	AR 1-5	*0.390*	*0.288*	*0.478*	*0.421*	*0.327*	*0.297*
	ARCH1-4	*0.314*	*0.331*	*0.223*	*0.391*	*0.319*	*0.317*
	Normality	*3.938*	*3.964*	*2.747*	*1.806*	*4.166*	*4.046*
	Hetero	*0.778*	*0.798*	*0.365*	*0.471*	*0.451*	*0.537*
	RESET	*0.665*	*0.594*	*0.988*	*0.525*	*0.561*	*0.366*

Note: ****P < 0.01, ** 0.01< P < 0.05 and * 0.05 < P < 0.10*

The second variable with consistently negative coefficient on its current representation is the growth of foreign exchange reserve. In all of the ten specifications it enters, the current representation of foreign reserve holds all negative coefficients while eight of them are significant at conventional levels. The coefficients of all the significant estimates lie in a range between -0.08 to -0.1 regardless of the sample periods. The magnitudes of the insignificant coefficients (in the 3rd & 4th specifications) are either close to or fall in the range, i.e. -0.07 & -0.08. Hence, the estimates could be taken as reasonably stable against the changes in sample periods and specifications. The estimations from the three selected models are recorded to be -0.105 in the 6th, -0.086 in the 9th and -0.102 in the 10th specifications. Its interpretation in determining the growth of domestic investment may apparently seem a puzzle in that it looks to vary inversely with the growth of domestic investment. However, it might not be the fundamental positive link between foreign exchange reserve and investment that is broken. Rather, taking a glance at our graphical diagnosis and descriptive statistics, we observe that foreign reserve is one of the variables with unpredictable variations and highest standard deviation next to FDI. Ambachew (2008) describes that foreign exchange reserve in Ethiopia is one of the most erratic macroeconomic variables (P. 45).

Thus, its negative coefficients should be taken as indicators of the adverse effect of uncertainty in the macroeconomic environment in general and provision of foreign resources in particular. Moreover, its lag representation attains significantly positive coefficient in the 10th specification. Thus, it is rather legitimate to think also the positive effect of foreign reserve lags. However, its instability would have been causing uncertainty and hurting domestic investment. Thus, based on the two proxies, we perceive that imprudent macroeconomic management was one of the obstructions of private investment in Ethiopia.

Table 7: Single Equation *ECM* Estimations, (Dependent Variable: *Growth of Investment) (Coefficients of Short-Run Relations and Speed of Adjustment)*

(B) Sample Periods II and III

Regressors		Sample Period II (1965-2003)			Sample Period III (1970-2003)	
		7	**8**	**9**	**10**	**11**
Parameter Estimation	Constant	0.238***	0.187***	0.187***	0.145***	0.089***
	Δcons	1.318**	0.325**	1.328**	-	-
	Δcons_1	-	-	-	0.467	-
	grgdppc	-	-	-	1.109**	-
	Δreturn	0.952	1.236*	1.235*	-	1.191***
	Δfxres	-0.077**	-0.082**	-0.086**	-0.102**	-
	Δfxres_1	-	-	-	0.094*	-
	Δcpi	-0.961***	-1.192***	-1.196***	-0.742**	-
	Δcpi_1	-0.853**	-	-	-	-
	Δ^2tel/100	0.227	-0.025	-	-	1.018**
	Δ^2tel/100_1	-0.730	-	-	-	-
	Δgove	-0.291	-0.348*	-0.355*	-0.818***	-
	DW	-0.105*	-0.119*	-0.120**	-	-
	DLIB	-	-	-	-0.491**	-
	DLIB_1	-	-	-	0.476**	-
	Δfdi	-	-	-	-	0.030***
	Δfdi_1	-	-	-	-	0.021**
	Δexport	-	-	-	-	0220**
	Δimport	-	-	-	-	0.489***
	Δinv_1	0.085	0.255*	0.262**	0.137	-0.168
	ECM	-0.515***	-0.389***	-0.395***	-0.421***	-0.731***
Diagnosis Testing	R^2	*0.76*	*0.67*	*0.68*	*0.69*	*0.79*
	DW	*2.03*	*2.39*	*2.43*	*2.12*	*2.02*
	Obs.	*38*	*38*	*38*	*32*	*32*
	AR 1-5	*1.070*	*2.072*	*2.110*	*0.368*	*0.367*
	ARCH1-4	*0.330*	*0.441*	*0.501*	*0.250*	*1.328*
	Normality	*3.138*	*4.040*	*3.775*	*3.147*	*2.450*
	Hetero	*0.405*	*1.081*	*0.973*	*0.234*	*0.350*
	RESET	*0.400*	*0.421*	*0.441*	*0.185*	*0.168*

*Note: 1. ***P < 0.01, ** 0.01< P < 0.05 and * 0.05 < P < 0.10;*

2. The coefficients for tele/100 in the 7th and 8th specifications are for its first difference representation while the 2nd-difference is included in the 11th.

In order of magnitude, the next constraint identified is the crowding-out effect of government activities as proxied by government expenditure. In all of the 10

specifications it enters, its coefficients are estimated statistically significantly negative for both its current and lag. In the first six specifications estimated for the full sample period, the coefficients on its current representation fall in a range between -0.63 to -0.76; and, on its lag between -0.41 and -0.6. It has also been estimated as high as -0.82 for the second sample period excluding its lag. This finding could be interpreted as the crowding-out effect of government expenditure through its impacts of reducing saving, increasing interest rates and prices of intermediate inputs in the market. Otherwise, it might be picking up the negative impact of the lack of good governance in the country and war. Despite the fact that the exclusion of its lag could have contributed to the rise in its estimated magnitude, the latter sub-period is also identified as politically more turbulent than the earlier. This fact is indicted by the mean of the war dummy (DW) variable that is greater in the 1970-2003 period. Thus, we expect that the strong negative effect of government expenditure might have been magnified by similar effects of war & violence-related spending. In support of this presumption, the correlation coefficient of the two variables is referred to be about 0.17 (Appendix Table 1). Therefore, with an anticipated interaction between them, all the three equations of the first sub-period (1965-2003) are estimated with the simultaneous inclusion of the two variables where both are estimated with marginal significances but stable magnitudes; *i.e., coef. of Δgove ≈ -0.30 to -0.36 and coef. of DW ≈ -0.10 to -0.12*. In addition, our further attempt with the exclusion of the war dummy and its own lag, and the estimation for the second sub-period clearly reveal its highest negative estimate (more than a fold). From the estimates, we draw some conclusions, i.e. the effect of government expenditure is strongly supported to harm the growth of private investment. However, its coefficients could not be interpreted as the only crowding-out effects. The adverse consequences of war & violence seem compounded within it. The reduced magnitudes & their merely marginal significances when they enter simultaneously are in support of this argument and the existence of huge interaction between the two variables. In any case, government expenditure & political instabilities are among the main culprits of private investment in Ethiopia. Thus, from the negative side also, the investigation identifies three constraints of private investment in Ethiopia; i.e. unfavourable macroeconomic environment, government activities and political instabilities (see Appendix Tables 2, A & B for the long-run solutions).

In addition to the identification of the main positive determinants *(demand, return to capital, trade openness & liberalization measures, FDI & lagged foreign reserve)* and negative determinants (*macroeconomic and political instability & the crowding-out consequences of government activities*), there are also some other observed coincidences and tendencies, such as:

i. *The estimates for trade openness and government activities, without the separate consideration of war & political influences, are nearly equal in magnitude but opposite in sign (the first six specifications) implying that the positive attribute of openness to trade seems fully cancelled-out by government intervention and war related activities.*
ii. *As expected, the magnitudes of the long-run elasticity coefficients are estimated greater than their short-run counterparts.*
iii. *The speed of adjustment (λ) is low ($-0.3 \leq \lambda \leq -0.2$) when the sample period covers 1950-2003 signifying the relative rigidity of the earlier, but, relatively faster ($-0.7 \leq \lambda \leq -0.4$) in the latter two sub-sample periods. It is also consistently estimated to be strongly significantly negative. Its significance is an indication to the existence of cointegration, according to Engle-granger (1987) single equation residual-based approach, and adjustment process towards the long-run equilibrium. On the other hand, its invariably negative appearance implies the positive short-run deviation from the equilibrium and then the downward adjustment process.*

Nonetheless, all the above estimations are based on the implicit assumption of non-simultaneity among the dependent and the explanatory variables. However, such a decision is subjective and has been severely criticized by Christopher Sims. According to him, if there is true simultaneity among a set of variables, all should be treated on an equal footing; there should not be any a priori distinction between endogenous and exogenous variables (Gujarati, 1995, P. 746, Asteriou and Hall, 2007, P. 279). Hence, we extend the research into a focused dynamic analysis using VAR methodology allowing for simultaneity and avoiding a priori subjective classification of variables into endogenous and exogenous; to see the dynamic interdependence between *investment, trade policy and growth* using the full data set described above for a period 1950-2003.

4.6 Investment, trade and economic growth, nexus, evidence from Ethiopia

This section attempts to provide evidences on the dynamic interdependence between investment, trade openness and economic growth, i.e, three expected feedback links: *investment vs. trade openness;* i*nvestment vs. economic growth; and, trade openness vs. economic growth*.

4.6.1 Specification

As the basis of the specification, we remember the stationarity test results reported in sub-section 5.4.1 show that the levels series of these variables are found non-stationary while their first-differences are stationary dominantly up to the fourth lags at all conventional significance levels. However, there could be cointegrating relationships between the variables that should be checked before passing to the next specification steps. Hence, Johansen's (1988) Trace test has been conducted for cointegration of I(1) with the inclusion of up to 4th lags.

Table 8: Johansen's Co-integration of I(1) Test results (with 4 lags)

H0: Co-integrating rank, r ≤ p, (where p = 0, 1, 2)

Null Hypothesis	Trace Statistic [Prob]	Implications
r = 0	21.793 [0.320]	1. Do not reject the null hypothesis (r = 0)
r ≤ 1	10.594 [0.242]	2. VAR in differences is stable
r ≤ 2	2.656 [0.103]	3. No long-run relationships

The use of a year dummy variable as an unrestricted regressor (YD = 1 for years 1955 – 1960, 1984, 1987, 1988 and 1991 and zero otherwise) owing to some outlying observations does not alter the outcome of the test results.

Hence, we specify a VAR(*p*) model with the first differences of the variables as:

$$\Delta \boldsymbol{y_t} = \boldsymbol{\alpha} + \sum_{\boldsymbol{i=1}}^{\boldsymbol{p}} \boldsymbol{\beta_i} \Delta \boldsymbol{y_{t-i}} + \boldsymbol{\varepsilon_t}$$

where Δ is the change in our vector of endogenous variables $\boldsymbol{y_t}$ *(logINV, logOPEN and logRGDPPC) at time t; α is a vector of constant terms;* $\boldsymbol{\beta_i}$ *is a matrix of*

parameters and $\mathbf{y}_{t-i}$ *is a vector of pre-determined variables, at lag i; and* $\boldsymbol{\varepsilon}$ *is a vector of white noise disturbances.*

The next step is to determine the optimal lag length (*p*). The test results, displayed in Table 9, show that lags 2-4 are not significantly different from zero in both tests for each lags separately and for all 2-4 lags jointly while only the first lag appears significant.

Table 9: Optimal Lag Length Determination

Ho: the lag coefficient is zero

Tests on the significance of each lag			**Joint Tests on the significance of lags up to 4**		
Lag	**F-Test Value [Prob]**	**Decision**	**Lag**	**F-Test Value [Prob]**	**Decision**
Lag 4	F(9,82)=0.431 [0.914]	Do no reject Ho	Lag 4 – 4	F(9, 82)=0.431 [0.914]	Do no reject Ho
Lag 3	F(9,82)=1.419 [0.193]	Do no reject Ho	Lag 3 - 4	F(18,96)=0.833 [0.658]	Do no reject Ho
Lag 2	F(9,82)=0.417 [0.922]	Do no reject Ho	Lag 2 – 4	F(27,99)=0.669 [0.884]	Do no reject Ho
Lag 1	F(9,82)=3.289 [0.002]***	Reject Ho	Lag 1 - 4	F(36,101)=1.422 [0.088]*	Reject Ho

Based on these information, we specify a *vector autoregressive of order 1,VAR(1):*

$$\boldsymbol{\Delta y_t = \alpha + \beta \Delta y_{t-1} + \varepsilon_t}$$

That could be expanded as a 3-dimensional vector of equations:

$$\begin{bmatrix} \Delta inv_t \\ \Delta open_t \\ \Delta rgdppc_t \end{bmatrix} = \begin{bmatrix} \alpha_1 \\ \alpha_2 \\ \alpha_3 \end{bmatrix} + \begin{bmatrix} \beta_{11} & \beta_{12} & \beta_{13} \\ \beta_{21} & \beta_{22} & \beta_{23} \\ \beta_{21} & \beta_{22} & \beta_{23} \end{bmatrix} \begin{bmatrix} \Delta inv_{t-1} \\ \Delta open_{t-1} \\ \Delta rgdppc_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \end{bmatrix}$$

The coefficients from the estimation of this specification will be interpreted as follows: *the cross diagonal coefficients are short-run spillover effects of one over the other. The diagonal coefficients represent the effect of the past on its own current.* The variables are the first differences of the logs of private investment, trade

openness (trade to GDP ratio) and real per capita GDP). The descriptive statistics of the data of the three variables are presented in Table 10.

Table 10: Descriptive statistics of the first differences (growths) of the data

Variables	Statistical Summary		Correlation Matrix		
	Mean	**St. Dev.**	**Δinv**	**Δopen**	**Δrgdppc**
Δinv	0.086	0.220	1.000		
Δopen	0.035	0.137	0.370	1.000	
Δrgdppc	0.013	0.067	0.009	-0.230	1.000
Sample period: 1951 - 2003					

4.6.2 Results of VAR(1) estimation

According to the diagnostic test results, the explanatory powers of the estimated models are modest. The residuals from each of the equations and the system are checked for no-autocorrelation, normality and homoscedasticity properties. As indicated in the lower panel of Table 11, all the tests have not rejected their null hypotheses of *no-autocorrelation, normality and homoscedasticity* for all equations separately and for all vectors of the variables jointly at all conventional significance levels except normality in the investment equation where it is rejected marginally at 10 percent significance level. Hence, the fulfillment of the required properties in all of the equations and their system jointly are in support of the use of the estimated models for the intended analyses. Furthermore, the number of observations is greater than 30 and the non-serial correlation in errors is preserved so that estimates and test results remain valid to rely on, *by the central limit theorem.*

Based on these justifications, our causality estimates between investment, trade openness and economic growth suggest that there is no feedback link between any pair of the variables considered out of the 6 ($n \times n\text{-}1$) expected spillover effects; where n is the number of variables. Nonetheless, we have observed two uni-directional positive short-run causalities that run from real per capita GDP to trade openness and from trade openness to investment.

In addition, two negative own impulse-response transmission mechanisms from lagged investment to current investment (consistent to the single equation estimation results of the full sample period); and, from lagged per capita GDP to current per capita GDP (perhaps exhibiting short-run cyclicality). The alarming evidence is that no either of the growth force is supported to have growth contribution in the country. Rather, the coefficients are estimated unexpectedly negative despite insignificant (see Table 11). It is a contradiction to our finding for the SSA economies on average. In this respect, Ethiopia, where the mechanisms for the translation of investment into grapes of economic growth seem malfunctioning, may not be an ideal representative of the SSA economies.

As indicated by the estimated correlation coefficient (-0.23), the association between trade and economic growth seems negative. The results on the last column of Table 11 show that there is no significant causal effect from trade openness to economic growth in Ethiopia. However, time series studies are observed to produce such weak results. Substantiating with Ram's (1987) and Greenaway & Sapsford's (1994) weak results, Thirlwall (2006) explains that the relationship between exports and growth is much weaker when time series studies are conducted for individual countries against the strong positive associations supported by cross-section studies (P. 534).

In general, our causality analyses on the dynamic link amongst investment, trade and economic growth have brought us about to deduce conclusions as there is no feedback between any pair of the variables considered out of the 3 expected dynamic feedback links. Nonetheless, we have observed two uni-directional positive causalities that run from economic growth to trade openness and from the latter to investment; and two negative impulse-response kind shock transmission mechanisms to the current investment and per capita GDP from their own respective lags. All the above analyses have also been fully supported by the respective IRFs (Appendix Figure 1) and Granger short-run causality test results (Appendix Table 3). The stability and other behaviours of the estimated VAR model have also been illustrated by the companion matrix and the scaled residuals plotted as Appendix Figures 2 and 3.

Table 11: Results of Parameter Estimation and Diagnostic Tests, VAR(1)

Regressors			Dependent Variables	Endogenous variables: *Δinv, Δopen, Δrgdppc, (Sample 1955-2003; Obs = 49)*		
				Equations in the System of VAR (1)		
				Δinv	**Δopen**	**Δrgdppc**
				Coef. [P-Value]	**Coef. [P-Value]**	**Coef. [P-Value]**
Vector of Lagged Variables	Δinv_1			-0.305 [0.035]**	0.118 [0.141]	-0.051 [0.197]
	Δopen_1			0.412 [0.068]*	0.058 [0.644]	-0.062 [0.313]
	Δrgdppc_1			0.499 [0.242]	1.234 [0.000]***	-0.373 [0.003]***
	Constant			0.032 [0.318]	-0.007 [0.689]	0.025 [0.006]***
Diagnostic Tests	R^2			0.78 (LR)		0.38 (LM)
	Equations	*AR1-5 Test*	*F(5,38)*	*0.497 [0.777]*	*0.850 [0.523]*	*1.677 [0.164]*
		Normality	*Chi^2(2)*	*5.124 [0.077]**	*0.202 [0.904]*	*2.372 [0.305]*
		ARCH1-5	*F(5, 33)*	*0.553 [0.735]*	*1.041 [0.410]*	*0.827 [0.540]*
		hetro test	*F(9, 33)*	*0.959 [0.490]*	*0.844 [0.582]*	*1.380 [0.237]*
		helto-X test	*F(17, 25)*	*1.151 [0.366]*	*0.649 [0.820]*	*1.678 [0.117]*
	Vector	*AR1-5 Test*	*F(45, 78)*		*0.821 [0.761]*	
		Normality	*χ2 (6)*		*5.856 [0.439]*	
		hetro test	*F (54, 147)*		*0.886 [0.690]*	
		helto-X test	*F(102, 121)*		*1.082 [0.338]*	

Note: 1. *Numbers in parentheses are P-value; 2. Two year dummy variables have* been employed to account for outlying observations and correct for normality problems in the distribution of the variables (I*NV: YD_1 = 1 for years 1955 –1960 & 1984; GDP: YD_2 = 1 for years 1984, 1987, 1988 and 1991 & zero otherwise); hence, forecasting is impossible*

However, it is worthwhile to note that the estimated results are sensible in most instances but some are alarming as well as puzzling. There could be a number of reasons for some of their puzzling properties. Firstly, differencing the variables could cause loss of useful information; secondly, the annual data observations may not be sufficient in all of the estimation as the VAR is data intensive and needs high degrees of freedom. The crucial point is the weak contribution of both investment and trade towards economic growth which have been revealed by the corresponding insignificant coefficients in the growth equation. In fact, we remember that the share of private investment in GDP has never been above 6% up to 2003. This small share of private investment in GDP might have made its growth contribution negligible as its weight is less than 0.06. The trade performance has also been suppressed until recently. Thus, it is not surprising that the investment-trade-economic growth links are so weak in a country where the overwhelming economy

has been devastated by prolonged war, recurrent drought, inappropriate policies (i.e., not investment-friendly and inward-looking), low institutional capacities and discipline, low social and infrastructural services, highly dependent on aid and debt and so forth structural problems.

However, the evidences should not be interpreted as investment and trade do not contribute to growth. Rather, they could be interpreted that the investment and trade performances of the country have been low for long time. Hence, measures that improve the contribution of trade to investment could help the economy to build its productive capacity. Furthermore, it is our conviction that some of the results should be taken cautiously and checked with different data sets and methodologies.

5. Conclusion

The Ethiopian private investment performance has been weak for long time. It had been stagnantly low until the end of the socialist regime. Domestic private investment has started to rise since 1992 while FDI did since 1996. FDI was also contracted during the 1998-2000 border war and few years following the 2005 national election. Investment is one of the volatile macroeconomic variables. But, FDI is 20 times more volatile than domestic private investment; i.e. *the standard deviation of Δfdi is 3.78 while that of Δinv is 0.19*.

In the attempt to identify the main determinants, among the variables considered, investments is evidenced to be affected **favourably** by *the growth of domestic market (growths of private consumption or per capita income), return to investment (as proxied by the inverse of real GDP), government policies promoting openness and liberalization, infrastructure (weakly proxied by the number of telephone subscribers) and FDI;* and, **negatively** by *macro-economic instability (inflation and foreign exchange reserve), government expenditure, and political instability (war)*.

Thus, we recommend that enhancing trade liberalization and openness, augmenting domestic market and the return to investment, maintaining macroeconomic stability (particularly stable price level and provision of foreign exchange) and, peace and

security could favour investment in the country. Improving the availability and reliability of infrastructural facilities and investment friendly government interventions should be among the main ingredients of a policy package designed to promote private investment in Ethiopia. The operation of the public sector and other institutions will need new thinking.

FDI in Ethiopia is found to be complementary to domestic investment. However, FDI is found to be the most volatile variable followed by foreign exchange reserve. Hence, it leads us to conclude that FDI in Ethiopia needs special care and more anxiety compared to that of domestic investment. On the other hand, the dominant form of investment in Ethiopia is domestic. Thus, we suggest that Ethiopia should give primary focus to promoting domestic investment. The successes on domestic investment could also serve as an attraction to FDI.

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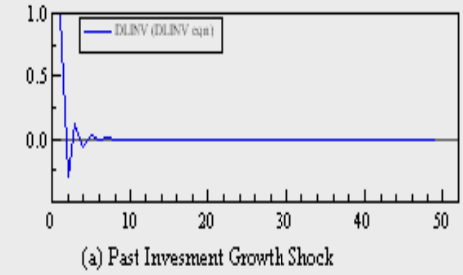
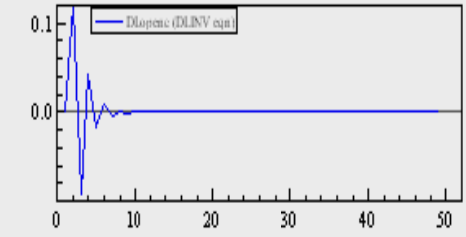
Appendix Figures and Tables

Appendix Figure 1. Impulse-Response Shock Transmission Mechanisms amongst the Growths of Domestic Investment, Openness to Trade and GDPPC of Ethiopia

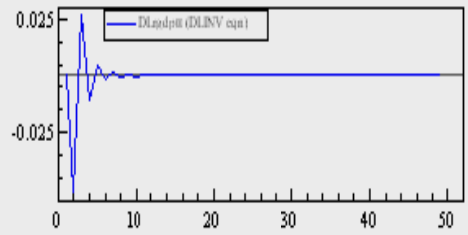
(i) Single IRF of Investment Growth



(a) Past Invesment Growth Shock

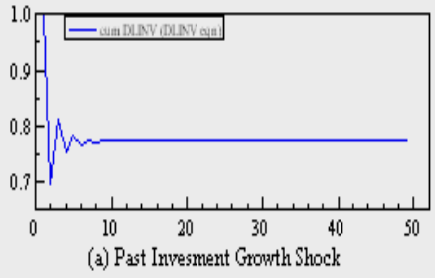


(b) Openness to Trade Growth Shock

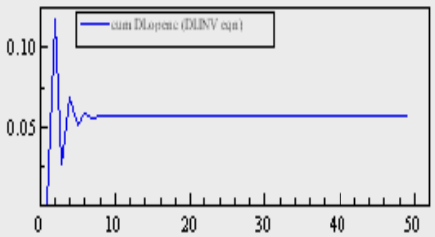


(c) Real GDP Growth Shock

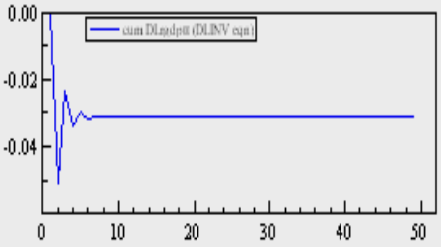
(ii) Accumulated IRF of Investment Growth



(a) Past Invesment Growth Shock

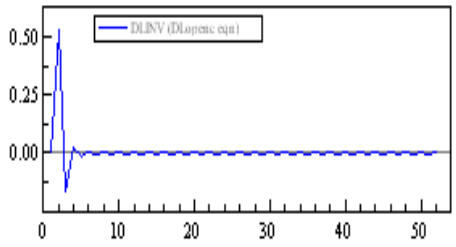


(b) Openness to Trade Growth Shock

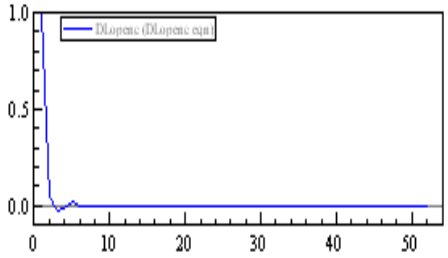


(c) Real GDP Growth Shock

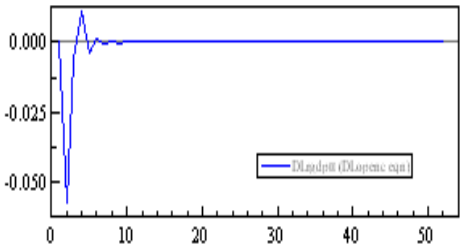
(iii) Single IRF of Openness to Trade Growth



(a) Investment Growth shock

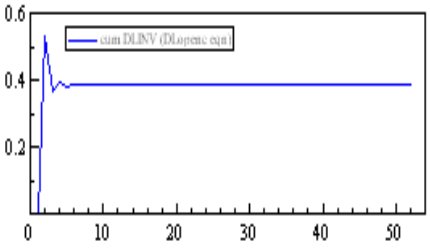


(b) Openness to Trade Growth Shock

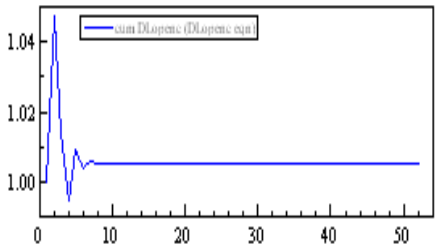


(c) Real GDP Growth Shock

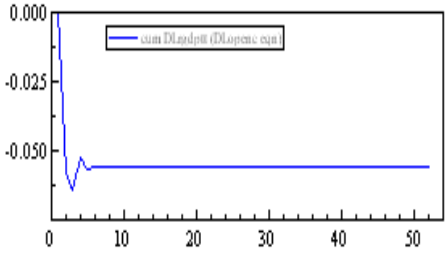
(iv) Accumulated IRF of Openness to Trade



(a) Investment Growth shock

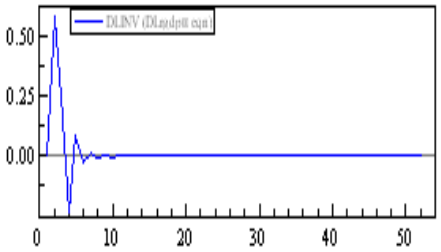


(b) Openness to Trade Growth Shock

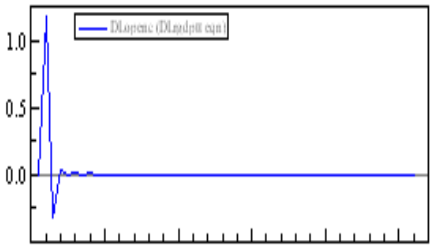


(c) Real GDP Growth Shock

(v) Single IRF of Real GDPPC Growth



(a) Investment Growth Shock



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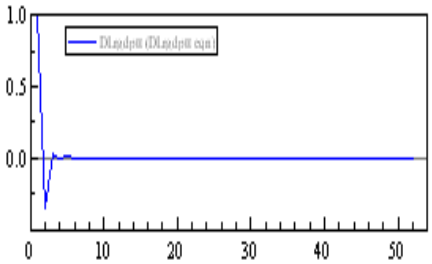
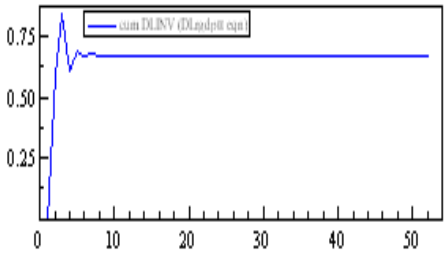
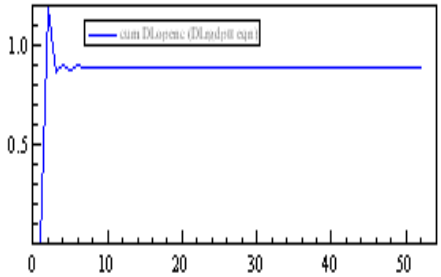


(c) Real GDP Growth Shock

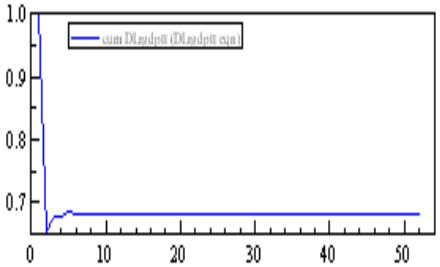
(vi) Accumulated IRF of Real GDPPC Growth



(a) Investment Growth Shock



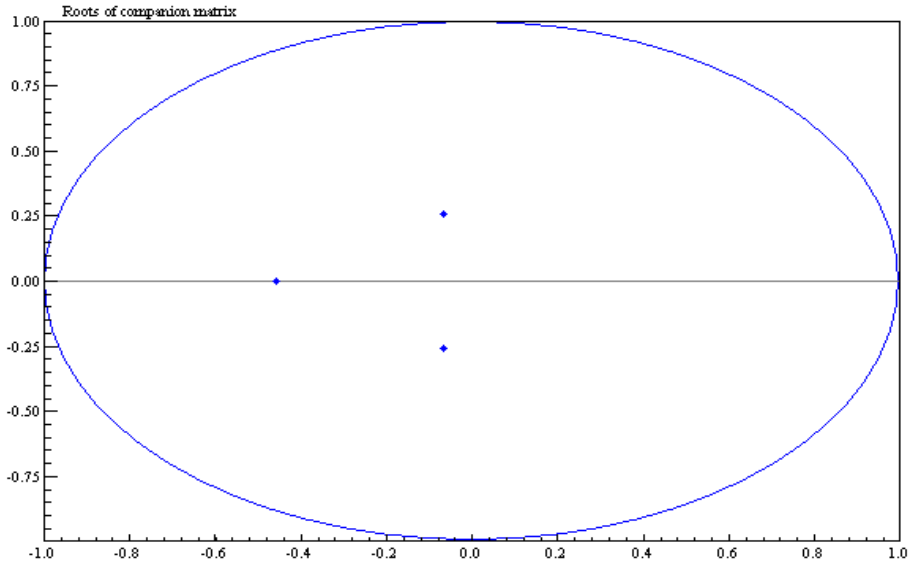
(b) Openness to Trade Growth Shock



(c) Real GDP Growth Shock

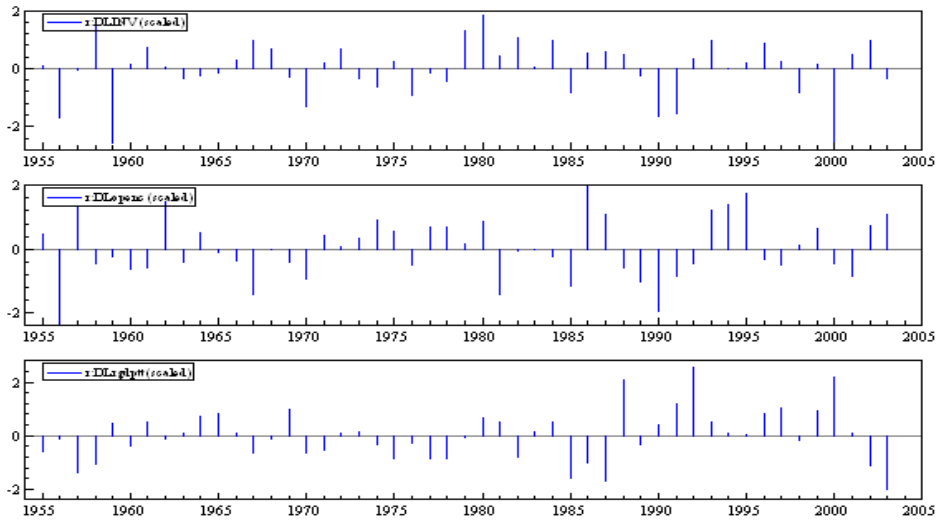
Appendix Figure 2. Stability of the estimated VAR model

(All the Eigen values or roots of the Companion Matrix are inside the unit circle; hence, the system is stable.)



Appendix Figure 3. Plots of Scaled Residuals (*Residual/equation standard error*) of *Investment, Trade Openness* and *GDPPC Growth* Equations (in order) of the VAR model

(The rule of thumb for dramatic outliers is out of ± 3.5)



Appendix Table 1. Correlation Matrix of the Variables, Computed from the third Sample (1970 - 2003)

	DW	LIB	Δinv	Δfdi	Δcons	Δgove	Δopen	Δrgdppc	grgdppc	Δfxres	Δtele/100	Δcpi	Δ^2tele/100
DW	1.000												
LIB	**-0.527**	1.000											
Δinv	-0.180	0.134	1.000										
Δfdi	-0.044	0.046	0.213	1.000									
Δcons	-0.082	0.018	0.118	-0.052	1.000								
Δgove	0.170	0.035	-0.144	0.175	-0.058	1.000							
Δopen	-0.242	**0.334**	**0.445**	-0.151	**-0.364**	0.242	1.000						
Δrgdppc	-0.173	0.218	-0.032	0.082	**0.843**	0.242	**-0.332**	1.000					
Grgdppc	-0.268	0.245	0.111	0.110	**0.818**	0.154	-0.313	**0.944**	1.000				
Δfxres	**-0.308**	0.181	-0.067	**-0.441**	0.265	-0.345	0.005	0.128	0.216	1.000			
Δtele/100	**0.430**	**0.303**	-0.225	-0.064	-0.209	0.047	0.071	-0.176	-0.255	-0.049	1.000		
Δcpi	-0.103	-0.234	**-0.399**	-0.053	0.114	-0.283	-0.251	-0.077	-0.044	0.192	-0.074	1.000	
Δ^2tele/100	0.104	0.192	0.057	-0.177	-0.090	0.233	0.314	-0.018	-0.035	-0.020	**0.494**	-0.071	1.000

Appendix Table 2. Long-run Solutions from Single Equation ECM Estimations

(A) Sample Period I (1950 - 2003)

(Dependent Variable: Growth of Domestic Private Investment)

Regressors		Sample Period I (1950-2003)					
		1	**2**	**3**	**4**	**5**	**6**
Parameter Estimation	Constant	0.103***	0.100***	0.124***	0.122***	0.101***	0.108***
	Δcons	0.336	0.504	-	-	0.530	0.438
	Δreturn	-0.395	0.158	-0.980	-0.284	-	-
	Δopen	0.930***	1.072***	1.041***	1.158***	1.018***	1.087***
	Δfxres	-0.037	-0.072*	-0.042	-0.059	-0.060	-0.085**
	Δgove	-0.871***	-0.862***	-1.107***	-0.996***	-0.933***	0.954***
	ECM	*-0.252***	-0.234***	-0.189**	-0.174**	*-0.216***	*-0.220****
Wald Test: χ2		35.887***	44.350***	34.599***	39.183***	36.815***	44.418***

Note: *1. ***P < 0.01, ** 0.01< P < 0.05 and * 0.05 < P < 0.10*

2. The Wald test is a joint significance test of the estimated coefficients excluding the constant term.

Appendix Table 2. Long-run Solutions from Single Equation ECM Estimations

(B) Sample Period II (1965 - 2003) and Sample Period III (1970-2003)

(Dependent Variable: Growth of Domestic Private Investment)

	Regressors	7	8	9	10	11
Parameter Estimation	Constant	0.260***	0.250***	0.254***	0.168***	0.077***
	Δcons	1.440**	1.778*	1.799**	0.541	-
	grgdppc(cs)	-	-	-	1.287**	-
	Δreturn	1.040	1.659	1.673	-	1.020***
	Δfxres	-0.084*	-0.110*	-0.116**	-0.009	-
	Δcpi	-1.982***	-1.600***	-1.621***	-0.860**	-
	Δ2tel/100	-0.550	-0.033	-	-	0.871**
	Δgove	-0.318	-0.466	-0.481	-0.949***	-
	DW	-0.115	-0.160*	-0.163*	-	-
	DLIB	-	-	-	-0.018	-0.108**
	Δfdi	-	-	-	-	0.044***
	Δexport	-	-	-	-	0.188**
	Δimport	-	-	-	-	0.419***
	ECM	*-0.563***	*-0.523***	-0.535***	-0.488***	-0.625***
Wald Test: χ2		*34.684***	*18.235***	18.817***	16.835**	54.5***

Note: *1. ***P < 0.01, ** 0.01< P < 0.05 and * 0.05 < P < 0.10;*

2. The coefficients for tele/100 in the 7th and 8th specifications are for its first difference representation.

Annex Table 3: Granger Short-run Causality Test Results *H0: No Granger Causality*

Variables		Equations		
		Δinv	**Δopen**	**Δrgdppc**
		χ2[P-value]	***χ2[P value]***	***χ2[P-value]***
Exclusion Restrictions	Δinv_1	5.101 [0.024]**	0.613 [0.433]	1.545 [0.214]
	Δopen_1	6.293 [0.012]**	0.144 [0.705]	1.018 [0.313]
	Δrgdppc_1	2.020 [0.155]	23.991 [0.000]***	9.888 [0.002]***

RURAL LAND CERTIFICATION AND LAND RELATED INVESTMENT: A CASE STUDY OF TWO RURAL VILLAGES IN THE AMHARA NATIONAL REGIONAL STATE, ETHIOPIA.

Ermias Ashagrie and Hibret Belete

Abstract

This paper provides some empirical evidence towards the effect of rural land certification on land-related investment; specifically on tree planting and terrace construction decision of small-holder farmers. An effort was made to quantify differences in land-related investments among those with or without certificate. Accordingly, 80 households, 40 households from cadastral registered Kebele and the other 40 from untitled kebele were interviewed using a pre-tested questionnaire. The study estimated the investment equation using Ordinary Least Square (OLS) and Probit model. The result indicates that land certification has insignificant effect on land-related investment-both in tree plantation and construction of terraces. The result seems contradictory with the conventional literature that shows tenure security accorded by land titling enhances farmers' propensity to engage in land related investments. This is because the results show that farmers' perception of tenure security is virtually similar in both Kebeles-in titled and untitled. In addition, in the context of the study area, where there is no property market and using land as collateral is prohibited by law, land titling may affect investment only through its assurance effect. Based on these results, the study proposed immediate solutions and urges future work that require rigorous examination whether other scenarios (privatization, long-term lease) works to enhance investment.

1. INTRODUCTION

1.1 Background

The Federal Democratic Republic of Ethiopia is a land-locked country in the horn of Africa, covering an area of 437,600 square miles; it is the second populous country in sub-Saharan Africa next to Nigeria (Murison 2004). According to the third Population and Housing Census results, the total population of the nation was around 74 million in the year 2007 with an annual growth rate of 2.6 percent (FDRE-PCC 2008). The country's economy is sustained primarily through agriculture, coffee being the number one export providing two-thirds foreign exchange earning. Subsistence farming engages over 80% of the total population contributing about half of GDP, but frequent droughts and poor agricultural systems have undermined this sector's productivity (MoFED 2005). Furthermore, land and environmental degradation, land fragmentation combined with a rising number of landless people in rural areas, and lack of proper incentives for land related investment are cited as major reasons to stagnant agricultural production (EEA 2002; Adal 2002; Gebreselassie 2006).

Land use policies have been contesting in both political and development debates for over four decades in Ethiopia, given the fact that land is the main asset and source of livelihood to the majority population. Additionally, as a landlocked economy with few natural resources, growth in agriculture remains a crucial part of an overall economic growth and poverty reduction strategy. Indeed "many elements of the existing land tenure system such as declining farm size, tenure insecurity, and subsistence farming practices, are identified as part of those causes of poor performance in the agricultural sector" (EEA 2002:6). The tenure system is also cited as the major hurdle for the poor adoption of land improvement and management practices that continues to damage the sustainability of the system (Gebreselassie 2006). As a result, the current tenure system is a source of controversy among policy makers, government, non-government actors and researchers because good land management is central to sustainable agrarian development.

Observers (Adal 2002; Jemma 2001; Rahmato 2004) note that the contemporary land policy debate in this country is influenced by ideological considerations rather than being based on substantial micro-level study. It is also believed that

international policy discourses on decentralization and community empowerment have influenced the political debate and subsequently land policy documents (Crewett & Korf 2008:204).

To begin with polarized groups, we can broadly distinguish two political discourses; the discourses of fairness and state protection that favour state ownership, and the neoclassical discourse that adheres for privatization and efficiency. Thus, the majority of present day debates concentrate on ownership issues and put forward ironical solutions: state ownership versus private ownership (Adal 2002; Crewett & Korf 2008). Adal notes that;

> *The current debate on the land issues focuses on ownership and on private-state dichotomy. State ownership of land has been strongly advocated by the ruling party and some other students in the field while private ownership is favoured by Western economic advisors, international organizations like The World Bank, many opposition political parties and some scholars as well* (Adal 2002:28).

When we move to the non-polarized groups, there are some scholars who assert a compromising argument to land use policies that encourage and formalize land rentals. For example, Holden, Shiferaw and Pender (2001) and Haile Gebriel (2004) assert that formalizing of the informal land markets seems to be the logical strategy to reduce inefficiency in the agricultural sector. Rahmato has been a particularly forceful critic who does not employ the state versus private ownership dichotomy, but suggests a third way of community or associative ownership of land (Rahmato 1994:13-15). Rahmato (2004:13) argues, the disincentives of sustainable land use are tenure insecurity and small plot sizes coinciding with an increasing rural population and inter-generational competition over ancestry holding. He then, suggests that customary/traditional land tenure systems have the necessary elements to stimulate sustainable land use.

Equally, others argue that it is tenure security not land ownership that determine land-related investments. For example, Gebreselassie considered the assurance effect associated to the current land use policy as an alternative option to demystify the widespread fear of insecurity in rural areas. He notes, “recent attempts at providing systems of land registration through certification may be one route” in

providing assurances for perceived tenure security to enhance land-related investment (Gebreselassie 2006:18). However, the national study of Ayalew et al (2005) reveals a different story as limited transfer rights rather than the pervasive insecurity have shown a statistically significant impact on long-term investment, the presence of coffee and other tree species on sample farm plots. The implication is "the current policy appears to be pushing farmers back in to low return, subsistence production by keeping their time horizons short and focused on single period crops" (Ayalew et al 2005:28). This is a direct contradict to the national development strategy that aims at improving the welfare of farmers by diversifying and commercializing agriculture (ibid).

The government attempted to compromise contemporary debates by embarking on a large-scale land registration and certification scheme in major regions of the country. This is mainly due to the fact that the major development challenges that the country confront are land and environmental degradation, land fragmentation combined with a rising number of landless people in rural areas, and the wish to create a more enabling environment for investment in agriculture. Indeed the polarized ideologies were escalated in the third national election campaign of 2005.

In general, one can conclude that, the question of whether certification and registration scheme has an impact on sustainable farming practice or not remains an important policy question. It is also a deeply sensitive political issue in the present day Ethiopia. It has not been possible to locate any study that has systematically investigated the effects of land certification on sustainable land use in the Amhara region. It is with this background that this study is initiated to fill the existing literature gap on this critical issue by examining the effect of land certification on land-related investment in two rural *'kebeles'* of the Amhara National Regional State (ANRS).

1.2 Objective of the Study

- To examine the effect of rural land certification on land-related investment with particular emphasis on small-holder's tree planting decisions and terracing practices in the study area.
- To come up with plausible policy recommendations.

1.3 Rationale of the study

The empirical findings of this study provides information for the government and international donors to observe the measures that should be taken to make the land administration work to improve land-related investment. So, verifying empirically the theoretical relationship between land titling and investment behaviour will have a far-reaching importance to take early appropriate policy measures since the scheme is a recent phenomenon in Ethiopia. Furthermore, the land problem in the contemporary neoliberal globalization period requires a broader understanding than the past. Moreover, it is believed that the study can be considered as a basis for further research in a related domain.

1.4 Limitation and scope of the study

Verifying empirically the impact of land certification on investment behaviour is a difficult task. This is because the time is too early to see the effects of land titling on long term investment today. Additionally, due to the comprehensive nature of the land registration program in the region, households in the untitled area may expect that their land could be certified in the future. But in the study land certification was a dummy variable used to measure land tenure insecurity. The study also fails to take into account the possible endogenity problem of tenure insecurity in the specification of the econometric model.

The study adopts only a quantitative research approach. However, in order to understand the concept of land titling and its impact on long- term investment, credit market practice and perception of an economic agent concerning land tenure system in terms of desirability of the system, expectation of expropriation, redistribution of land and other land related matters, employing qualitative and quantitative method of study is getting an increasing importance by many researchers. It is mainly because of the overt fact that mixed-approach is appropriate to better understand a research problem by converging both quantitative and qualitative data.

The conceptual model employed here draws from Feder et al 1988. The key difference is that the supply-side link between land titling, tenure security, credit-access, and investment is omitted. Land selling and Use of land as a collateral is prohibited by law in Ethiopia. Land titling thus affects investment mainly through the assurance effect that the returns of investments will accrue to those who make an investment. Thus, it would have a great importance for policy making if the study analyzed the supply-side effect of land titling.

The study compares titled and untitled plots in a very homogeneous geographical area, within which differences in infrastructure, market access, the returns to land specific investment, and soil fertility was virtually the same. The scope of the study is thus limited to these homogeneous kebeles and hence findings could not be generalized to the prevailing diverse agro-ecological and socio-economic conditions in the ANRS and the country.

1.5 Organization of the paper

The paper is organized under five sections. The following section discusses the theoretical and empirical framework considered to analyze the primary data gathered in the field. The third section explains the research methodology used. The fourth section offers the major results of the study, which is followed by the last section that is devoted to indicate the conclusion and policy implications of the study.

1. Theoretical and empirical framework to analyze the effect of land certification on investment

A central argument put forward by many economists in defense of full-fledged private property rights is that such rights enhance investment incentives (Demsetz 1967; Feder et al 1988; Feder and Nishio 1998). It is emphasized, for example, by those who point to the necessity of establishing freehold titles to land in order to stimulate agricultural growth in sub-Saharan Africa (see, e.g. Johnson 1972; Firmin-Sellers & Patrick 1999). There are several forces making for a positive impact of individualistic property rights on investment. Broadly speaking, when such rights

prevail, landowners are expected to be both more willing and more able to undertake investment for essentially three reasons. Available literature depicts core theoretical arguments of security, collateral and trade in the way land registration and certification scheme might foster investment decisions.

The **Security argument** principally emphasizes on the assurance effect of the scheme. Land certification reduces the risk of expropriation and thus stimulates land-related investment by removing the disincentives to invest. With positive expectations about exclusive enjoyment of any returns earned from investment, landowners will develop an interest to invest in land improvements as well as making land based investments in agriculture and non-agricultural sectors (Atwood 1990; Feder & Feeny 1991; Besley 1995). This boosts demand for investment that ultimately increases demand for complementary inputs including labour, additional agricultural inputs as well as credit (Feder & Onchan 1987; Brasselle et al 2002; Deininger 2003)

According to **the Collateralization argument,** the scheme provides farmers with a title that can be offered as collateral to financial institutions, thereby improving farmers' access to institutional loan that could finance land related investment. The pledging of land titles in mortgage transactions also helps to overcome the problems of asymmetrical information; such as the incentives of moral hazard and adverse selection. These collateral arrangements are crucial to lending institutions and the credit markets because they partly or fully shift the risk of bad debt from the lenders to the borrowers since a default on the loan would trigger the loss of collateral to the borrower. The prospect of losing property rights to the collateral works as an incentive for the borrower to repay the loan; at least, it works as an incentive for borrowers to avoid intentional default (moral hazard). In addition, collateral mitigates the problem of adverse selection as it enables the lender to screen out borrowers most likely to default (Feder 1999; Feder & Nishio 1998; Feder & Onchan 1987).

In the event of default, property rights of the collateral are transferred to the lender, if there are adequate legal and regulatory arrangements for foreclosure. The lender can then sell the collateral (land) to recover the loan if there is an active free land market. Land is regarded as a highly suitable collateral asset with a number of

desirable characteristics; such as its immobility, fewer incidences of its permanent damage and it requires less maintenance (Binswanger & Rosenzweig 1986).Consequently, those farmers bestowed with transferable land ownership title can obtain credit at a lower cost and higher amount in contrast to farmers without it. As Besley (1995) notes, easy collateralization of land induced the financial intermediaries to charge a lower interest rate on borrowing and since a maximizing farmer operates at a point where marginal return from investing equals interest rate this further increases land-related investment[32].

The third argument asserts that Land documentation facilitates all transactions concerning land, and makes such transactions easier and cheaper. Easily conversion of land to liquid assets through land market, improvements made through investment can be better realized, thereby increasing its expected return (Besley 1995; Platteau 1996). This is the 'realizability effect' (Brasselle et al 2002) and could occur if the landholder can either sell, lease, exchange (barter), pledge or mortgage land. Since all these transactions are subject to the problems of information asymmetry, the land registration system is vital to minimize the associated problems among contracting parties. As a result, land becomes securely and efficiently transferable; land transactions take place at low cost, quickly and securely. According to Besley (1995), the key assumption in this argument is that a better land rights regime leads to expanded trading opportunities that enhances the benefit from trade and provides incentives to land-related investment.

Overall, the notion that greater tenure security (although not necessarily a formal title) provides adequate incentives to land related investment is a key element in empirical literature (e.g. Feder & Onchan 1987 in Thailand; Lin 1992 in China; Brasselle et al 2002 in Burkina Faso; Besley 1995 in Ghana; Gavian & Fafchamps 1996 in Niger). However, empirical studies in Africa and elsewhere have also produced inconclusive result on the relationship between tenure security and farm investment. In spite of the conventional belief, only a few studies have confirmed that tenure insecurity is a serious impediment to land related investments, largely confined to Asia and Latin America (Ayalew et al 2005:6). Additionally, only a few

[32] According to Besely the collateralization argument is similar to a neoclassical credit market, and this argument operates through a reduction in equilibrium interest rate

studies have confirmed the "mono-directional relationship" (Neef 2001:125) and some affirm the reverse causality (e.g. Sjaastad & Bromley1997; Place & Otsuka 2001). Moreover, some argue (e.g. Brasselle et al 2002; Rahmato 2004) that the customary tenure system in Africa, where it exists, have the necessary elements to stimulate small scale investments. Consequently, they have underscored that formalizing land rights alone might not be a panacea for problems of low agricultural investment and productivity.

For example, a study by Tyndall (1996) on the effects of land registration on tree planting in Kenya depicts that more trees were planted in the unregistered land than the registered land. That is because tenure insecurity was very high in the unregistered area and households perceive that tree plantation helps to secure their right on land. Equally, Holden and Yohannes (2002) concluded that resource poverty in land, livestock and basic education, rather than tenure insecurity, may undermine investment in perennials and purchase of farm inputs in Southern Ethiopia. In contrast, a study carried out by Moor (1996) in Zimbabwe shows that tenure security has a significant and positive effect on long-term farm investments. Gebremedhin and Swinton (2003) also found that farmers' perceived tenure security in northern Ethiopia was significantly and positively associated with long-term durable soil conservation investments, but not with the degree of investment. Whereas Ayalew et al (2005) found that perceived transfer rights, rather than a short term threat of expropriation, are quantitatively more important factors for low level of long-term investment in Ethiopia.

Therefore, empirical results on the relationship between tenure security and investment have come up with mixed results and suggest different policy options. This is due to varying context of land rights, land availability, land re-distribution experience and investment types and characteristics. On the top of which, the complex nature of the relationship between tenure security and land-related investment poses methodological difficulties. This casts a considerable doubt on the effect of ambitious land registration and certification schemes for long-term farm land augmenting investment in the African context. As Besley (1995) points, there still remains a need for proper understanding of the evolution of property rights along with a careful empirical investigation of the links between land rights and long term investment. Feder and Nishio (1998) also note that;

> *[our] model only provides a general framework, and the extent to which it applies to a given country depends largely on the policies, traditions, culture and other specific factors* (Feder &Nishio 1998:28).

In light of these broad theoretical and empirical literature, the analysis of this study draws on the security argument (assurance effect) omitting the collateral, gains from trade and allocative efficiency arguments because land selling and mortgaging is prohibited by law in Ethiopia.

3. Methodology

3.1 The Study area and the sample

This study used primary data from households residing at two rural 'kebeles'(the lowest administrative unit) in the Amhara National Regional State of Ethiopia. The two *'Kebeles'* were chosen one the basis of 'with' and 'without' land use title deeds. Addis ena Gulit kebele was a place where most households received the land holding certificate in 2004 and Gonbat kebele was a place where no one received a certificate during this study. Addis ena Gulit was a particular interest because it was a place where the first modern registration was started in 2004 and was appropriate to test the link between certification and investment. The second sample Kebele (Gonbat) was chosen for two main reasons. First, this area is similar with Addis ena Gulit in a number of factors including distance from the main road, agricultural productivity, population density, income level. Second, households in this area are assumed to have little expectation regarding to the ongoing land certification program.

Households both in Addis ena Gulit and Gonbat depend on subsistence agriculture. There are 800 households in Addis ena Gulit and 914 in Gonbat kebele. Land use is similar in both kebeles. Land use is greatly correlated with plot location. Compound land, where households reside, is used to grow vegetables, maize, fruit trees, chat and hop (locally called Gesho). Inner fields, like compound plots, are usually very fertile due to application of household waste and livestock tethering and they are used for vegetable, maize and fruit trees. Addis ena Gulit belongs to East Gojjam Administrative zone and Gonbat to West Gojjam. Addis ena Gulit and Gonbat are

located the same distance from Debre Markos and Bahir Dar respectively. While Addis ena Gulit is 15 Kilometre away from Debre Markos to the north, Gonbat is located the same distance far from Bahir Dar to the north. Representative households are selected from these sample 'kebeles' using a stratified sampling technique. A total sample of 80 households are interviewed using a pre-tested questionnaire on January 2008; 40 from the titled and the remaining 40 from untilled.

3.2 Measurement of land tenure security

Land tenure security varies along a continuum of rights. There is minimum security when the landholder has a temporary, not necessarily exclusive claim on the land and its produce, while his ability to make use decisions is limited and to make transfer decisions is nil. On the contrary, maximum security is achieved when an individual has rights to a piece of land ''on a continuous basis, free from imposition or interference from outside sources, as well as ability to reap the benefits of labour and capital invested in that land, either in use or upon transfer to another holder'' (Place et al., 1994: 19). Only when land is registered and protected by a legal title is such maximum security afforded.

Thus, households with land certification are considered to have secure land use rights while those without certificate are said to have unsecure use right. It is also assumed that individual households' expectation in the untitled kebele about future land certification could not affect their investment decision during the survey period. So, tenure security is measured by holding land certificate and treated as an exogenous variable in the analysis.

3.3 Measurement of land-related investment

To empirically investigate the link between land certification and land related investments, the study opted to use smallholder's tree planting decisions and terracing as a measure of investments. Four dummy variables were used to measure individual household's tree planting and terracing practice in the pre and post 2004 period. The variable TREE_A equals one if one or more trees appeared on the plot

after 2004 (year of formal registration in Addis ena Gulit), and the value zero otherwise. The variable TERRACE_A indicates whether the farmer has undertaken terracing on the plot in question after 2004. The variable TREE_B represents plots with trees before 2004 taking unit value if there was any tree on the respondents plot before 2004, and 0 otherwise. The variable TERRACE_B represents terracing before 2004 and equals one if the plot was with terrace before 2004 and zero otherwise.

3.4 Method of data analysis and econometric estimation techniques

The study adopted econometric estimation techniques to analyze the primary data gathered from the study participants. Econometric estimation is done using Ordinary Least Square (OLS) and Probit models.

By representing households indexed by i and plots by j, a simple OLS regression having the following functional form is used to estimate the investment impact of land certification;

$$I_{ij} = \alpha_o + \alpha_1 C_i + \alpha_2 X_i + \alpha_3 Z_j + \varepsilon_i$$

Where I_{ij} is dummy variable indicating whether or not investments were undertaken after 2004 by i[th] cultivator on his j plot: two types of investments (tree planting and terracing) are considered; C_i is a dummy indicating whether certification is launched in the kebele or not; X_i[33] and Z_j[34] are vectors of household and plot characteristics that will have a potential influence on individual household investment decision; $\alpha 1$, $\alpha 2$, and $\alpha 3$ are coefficients or vectors of coefficients to be estimated; and ε_i is the stochastic (behavioral) error term of i^{th} household.

[33] X_i encompasses family size, educational level of household head, total land size possessed by the household, age of household head, sex of household head, and access of household head to non-agricultural employment opportunities.

[34] Z_j encompasses soil and topographic characteristics of the plot, plot distance from household dwelling, status of investment on the plot in pre and post 2004 periods, the length of possession of the plot by its current cultivator, and modality of acquisition.

4. Estimations and main results of the study

To empirically investigate the link between land certification and land related investments, the study opted to use smallholder's tree planting and terracing decisions as a measure of investments. Finally, the estimated OLS regression result, which has a functional form elaborated under section 3.4, confirm to the following relationship between the dependent and explanatory variables.

4.1 Dependent variable: tree planting

The regression result, as presented in Annex 1, shows that the coefficient of CERT, which is a dummy variable taking value one for titled (i.e. Addis ena Gulit) and zero for untilled (Gonbat), is not significantly different from zero. This implies that land certification has positive but insignificant impact on tree planting decision. Households, both in the titled and untitled Kebeles, show similar propensity to engage in tree plantation. This result contradicts the literature that contends formalization of property rights in the form of certification enhances households' tree planting decision.

Farm size designated by AREA, which is a continuous variable that measures the total hectare(s) possessed by the household, shows positive and significant causal link with the dependent variable. Both Probit and OLS estimates reveals, the total area possessed by a household is positively and significantly associated with tree planting decision. One plausible explanation to this finding is that farmers with larger holding seem less constrained in their crop production to meet household needs. In other words, they have relatively better opportunity to trade-off current consumption for expected future higher benefit stream of tree plantation; as long as daily subsistence needs are satisfied.

The distance of parcel(s) (DIST_H), which is a continuous variable measured in terms of walking time (hours) required to arrive from household dwelling to each plot, shows negative and significant causal link. It reveals that an hour increase in distance decreases the probability of tree planting by 55 percent. In other words, farmers tend to plant trees in a plot relatively nearest to their dwelling. This is

expected since proximity allows for more constant attention and frequent supervision of trees. This finding is in contradiction with the recent studies in Africa (Beslay 1995; Brassele et al 2002) that shows framers plant trees to secure their holdings.

The variable TERRACE_A, which is a dummy variable that represents the terracing of a particular plot in the post 2004 period taking a value of one if the plot is terraced in this period and zero otherwise, shows negative and significant influence on tree planting. This reveals the substitutability of tree planting and terracing practices. Farmers who terraced their plot have shown less engagement in the practice of tree planting. The regression result shows that terracing after 2004 decreased probability of tree planting in this period by 10 percent.

Soil fertility, a binary variable taking on the value of one if a respondent declared high fertility to the plot and zero otherwise, shows positive and significant effect on tree planting practice. There are two possible explanations to this finding; first, perhaps the most familiar tree species (eucalyptus family) in the locality have the attribute of demanding more fertile soils than food and other cash crops, so the more fertile soils are used for tree plantation. Second, farmers might tend to give relatively better attention to plots that have higher immediate economic benefit, so less fertile plots are left without trees and associated investment.

4.2 Dependent variable: Terracing

The detail regression result is presented at Annex 2. It reveals that Land certification, a binary variable taking on the value one for titled kebele and zero for untitled kebele, is found to have no relationship with terrace undertaking. That is farmers, both in the titled and untitled kebeles, have similar propensity to invest on terracing. This result also contradicts to the conventional wisdom that postulates the significant contribution of certification on farmers' propensity to engage in terracing.

The topography of the plots designated by SLOPE, which is a dummy variable taking on the value of one if a respondent declares the particular plot is flat and zero otherwise, shows significant effect on terracing practices in the study area. This

implies that farmers are constructing terrace on relatively steeper plots. This might be as the new regional proclamation obliged farmers to undertake terraces on the steeper plot. In addition, it is obvious that steeper plots are more susceptible to soil erosion than flatter plots.

The positive and significant coefficient of FAMILY_S, a continuous variable which measures the number of household members between 14 and 60 years old, supports the conventional reasoning that greater family labour signals greater potential to undertake labour intensive investments like terracing. This is expected because in countries like Ethiopia where labour market is characterized by imperfection, land-related investment is a good way to make better use of otherwise underutilized family labour.

Farm size designated by AREA, which is a continuous variable that measures the total hectare(s) possessed by the household, shows positive and significant effect on terracing. It indicates that a one hectare increase in farm size increases the probability of undertaking terrace by 30 percent. The possible explanation for this finding might be farmers with lower farm land might not be willing to sacrify current lower income (accrued from annual crop yield per the space occupied by the terrace) to future higher benefit stream (that could be obtained from the yields of multipurpose shrubs and perennial crops planted on the terrace and increased crop yield associated with improved soil fertility).

The variable TERRACE_B, which is a dummy variable that takes a value of one if the plot is terraced in the pre 2004 period and zero otherwise, depicts a strong positive effect on subsequent terracing. The possible explanation might be a periodic maintenance is sought for an existing terrace to avoid its collapse.

5. Conclusion and policy implications

This study examined the investment effects of rural land certification and registration scheme. The purpose of this analysis is to investigate the effects of land certification upon tree planting and terracing. It adopted the conceptual framework that explains how land certification affects investment through its assurance,

collateral and trade effects. However, only the assurance effect had contextual relevance to analyze the primary data gathered. Additionally, tenure security is treated as exogenous variable in the analysis.

The findings of this study clearly reveal that land certification doesn't show any significant influence on land related investment decision of households. This is due to the fact that the major impediments for farmers propensity to engage in tree plantation in the study area are resource poverty (mainly land), distance of the plot from the household dwelling, and less familiarity to tree species that could grow in less fertile lands. Likewise, the major reasons for under-construction of terraces in the study area are associated with resource poverty (both land and labour) and topography. And hence, tenure insecurity doesn't appear to be a major impediment to households' investment decision.

Furthermore, households both in the titled and untitled area have similar feeling about tenure security[35]. Some farmers in the untitled kebele are aware of the government proclamation that prohibits further redistribution of land in the future and believe the 1997 land redistribution is the last. Nearly everyone hold the view that the average land holding per household reached at its minimum threshold level to be redistributed again. Moreover, in the context of the study area, where there is no property market and using land as collateral is prohibited by law, land may titling affect investment only through its assurance effect.

Based on these findings the authors claim for the urgency of complementary conditions, which have a contextual relevance to the study area, in order to achieve the envisioned outcome of certification and registration scheme. To begin with immediate solutions, indigenous networks might be a potential coping strategy for mutual support and aid of labor poor farmers. Second, diverse livelihood strategies, particularly off-farm activities, might be an important mechanism to raise the assets and incomes of resource poor households. Third, farm investment can be improved by coordinating and/or introducing financial intermediaries that provide ear-marked credit to land related investments (i.e. terracing and tree-planting in the context of

[35] The Full study report is supplemented by descriptive statistics to analyze the data. Thus, the result associated with farmers perception about tenure security is presented at annex 3 of this article.

this study). Launching comprehensive land consolidation program might also solve under-investment in tree plantation due to distance factor. Above all, the agricultural extension program might have invaluable contribution to demystify the misconception towards mutual interdependence of terraces and trees, to introduce tree species suitable to less fertile lands and launch comprehensive agro-forestry practices.

Enforcing land rights and obligations to proper farming practices alone could not determine the ultimate goal of the scheme, but factors other than formal land tenure rights influenced the land-holder's incentive for long-term land augmenting investments. It should also be born in mind that failure of uphill plot holder to undertake trench terracing and favorable soil conservation activities will have a devastating impact on downhill plot holder, who might be exemplary in doing an ideal land related investment. Therefore, the government needs to reassess the orientation of its institutions and development partners to address the interwoven scenario of lower land related investment in the near future.

Above all, certification by itself couldn't ameliorate the problem of under-investment in the study area, given the prevailing orientation of public institutions and development partners to address the interwoven scenario of land related investment in the country. Thus, the paper urges rigorous examination of other scholars in the field on the relevance of other scenarios (e.g. privatization, long-term lease), to check whether or not the lasting solution lies at the heart of de Soto's argument. Land has remained "dead" (as the term used by de Soto 2000) though farmers have received land certificate, as the certificate adds no right to holders is the essence of his argument. "Formal property is more than a system for titling, recording and mapping assets-it is an instrument of thought, representing assets in such a way that people's minds can work on them to generate surplus value" (de Soto 2000:231)

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Annex 1: Regression Result on the Effects of land certification on Tree Planting Decision

Description	**Name**	**Coefficient**	**Probit (Marginal Effect)**
Certified	CERT	0.0116698 (0.16)	.0297926 (0.41)
Head's Age	AGE	-0.003586 (-1.13)	-.0049027 (-1.5)
Gender (Female = 1)	GENDER	-0.1067223 (-1.21)	-.1183039 (-1.79)
Education attained by head of household	EDUC	0.0045009 (0.12)	.0074626 (0.2)
Total household size (working age)	FAMILY_S	-0.0152861 (-1.09)	-.0236404 (-1.63)
Non Farm Employment	NFE	0.0252486 (0.36)	.0441963 (0.62)
Plot with trees before 2004	TREE_B	0.086541 (1.58)	.0475993 (0.88)
Terracing on plots after 2004	TERRACE_A	-0.0957754* (1.74)	-.0987433* (-2.00)
Plot Acquired through redistribution	REDIST	0.04256 (0.60)	.0946618 (1.29)
Distance of plots from household dwelling	DIST_H	-.2831552*** (-3.71)	-.5471046*** (-4.92)
Years under possession	YEARS	0.0058992 (1.25)	.0077711 (1.70_
Farm Size	AREA	0.1924632* (1.61)	.2802146* (2.24)
Soil quality – fertile	FERTILITY	0.0863359** (2.49)	.0749593** (2.14)
Slope – flat	SLOPE	0.0247712 (0.71)	.0172287 (0.49)
Constant	C	.3082837 (1.86)	
Log likelihood			-153.73768
Adjusted R-squared		0.1570	

*significant at 10%; **significant at 5%; ***significant at 1%

Annex 2: Regression Result on the Effects of land certification on Terracing Practice

Description	Name	Coefficient	Probit (Marginal Effect)
Certified	CERT	0.0179971 0.31	0.026841 0.41
Plots with trees after 2004	TREE_A	-0.1348785** -2.31	-0.1538156*** -2.68
Age of Household head	AGE	-0.0045299* -1.66	-0.0058872* -1.91
Gender (1= female)	GENDER	-0.0911774 -1.12	-0.1189929 -1.57
Education attained by head of household	EDUC	0.0223363 0.62	0.0236767 0.6
Non farm Employment	NFE	0.0552614 0.85	0.0614326 0.76
Household size (working age)	FAMILY_S	0.0244661* 1.85	0.0281646* 1.87
Slope - flat	SLOPE	-0.3327055*** -6.41	-0.3448293*** -5.85
Distance of plots from household dwelling	DIST_H	0.050234 0.7	0.0449281 0.59
Farm size	AREA	0.2966216*** 2.58	0.3423708*** 2.58
Soil quality -fertile	FERTILITY	0.012876 0.39	0.0051241 0.14
Plots with terracing before 2004	TERRACE_B	0.0848958 1.59	0.1014704* 1.8
_constant	C	0.4609265 2.63	
R-Squared		0.2346	
Log likelihood			= -151.52003

*significant at 10%; **significant at 5%; ***significant at 1%

Annex 3: Households Perception of Tenure Security

		Addis ena Gulit (Certified Kebele)		Gonbat (Uncertified Kebele)	
Characteristics	Total Sample	Mean	Standard Deviation	Mean	Standard Deviation
Affected by 1997 redistribution	80	0.43	0.50	0.35	0.48
Affected Positively	80	0.24	0.47	0.25	0.44
Affected Negatively	80	0.19	0.44	0.13	0.40
Expect Redistribution	80	0.18	0.46	0.30	0.38
Expect Decrease	80	0.06	0.42	0.14	0.47
Expect Gain	80	0.12	0.39	0.16	0.52
Perceive the right to bequeath	80	0.95	0.43	0.90	0.41
Perceive the right to mortgage	80	0.42	0.56	0.52	0.48
Perceive the right to sale	80	0.04	0.37	0.10	0.54

About 43% and 35% of the sample farmers in the titled and untitled Kebeles were affected by land redistribution in 1997, respectively. While 24% and 25% of these farmers were affected positively, about 19% and 13% were affected negatively in the titled and untitled kebeles, respectively. Most farmers in both Kebeles are confident that there will not be land redistribution in the future. Only 18% in the titled area and 30% in the untitled area are expecting redistribution in the future. From these farmers about 6% in Addis ena Gulit and 14% in Gonbat expect decrease due to land redistribution. The possible explanation for this might be; First, some farmers in the untitled kebele are aware of the government proclamation which prohibits further redistribution of land in the future. And they believe that 1997 land redistribution is the last. Second, most farmers hold the view that the average land holding per household is very small to be redistributed again in the future. Households both in the titled and untitled area perceive to have the same right. About 95% and 90% of the sample households in the titled and untitled kebele perceive to have the right to bequeath their holding to member of a family. Sample households in titled (42%) and untitled (52%) perceive that they have the right to mortgage their land. Only 4% and 10 % of the farmers in the titled and untitled kebeles have perceived to have the right to sale their land, respectively. The perception of the right to sale is lower in the titled area, this might be because certification has reduced informal sale of land.