



THE IMPACT OF SOCIAL PROTECTION PROGRAMMES ON CHILD LABOUR AND EDUCATION IN ETHIOPIA

By

Getachew Berhanu Kebede

**Thesis submitted in partial fulfilment of the requirements for the degree of
Master of Science in Social Protection Financing at University of Mauritius**

Mauritius International Business School

June 2012

Table of contents

Table of Contents

Table of contents	ii
List of Tables	iv
List of Figures	v
Acknowledgements.....	vi
List of Abbreviations	x
Chapter One.....	1
1. Introduction	1
1.1 Background of the problem	1
1.2 Statement of the Problems.....	3
1.3 Objectives of the study	7
1.4 Research Questions.....	7
1.5 Significance of the Study.....	8
1.6 Description of the programmes	9
Chapter Two.....	12
2. Literature Review	12
2.1 Definition of child labour	12
2.2 Theoretical Literature review.....	13
2.3 Social Protection and its relation with child labour and Education	13
2.4 Evidence on the conditional transfers and its relation with child labour and Education	14
2.5 Evidence on unconditional transfers and its relation with child labour and education.....	16
2.6 Evidence on Public works and its relation with child labour and education.....	17
Chapter Three.....	20
3. Data and Methodology.....	20
3.1 Data Description	20
3.2 Methodology and Data Analysis	21
Chapter 4.....	Error! Bookmark not defined.
4.1 Description of background characteristics of responds	29
Chapter 5.....	38

5.1 Results and discussion of Results.....	38
5.2 Results.....	38
5.3 Discussion.....	44
5.4. Conclusion and Recommendation	46
References	48
Appendix A.....	54
Descriptive Results	
Appendix B.....	57
Results of Smoothed Kernel density graphs	
Appendix C.....	59
Results of Propensity Score Regression	

List of Tables

Table 1 Demographic and Socio-economic characteristic of children and households between 2002 and 2009	29
Table 2 Level of Assets, Wealth and Livestock indices and Change in indices between round 1 and round 2 and round2 and round 3	31
Table 3 Percentage of households affected by various shocks in the last 4 years for 2006 and 2009	32
Table 4 Index children school enrolment rate in 2002, 2006 and 2009(15 years old)	33
Table 5 Average grade completed of 15 years index child in round 1,round 2 and round3	33
Table 6 Time spent working on various activities in hours a typical day in the previous week by children of 15 years old.....	34
Table 7 Participation rate (%) of children (15 years old) in various activities in a typical day in the previous week for 2009 as compared to 2006.....	35
Table 8 Involvement in income (birr per year) from PSNP: Public Work and Direct Support in the last 12 months from the survey time for 2009.....	36
Table 9 Perceived impact of the programmes on child wellbeing in 2009	37
Table 10 Impact of the PW of the PSNP on child labour (hours spent in a typical day on work) and Education (highest grade completed and enrolment, time spent in a typical day on schooling and studying) by children of 15 years old in rural areas (kernel matching)	39
Table 11 Impact of EGS on child labour (hours spent in a typical day on work) and Education (highest grade completed and enrolment, time spent in a typical day on schooling and studying) by children of 15 years old in rural areas (kernel matching).....	40
Table 12 Impact of DS of the PSNP on Child Labour (hours spent in a typical day on work) and Education (highest grade completed and enrolment, time spent in a typical day on schooling and studying) by children of 15 years old in rural and urban areas (kernel matching).....	41
Table 13 Impact of Pension on child labour (hours spent in a typical day on work) and Education (highest grade completed and enrolment rate, time spent in a typical day on schooling and studying) by children of 15 years old in rural and urban areas (kernel matching).....	43

List of Figures

Figure 1 Effect of PW on child work and schooling time (income effect dominates substitution effect) .. 22

Figure 2 Effect of PW on child work and schooling time (substitution effect outweighs income effect) .. 23

Acknowledgements

Before all, I would like to state my limitless respect and gratitude to my almighty GOD who gave me strength throughout the quest in this thesis. I would like to thank my advisor Mr. Anthony Hodges and Prof. Chris De Neubourg for their invaluable criticism and unreserved support and comment they provided me from the title selection to the successful completion of this thesis.

I would like to thank my families, especially, Demmelash Kebede, who gave me all round support in this journey. I owe enormous debt to ILO and University of Mauritius for the financial assistance to enroll in this program. I would like also to thank Young Lives for providing me access to their data. Finally I would like acknowledge authors who have utilized the Young Lives dataset before me and assist in guiding this research.

About Young Lives

Young Lives is an international study of childhood poverty, following the lives of 12,000 children in 4 countries (Ethiopia, India, Peru and Vietnam) over 15 years. www.younglives.org.uk

Young Lives is core-funded from 2001 to 2017 by UK aid from the Department for International Development (DFID), and co-funded by the Netherlands Ministry of Foreign Affairs from 2010 to 2014. Sub-studies are funded by the Bernard van Leer Foundation and the Oak Foundation.

The views expressed are those of the author(s). They are not necessarily those of, or endorsed by, Young Lives, the University of Oxford, DFID or other funders.



UNIVERSITY OF MAURITIUS

PROJECT/DISSERTATION DECLARATION FORM

Name: Getachew Berhanu Kebede	
Student ID: 1070072	
Programme of Studies: MSc in Social Protection Financing	
Module Code/Name:	
Title of Project/Dissertation: The Impact of Social Protection Programmes on Child Labour and Education in Ethiopia	
Name of Supervisor(s): Anthony Hodges	
Declaration: In accordance with the appropriate regulations, I hereby submit the above dissertation for examination and I declare that: <ul style="list-style-type: none">(i) I have read and understood the sections on Plagiarism and Fabrication and Falsification of Results found in the University's "General Information to Students" Handbook (20..../20....) and certify that the dissertation embodies the results of my own work.(ii) I have adhered to the 'Harvard system of referencing' or a system acceptable as per "The University of Mauritius Referencing Guide" for referencing, quotations and citations in my dissertation. Each contribution to, and quotation in my dissertation from the work of other people has been attributed, and has been cited and referenced.(iii) I have not allowed and will not allow, anyone to copy my work with the intention of passing it off as his or her own work.(iv) I am aware that I may have to forfeit the certificate/diploma/degree in the event that plagiarism has been detected after the award.(v) Notwithstanding the supervision provided to me by the University of Mauritius, I warrant that any alleged act(s) of plagiarism during my stay as registered student of the University of Mauritius is entirely my own responsibility and the University of Mauritius and/or its employees shall under no circumstances whatsoever be under any liability of any kind in respect of the aforesaid act(s) of plagiarism.	
Signature:	Date:



UNIVERSITY OF MAURITIUS

This form must be completed and handed to the Faculty/Centre Registry at the time of submission of the three spiral-bound copies and one soft copy of the dissertation.

A. To be Completed by the Student

Name: Getachew Berhanu Kebede	
Student ID: 1070072	
Programme of Studies: MSC in Social Protection Financing	
Module Code/Name:	
Title of Project/Dissertation: The Impact of Social Protection Programmes on Child Labour and Education in Ethiopia	
Word Count:	
Signature:	Date:

B. To be Completed by the Supervisor(s)

Name(s):	
Comment(s) on the Supervision	
Signature:	Date:

C. For Office Use Only

This is to certify that Mr/Ms/Mrs.....has submitted.....spiral-bound copies and	
.....soft copy of dissertation on.....at the Faculty/Centre Registry.	
.....
Officer's Name	Officer's Signature

Abstract:

The study investigates the impact of participation in Social Protection Programmes on child labour and education in Ethiopia, the largest social protection program in Sub-Saharan Africa outside of South Africa, Specifically PSNP and Pension. Social Protection programmes are recently widely recognized in developing countries as main means to tackle poverty, reduce vulnerability and to smooth consumption of households. It is very important to assess intra-households impact of the programmes. Most of the previous studies assess the explicitly objective of the programs. My study evaluated the effect of SP programmes on children outcomes which in turn important to break intergenerational translation of poverty. Using Propensity Score matching method to identify program impacts, we find evidence of both processes at work and schooling. Results are presented by for each programme by place of residence and gender. I find that participation in Public Works leads to significance increases school enrolment of child however PW also increases boys time on paid work outside home and girls on unpaid work outside home in rural areas. PW is better than EGS for enhancing boys school enrolment. The direct support is effective in reducing child labour and increasing education in rural and urban areas. DS reduces time devoted to any activities by 40 minute per a typical day for children for both urban and rural resides. When I Disaggregated based on gender direct support reduces time spent domestic chores in turn increases time devoted on schooling. Besides enhances grade completed and enrolment rate. For boys DS reduced time spent on total work by 57 minutes per day. Similarly Pension is effective in reducing child time spent on work and increasing schooling. For girls it reduces time spent on study at home and highest grade completed. For boys significantly reduce time spent on total work almost by 2 hours per typical day and increases highest grade completed by 1 grade and enrolment rate by 9%.

List of Abbreviations

CFW	Cash for Work Programme
CSA	Central Statistical Agency of Ethiopia
DFID	Department for International Development
DSP	Direct Support Programme
DS	Direct Support
EGS	Employment Generation Scheme
FDRE	Federal Democratic Republic of Ethiopia
FFW	Food for Work Programme
GFFD	General Free Food Distribution
GR	Gratuitous Relief
GTP	Growth Transformation Plan
ILO	International Labour Organization
ISSA	International Social Security Association
MOE	Ministry of Education of Ethiopia
MoFED	Ministry of Finance and Economic Development
OECD	Organisation for Economic Co-operation and Development
PETI	Programme de Erradicação do Trabalho Infantil
PSNP	Productive Safety Net Programme
PWP	Public Work Programme
PW	Public Work

SIMPOC Statistical Information and Monitoring Programme on Child Labor

SP Social Protection

SSA United State Social Security Administration

UNICEF United Nations International Fund for Children

USAID United States Agency for International Development

YL Young Lives

Chapter One

1. Introduction

1.1 Background of the problem

Social protection is increasingly recognized as an essential instrument for poverty reduction in low and middle-income countries. An emerging evidence base in developing countries is documented on the role of social protection in tackling poverty, supporting economic growth and enhancing the effectiveness of growth strategies for poverty reduction (ILO, 2010; OECD, 2009).

Social protection refers to policies and actions, which enhance the capacity of poor and vulnerable groups to escape from poverty, and better manage risks and shocks. It encompasses the instruments that tackle chronic and shock-induced poverty and vulnerability (Sabates-Wheeler and Haddad, 2005; as cited by OECD, 2009). Social protection can enhance household capacity to acquire food, use health services and maintain children in school (Bissell, 2009). It supports human capital development in turn helps to break an inter-generational transmission of poverty. Children are among the most vulnerable group, especially, in developing countries they are affected by malnutrition, health problem, child labor, lack of education, etc.(ILO,2010).

According to the Statistical Information and Monitoring Programme on Child Labor (SIMPOC), child employment is declining from globally from 2004 to 2008 but in Sub-Saharan Africa child employment increased sharply from 49.3 million in 2004 to 58.2 million in 2008 (activity rate from 26.4 to 28.4 per cent) (*Diallo et.al,2010*)¹. Ethiopia belongs to those countries which have highest rate of child labor and low school attendance.

Social protection not only tackles income poverty, but also provides effective support for broader developmental objectives (OECD, 2009). Particularly, it gives support for children, such as better nutrition, health, education outcomes and reduces child labor. Well designed and properly implemented social protection measures can yield significant and multiple benefits in child nutrition, health, safety and education (Bissell, 2009).To reduce the negative impact of economic

¹ For more information visit www.ilo.org/publns

shocks on children, government and others organizations develop social protection programmes, including social assistances like conditional and unconditional cash transfer to the poor (Farrington and Slater,2006).Social protection can preempt child labor by changing the economic and social situation of household (Bissell,2009).

Empirical evidences from the *Progresa*-Mexican cash transfer program-shown that short-term shocks that led children out of school had long-term consequences on their educational achievements. Shocks pushed parents to take children out of school and to use child labor as a risk-coping strategy. However, the evidences shows that the Conditional Cash Transfer helped to protect children from these shocks, thereby creating an additional benefit and serving as safety nets with long-term benefit. However, the effect of Unconditional Cash Transfer or social assistance on child welfare is not clearly known (De Janvry et al., 2006; woldehanna, 2009).

Ethiopia with the second most populated country in Africa, has integrated social protection with the poverty reduction policy and poverty trends show decline in recent years from 44% in 2000 to 29% in 2011 and the economy showed average annual growth rate more than 10% for the last seven years despite challenged by persistence drought (MoFED, 2012). The Productive Safety Net Programme (PSNP) was introduced in 2005 by the Ethiopia government with harmonization of donors support to replace the emergency relief-based Employment Generation Scheme (EGS) in order to better address poverty and vulnerability. PSNP covers about 7-8 million populations with annual budget of 500million USD and the largest in sub Saharan Africa (outside South Africa). Ethiopia has Growth and Transformation Plan (GTP) to achieve millennium developmental goal of eradicating extreme poverty or hunger and to graduate as middle income country. The GTP plan includes providing the citizen broad based social protection. However the developmental policy doesn't consider the intra households impact of social protection programmes, especially on child welfare.

This study will attempt to examine the impact of Ethiopia social protection programme on child labor and schooling using three panel dataset that collected on the same households in 2002, 2005 and 2009.

1.2 Statement of the Problems

Child labor remains a serious problem in the world today. International Labor Organization (2010) estimates that about 215 million child laborers between the ages of 7 and 14 are found in the world, the Sub-Saharan Africa has the highest incidence of children in economic activities. That is 28.4% of labor in Sub-Saharan African countries come from child labor whose are in the age between 5 to 14 years old, and the attempt towards the elimination of child labor is still lagging behind compare to in the other part of the world. These in turn is affecting adversely the accumulation of human capital. High level of child labor is associated with low level of school attainment. The international programme of elimination of child labor has prioritized Africa (Diallo *et.al*, 2010). Similarly Ethiopia has one of the highest rates of child labor in the world. About half of children whose age between 5 to 14 years old are engaged in the economic activities in Ethiopia and that exhibited the low rate of school attendance and grade completion (CSA, 2002; MOE, 2011).

There has been an impressive gain in the numbers of children attending primary school with the gross enrolment ratio increasing from 74.2 % in 2004 to 93.4% in 2010 and 96.4% in 2011. However, the differential enrolment rate of 96.6% for boys and 90.1% in 2010 for girls shows a gender bias, which is also more pronounced in rural areas, followed by High dropout rate, grade repetition and low grade completion. For instance, dropout rate for primary school (grade 1-8) was 18.6% in 2010 and 19.9% in 2011 respectively. Repetition rate for primary school 4.9% in 2010 and 8.5% in 2011. Primary grade completion rate is about 49% .secondary enrolment rate is very low (CSA: Welfare Monitoring Survey, 2004; MoE, 2011). USAID (2012) published view from Debre Abay area in north Ethiopia “*Alternative education ends at the fourth grade and not surprisingly, some still drop out, mainly for poverty-related reasons, including the families’ need for their children’s labor or their inability to pay for room and board near the schools*”

In line with the above, about 85% of Ethiopia children in the 5-15 age group were engaged in productive activity, in housekeeping activity or in both during the reference week. Also, while the participation rate of boys (62%) is higher in productive activities than girls (22.8%) and vice versa for housekeeping activities girls (44.3%) and boys (41.9%). The report showed three in four

of children in the 5-17 age group who were engaged in the productive activities worked for more than 40 hours over the reference week and in housekeeping activity about 35.6%,9.21%,and 19% of the children spent on average 3-4,5-6,and 1-2 hours a day(CSA,2002;Astatike,2003).Astatike (2003) summarized as follows

“Child work becomes detrimental to the normal development of children the higher the extent of participation measured, among others, by hours of labour supply and work starting age of children. The younger the work starting age and/or the longer the time spent on work activities, the more detrimental child work becomes. In terms of work starting age, Ethiopian children do start participating in work activities at too early an age that they are highly exposed to various health and physical hazards. This is especially the case in rural areas where children often began helping their parents in farm work, herding, and/or domestic work activities as young as 4 years of age. Assefa (2002), in a study on the allocation of rural Ethiopian children’s time, reported that 12% of the total children started participating in work activities as early as 4 years of age.”

The most frequently mentioned cause of child labour is poverty: raising parents’ income would mean that sending children to the labour market was no longer a necessity (Basu and Van 1998; Lopez-Calva and Felipe, 2001). In connection with the above social protection program uses to tackle poverty and others. Social Protection is set of public intervention to mitigate risks and reduce vulnerability or chronic poverty. It is also important for developing countries to mitigate risks or reduce poverty.

“However, Government and donor concern is often focused on mitigating poverty at the household level, but it is also important to examine intra-household effects. As social protection measures become more widespread, it is necessary to understand their impacts– both positive and negative – on children” (Yablonski and Woldehanna, 2008).On the other hand some of Social protection designed and targeted to help the economic transformation become sufficiently labour intensive. For instance public works programme by definition seek to increase the amount of work available, this is supported by the following study. Townsend study showed that

“these schemes increase the amounts of work some children do (for instance in household chores or other work which would have previously been done by adults now

working in the scheme). Since the reason for this is the work requirement, one solution to avoid this would be to consider options around child benefits which focus resources on families but without the work requirement “(Townsend 2010; As cited by Portar and Dornan, 2010).

Social Protection which introduces conditionality attached to the receipt of payment affect different members within households, and ability of households to take advantage of such schemes, specially intended or unintended consequences for children, since adults make decisions on behalf of children. The Productive Safety Net Programme (PSNP) is currently the largest scheme in sub-Saharan Africa (outside of South Africa), and includes the provision of food or cash for work as well as direct support to poor households who are unable to participate in public works and component of conditionality through a work requirement. Unlike in India there is no childcare provision for work sites. Household participation in public works may increase labour demands on children, possibly in different ways for girls and boys, older and younger children (Porter and Dornan, 2010).

Large social protection are implemented in Ethiopia as one of poverty alleviation tools, However, all of these policies target the household as a whole, without focusing on the issue of intra-household resource distribution. In particular, the child welfare effect of social protection programmes is not considered by practitioners and policy-makers, at least for the programmes considered in this paper, namely PSNP, EGS and Pension (Woldehanna, 2009). In Ethiopia Children age below 15 years constitute 43.9 % (29 million) of population. Identifying the impact of social protection on children is very important to whether it exacerbates or improves their outcome (child labour and education). Children of different age and gender tend to have different work responsibilities in Ethiopia, accordingly the impact may differ (Heissler and Porter, 2010).

This review of literature reveals that while cash transfers conditional on children school attendance are effective in ensuring child schooling and reducing child work/labour, the evidence for the child welfare effect (schooling and labour) of unconditional assistance (DS and Pension), public works is not yet sufficiently available (ILO, 2010).

I am aware of the work of Woldehanna(2009) and Hoddinott(2009) on the impact of PSNP on child labour and schooling. However the earlier work has limitation of Woldehanna, 2009 using Young Lives data set and Hoddinott_et_al(2009) using household food security survey(FSP). The study was based on data that was collected when the programme had only been operational only for one year(between 2005 and 2006) i'e the intervention period is relatively short given some of the delays in the implementation process. Hoddinott.et.al (2009) used FSP which is cross-sectional survey without having pre-program data by including retrospective questions to control some pre-program conditions and outcomes which may create biases.

This study which uses data from the Young Lives survey that was conducted in 2009, address the issues. It gives insight into the long-run effects of the transfers from public works received under the PSNP and the graduation of PSNP beneficiaries in line with data collection year which in turn will be helpful for the evaluation and design of the programmes. Besides it also assess pension impact on children without explicitly targeting them.

The study informs policy makers to consider unintended or intended impact on children on the design of social protection which in turn will make huge difference not only to benefit children but also their families, communities and national development as a whole.

1.3 Objectives of the study

General Objective of the study

To assess the impact of social protection programmes on child labour and education.

Specific Objectives

1. To evaluate the impact of different social protection programmes on child labour.
2. To evaluate the impact of different social protection programmes on child schooling.
3. To identify the effect of different social protection programmes on child time use between work and schooling and study at home.

1.4 Research Questions

1. What were the trends of social and economic situation of households change between 2002 and 2009?
2. What were the impact of social protection programs on child labour and schooling?
4. To identify the differential impact of SP programmes on boys and girls?
3. What features of the social protection programmes may explain the results?

1.5 Significance of the Study

This study has two fold benefits:

1) It identifies the impacts of social protection programs on child labor and education to provide evidence, help us to better understand and have knowledge on the subject; 2) it may serve as an input for future in designing and targeting social protection programs to consider child labour ; 3) it may also help both for the government and non-government organization to design and implement social protection programs to consider intra-households impact, particularly, between family members and children; 4) On the top of these, the study may serve as spring board for those who are interested to extend for further investigation.

1.6 Description of the programmes

1.6.1. Description of employment support programmes and Productive Safety Net Programmes

Chronic food insecurity has been a defining feature of the poverty that has affected millions of Ethiopians for decades. The vast majority of these extraordinarily poor households live in rural areas that are heavily reliant on rain fed agriculture and thus, in years of poor rainfall, the threat of widespread starvation is high. Since the 1983-84 drought, the policy response to this threat has been a series of ad hoc emergency appeals for food aid and other forms of emergency assistance (Gilligan_et_al, 2009). The food for work program implemented in Ethiopia since 1980s with objective of rehabilitation and development of rural lands and infrastructure. The program implemented in several phase until the start of Employment support program (EGS) in 1997.

EGS started as temporary employment schemes with objective of rebuilding of household and community assets, contributing to reduce Ethiopia's chronic food insecurity. Transfer food(2.5kg per working day) for those who are able to work but free food aid for those who are not able to work. The program implemented in three phase until the start of PSNP IN 2005 (woldehanna, 2009). However Over time, concerns arose regarding several operational shortcomings in the emergency appeal system's ability to maintain a reliable safety net and develop productive assets. While food aid saved lives, it often failed to protect livelihoods, resulting in millions of people sliding into poverty (Wiseman et al, 2010).

As a result, the number of individuals in need of emergency food assistance in ethiopia rose from approximately 2.1 million people in 1996 to 13.2 million in 2002/3, before falling back to 7.1 million in 2004 (World Bank 2004;As cited in Wiseman et al,2008). Further, the ad hoc nature of these responses meant that the provision of emergency assistance—often in the form of food-for-work programs—was not integrated into ongoing economic development activities (Subbarao and Smith 2003). Following the severe 2002 drought, there was a growing consensus between the Ethiopian Government and donors on the need to reform the emergency food aid system in favor of a more productive approach to providing a safety net to vulnerable populations.

In response, in 2005 the Government launched an alternative system, the Productive Safety Net Program (PSNP), to help address the needs of chronically food insecure households. Ethiopia's PSNP is an international flagship program both in its scope and in its partnership approach, having reoriented a rural safety net to better respond to the needs of food insecure households and create productive investments to underpin rural economic growth and environmental rehabilitation. This is achieved through: (i) the predictable provision of adequate food and cash transfers to targeted beneficiary households, thus allowing effective consumption smoothing and avoiding asset depletion; and (ii) the creation of productive and sustainable community assets that contribute to the rehabilitation of severely degraded areas and increase household productivity (Wiseman_et_al,2010). .

The PSNP operates in 262 *woredas* that had been significant recipients of food aid between 2002 and 2004. The PSNP operates as a safety net, targeting transfers to poor households in two ways, through Public Works (PW) and Direct Support (DS). Public works, the larger of the two components of the PSNP, pays beneficiaries selected by the community for work they undertake on labor-intensive projects that build community assets. Participants are paid in-kind or in cash. Direct support is provided to labor-scarce households including those whose primary income earners are elderly or disabled in order to maintain the safety net for the poorest households who cannot participate in public works (Gilligan_et_al,2009).

Woldehanna(2009)summarized the targeting criteria as follows “*According to the revised PSNP programme implementation manual (FDRE 2006), a combination of administrative and community targeting is used to identify able-bodied food insecure households who can participate in the programme. The Food Security Task Force established in each community is responsible for selecting the beneficiaries (households) of the programmes. In principle, the task force pre-identifies beneficiaries (MoARD 2006: 23) who (1) are chronically food-insecure;4 (2) who have suddenly become more food-insecure over the last 1 to 2 years as a result of a severe loss of assets and are unable to support themselves; and (3) who do not have any family support or other means of social protection or support. The task force has to further refine the selection by looking at (1) status of household assets such as land holding, quality of land and food stock; (2) income from non- agricultural activities and alternative employment; and (3) support/remittances from relatives or community.*”

The PSNP programme also has a Direct Support (DS) component which delivers assistance to households who are labour-poor and do not have reliable support.(Gilligan et. al. 2007; as cited in Woldehanna, 2009).All Young Lives sample sites are beneficiaries of social protection PSNP, EGS and Pension and located within the food security districts. The involvement of households in the PSNP and the amount of income beneficiary households obtained in was captured both in 2006 and 2009 survey.As a result I can able to assess the impact of social protection programmes on child labour and Education.

1.6.2 Description of Pension

Ethiopia social security is Social insurance system established in 1963(public servant and uniformed) and current law in 2011(both private and government sectors).It covers Employees in the public and private sectors, including military and police personnel; the coverage extends to private sector employees and voluntary for the self-employed. The source of the fund is contribution from employees (5% initially rising to 7% in 2013) and employers (7% initially rising to 11% in 2013 for both private and public) and 24% for military).It provides benefit for old age, survivors, work injury and sick leave.

The pension benefit is calculated is 30% of the insured's average monthly basic salary in the last three years before retirement plus 1.25% (civilian) or 1.6% (military) of the insured's average monthly basic salary for each year of service exceeding 10 years. The maximum benefit is 70% of the basic salary. A Social Security Agency administrative organization is supervised by a board of directors and managed by director general (SSA, 2011).

Chapter Two

2. Literature Review

2.1 Definition of child labour

According to the International Labour Office (ILO), child labour has been defined as (a) all economic activities undertaken by children under age 11; (b) all economic activity undertaken by children aged 12 to 14, excluding permitted 'light work'² in the sense of Convention 138; (c) all economic activity carried out under 'hazardous conditions' by children aged 15 to 17; and (d) 'the worst forms of child labour' carried out under age 18. The previous ILO's definition of child labour excluded chores and childcare from definitions of work because they were not viewed as 'economic activity' on the ground that these kinds of work do not harm children's education, health and physical and psychological development.

Recently ILO (2010) includes unpaid household services such as domestic chores and childcare which may be hazard to children working for long hours. Beside the new International Conference of Labour Statisticians (ICLS) agreed on new definition of Child Labour. Bissell (2009) summarized the new international agreement definition "Hazardous unpaid household services included for the first time. Hazard may result from: long hours, unhealthy environment, unsafe equipment or heavy loads, dangerous locations. Impact on children's education considered re long hours and Might now provokes re-analysis of whether girls remain in child labour in the home."

Similarly evidences show that these kinds of activities also contribute to harm children's development and learning processes, especially in the case of girls (see Knaul 1999; Lavinias et al. 2001; Levinson et al. 2001; Sedlacek et al. 2001; Anker 2000; As cited in Woldehanna, 2009) Similar Exclusion of 'domestic' activities from the definition of work has been widely criticised, notably by feminist analysts (Fishburne Collier and Yanagisako 1987: 20; Moore 1988; As cited in Orkin, 2012), because it underestimates the amount of work done by female children (D. Levison

² There is debate about how to differentiate light work, which is argued to be harmless or beneficial to children, from harmful work, which can expose children to health hazards or be too onerous (Lieten 2000). In addition to not being harmful, light work must not affect children's health and development or 'prejudice their attendance at school ... or their capacity to benefit from the instruction received', according to the ILO Convention concerning minimum age for admission to employment, 1973 (No. 138) (ILO1973: 4).

and Moe 1998;As cited in Orkin.K,2012). In Ethiopia children work for long hours on unpaid household service (child care and domestic chores) which may impact on education (CSA, 2002; Astatitke, 2003).

For my study, I used the terms child work and labour interchangeably for any kind of activities though some literature differentiates between ‘child work’ and ‘child labour’ and also I used education and schooling interchangeably.

2.2 Theoretical Literature review

Despite the effective of social protection programs, little is known about some programmes such as Public work; pension how they affect child welfare. Economic reasoning tells us there will be two types of effects: an *income effect* from the transfers received and a *substitution effect* from the additional labor demand (Hoddinott et al, 2009). Basu and Van’s (1998) ‘luxury axiom’ states that child labor will decrease as incomes are raised above a subsistence threshold. The literature on human capital investment posits that if child schooling is a normal good, the increased income will result in increased levels of school participation (Behrman and Knowles, 1999).

Hoddinott et al,(2009) summarized the literature as follows

“The labor requirement in public works may leads to substitution effects that can be detrimental to child welfare. Public works programs directly increase demand for household labor and may alter the intrahousehold division of labor between adults and children in ways that could adversely affect both schooling and child labor. This follows from what Basu and Van call the ‘substitution axiom’, that adult and child labor are substitutes. Similarly, it is not possible to tell whether the increased demand for adult labor from public works will increase or decrease school participation.”

2.3 Social Protection and its relation with child labour and Education

The impact of the SP programmes on incidence of child labour. The issue of child labour is linked to developing countries and hence to poverty, one way or the other.As argued by Lieten

(2006), “*child labour is an issue widespread across the developing world and linked to poverty, one way or the other, and has the potential to cause intergenerational transmission of poverty by ensuring that a child is caught in a situation where lack of education from an early age causes future poverty, thus increasing the probability that future generations will also be caught in the same vicious cycle(see Gahlaut,2011).*”

Poverty reduction will improve child schooling and reduce child labour would be a crucial policy issue of a typical developing country. Evidence documented one of the effective way to poverty reduction is increasing access to social protection programmes to the poor (cookburn and college, 2000; and Cockburn, 1999; as cited by Senbet, 2010).

There is a growing body of evidence from a range of developing counties that social protection programmes can effectively increase the nutritional, health and educational status of children and reduce their risk of abuse and exploitation, with long term development benefits (Gilligan.et.al., 2006).However some social protection programmes could increase demand for child labour, with discourages schooling (Yablonski and Woldehanna, 2008).

2.4 Evidence on the conditional transfers and its relation with child labour and Education

Many social transfers programmes such as conditional cash transfers (CCT) directly target improvements in the schooling of children in beneficiary households and transfers in cash or in kind to poor households subject to compliance with specific conditions to education and/or health. CCT such as providing cash in exchange for school attendance demonstrated success in keeping children at school (Bissell, 2009).For instance in middle income country, where primary school enrolment rates were high prior to the implementation of the programmes, the impact has been more significant on secondary school enrolment and attendance. This increases opportunity cost of schooling in turn reduces child labour (ILO, 2010).

In with the above ILO (2010) summarized several study as follows

“Child labour is also a significant factor in keeping generations in poverty and confined to the informal economy. In many developing countries, child labour can also be associated with hazardous employment. Reducing child labour can thus be a very positive step towards a sustained exit from poverty.In Colombia, Familias en Acción is reported to have reduced child labour in rural areas. Similar effects have been reported from Nicaragua’s Red de Protección

Social, Ecuador's Bono de Desarrollo Humano, and Brazil's Child Labour Eradication Programme. In Mexico, studies find small reductions in child labour. This suggests an increasing opportunity cost of schooling, i.e. income opportunities forgone for the household, as children grow older. Similar results are reported from Costa Rica's Superémonos, Brazil's Bolsa Familia"

Study on of Ecuador's Bono de Desarrollo Humano (Human Development Bond) program shows that it increased school enrollment by 10 percent and reduced child labor by 17 percent (Schady and Araujo 2006). Conditional cash transfers in Bangladesh, Pakistan, and Turkey helped to reduce the gender gap, where school enrolment rates of girls were lower than boys (Khandker, Pitt, and Fuwa, 2003; Chaudhury and Parajuli, 2008; Ahmed et al. 2007; As cited in Fiszbein and Schady, 2009). The summarized study indicates PROGRESA reduced by 35% and 29% the probability of working rural boys aged 10 and 14 respectively and increased secondary school enrolment on average by 24% over the period (1997-2003). The study found that PETI in Brazil increased time spent at school, reduced labour force participation and hazardous work, and increased academic success for children who had participated in the programme (Yap, Sedlacek and Orazem, 2002).

Amarante, Ferrando and Vigorito (2011) Study revealed PANES (CCT) in Uruguay did not affect either school attendance or child labour whether children are considered as one group or are disaggregated by sex and age. School feeding programs have also a positive impact on school attendance. For example, small pilots in Burkina Faso, Jamaica, and Malawi increase attendance rate up to 36% and enhance enrolment (Ahmed, 2004b and Del Rosso, 1999; As cited in Fiszbein and Schady, 2009). On one hand school feeding programs did not affect on attendance rate in Kenya (Meme and others 1998; As cited by Fiszbein and Schady, 2009). Gahlaut (2011) measured the impact of Juntos in Peru using young lives data indicates the program participation reduced child labour by 31%.

2.5 Evidence on unconditional transfers and its relation with child labour and education

Improvements in schooling are not restricted to conditional cash transfer programmes. Positive effects on schooling can also be observed for unconditional transfers or workfare programmes (ILO, 2010). The study revealed that the South African Child Support Grant increases primary school enrollment by roughly 2.4 percentage points from a base of 95.6%, decreasing non-attendance by 54% (Williams, 2007).

Edmonds (2006) find receipt of anticipated large cash transfers is associated with increases in school attendance as well as primary school completion and declines in child labor. This study has interpreted the finding that child labor supply and schooling are responsive to the timing of income as evidence of liquidity constraints affecting these time allocation decision. Accordingly ISSA(2010) summarized Duflo (2000); Samson et al (2004) study as follows

“Old-age pensions also help children grow into more productive adults who escape the inter-generational transmission of poverty. Girls in households receiving a non-contributory pension are more likely to attend school, succeed academically and have better health and nutrition indicators than children in similar households that do not receive the grants.”

In Namibia and South Africa, pensioners reported using their social pension benefits to pay grandchildren’s school fees (Edmonds, 2006; ILO, 2010). Similarly Croome and Mapetla, (2007) study that was summarized by ISSA (2010) agrees with the above *“Old-age pensioners often spend their pension income to purchase school uniforms, books and health-care for their grandchildren. For example, 60 per cent of the monthly pension received by persons aged 70 or older in Lesotho is redirected consistently to children. Evidence also suggests that this mechanism has halved Lesotho’s hunger rate.”*

The average South African child living with an elder that is not yet pension eligible spends 17 hours a week working Male pension eligibility is associated with an approximately 35 percent decline in hours worked per week and a rise in school attendance to almost 100 percent. The study also find that, hours worked declines more when male eligible (by 6 hours) in the households than female eligible (2 hours). In the same way the study shows that pension income

paid to an elder male is associated with increase school attendance rates from 96 percent to 100 percent (Edmonds, 2004 and Williams, 2007).

Most of this decline in child labor is in market work which includes work in agriculture, work for Pay, or work in a household business (Edmonds, 2004). In Zambia cash transfer rose enrolment rates by 3 to 79 percent points for 7-18 years old and out of children (7-17) not enrolled in school at baseline, 50 percent came back to school at evaluation (UNICEF, 2007). Similarly Edmonds (2005) revealed pension income to an elder male is associated with over an hour less work per day and increase attendance of children in turn increases school attainment and primary school completion rates.

2.6 Evidence on Public works and its relation with child labour and education

Study conducted by Woldehanna(2009) in Ethiopia by using young Lives dataset showed Public work program increases paid work outside the home by 0.13 hours per day and reduces child care and household chores by 0.57 hours per day. Disaggregating into by gender the program reduces the amount of time devoted to child care and household chores for boy and girls though higher reduction for boys than girls. The finding shows participating in PW lead to an increment of time devoted to study (0.25 hours) for girls. The effect of PW on paid work is more prominent for girls than boys. The net effect is that children's total hours spent on work are reduced.

While Hoddinott et al(2009) by using Ethiopia food security survey showed that in beneficiary households that received any PW payment the effect are more significantly for boys than girls. It reduces agricultural labor for boys age 6-16 years on average by 2.87 hours per week and for younger boys (6-10 years), the program reduces time spent on domestic chores on average by 1.2 hours per week but no effect on older boys. There is also no effect on girls' child labor time on average or on labor however, for older girls the program reduces total labor time by 5.29 hours per week. For households receiving larger PW transfers, the effects are significantly for young boys. The study revealed for boys age 6-10 years, PW also moderate reduction of time spent on domestic chores by 2.42 hours per week and total labor hours by 4.7 hours per week. But there is no significant effect on girls' labor time.

Uppal(2009) examined Indian National Rural Employment Guarantee Scheme (NREGS) by using Young Lives data set and find for boys, registration for the scheme has reducing the likelihood of work by 13.4% however For girls, being in a rural area increases the chances of child labour by 10.1%. Although the PWP is not found to be effective in increasing children's attainment of grades and the time boys spend on studying at home (Woldehanna, 2009).

In Hoddinott et al (2009) study households that received any transfers from PW has no beneficial effects on school attendance rate for boys while lower the attendance rates for younger girls(age 6-10). "7 percentage point drop in school attendance rates on average as a result of the program and no effect on older girls age 11-16. This suggests that intra-household substitution effects of labor time dominate the positive income effects of the program for younger girls, but not for older girls on average."While households receive at least 90 birr payment from public work, his results as follows

"Households that received at least 90 birr payment from public works under the PSNP increased the school attendance rate by 19 percentage points for boys, most of this effect is driven by younger boys. Boys age 6-10 in households had a significant 23 percentage point increase in school attendance as a result of the PSNP transfers. For boys age 11-16, the estimated no effect and 15% school attendance increment for girls age 11-16. The result shows that the program is much more effective at improving child welfare when payments are near the level intended in the program design. School attendance rates increase substantially for boys on average, for young boys age 6-10 years, and (weakly) for girls age 11-16 years. Also, child labor supply falls for younger boys in this group, while older girls are unaffected."

Compared to Employment Generation Scheme (EGS, its predecessor), PWP is more effective in reducing child work. Specifically, it helps households to reduce the amount of time children spend on child care and household chores(Woldehanna,2009). The study also revealed that direct support(DSP) is effective in reducing child work and increasing grade completed for children in both rural and urban areas. Direct support reduced child work in paid and unpaid activities while in increasing grades completed significantly only for boys. In rural areas, boys' hours of unpaid work outside home and girls' hours of childcare and household chores declined. For urban areas hours devoted of paid work for girls and hours devoted for paid and unpaid work for boys. He

found that the grade boys completed in urban areas increased by half a year. However the program reduced time spent on schooling (Woldehanna, 2009).

The impact evaluation literature reviewed here normally focuses on assessing the extent to which social transfer programmes achieve their explicit objectives. Where programmes have the objective of improving school attendance, or facilitating asset accumulation, these effects are measured with relative precision. Less information is available on less direct effects. Fortunately, the research literature on the indirect effects of social transfers is growing fast (ILO, 2010). The income and substitution effects have opposing influences on child labor; *a priori*, it is not possible to tell which effect will dominate (Hoddinott et al, 2009). Few Empirical evidence existing specifically and most of the studies on effect of unconditional transfers on child outcome exist for middle income countries but not for low income countries in which the impact may differ from the former.

Though Woldehanna(2009) and Hoddinott et al (2009) study on PSNP isn't used as references since the results doesn't give insight to beneficiaries to analysis the impact of programmes only operational for short term(one year).Beside the two studies has revealed some similar and contrast results, conducted during initial stage of implementation of the program. The literature on the impact of unconditional transfers on child labour and education are not well documented. No previous study conducted on the effect of pension on child outcome in Ethiopia.

This study fills an important gap in existing literature. The study assessed pension impact on child labour and education in addition to PSNP. This study use the data set collected in 2009, after five year operation of the programmes. It is also in line with evaluation and graduation of program to assess and use the policy makers. It investigates the impact of social protection programmes on child labour and education.

Chapter Three

3. Data and Methodology

3.1 Data Description

The data for this study are from the Young Lives data-set. Young Lives is an innovative longitudinal research project investigating the changing nature of childhood poverty. Young Lives is tracking 12,000 children in Ethiopia, India (Andhra Pradesh), Peru and Vietnam over 15 years through a quantitative survey and participatory qualitative research, linked to policy analysis. Since 2001, in Ethiopia, Peru, India and Vietnam, children from two cohorts have been visited three times for quantitative surveys, and twice for qualitative studies.

The sample consists of two cohorts of children. There are 2,000 children from each country. The 2,000 'index children' in each country in the younger cohort were aged 6 to 18 months on the first visit in 2002, and were resurveyed again at age 4 to 5 in 2006 and most recently aged 7 to 8 years in 2009. There were 1,000 children from each of the four countries in the older cohort (between the ages of 7.5 and 8.5 in 2002), who were resurveyed at age 11.5 to 12.5 in 2006 and in the third round at age 14.5 to 15.5 in 2009. They will be followed until their fifteenth birthdays.

For this study the Young Lives Households (Panel) Survey data from the older cohort of round 1, 2 and 3 were used from Ethiopia, and specifically I have used information collected using section 1A of Child Questionnaire. Young Lives gave me the permission to access the dataset and requested me to share them the findings the study.

The dataset has several strengths for our purposes. Firstly, it covers just the right period: since PSNP implemented just between Round 1 and 2. The first survey was in 2002 provide as pre-programmes and Round 2 was in 2006 and round 3 in 2009, leaving a long-enough gap for the teething problems to have been resolved and for outcomes to have been realised. Secondly, the longitudinal nature of the data helps greatly in dealing with problems in estimation and identifying impact. Thirdly, the children in the old Cohort were aged between 14.5 and 15.5

3.2 Methodology and Data Analysis

3.2.1 Theoretical Conceptual Framework

As discussed in the literature the impact of social protection program on child labour and education is not clear cut. The program may reduce or increase child labour depending on whether the income effect dominates the substitution effect or vice versa, which might be summarized as follows.

Economic categorizations of goods relate consumption of a good with a particular individual's income. Normal goods increase in consumption as income increases. By considering education as a normal good: as one's income increases (family income), demand for education increases. Thus if the income effect of the program dominates the substitution effect, it reduces child work and enhances time spent on schooling and study. In contrast if the substitution effect dominates the income effect of households participating in SP programs increase time spent on work and reduce schooling, studying and enrolment. "On the other way dominance of one on the other depends on preferences of parents for schooling and other goods given the budget constraints; the opportunity cost of children and other household members' time; and substitutability of adult labour by child labour or vice versa." (Woldehanna, 2009)

Let us take the following equation

$$P_x X + P_s S = M$$

Where P_x is the price of other goods and P_s is the cost of children's time, including direct cost of schooling

X is quantity of other goods available for consumption in the household and S is representing time spent on schooling, study and leisure. Assume that M is the total amount of budget of household for spending.

Figure 1 and 2 demonstrate more

Whereas the vertical axis representing the quantity of other goods (denoted by X) available for consumption in the household and the horizontal axis representing time spent on schooling, study and leisure (S).

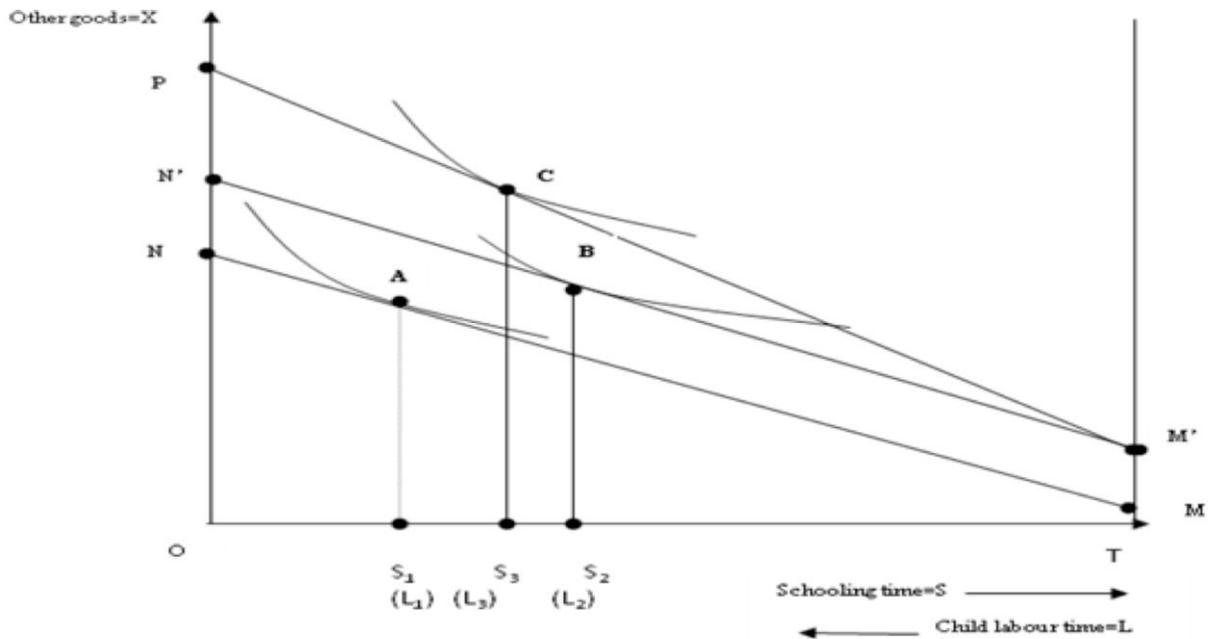
P_s/P_x the slope of the line. The total time available to children is line OT

which can be used for working (W) and schooling, study and leisure (S). Child work is measured by $T-S$. Line NM is the original budget line given by

$$XS = M/PX + P_s/PX$$

To demonstrate a case where income effect dominates the substitution effect, let us consider Figure 1. Initially the household budget is at point A , when a household benefits from SP programs income of household rises from M to M' . Assuming the opportunity cost of time does not change, the equilibrium point moves from point A to point B , where child work declines from TL_1 to TL_2 and schooling time increases from OL_1 to OL_2 due to income effect. However, the household faces a steeper budget line (line $M'P$), indicating an increase in the opportunity cost of using child time for schooling. As a result, the final optimal allocation of a child's time is at point C , where child work increases to TL_3 and schooling time decreases to OS_1 due to substitution effect. Since the income effect is larger than the substitution effect, child work declines from TL_1 to TL_3 and schooling time increases from OS_1 to OS_2 .

Figure 1 Effect of PW on child work and schooling time (income effect dominates substitution effect)



When substitution effect dominates income effect (Figure 2).

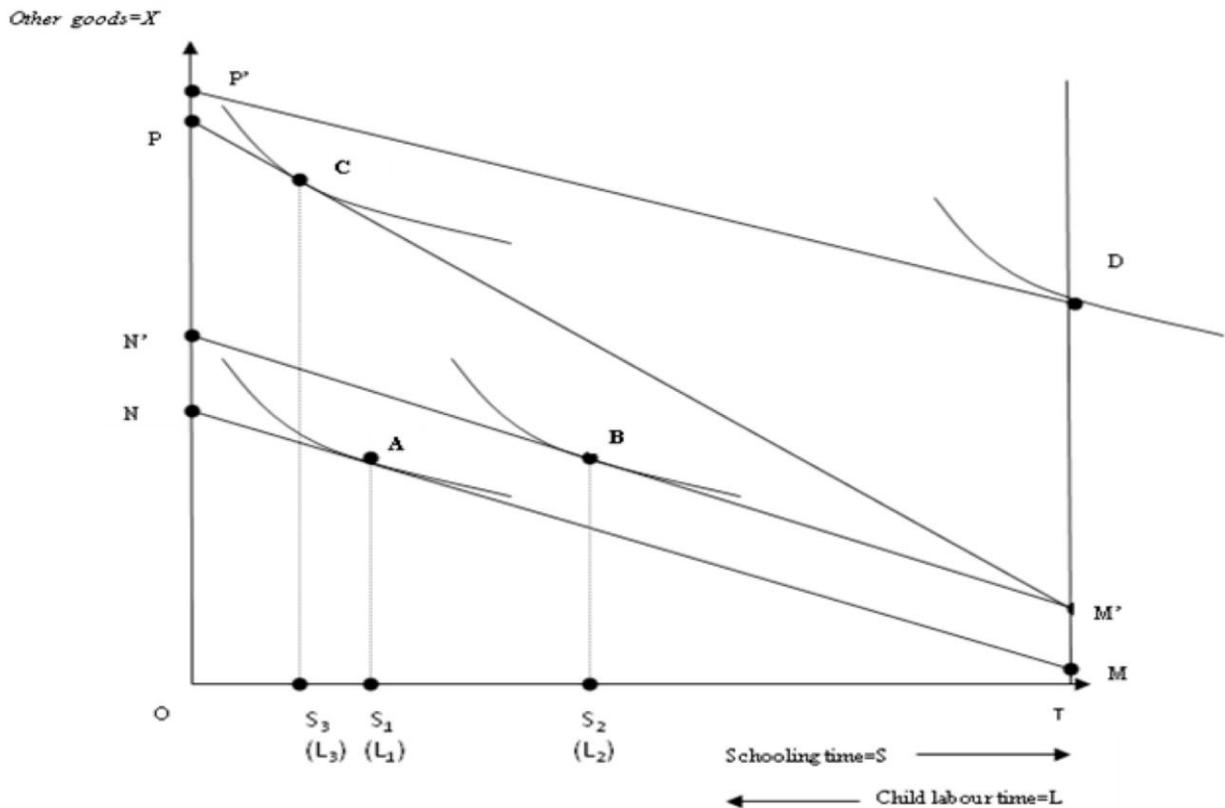
Assuming the household budget constraint before participation in PSNP is line MN , the initial

equilibrium will be at point A. When a household is participate in SP programs, the household's budget constraint incline upward and the new line of budget constraint is PM'.

In line with the above argument, due to income effect, child work declines from TL1 to TL2, and schooling increases from OS1 to OS2 because of income effect. Child work increases from TL2 to TL3, and schooling time declines from OS2 to OS3 due to substitution effect. Since the substitution effect dominates the income effect, the net effect is that child work increases from TL1 to TL3, and schooling time declines from OS1 to OS3 at the final optimal point, C.

Point D shows the level of transfer required for households to voluntarily allocate child's full time to schooling and studying (Woldehanna, 2009).

Figure 2 Effect of PW on child work and schooling time (substitution effect outweighs income effect)



3.2.2 Empirical Model

Impact evaluation of a program is useful for decision making process or to expand or for policy decision. In line to estimated the impact of social protection programmes on child labour and education in Ethiopia. We have to make an empirical identification strategy a method for indentifying causal effects that are a direct results of participating in the programmes but it requires comparing outcomes for beneficiaries households to the counterfactual outcome(what those outcome would have been in the absence of the programmes. The main challenges to researchers or others are the counterfactual cannot be directly observed. Therefore, we have to construct a proxy for these counterfactual outcomes from data on a selected comparison group of non beneficiary households (Hoddinott et al, 2009)

Hoddiott et al(2009)summarize as follows

“To better understand the process of constructing a comparison group, consider measuring the impact of the PSNP on school attendance, for example, as the difference in average attendance rates between representative samples of children in PSNP beneficiary households and those in nonbeneficiary households. The problem with this approach is that nonbeneficiary households are likely to be systematically different from beneficiary households for reasons unassociated with the PSNP, but that also affect school attendance. For example, nonbeneficiary households will be wealthier on average and may have more educated household heads. The resulting impact estimate would be biased because the observed differences in school attendance are affected by the PSNP and by these other pre-program differences in household characteristics. In the literature on program evaluation, this form of bias is commonly referred to as “selection bias.” The two most important sources of selection bias include “program placement” bias, resulting from effective targeting of the program to poor communities and households, and self-selection bias, resulting from the fact that households that choose to participate in the program may be different than households with access to the program that choose not to participate.”

In order to eliminate this bias sometimes referred to as selection bias, we must construct valid comparison groups from among non beneficiary households that was similar to the social protection programmes beneficiaries before the implementation of the the programmes

(Berhane.et.al., 2011; as cited in Hoddinott et al., 2009).If SP programmes in Ethiopia provided randomly to eligible households,the approach would be easy to construct such a comparison group. The random approach eliminates selection bias. “This approach eliminates selection bias because it guarantees that access to the program is not correlated with household characteristics, as it would be in a targeted program or one in which households may lobby for participation” (Heckman, Ichimura and Todd, 1997). On average, beneficiaries and non beneficiaries are very similar in a randomly allocated program it would be more likely that beneficiaries and non beneficiaries have similar characteristics. This method is more easy and useful to evaluate a program during the pilot phase, when access to the program is limited, but it is more difficult in a fully scaled program.

Similarly a randomized evaluation design was not possible for the PSNP and pension because the programs are not in the pilot phase even PSNP was implemented on a large scale entirely within the first year. As a result, other “non experimental” evaluation methods had to be used. For this study, I use an evaluation method called Propensity Score Matching (PSM) that constructs a comparison group by matching beneficiaries to non beneficiaries based on observable child and household characteristics (Hoddinott.at.al, 2009).

Recently matching method has been widely used in impact evaluation. The method aims to ‘select sufficient observable factors that any two individuals with the same value of these factors will display non-systematic differences in their reaction to the policy reform’ (Blundell and Dias 2002: 4).

One possible way to measure the impact of safety nets on child welfare (child labor and schooling) is to compare child welfare outcome (measured by child work) between those households which participate in Social Protection Programs and those which do not. Let y_1 denote the child labor and schooling outcome with treatment and y_0 the child labor and schooling outcome without treatment (control group). Let the variable ω be a binary treatment (participation in safety net programmes) indicator where $\omega=1$ denotes participation in the programmes and $\omega=0$ denotes non-participation.

Let us assume that treatment ω , is independent of the outcomes (y_1 and y_0) after conditioning with x : $y_1, y_0 \perp \omega | x$. We can also deal with the weaker version of conditional independence of participation and y_0 : $y_0 \perp D | x$. This assumption is called ignorability assumption (Rubin1978).

Assuming that $E(y | x, w)$ is linear, the outcome-participation equation is given by $Y = \gamma\beta + \alpha\omega + u$, (4.1)

where $E[u | \omega] = E[y - \gamma\beta - \alpha\omega | \omega] = 0$. In this case w is treated as exogenous. In order to identify some population measure of impact, overlap or matching assumption is required. Matching assumption is stated as

$$0 < \Pr[\omega = 1 | x] < 1 \quad (4.2)$$

This assumption ensures that for each treated individual, there is another matched untreated individual with a similar x . When treatment participation depends stochastically on a vector of observables x , the concept of propensity score is useful. Propensity score is a conditional probability measure of treatment participation given x , denoted as

$$p(x) = \Pr[w = 1 | X = x] \quad (4.3)$$

Another condition that plays an important role in treatment evaluation is the balancing condition which states that $w \perp x | p(x)$. This means that for individuals with the same propensity score, the assignment of treatment is random and should look identical in terms of x vector. This balancing condition is a testable hypothesis. Conditional mean independent assumption states that

$$E(y_0 | w = 1, x) = E(y_0 | w = 0, x) = E(y_0 | x).$$

This implies that y_0 does not determine participation. According to Rosenbaum and Rubin (1983), the conditional independent assumption given x implies conditional independent assumption given $p(x)$. That is

$y_1, y_0 \perp w | x \perp y_1, y_0 \perp w | p(x)$. Often $p(x)$ is a particular function of x and is computed given the data (w_i, x_i) by logit or probit regression.

From the assumptions above, the outcome-participation equation can be written as

$$y = x\beta + \alpha p(x) + u = x\alpha\beta + \alpha p(x) + [u + \alpha(p(x) - p(x))] \quad (4.4)$$

Since the unknown $p(x)$ is replaced by a sample estimate, the error term,

$u + \alpha(p(x) - p(x))$, includes additional sampling error, $\alpha(p(x) - p(x))$.

Selection bias can arise when the treatment is correlated with the error term in the outcome equation. Selection bias can arise due to two reasons: selection on observables and selection on unobservables. Selection on observables arises when there are incorrectly omitted variables that partly determine w and y . In this case, the error term will be correlated with the participation variable, w . This can be easily corrected by including all relevant variables in the outcome equation. The second source of selection (selection on unobservables) arises when there are unobservable factors that partly determine both w and y , which makes the error term in the outcome equation to be correlated with the participation variable, w . In this case we have to deal with endogenous treatment effect or use IV estimation method

We rely on two forms of matching to identify program impacts, propensity score matching (PSM) and Kernel matching (KM) (Smith and Todd, 2005).

In implementing PSM, propensity scores on the covariates using probit analysis were estimated. Then, beneficiaries ('treated' group) were paired with a comparable group of non-beneficiaries (control group). Finally, the counterfactual outcome of the child of PSNP beneficiaries was calculated as weighted averages of outcome of all individuals in the comparison group.

Kernel matching

Finally, the counterfactual outcome of the child who are from beneficiaries was calculated as a weighted outcome of the average in the comparison group. The baseline results reported, use kernel matching algorithms, where each children i who are from beneficiaries is matched with children with weighted averages of all individual in the control group to construct the counterfactual outcome (Caliendo and Kopeinig, 2005).

The major advantage of these approaches is the lower variance which is achieved because more information is used. A drawback of these methods is that possibly observations are used that are bad matches. Hence, the proper imposition of the common support condition is of major importance for KM and Heckman, Ichimura, and Todd (1998) derive the asymptotic distribution of these estimators and Heckman, Ichimura, and Todd (1997) present an application.

As Smith and Todd (2005) note, kernel matching can be seen as a weighted regression of the counterfactual outcome on an intercept with weights given by the kernel weights. Weights depend on the distance between each individual from the control group and the participant observation for which the counterfactual is estimated. It is worth noting that if weights from a symmetric, nonnegative, unimodal kernel are used, then the average places higher weight on persons close in terms of propensity score of a treated individual and lower weight on more distant observations (Caliendo and Kopeinig, 2005)

Chapter 4 Descriptive Statistics

4.1 Description of background characteristics of respondents

This subsection describes and analysis some selected background characteristics of the respondents. To identify the variation in the background characteristics (demographic and socio-economic) of the population between 2002 and 2009, the background characteristics of the respondents over survey time are presented.

I. Households composition, location, Education and gender

As Table 1 indicates the total number of household is 971, of which 568(59%) and 403(41%) of sample reside rural and urban areas respectively in 2009, with a slight difference from the previous survey. Among the young lives children 51% are boys and 49% are girls in all rounds. The average fathers education level is grade two in the first and four in the second and six in the third round while mothers' education level is grade two during all rounds. The average age of households head is within range of 15 to 85 years of age over the survey period.

The Young Lives older cohort sample children are on average the fourth children of their families, having an average of three older siblings. Each household also has at least 1.2 in round two and 0.96 in round three economically dependent members. Average households size is 6.4 in 2009.

Table 1 Demographic and Socio-economic characteristic of children and households between 2002 and 2009

Background variables	Categories	2002	2006	2009
Age of child	Age	7.5-8.5	11.5-12.5	14.5-15.5
Sex of the child	Boys	51%	51%	51%
	Girls	49%	49%	49%
Households size	Average HHs	6.4	6.5	6.4
Education	Father	2	4	6
	Mother	2	2	2

Total household members	Total	5439	7241	7894
Dependence Ratio	DR	1.21	1.23	0.96
Birth order of the child	Average child	4	4	4
Place of Residence	Urban	36%	396(40%)	403(41%)
	Rural	64%	584(60%)	568(59%)
	Total	1000	980	971

Source: Young Lives Dataset; Own calculation

II. Household Wealth

As present in Table 2: average wealth index shows a gradual increment over the survey period from 0.21 in 2002, to 0.29 in 2006 and to 0.35 in 2009. The wealth index is 0.26 for rural and 0.48 for urban in 2009, and the wealth index is higher for urban than rural in all rounds. The wealth index grows on average by 38% from 2002 to 2006, and 21% from 2006 to 2009.

Similarly, asset index and Tropical Livestock Index (TLU) increased substantially from 2002 to 2009. Asset index grows on average by 22% in rural and 12% in urban from the year 2006 to 2009. Livestock index increased on average by 4% between 2002 and 2009. Livestock increased by 8% in rural and reduced by 27% in urban from 2006 to 2009. On average the wealth index and asset index are higher in urban than in rural areas, while livestock index is higher in rural than in urban areas. This is partly because the wealth index and non livestock asset index better measures urban wealth, while the livestock index is better suited to measuring rural wealth.

Table 2 Level of Assets, Wealth and Livestock indices and Change in indices between round 1 and round 2 and round2 and round 3

Wealth Variables	Rural	Urban	Total
Wealth index R3	0.26	0.48	0.35
Wealth index R2	0.20	0.43	0.29
Wealth index R1	0.11	0.35	0.21
Change in wealth Index (%) R1&R2	0.82	0.23	0.38
Change in wealth Index (%) R2&R3	0.30	0.12	0.21
Asset index R3	0.44	0.85	0.61
Asset index R2	0.36	0.76	0.53
Asset index R1	0.20	0.56	0.35
Change in asset index (%) R1 & R2	0.80	0.36	0.51
Change in asset index (%) R2 & R3	0.22	0.12	0.15
Livestock index in TLU R3	3.81	0.51	2.44
Livestock index in TLU R2	3.52	0.7	2.35
Livestock index in TLU R1	3.30	0.78	2.25
Change in TLU index (%) R1 & R2	0.07	-0.10	0.04
Change in TLU index (%) R2 & R3	0.08	-0.27	0.04

Source: Young Lives Dataset; Own calculation

III. Shocks

Table 3: shows households affected by shocks in the last four years for 2006 and 2009 survey. Accordingly, 85% of the households have depicted that they suffered from soaring food price, and the effect is higher in urban (96%) than rural (77%) in 2009. About 36.5% of the households affected by increased in input price, 37% by drought, 11% job loss, 13% flood, 27% crop failure, 29% livestock death and 43% of the households have suffered from either illness or death of household member during the last four years-from 2006 to 2009. Those households who were affected by different type of shocks increased from 2006 to 2009: input price (6.4%), soaring food price 53.03%, death of livestock (2.6%), job loss(0.83%), drought(6.27%), illness of the child mother(1.63%), while crop failure reduced by 7.4%.

Table 3 Percentage of households affected by various shocks in the last 4 years for 2006 and 2009

Type of Shock(%)	2009			2006			Change
	Rural	Urban	Total	Rural	Urban	Total	
Dummy for Increased in Input Price	55.28	10.17	36.56	37.67	19.19	30.20	6.36
Dummy for soaring food price	77.29	96.03	85.07	39.9	20.45	32.04	53.03
Dummy for Livestock Death	41.90	9.93	28.63	37.67	8.08	26	2.63
Dummy for Job Loss	5.28	19.60	11.23	5.31	17.9	10.4	0.83
Dummy for Drought	54.05	12.66	36.87	46.92	6.6	30.6	6.27
Dummy for flood or too much rain	2.73	19.54	12.56	20.9	2.8	13.6	(1.04)
Dummy for Crop Failure	41.55	5.21	26.47	52.6	6.3	33.87	(7.4)
Dummy for Death of child's Father	3.17	4.96	3.91	4.5	5.3	4.8	(0.89)
Dummy for Death of child's Mother	1.23	2.48	1.75	1.9	3.3	2.4	(0.65)
Dummy for Illness of child's Father	16.02	13.15	14.83	17.9	11.6	15.4	(0.57)
Dummy for Illness of child's Mother	24.12	18.61	21.83	23.5	15.4	20.2	1.63
Dummy for Divorce or separation	2.11	2.48	2.27	1.07	3.03	2.2	0.07
Dummy for payment child school enrolment	11.80	10.67	11.33	10.1	9.59	9.8	(1.53)

Source: Young Lives Dataset; Own calculation

IV. Child Schooling and work:

a. Enrolment rate, highest grade completed and drop out

Table 4: shows the average enrolment rate is 89.5% in 2009-with higher enrolment rate in urban (95.8%) than in rural (85.0%) in the year 2009. The enrolment rate of the index children during 2006 was 94.8% and in 2002 it was 66.0%.The urban children enrolment rate increased from 88.3% in 2002 to 98% in 2006 and slightly declined to 95.8% in 2009. Similarly, the rural index children enrolment rate increased from 50.1% in 2002 to 92.43% in 2006 and declined to 85% in 2009. In all rounds the results shows girls have higher enrolment rate than boys.

Table 4 Index children school enrolment rate in 2002, 2006 and 2009(15 years old)

	Rural			Urban			Total		
	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3	Round 1	Round 2	Round 3
Girls	52.92	94.53	86.50	88.67	97.54	97.54	68.13	95.81	91.19
Boys	47.62	90.48	83.67	88.00	99.00	94.00	63.97	93.93	87.81
Total	50.18	92.43	85.04	88.34	98.26	95.78	66.01	94.85	89.50

Source: Young Lives Dataset; Own calculation

In Table 5: the average highest grade completed by children in round three is 5.73. The mean grade completed for urban is similar for boys and girls in round 3, while in rural slightly higher for boys. The results shows an increment over the survey period, however, the change in the increment is higher between 2002 and 2006, than between 2006 and 2009. Among children enrolled only 20% have taken grade national examination (See Appendix A, Table 4.1).

Dropout rate, about 8 % of children have dropped out between the years 2006 to 2009, and 2.5% between the years 2002 to 2006. The main reason for drop out is assessed majority (40%) mentioned had to work paid work to earn money and needed for agricultural work and domestic work or family business(See Appendix A, Table 4.2). The rural dropout rate is 12 % which is higher than in urban areas of 4 % in 2009. Girl's dropout rate (7 %) is less than boy's dropout rate (9%) probably because boys are required to work on economic activity more than girls. Among those who are enrolled in school 13% of them have missed school for more than a week in 2009 (See Appendix A, Table 4.1).

Table 5 Average grade completed of 15 years index child in round 1, round 2 and round 3

	Rural			Urban			Total			Change from Round 1 to Round 3					
	R1	R2	R3	R1	R2	R3	R1	R2	R3	Rural		Urban		Total	
										R1&R2	R2&R3	R1&R2	R2&R3	R1&R2	R2&R3
Girls	0.41	3.7	5	0.84	4.9	6.4	0.65	4.2	5.8	3.29	1.3	4.06	1.6	3.55	1.6
Boys	0.57	3.5	5.2	0.91	4.9	6.4	0.76	4.1	5.6	2.93	1.7	3.99	1.5	3.34	1.5
Total	0.49	3.6	5.1	0.87	4.9	6.4	0.7	4.2	5.7	3.11	1.5	4.03	1.5	3.5	1.5

Source: Young Lives Dataset; Own calculation

V. Time spent working on various activities

As shown in Table 6 in a typical day a child spent on child care and domestic activities on average is 3.48 hours. The number of hours an index child spent on all types of work is 5.24 hours in 2009, which is higher than 4.46 hours a child spent in 2006. Total hours a child spent on schooling and studying at home is 5.69 and 2.04 hours respectively in 2009, which is higher than the hours he/she spent in 2006. However, the child time spent on unpaid work outside home is slightly less in 2009 (1.34 hours) than 2006 (1.62 hours). Child time spent on all activities is higher in rural (6.19 hours) than urban (3.88 hours) in a typical day, while time spent on schooling is less for rural (5.36) than urban (6.17). This is likely due to the more the time child spent on work shows less time for schooling.

Boys spent on paid and unpaid work outside home is higher than girls, while time spent on child care and domestic work is higher for girls than boys. Generally girl's spent more time on all activities including schooling than boys.

Table 6 Time spent working on various activities in hours a typical day in the previous week by children of 15 years old.

Outcome Variables	2009					2006
	Rural	Urban	Girls	Boys	Total	Total
Hours index child spent on child care	1.08	0.59	0.92	0.48	0.88	0.61
Hours index child spent on domestic work	2.75	2.4	3.47	1.78	2.61	2.23
Hours index child spent on unpaid work outside home	1.92	0.52	0.48	2.17	1.34	1.47
Hours index child spent on paid work outside home	0.44	0.38	0.31	0.51	0.41	0.15
Hours index child worked outside home, paid and unpaid	1.48	0.14	0.17	1.66	0.93	1.62
Hours child spent on child care and domestic activities	3.84	2.98	4.39	2.26	3.48	2.84
Total hours index child spent all types of work	6.19	3.88	5.18	4.94	5.24	4.46
Total hours child spent on schooling	5.36	6.17	5.74	5.32	5.69	5.42
Total hours child spent on studying at home	1.96	2.15	1.82	1.89	2.04	1.73

Source: Young Lives Dataset; Own calculation

VI. Participation rate of children on various activities

As presented on Table 7: almost all children (98.8%) in our study sample participate in any of activities in a typical day- about 45% of children participate in child care- that is higher for rural (48%) than urban (40%) areas. Children involvement in domestic work, unpaid and paid work is 90.8% and 46% respectively. Participation rate of girls is higher than boys for all activities except for paid and unpaid.

Table 7 Participation rate (%) of children (15 years old) in various activities in a typical day in the previous week for 2009 as compared to 2006

Outcome Variables	2009					2006
	Rural	Urban	Girls	Boys	Total	Total
Child care	47.9	39.7	55.3	34.0	44.5	35.7
Domestic work	89.1	93.3	98.5	83.6	90.8	87.2
Unpaid work outside home	54.7	19.3	21.6	57.7	40.08	45.0
Paid work outside home	9.4	8.07	6.3	10.9	8.63	4.5
Worked outside home, paid and unpaid	59.9	26.6	26.4	64.9	46.04	47.3
Child care and domestic activities	91.02	94.3	99.2	85.83	92.4	89.7
All types of work	100	97.5	99.8	97.8	98.8	97.6

Source: Young Lives Dataset; Own calculation

VII. Support Programmes

Information on households' participation in PSNP comes from the income module of the household questionnaire. While PSNP started in 2005, how much income each household obtained over the last 12 months from PSNP was recorded in the income module of the survey data collected in the last quarter of 2009. PWP is one of the components of PSNP that is specifically designed for rural areas. About 46% and 39% of the sample households in rural areas were involved in PWP in 2006 and 2009 respectively. About 20% and 14% of households are beneficiaries of the direct support in urban and rural respectively in 2009. The average income a household obtained from the public work was found to be 699.54 Birr per year in 2009 and 238.67 Birr in 2006. The average income a household obtained from the direct support was found to be 232.57 Birr in 2009 and 147.03 Birr in 2006. This disparity was because PSNP was not fully implemented in 2006. There are about 12.4 % and 4.4 % pension beneficiaries in urban and rural respectively in 2009.

Table 8 Involvement in income (birr per year) from PSNP: Public Work and Direct Support in the last 12 months from the survey time for 2009

Beneficiaries and income of PSNP	For 2009 Survey			For 2006 Survey		
	Rural	Urban	Total	Rural	Urban	Total
% of Participating in Public Work PSNP	38.9	6.7	25.5	46.2	9.1	31.2
% of Participating in Direct Support PSNP	13.5	20	15.56	18.7	32.8	24.4
% of Participating in Public Work EGS	38.6	6.5	25.2	38.6	6.5	25.2
Mean income from Public Work, PSNP (ETB)	731.61	437.04	699.54	367.76	48.3	238.67
Mean income from Direct Support, PSNP (ETB)	235.00	212.5	232.57	158.34	130.35	147.03
Retirement pension for 2009	4.4	12.4	8%			4.8

Source: Young Lives Dataset; Own calculation

VIII. Perception of Support Programmes impact

Table 9: presents the perceived impact of the participation on the programs on the well being of the children. About 28% of the respondents perceived that the PSNP in cash allowed children to have better quality of food, for children, and 60% of them perceived that the programmes allowed more food for child. 4% of them believed that more resources is available for the child education, 1.41 % of them perceived that reduced children working time and 0.47 % of them felt that children reduced their household chores. In generally, PSNP in cash or in kind has improved child wellbeing by providing more food and better quality of food and less impact on health, education to improve and reduce child work child.. These likely due the objective of the programmes improve food security of households. About 2.4% of PSNP beneficiaries graduated until 2009 and the major (41%) of households perceived immediate effect of graduation is higher food insecurity. (See Appendix A, Table 9.1)

Table 9 Perceived impact of the programmes on child wellbeing in 2009

Perceived Impact	PSNP in	PSNP in	Direct
	Cash(%)	Food(%)	Support(%)
	2009	2009	2009
Better quality of food	27.8	26.23	33.3
More food	59.9	69.30	21.2
More resources for educational purposes	4.2	1.98	24.24
More health care treatment	2.35	0.4	3.03
More time to study	0	0	9.09
Less time on work activities	1.41	1.96	6.06
Less time on household chores	0.47	0	3.03
Others	3.87	0.13	0

Source: Young Lives Dataset; Own calculation

Chapter 5

Results and discussion of Results

5.1 Results

Table from 10 to 13 below presents the results of the study: ATT (Average Treatment on Treated) the impact of social protection programmes on child labor and schooling. I made the matching between control and treatment group by using the following variables; First I have used variables that are closely related the outcome variable, which are not affected by the intervention; Second I have used variables that are closely related to participation criteria; Third I have used economic intuitions to select those variables. Specifically, the variables used to find matching control group and treatment group includes: Households demographic composition, wealth index, shock, drought and place of residence, etc. The dependent variable for schooling is the highest grade completed and enrolment rate and time spent on schooling and studying. Child labor is measured by number of hours child spent and can be analyzed in terms of the time spent on the following activities: 1).Paid and unpaid work outside home; 2).Unpaid work outside home; 3). Paid work outside home; 4). On domestic work; 5).Child care; 6). Child care and household chores; 7).Total work;

5.1.1The Impact of PW component of PSNP on Child Labor and Schooling in Rural areas

Table 10 presents the estimated impact of PW on child labor and schooling. The study shows the effect of PW on child labor and schooling in rural since PW designed for rural.

The result revealed that PW has effect neither on child education nor child labour by considering child as one group. However, when I disaggregated the data based on gender, I observed a slightly different result both for the girls and boys. For girls I found a statistically positive effect for unpaid work outside home and combined paid and unpaid work outside home. Accordingly I found that PW increases unpaid work outside home for girls by 0.384 hours per day and combined paid and unpaid work by 0.65 hours per day as compared to non-beneficiaries but no effect on net time spend on total work.

The study revealed that PW has impact on child education, particularly; Participating in PW increases the enrolment for girls and boys by 8.1percent and 7.4 percent respectively as compared to non-beneficiaries of PW but no effect on grade completion.

For boys I found a statistically positive effect for paid work outside home. Consequently, the effect of PW increases paid work outside home for boys by 0.317 hours per day.

Table 10 Impact of the PW of the PSNP on child labour (hours spent in a typical day on work) and Education (highest grade completed and enrolment, time spent in a typical day on schooling and studying) by children of 15 years old in rural areas (kernel matching)

Outcome	All children(N=)			Girls(N=)			Boys(N=)		
	attk stat	S.E	T- stat	attk stat	S.E	T- stat	attk stat	S.E	T- stat
All children (N=568)									
Paid and unpaid work outside home	-0.017	0.608	-0.028	0.650	0.317	2.049	-0.091	0.880	-0.103
Unpaid work outside home	0.101	0.385	0.263	0.384	0.163	2.358	-0.436	0.742	-0.588
Paid work outside home	-0.133	0.389	-0.342	0.267	0.306	0.872	0.317	0.157	2.025
Domestic chores	-0.374	0.359	-1.153	-0.430	0.372	-1.154	0.056	0.425	0.133
Child care	0.530	0.519	1.081	0.162	0.269	0.601	0.952	0.903	1.054
Child care and domestic chores	0.156	0.636	0.245	-0.268	0.396	-0.677	1.009	0.706	1.428
Total work	0.124	0.801	0.155	0.382	0.511	0.747	0.890	1.077	0.826
Schooling	0.638	0.556	1.149	-0.192	0.363	-0.529	0.512	1.125	0.455
Studying	0.345	0.542	0.637	-0.202	0.198	-1.021	0.563	1.042	0.541
Grade completed	0.117	0.443	0.263	-0.785	0.574	-1.366	0.006	0.631	0.009
Enrollment	-0.040	0.041	-0.986	0.081	0.048	1.686	0.074	0.044	1.686

For two tail test, T values for 1%, 5%, and 10% levels of significance are 2.576, 1.96, and 1.645 respectively;

ATTk=average treatment effect of the treated using kernel matching

5.1.2. The impact of EGS on child labour and schooling

The result presented in Table 11 estimates the impact of EGS that existed before 2005. Accordingly, EGS has an insignificant effect on time spend on paid work outside home, unpaid work outside home, total work, schooling, studying, on domestic chores and on education by considering child as one group.

When I disaggregated the estimation based on gender, I could able to see the significant effect of EGS on girls schooling and labor. For boys, the effect of EGS is becoming evident and showing its significantly positive effect on paid work outside the home. Accordingly, EGS increases paid

work outside the home for boys by 0.317 hours per day for beneficiaries as compared to non-beneficiaries. For girls it increases hours on unpaid work and combined paid and unpaid work by 0.38 and 0.65 respectively.

Table 11 Impact of EGS on child labour (hours spent in a typical day on work) and Education (highest grade completed and enrolment, time spent in a typical day on schooling and studying) by children of 15 years old in rural areas (kernel matching).

Outcome	All children(N=568)			Girls(N=278)			Boys(N=289)		
	attk	S.E	T-stat	attk	S.E	T-stat	attk	S.E	T-stat
All children (N=568)									
Paid and unpaid work outside home	-0.017	0.608	-0.028	0.650	0.317	2.049	-0.091	0.805	-0.113
Unpaid work outside home	0.101	0.385	0.263	0.384	0.163	2.358	-0.436	0.857	-0.509
Paid work outside home	-0.133	0.389	-0.342	0.267	0.306	0.872	0.317	0.161	1.969
Domestic chores	-0.374	0.359	-1.040	-0.430	0.372	-1.154	0.056	0.387	0.145
Child care	0.530	0.519	1.021	0.162	0.269	0.601	0.952	0.836	1.139
Child care and domestic chores	0.156	0.636	0.245	-0.268	0.396	-0.677	1.009	1.038	0.972
Total work	0.124	0.801	0.155	0.382	0.511	0.747	0.890	1.005	0.885
Schooling	0.638	0.556	1.149	-0.192	0.363	-0.529	0.512	1.190	0.430
Studying	0.345	0.542	0.637	-0.202	0.198	-1.021	0.563	0.865	0.651
Grade completed	0.117	0.443	0.263	-0.785	0.574	-1.366	0.006	0.716	0.008
Enrollment	-0.040	0.041	-0.986	0.081	0.048	1.686	0.074	0.051	1.449

For two tail test , T values for 1%, 5%, and 10% levels of significance are 2.576, 1.96, and 1.645 respectively;

ATTk=average treatment effect of the treated using kernel matching

5.1.3 The impact of Direct Support program (DS) on child labour and schooling

The effect of DS includes cash/food aid and education in the both rural and urban areas unlike the two programmes above which focus only rural areas. The results are presented on Table 12: The study revealed the impact of DS has a significant negative effect on domestic chores, combined domestic child care and domestic chores, and on total work while it is insignificantly affecting paid and unpaid work outside home, child care and positive for schooling, enrolment and grade completed. DS, accordingly, reduces time spent on domestic chores by 0.392 hours per day; on combined child care and domestic chores by 0.582 hours per day and on total work by 0.657 hours per day by considering child as one group.

However, when I disaggregated the data based on their place of residence, the effect of DS on rural households significantly reduces paid work outside the home (by 0.238 hours per day) and total work hours (by 0.711 hours per day). It also increases enrolment rate of children of beneficiaries by 9.7% as compared as to non-beneficiaries. Similarly, for urban beneficiaries DS significantly reduces child care and domestic chores time spent by 0.515 hours per day and domestic chores alone by 0.366 hours per day.

Further disaggregation of DS based on gender as indicated at the bottom of Table 12, for girls DS significantly reduces the domestic chores and significantly increases schooling time, highest grade completed and enrolment rate. Consequently, DS increased time that girls spent on their schooling by 0.663 hours per day, highest grade completed by 0.67 grade and enrolment rate by 5.5%, while it reduces domestic chores by 0.582 hours per day. Similarly for boys, DS reduces time spent on unpaid work outside the home by 0.541 hours per day, child care and domestic chores by 0.643 hours per day and total work by 0.955 per day as compared to boys from controlled group. This shows effectiveness of DS in reducing girls work that in turn enhances the time that a child invests in schooling.

Table 12 Impact of DS of the PSNP on Child Labour (hours spent in a typical day on work) and Education (highest grade completed and enrolment, time spent in a typical day on schooling and studying) by children of 15 years old in rural and urban areas (kernel matching).

Outcome	Rural+Urban			Rural			Urban		
	atk	S.E	T-stat	atk	S.E	T-stat	atk	S.E	T-stat
All children (N=568)									
Paid and unpaid work outside home	-0.106	0.253	-0.418	-0.144	0.496	-0.290	0.014	0.297	0.048
Unpaid work outside home	-0.191	0.191	-1.001	0.095	0.483	0.196	-0.068	0.202	-0.335
Paid work outside home	0.116	0.189	0.612	-0.238	0.105	-2.270	0.146	0.267	0.547
Domestic chores	-0.392	0.198	-1.975	-0.369	0.406	-0.909	-0.366	0.160	-2.280
Child care	-0.190	0.132	-1.438	0.198	0.313	-0.632	-0.149	0.093	-1.595
Child care and domestic chores	-0.582	0.236	-2.468	-0.568	0.503	-1.127	-0.515	0.227	-2.268
Total work	-0.657	0.322	-2.042	-0.711	0.428	-1.662	-0.437	0.368	-1.186
Schooling	0.386	0.289	1.332	0.610	0.502	1.215	0.246	0.370	0.665
Studying	-0.160	0.190	-0.846	0.086	0.295	0.292	-0.196	0.168	-1.163
Grade completed	0.293	0.271	1.082	0.845	0.605	1.397	-0.160	0.335	-0.477
Enrollment	0.028	0.025	1.143	0.097	0.060	1.652	-0.019	0.030	-0.633

For Rural and Urban	Girls (N=477)			Boys (N=494)		
Outcome	attk	S.E	T-stat	attk	S.E	T-stat
Girls (N=568)						
Paid and unpaid work outside home	0.080	0.256	0.312	-0.363	0.558	-0.652
Unpaid work outside home	0.114	0.165	0.687	-0.541	0.331	-1.646
Paid work outside home	-0.034	0.162	-0.207	0.229	0.404	0.567
Domestic chores	-0.582	0.329	-1.767	-0.194	0.172	-1.124
Child care	0.073	0.138	0.526	-0.449	0.302	-1.486
Child care and domestic chores	-0.509	0.331	-1.535	-0.643	0.376	-1.708
Total work	-0.429	0.397	-1.080	-0.955	0.528	-1.808
Schooling	0.663	0.357	1.859	0.039	0.510	0.076
Studying	-0.192	0.168	-1.147	-0.035	0.315	-0.110
Grade completed	0.674	0.384	1.755	0.216	0.428	0.505
Enrolment	0.055	0.023	2.382	-0.006	0.047	-0.117

For two tail test, T values for 1%, 5%, and 10% levels of significance are 2.576, 1.96, and 1.645 respectively;

ATTk=average treatment effect of the treated using kernel matching

5.1.4 The impact of Pension on child labour and schooling

The estimated impact of pension on child labor and schooling is assessed and the results are shown in Table 13. It shows pension is effective in reducing child labor and enhancing child education. Pension reduces child time spent on combined paid and unpaid outside home by 0.563 hours per day and unpaid work outside home by 0.472 hours per day. The child time spent on total work also reduced by 1.095 hours per day. Similarly pension increases child highest grade completed by 0.59 points and child enrolment by 6.3% as compared to child from control group.

For rural beneficiaries, the study shows pension reduces time spent on paid work outside home by 0.44 hours per day and total work by 1.92 hours per day. With respect education, pension increases child school enrolment by 23.8% and highest grade completed by 1.72 grade. Similarly, for urban child pension increases child school enrolment rate by 3.8% significantly. .

Upon further disaggregation, I found that pension reduces for Girls, the time spent on paid and unpaid work by 0.626 hours per day and increase school enrolment rate by 5.2%. It increases time spent on study for girls by 0.376 hours per day. Similarly, for boys, pension reduces time spent on combined paid and unpaid by 0.81 hours per day and unpaid alone by 0.545 hours. It also increases highest grade completed by 0.996 grade and enrolment rate by 8.6% for boys from beneficiary's households as compared to non-beneficiaries. Surprisingly, pension reduces boys time spent on total work by 1.97 hours per day.

Table 13 Impact of Pension on child labour (hours spent in a typical day on work) and Education (highest grade completed and enrolment rate, time spent in a typical day on schooling and studying) by children of 15 years old in rural and urban areas (kernel matching).

Outcome	Rural+Urban			Rural			Urban		
	attk stat	S.E	T-	attk stat	S.E	T-	attk stat	S.E	T-
All children (N=568)									
Paid and unpaid work outside home	-0.563	0.221	-2.551	-1.275	0.906	-1.407	-0.278	0.264	-1.054
Unpaid work outside home	-0.472	0.157	-2.995	-0.921	0.744	-1.237	-0.141	0.177	-0.797
Paid work outside home	0.127	0.174	-0.729	-0.443	0.186	-2.378	-0.132	0.174	-0.758
Domestic chores	-0.018	0.216	-0.084	0.351	0.679	0.517	0.086	0.277	0.311
Child care	-0.478	0.551	-0.868	-0.905	1.042	-0.868	0.027	0.196	0.138
Child care and domestic chores	-0.497	0.606	-0.819	-0.554	1.077	-0.514	0.082	0.261	-0.316
Total work	-1.095	0.632	-1.734	-1.918	1.138	-1.686	-0.355	0.321	-1.107
Schooling	-0.291	0.616	-0.473	-0.220	1.215	-0.181	-0.117	0.271	-0.433
Studying	-0.260	0.561	-0.463	-1.251	1.219	-1.027	0.092	0.205	0.452
Grade completed	0.589	0.302	1.953	1.719	0.669	2.568	0.309	0.334	0.925
Enrollment	0.063	0.016	4.025	0.238	0.054	4.397	0.038	0.013	2.824

For Rural and Urban	Girls (N=477)			Boys (N=494)		
Outcome	attk stat	S.E	T-	attk stat	S.E	T-
Paid and unpaid work outside home	-0.626	0.397	-1.775	-0.810	0.424	-1.909
Unpaid work outside home	-0.221	0.190	-1.167	-0.545	0.287	-1.899
Paid work outside home	-0.405	0.280	-1.445	-0.358	0.423	-0.847
Domestic chores	0.108	0.336	0.322	-0.069	0.235	-0.295
Child care	0.059	0.175	0.334	-0.998	0.938	-1.064
Child care and domestic chores	0.167	0.292	0.571	-0.067	1.046	-1.020
Total work	-0.459	0.495	-0.929	-1.970	0.048	-1.880
Schooling	-0.052	0.396	-0.132	-0.411	1.012	-0.406
Studying	0.376	0.234	1.650	-0.871	1.185	-0.735
Grade completed	0.172	0.375	0.458	0.996	0.404	2.467
Enrolment	0.052	0.021	2.469	0.086	0.026	3.350

For two tail test, T values for 1%, 5%, and 10% levels of significance are 2.576, 1.96, and 1.645 respectively;

ATTk=average treatment effect of the treated using kernel matching

5.2 Discussion

The study reveals that PW effective in increasing school enrolment for girls and boys of participating households though it was not designed mainly for benefit of children. PW increases boys and girls labor of beneficiaries households as compared to non-beneficiaries through increasing time spent on paid work and unpaid work respectively. This likely because child directly involved in PW or substitute adults, particularly, the effect of PW on paid work were evident for boys due to cultural division of labor by gender.

Similar to the previous study conducted by Woldehanna(2009) this study shows that PW increases the amount of time spent on some work for both boys and girls. This shows that the substitution effect dominate the income effect. In contrast to his finding, PW has no effect child care and household chores while increased boys and girls school enrolment.

Portar and Durnan (2010) have revealed in Ethiopia and India there is evidence that public works schemes increases the work demands on children, either directly or through children substituting for adults in the household who are involved in the program.

They summarized as follows

“Households perceived benefits of various programmes also showed that the most common response was ‘more food’ for the child and Very few households cited less time spent on work or chores. In fact, some clearly felt that the labour demands of the PSNP mean that children need to sacrifice their time and energy for domestic work instead of studying or playing. Furthermore, the practice of children labouring on public works existed in at least three of the four research Sites. Also, some respondents, including teachers, stated that PSNP activities and increased household demand for child labour (as substitutes in domestic or public works) have negatively affected children’s educational participation and performance”(Portar and Durrnan,2010).

The effect of EGS on child outcome is similar to PW increasing hours devoted to paid work for boys and unpaid for girls. Besides EGS also enhances girls enrolment. Unlike PW, EGS has no significant impact on boys education. This is possible because PW transfers are in both in cash

and kind while EGS beneficiaries receive mostly in kind which in turn favour girls schooling not for boys according to gender social division of labour. This is supported by the following study Heissler and Porter (2010) “*show for the older cohort that work is divided in gendered and age related ways, with boys spending more time on agricultural work either for the household or externally, and girls spending more time on household chores and caring for other household members.*”

The study revealed that participating in DS significantly reduces child labour and enhances schooling as compared to child from non-beneficiaries households. DS reduces child labour through reducing the time devoted on child care and domestic chores and with net on total work by (0.71 hours per day). It also increases child school enrolment by 6.8%. DS reduces time devoted to any activities by 40 minute per a typical day for children for both urban and rural resides. For girls it reduced time spent domestic chores in turn increases time devoted on schooling. Besides enhances grade completed and enrolment rate. For boys DS reduced time spent on unpaid, child care and domestic chores with net effect on total work. This may be because DS doesn't require labour and has only income effect. However, on the effect of DS on girls education is contrast to Woldehanna(2009) finding which showed DS increase the grade completed for boys but no effect on girls.

When disaggregated by place of residence, the results favor rural particularly increase child school enrolment. For rural it reduces time spent on paid work outside home and on total work while for urban reduces time spent on child care and domestic chores. This likely that rural child is less likely to go to school due to liquid constraint than urban. The increase in school enrolment of children due to PSNP (PW and DS) is supported by Emirie et al. (2009) used qualitative methods in a subset of Young Lives sites found and stated as follows

“PSNP participants have started to send their children to school, instead of sending them to rich farmers for farm wage employment as a result of income they get from PSNP”(As cited by Portar and Durman,2010).

Pension has positive impact on child welfare outcome through reducing child labour and enhances grade completed and enrolment rate. Pension reduces hours spent on paid and unpaid

work outside home through net effect reduction on total work by 1 hour and 5 minutes per typical day for child from beneficiary households and increases grade completed by 0.59 grade and school enrolment rate by 6.3%. For rural beneficiaries pension significantly reduces time spent on paid work and on total work while for urban no significant effect child labour but increases child enrolment rate.

With respect to gender for girls pension are effective in increasing time spent on study and grade completed in turn reduce hours on paid and unpaid work. For boys significantly reduce time spent on total work almost by 2 hours per typical day and increases highest grade completed by 1 grade and enrolment rate by 9% .Similarly the study in South Africa showed that pension reduce hours spent on work and enhance schooling though explicitly not targeted to the benefit of child (Edmonds ,2006).However, the impact of DS and pension on education seems in contrast to the view of Feszbein and Schady (2009) *“They suggest that the impact on school attendance would have been smaller if the CCTs hadn’t included the explicit conditions”*.

5.3 Conclusion and Recommendation

5.3.1 Conclusion

The importance of Social protection programmes aim in improving child welfare has been well established and documented. However, on one hand public work programs, such as the one in the PSNP also increase demand for household labor time, which may undermine these goals as children are needed to substitute for other labor sources in the household. Similar only the implicitly objective of social protection unconditional and pension programmes are not well documented.

This study identifies different impact of social protection programmes on child labour and schooling using data from Young lives survey after long operation of the programmes. Thus, this study drive the following conclusions based on its investigations.

1. The public work programme increases the participation of boys on paid work and unpaid work for girls. During design of social protection the unintended effect of should be taken

into consideration. But the impact of PW programme in terms of child welfare is better than the previous EGS. Besides, the study reveals PW increases school enrollment of both boys and girls.

2. The study found that participation in EGS has insignificant effects on school enrolment and grade completed. But for girls, it increases time devoted to unpaid work outside home and for boys, it increases time spent on paid work. This suggests that PW is better than EGS program to improve child welfare.
3. DS has positive and significant impact on schooling and child labor. It helps to increase girls schooling and reduce domestic work, where in Ethiopia domestic work load is one of the most hindering girls education. In rural areas, it reduces also children time spent on total work pressure and paid work outside home, where child labor participation is high in agriculture. On the top of that, it cuts for urban children the time they spent on domestic chores and child care.
4. Pension also reduces time devoted on total work for boys, increases grade completed and enrolment. Besides for girls increases time spent on study and also enhances school enrolment which in turn will help the country to fulfill the Millennium goals of universal primary education for all and elimination of child labour.
5. The findings in this paper suggest that timely and urgent policy interventions might be needed to address the issue of PWP significantly increases child labour, may be either create awareness among the beneficiaries by using social workers or monitor regularly.

5.3.2 Recommendation

1. Direct support program coverage has to be increased than public work program for welfare of the children
2. Policy makers may consider Child labour (no child will participate) as conditional to reduce the negative impact of public work on child welfare.
3. The government has to progressively introduce universal pension not only for benefit of pension eligible but also to improve welfare of the children.

References

- Amarante, V., M. Ferrando and A. Vigorito (2011) School Attendance, Child Labor and Cash Transfer. An Impact Evaluation of PANES: PIERE Working Paper 2011-22, Poverty Economic and Policy (PEP) Research Network, Uruguay.
- Assefa, A. 2002. Allocation of Children's Time Endowment between Schooling and Work in Rural Ethiopia, ZEF Discussion Papers on Development Policy no.44. Bonn.
- Astatike, B. (2003) Child Domestic Work in Ethiopia: An Empirical Investigation, School of Graduated Studies: Department of Economics, Addis Ababa University.
- Basu, K. and P.H. Van. 1998. The Economics of Child Labor. *American Economic Review* 88(3): 412-427.
- Behrman, Jere R. and J.C. Knowles. 1999. "Household Income and Child Schooling In Vietnam." *World Bank Economic Review* 13(2): 211-56.
- Bissell, S. (2009) Child Labour and Social protection –some Key Consideration; European Forum on the Right of Children Protection, UNICEF, Brussels.
- Blundell, R. and M.C. Dias, 2002. Alternative Approaches to Evaluation in Empirical Microeconomics: University College London and Institute for Fiscal Studies, Department of Economics, UCL, cemmap working paper CWP10/02.
- Caliendo, M. and S. Kopeinig (2005) Some Practical Guidance for the Implementation of Propensity Score Matching: discussion paper No.1588, IZA, Bonn.
- Central Statistical Agency (2002) Ethiopia Child Labour Survey 2001, Statistical Bulletin 262, Addis Ababa: CSA
- Central Statistics Agency (2004), Welfare Monitoring Survey, Central Statistical Authority, Ethiopia.
- de Janvry, A., F. Federico, S. Elisabeth and V. Renos, 2006. Can Conditional Cash Transfer

Programmes Serve as Safety Nets in Keeping Children at School and from Working when Exposed to Shocks?’, *Journal of Development Economics* 7.2: 349-73.

Diallo, Y., F.Hagemann, A.Etienne, F.Mehran, Y.Gurbuzer,2010. Global child labour development; measuring trends from 2004 to 2008: International Labour Office, International Programme on the Elimination of Child Labour (IPEC) – Geneva: ILO, 2010 – 1 v. Geneva, ILO.

Edmonds,E ,2004. Does Illiquidity Alter Child Labour and Schooling Decisions? Evidence from Household Responses to Anticipated Cash Transfers in South Africa, NBER Working. Paper 10265, Cambridge, MA: National Bureau of Economic Research

_____.2005. Child Labour and Schooling Responses to Anticipated Income in South Africa, Forth coming *Journal of Development Economics* Department of Economics Dartmouth College and NBER.

_____.2006. Child Labour and Schooling Responses to Anticipated Income in South Africa, *Journal of Development Economics* 81.2: 386–414.

Emirie,.G, W. Negatu, and D. Getachew ,2009. Impacts of Productive Safety Net Programme on Child Poverty Reduction: Implications for Child Education, *Young Lives IDRC Paper*.

Farrington,.J and S.Rachel,2006. Introduction - Cash Transfers: Panacea for Poverty Reduction or Money Down the Drain?, *Development Policy Review* 24.5: 499-511

Fiszbein.A and N.Schady, 2009 Conditional Cash Transfers: Reducing Presents and Future Poverty. World Bank Policy Research Report; Washington, D.C.: The World Bank.

Gahlaut.A, 2011. An Analysis of the Juntos Cash Transfer Programme in Peru, with Special Emphasis on Child Outcomes: Young Lives Student Paper

Gilligan,.D.O., J.Hoddinott, and A.S.Taffesse,2006. The impact of Ethiopia’s Productive Safety Net Programme and its linkages. *Forthcoming, Journal of Development Studies*.

_____.2008.The impact of Ethiopia’s Productive Safety Net Programme and its linkages. IFPRI Discussion Paper 00839, NW Washington, D.C.

Gilligan, D.O., J.Hoddinott, N.R.Kumar, and A.S.Taffesse, 2009. An Impact Evaluation of Ethiopia's Productive Safety Nets Program. International Food Policy Research Institute 2033 K Street, NW Washington, D.C.

Heckman, J.J., H. Ichimura, and P.E. Todd. 1997. Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Program. *Review of Economic Studies* 64: 605-654.

_____. 1998. Matching as an Econometric Evaluation Estimator. *Review of Economic Studies* 65: 261-294.

Heissler, K. and C. Porter, 2010. Children's Contributions to the Household Economy: Evidence from Ethiopia', forthcoming Young Lives Working Paper, Oxford: Young Lives.

Hoddinott, J., D. O. Gilligan and A. S. Taffesse (2009) The Impact of Ethiopia's Productive Safety Net Program on Schooling and Child Labor. *Journal of Development Studies*, vol. 45(10), pages 1684-1706.

ILO, 2010. Effects of non-contributory social transfers in developing countries: A compendium/International Labour Office, Social Security Department- Geneva. ILO.

_____, 2010. The Fight Against Child Labour: Moving into Higher Gear, World of Work; The Magazine of the ILO.

ISSA (2008) Dynamic Social Security for Africa: An Agenda for Development, Development and Trends, Geneva. www.issa.int

Lieten, G. K., 2006. Child Labour: What Happened to the Worst Forms? -Economic and Political Weekly 41(2): 103-107.

López, C., and L. Felipe, 2001. Child Labour: Myths, Theories and Facts', *Journal of International Affairs* 55.1: 1083-119.

Ministry of Agriculture and Rural Development,2006. Productive Safety Net Programme: Programme Implementation Manual (Revised), Addis Ababa: Ministry of Agriculture and Rural Development.

Ministry of Education, 2011.Education Statistical Annual Abstract (2010/2011), Addis Ababa: MOE,EMIS. www.moe.gov.et

Ministry of Finance and Economic Development, 2012. Ethiopia's Progress towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11).Addis Ababa: Development Planning and Research Directorate, MoFED

Orkin, K., 2012.Are Work and Schooling Complementary or Competitive for Children in Rural Ethiopia? A Mixed-methods Study, Young Lives Working Paper No.77, University of Oxford.

OECD, 2009. Social Protection, Poverty Reduction and Pro-Poor Growth: Promoting Pro-poor Growth: Social Protection, OECD, Paris.

Porter,.C. and P.Dorman,2010.Social Protection and Children: A Synthesis of Evidence from Young Lives Longitudinal Research in Ethiopia, India and Peru, Young Lives Working Paper, University of Oxford.

Rosenbaum, P.R. and D.B. Rubin, 1983. The Central Role of the Propensity Score in Observational Studies for Causal Effects, *Biometrika* 70.1: 41-55.

Rubin, D. B.(1978). Bayesian Inference for Causal Effects: The Role of Randomization. *Annals of Statistics*, 6, 34.58.

Sabates-Wheeler R. and L. Haddad , 2005. Reconciling Different Concepts of Risk and Vulnerability: A Review of Donor Documents, Institute of Development Studies (IDS), University of Sussex, Brighton, www.oecd.org/dataoecd/33/60/36570676.pdf.

Schady,.N. and M.C. Araujo, 2006. Cash Transfers, Conditions, School Enrolment and Child

Work: Evidence from a Randomised Experiment in Ecuador, *Policy Research Working Paper Series* 3930, Washington DC: World Bank.

Senbet, D. 2010. Determinants of Child Labour versus Schooling in Rural Ethiopia *European Journal of Social Sciences – Vol.17 (3):414-425.*

Smith, J., and P. Todd, 2005. Does Matching Overcome LaLonde's Critique of Nonexperimental Estimators? *Journal of Econometrics*, 125(1-2), 305-353.

SSA, 2011. Social Security through the World: Africa, Office Research, Evaluation, and Statistics: SSA Publication No.13-11803, Washington D.C.

Subbarao, K. and J. Smith, 2003. What Role for Safety Nets? Transfers in Very Low Income Countries? Social Protection Discussion Paper Series No. 030, Social Protection Unit, Human Development Network. Washington, D.C.: The World Bank.

Townsend, P., 2010. Building Decent Societies, London: ILO / Palgrave

UNICEF, 2007. The Impact of Social Cash Transfers on Children Affected by HIV and AIDS; Evidence from South Africa, Malawi and Zambia Study Commissioned by UNICEF ESARO Bernd Schubert, Team Consult, Lilongwe.

Uppal, V., 2009. Is the NREGS a Safety Net for Children? *Young Lives Student Paper* University of Oxford.

USAID, 2012. The Education Alternative: Front Lines, USAID, Ethiopia.

Williams, J.M., 2007. The Social and Economic Impacts of South Africa's Child Support Grant Economic Policy Research Institute Working Paper #40 www.epri.org.za.

Wiseman, W., J. van Domelen and S. Coll-Black, 2010. Designing and implementing a rural safety net in a low income setting: Lessons Learned from Ethiopia's Productive Safety Net Program 2005-2009, draft paper. World Bank. Washington D.C.

Woldehanna, T., 2009. Productive Safety Net Programme and Children's Time Use between Work & Schooling in Ethiopia", Young Lives Working Paper 40.

Yablonski, J. and T. Woldehanna, 2008. Policy Brief Based on the Forthcoming Young Lives. Working Paper: Employment Generation Schemes and Children's Time Use between Work and Schooling. University of Oxford: Young Lives.

Yap, Y., G. Sedlacek and P. Orazem. 2002. Limiting Child Labor Through Behavior-Based Income Transfers: An Experimental Evaluation of the PETI Program in Rural Brazil.

Washington, DC, United States: Inter-American Development Bank. Mimeographed document.

Appendix A
Deceptive Statistics

Table 5.1A Dropout, not attending for more than one week and primary grade completion

Outcome Variable	Between 2002 and 2006(%)	Between 2006 and 2009(%)
Dropout rate	2.5%	8%
Missed for more than one week	14%	13%
Rural dropout rate	3%	12%
Urban dropout rate	2%	4%
Girls dropout rate		7%
Boys dropout rate		9%
Primary grade completion rate(grade 8)		20%

Source: Young Lives Dataset; Own calculation

Table 5.2A Main Reason for dropout between 2006 and 2009

Activity	%
Needed for domestic or agricultural work or family business	22%
Had to do paid work to earn money	18%
Illness, injury or family issues	17%
Books, uniform and others expensive	16%
Banned or didn't want to go school	10%
Others	17%

Source: Young Lives Dataset; Own calculation

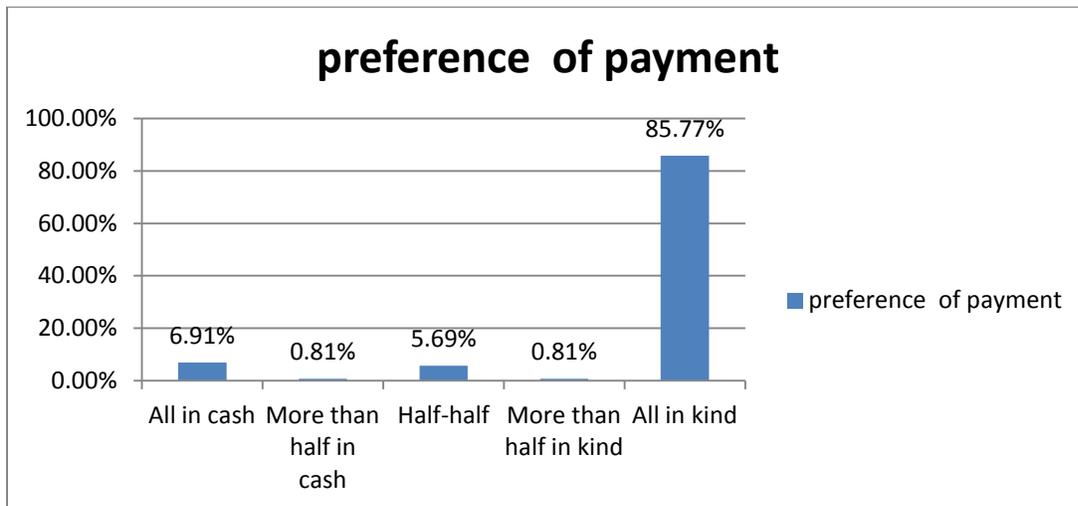
Table 9.1A. The most important immediate effect of graduation of the PSNP

Effect	Percent
Graduated(%)	2.4
Lost income	25.0
Higher food insecurity	41.7

No consequence	33.3
Total	100.0

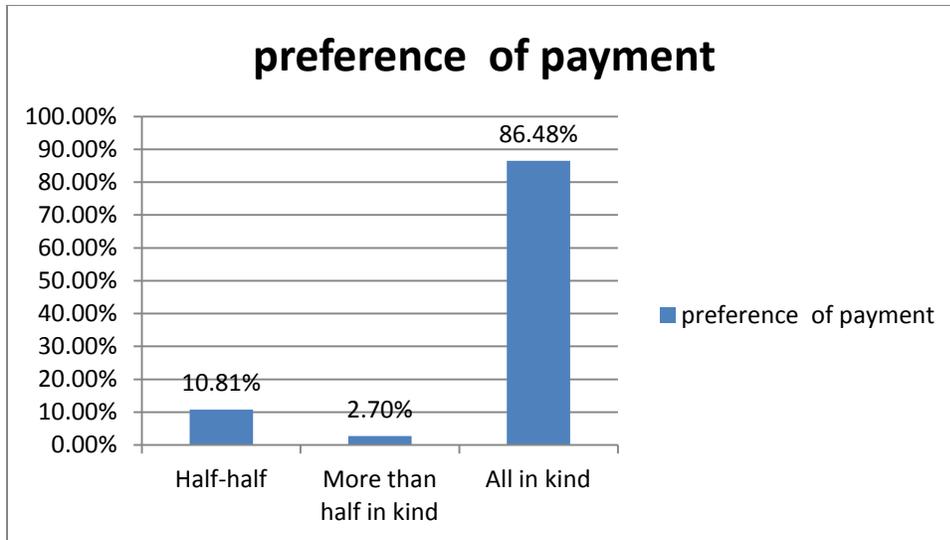
Source: Young Lives Dataset; Own calculation

Figure 9.2A. Proportion of payment for public work beneficiaries prefer to receive in cash or in kind.



Source: Young Lives Dataset; Own calculation

Figure 9.2A. Proportion of payment for direct support beneficiaries prefer to receive in cash or in kind.



Source: Young Lives Dataset; Own calculation

Appendix B

Results of Smoothed Kernel density graphs

Figure 10. Smoothed Kernel density graphs of the predicted d propensity scores for receiving Public Work for rural sample

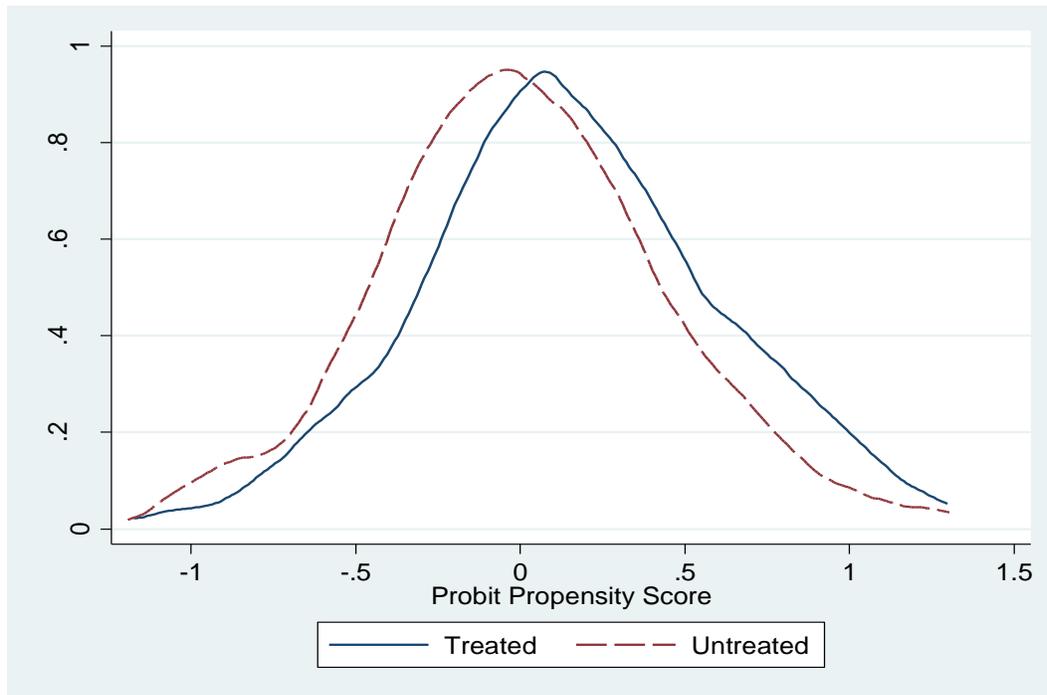


Figure 11. Smoothed Kernel density graphs of the predicted propensity scores for receiving Employment Generation Scheme (EGS) for rural sample

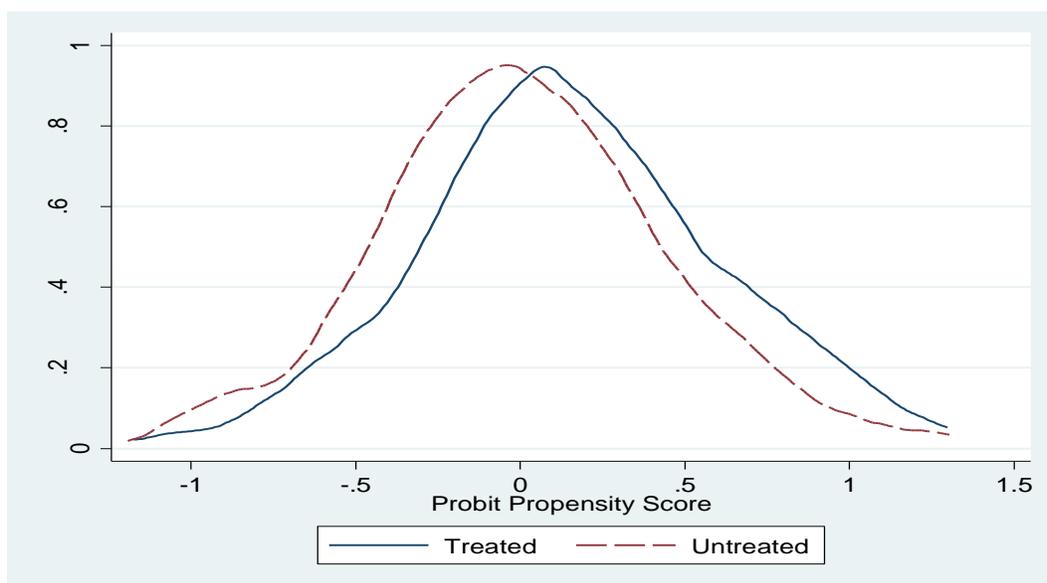


Figure12. Smoothed Kernel density graphs of the predicted propensity scores for receiving Direct Support for urban and rural sample

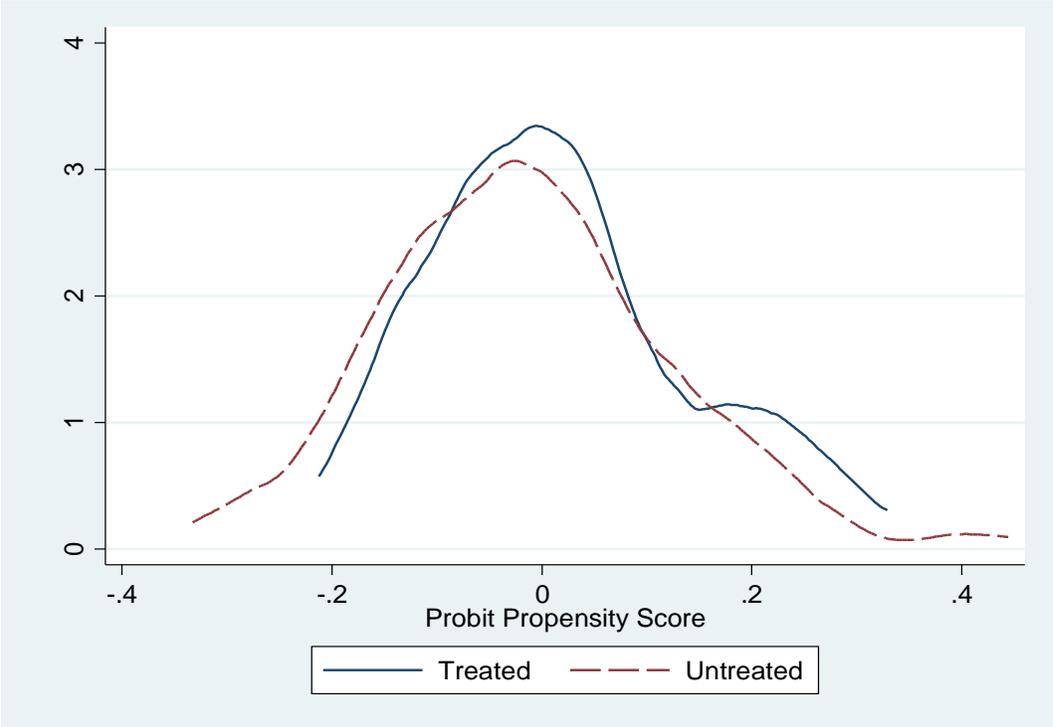
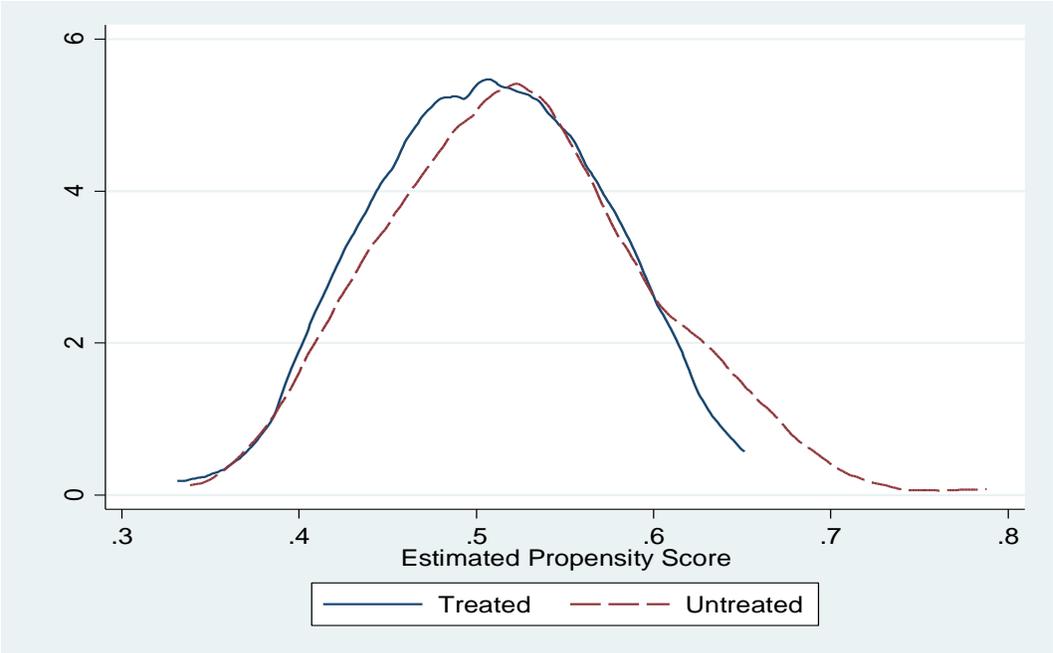


Figure13. Smoothed Kernel density graphs of the predicted propensity scores for receiving Pension for urban and rural sample



Appendix C
Results of Propensity Score Regression

Table 10C: First stage Probit regression (propensity score) of Public work in rural areas

```

-----
three_psn~32 |   Coef.  Std. Err.   z   P>|z|   [95% Conf. Interval]
-----+-----
      boys |   .170485   .1517079   1.12  0.261   -.1268571   .4678271
three_chil~e | -.0153225   .0216443  -0.71  0.479   -.0577445   .0270995
  one_schkid | -.2046013   .0858321  -2.38  0.017   -.372829   -.0363735
one_asset_~x | -.3166764   1.332156  -0.24  0.812   -2.927654   2.294301
  one_tlu | -.2329364   .0340027  -6.85  0.000   -.2995805   -.1662922
asset_2002~q | -1.555753   2.41862  -0.64  0.520   -6.296162   3.184656
one_wealth~q |  4.364479   4.716847   0.93  0.355   -4.88037   13.60933
two_sh_pri~2 | .2987693   .1771737   1.69  0.092   -.0484847   .6460233
two_s~hMoth1 | .3223782   .6002458   0.54  0.591   -.854082   1.498838
one_phychn~1 | .0659268   .1821813   0.36  0.717   -.291142   .4229956
  one_hhfood1 | .3585436   .2093325   1.71  0.087   -.0517405   .7688278
one_hhlstck1 | .0551107   .1785142   0.31  0.758   -.2947707   .4049921
  one_hhcrps1 | .5327982   .2145773   2.48  0.013   .1122344   .953362
one_hhdeath1 | -.1496553   .2346248  -0.64  0.524   -.6095115   .3102009
  one_hhjob1 | .6202403   .2467965   2.51  0.012   .1365281   1.103952
  one_hhill1 | -.0696234   .2116879  -0.33  0.742   -.484524   .3452772
one_hhbirth1 | -.2799987   .2541759  -1.10  0.271   -.7781744   .2181769
  one_food1 | -.3244631   .1813791  -1.79  0.074   -.6799596   .0310333

```

```

two_s~hFath2 | .6095008 .3538608 1.72 0.085 -.0840538 1.303055
two_s~sFath2 | -.2516702 .225615 -1.12 0.265 -.6938675 .1905272
two_s~sMoth2 | -.1592172 .207967 -0.77 0.444 -.5668251 .2483906
two_sh_de~k2 | .0273086 .1712436 0.16 0.873 -.3083226 .3629399
DepdeRatio | -.3211938 .1289888 -2.49 0.013 -.5740071 -.0683805
agecare | .0104438 .010711 0.98 0.330 -.0105493 .0314369
region2 | -1.649891 .2455667 -6.72 0.000 -2.131193 -1.168589
region3 | -1.283436 .2440539 -5.26 0.000 -1.761773 -.8050988
region4 | -2.49124 .3158055 -7.89 0.000 -3.110207 -1.872273
hdsex2 | -.4452006 .4155836 -1.07 0.284 -1.259729 .3693283
evtchk2 | -.0331735 .3206483 -0.10 0.918 -.6616327 .5952858
evtchk3 | -.7060214 .3731248 -1.89 0.058 -1.437333 .0252898
two_longte~2 | .2295797 .357773 0.64 0.521 -.4716424 .9308018
partner4 | .1810557 .5278333 0.34 0.732 -.8534786 1.21559
partner2 | .0198128 .4514891 0.04 0.965 -.8650897 .9047152
headschi | -.7664077 .2880346 -2.66 0.008 -1.330945 -.2018702
_cons | 4.742051 3.999425 1.19 0.236 -3.096678 12.58078

```

Number of obs = 491

LR chi2(34) = 266.56

Prob > chi2 = 0.0000

Pseudo R2 = 0.4073

Log likelihood = -193.93497

Source:Young Lives own calculation

See table 14c below for Description of the variables

Table 11C: First stage Probit regression (propensity score) of EGS in rural and urban areas

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
three_ps2~31						
three_chil~e	-.0153225	.0216443	-0.71	0.479	-.0577445	.0270995
boys	.170485	.1517079	1.12	0.261	-.1268571	.4678271
one_schkid	-.2046013	.0858321	-2.38	0.017	-.372829	-.0363735
one_asset_~x	-.3166764	1.332156	-0.24	0.812	-2.927654	2.294301
one_tlu	-.2329364	.0340027	-6.85	0.000	-.2995805	-.1662922
asset_2002~q	-1.555753	2.41862	-0.64	0.520	-6.296162	3.184656
one_wealth~q	4.364479	4.716847	0.93	0.355	-4.88037	13.60933
two_sh_pri~2	.2987693	.1771737	1.69	0.092	-.0484847	.6460233
two_s~hMoth1	.3223782	.6002458	0.54	0.591	-.854082	1.498838
one_phychn~1	.0659268	.1821813	0.36	0.717	-.291142	.4229956
one_hhfood1	.3585436	.2093325	1.71	0.087	-.0517405	.7688278
one_hhlstck1	.0551107	.1785142	0.31	0.758	-.2947707	.4049921
one_hhcrps1	.5327982	.2145773	2.48	0.013	.1122344	.953362
one_hhdeath1	-.1496553	.2346248	-0.64	0.524	-.6095115	.3102009
one_hhjob1	.6202403	.2467965	2.51	0.012	.1365281	1.103952
one_hhill1	-.0696234	.2116879	-0.33	0.742	-.484524	.3452772
one_hhbirth1	-.2799987	.2541759	-1.10	0.271	-.7781744	.2181769
one_food1	-.3244631	.1813791	-1.79	0.074	-.6799596	.0310333
two_s~hFath2	.6095008	.3538608	1.72	0.085	-.0840538	1.303055
two_s~sFath2	-.2516702	.225615	-1.12	0.265	-.6938675	.1905272
two_s~sMoth2	-.1592172	.207967	-0.77	0.444	-.5668251	.2483906
two_sh_de~k2	.0273086	.1712436	0.16	0.873	-.3083226	.3629399

DepdeRatio		-.3211938	.1289888	-2.49	0.013	-.5740071	-.0683805
agecare		.0104438	.010711	0.98	0.330	-.0105493	.0314369
region2		.841349	.2696534	3.12	0.002	.3128381	1.36986
region3		1.207804	.2724073	4.43	0.000	.6738959	1.741713
region5		2.49124	.3158055	7.89	0.000	1.872273	3.110207
hdsex2		-.4452006	.4155836	-1.07	0.284	-1.259729	.3693283
evtchk2		.6728479	.2894169	2.32	0.020	.1056013	1.240095
evtchk1		.7060214	.3731248	1.89	0.058	-.0252898	1.437333
two_longte~2		.2295797	.357773	0.64	0.521	-.4716424	.9308018
partner4		.1810557	.5278333	0.34	0.732	-.8534786	1.21559
partner2		.0198128	.4514891	0.04	0.965	-.8650897	.9047152
headschi		-.7664077	.2880346	-2.66	0.008	-1.330945	-.2018702
_cons		1.54479	3.992999	0.39	0.699	-6.281344	9.370924

Number of obs = 491

LR chi2(34) = 266.56

Prob > chi2 = 0.0000

Pseudo R2 = 0.4073

Log likelihood = -193.93497

Source:Young Lives own calculation

Table 12C: First stage Probit regression (propensity score) of Direct Support in rural and urban areas

```

-----
three_drs~32 |   Coef. Std. Err.   z  P>|z|   [95% Conf. Interval]
-----+-----
three_chil~e | -.054946   .02104   -2.61  0.009   -.0961836   -.0137084
      boys | .0278511  .1446925   0.19  0.847   -.2557411   .3114432
one_schkid | -.011414   .0251973  -0.45  0.651   -.0607999   .0379719
one_asset_~x | 1.333131   .8262244   1.61  0.107   -.2862387   2.952501
      one_tlu | -.1525352  .0380413  -4.01  0.000   -.2270947   -.0779756
asset_2002~q | -1.833175  .7731684  -2.37  0.018   -3.348557   -.3177932
one_wealth~q | 2.144871   1.812782   1.18  0.237   -1.408117   5.69786
two_sh_pri~2 | -.1539103  .1779051  -0.87  0.387   -.5025978   .1947773
two_s~hMoth1 | .2001346   .4186857   0.48  0.633   -.6204744   1.020744
one_phychn~1 | -.0586135  .2433587  -0.24  0.810   -.5355878   .4183608
one_hhfood1 | .4213529  .2167355   1.94  0.052   -.0034409   .8461467
one_hhlstck1 | -.0997156  .2314686  -0.43  0.667   -.5533858   .3539546
one_hhcrps1 | .1586918  .2332356   0.68  0.496   -.2984417   .6158252
one_hhdeath1 | -.1880387  .2506482  -0.75  0.453   -.6793002   .3032227
      one_hhjob1 | .0156356  .2215589   0.07  0.944   -.4186118   .449883
      one_hhill1 | .7128553  .1981104   3.60  0.000   .324566    1.101145
one_hhbirth1 | -.1246838  .2587974  -0.48  0.630   -.6319174   .3825499
      one_food1 | -.213173   .1724006  -1.24  0.216   -.551072    .1247261
two_s~hFath2 | .366986    .3142872   1.17  0.243   -.2490056   .9829777
two_s~sFath2 | -.4794915  .2439484  -1.97  0.049   -.9576215   -.0013614
two_s~sMoth2 | -.1596356  .1946771  -0.82  0.412   -.5411957   .2219245

```

```

two_sh_de~k2 | -.1477066 .211631 -0.70 0.485 -.5624957 .2670825
DepdeRatio | .0520729 .0701889 0.74 0.458 -.0854948 .1896406
agecare | .0006813 .0084868 0.08 0.936 -.0159525 .0173152
region2 | .0376944 .2188264 0.17 0.863 -.3911975 .4665863
region3 | .4122221 .2068163 1.99 0.046 .0068697 .8175746
region5 | .6645177 .2545516 2.61 0.009 .1656056 1.16343
hdsex2 | -.0660734 .290769 -0.23 0.820 -.6359702 .5038234
evtchk2 | .4995087 .2788259 1.79 0.073 -.04698 1.045997
evtchk1 | .897389 .3106644 2.89 0.004 .2884979 1.50628
two_longte~2 | -.2066185 .3803848 -0.54 0.587 -.952159 .5389219
partner4 | .4893565 .3581713 1.37 0.172 -.2126464 1.191359
partner2 | .3251253 .3463973 0.94 0.348 -.3538009 1.004051
headschr1 | .0931199 .1804496 0.52 0.606 -.2605547 .4467946
_cons | 7.990006 3.890277 2.05 0.040 .3652034 15.61481

```

Number of obs = 605

LR chi2(34) = 113.45

Prob > chi2 = 0.0000

Pseudo R2 = 0.2130

Log likelihood = -209.60855

Source:Young Lives own calculation

Table 13C: First stage Probit regression (propensity score) of Pension in rural and urban areas

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
pens_32						
boys	.2374805	.1716013	1.38	0.166	-.0988518	.5738128
three_chil~e	.0211277	.0244438	0.86	0.387	-.0267813	.0690367
one_schkid	.008242	.0180163	0.46	0.647	-.0270692	.0435532
one_asset~x	3.927887	1.246471	3.15	0.002	1.484849	6.370926
one_tlu	-.037859	.041177	-0.92	0.358	-.1185644	.0428464
asset_2002~q	-3.122766	1.080968	-2.89	0.004	-5.241425	-1.004106
one_wealth~q	.3342265	1.953908	0.17	0.864	-3.495363	4.163816
two_sh_pri~2	.0864457	.2197798	0.39	0.694	-.3443147	.5172061
one_phychn~1	.1412647	.297064	0.48	0.634	-.44097	.7234994
one_hhfood1	.2262296	.2495981	0.91	0.365	-.2629737	.715433
one_hhlstck1	.070685	.2854138	0.25	0.804	-.4887157	.6300858
one_hhcrps1	-.4458856	.2747297	-1.62	0.105	-.984346	.0925747
one_hhdeath1	.1707282	.285822	0.60	0.550	-.3894726	.7309289
one_hhjob1	.1231878	.2491996	0.49	0.621	-.3652344	.61161
one_hhill1	-.0458439	.2314779	-0.20	0.843	-.4995323	.4078445
one_hhbirth1	-.3884609	.3338858	-1.16	0.245	-1.042865	.2659432
one_food1	-.1834386	.2128566	-0.86	0.389	-.6006298	.2337527
two_s~hFath2	.1140369	.3791117	0.30	0.764	-.6290084	.8570822
two_s~sFath2	-.0802406	.2776132	-0.29	0.773	-.6243524	.4638713
two_s~sMoth2	-.2699227	.2535757	-1.06	0.287	-.766922	.2270766
two_sh_de~k2	.2352776	.2444417	0.96	0.336	-.2438194	.7143745
DepdeRatio	.0265442	.0766438	0.35	0.729	-.1236748	.1767632
agecare	.0013725	.0103472	0.13	0.894	-.0189077	.0216527
region2	-.1991972	.2962096	-0.67	0.501	-.7797573	.3813629
region3	-.8428606	.3663023	-2.30	0.021	-1.5608	-.1249212
region4	-.3215769	.2589127	-1.24	0.214	-.8290364	.1858826

```

region5 | -.1874059 .3088515 -0.61 0.544 -.7927437 .4179319
hdsex2 | -.1055778 .3420619 -0.31 0.758 -.7760067 .5648512
evtchk2 | .0400284 .2842327 0.14 0.888 -.5170574 .5971143
evtchk3 | .0165061 .3517509 0.05 0.963 -.672913 .7059251
two_longte~2 | -.3490885 .4991997 -0.70 0.484 -1.327502 .6293249
partner4 | .3592561 .4098727 0.88 0.381 -.4440796 1.162592
partner2 | -.5476953 .552342 -0.99 0.321 -1.630266 .5348752
headscl1 | -.2878064 .2138859 -1.35 0.178 -.7070151 .1314024
_cons | -5.862363 4.508951 -1.30 0.194 -14.69974 2.975018
Number of obs = 640
LR chi2(34) = 66.14
Prob > chi2 = 0.0008
Pseudo R2 = 0.1859
Log likelihood = -144.85338

```

Source:Young Lives own calculation

Table 14C: Description of the variable used

Variables Name	Description
Boys	Dummy for boys(1 if boy and 0 if girl)
three_childage	Child age
one_schkid	number of school aged children in household(round 1)
one_asset_2002_index	Asset index (2002)
one_tlu asset_2002_sq	livestock in TLU(2002)
one_wealth_2002_sq	Wealth index(2002)
two_sh_prinput2	Dummy for input price(round 2)
two_sh_deathMoth1	Dummy for death of mother(until round 2)
one_hhcrps1	Dummy for crop failure(round 1)
one_hhdeath1	Dummy for death of households members(round 1)

one_hhjob1	Dummy for job loss(round 1)
one_hhill1	Dummy for hh members illness(round 1)
one_hhbirth1	Dummy for new birth(round 1)
two_sh_deathFath2	Dummy for death of father(round 2)
two_sh_illnessFath2	Dummy for illness of father(round 2)
two_sh_illnessMoth2	Dummy for illness of mother(round 2)
two_sh_death_livesk2	Dummy for death of livestock(round 2)
DepdeRatio	Dependency ratio
one_food1	Dummy for food insecurity
agecare	Age of care giver
hdsex2	Household head sex(round 2)
headsck1	Household head education(round 1)
hdsex2	Household head education(round 2)
region2	Amhara region
region3	Oromia region
region4	SNNP region
region5	Tigray region

