Sayan Chakrabarty

Does Social Labeling Displace Child Labor and Increase Child Schooling? Evidence from Nepal

Cuvillier Verlag Göttingen

Does Social Labeling Displace Child Labor and Increase Child Schooling? Evidence from Nepal

Dissertation

Zur Erlangung des Grades eines
Doktors der Wirtschaftswissenschaften
(Doctor rerum politicarum)

Eingereicht dem
Fachbereich Wirtschaftswissenschaften
der Justus-Liebig-Universität Gießen

von
Sayan Chakrabarty
aus Sunamganj, Bangladesh.

Die Deutsche Bibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über http://dnb.ddb.de abrufbar.
1. Aufl. - Göttingen : Cuvillier, 2007
Zugl.: Gießen, Univ., Diss., 2006

978-3-86727-149-3

Tag der mündlichen Prüfung: 14 July, 2006

Referent: Prof. Dr. Hans-Rimbert Hemmer

Koreferent: Prof. Dr. Jürgen Meckl

Nonnenstieg 8, 37075 Göttingen
Telefon: 0551-54724-0
Telefax: 0551-54724-21
www.cuvillier.de

1. Auflage, 2007
Gedruckt auf säurefreiem Papier

978-3-86727-149-3

Sayan Chakrabarty

Does Social Labeling Displace Child Labor and Increase Child Schooling? Evidence from Nepal

The aplomb of finishing this Ph.D. thesis effulgently originated from the inspiration of my parents (Prof. Arun Kumar Chakrabarty and Mrs. Gouri Chakrabarty). This book is dedicated to my parents.

ACKNOWLEDGMENTS

I would like to express my sincere gratitude and appreciation to my supervisor Prof. Dr. Hans-Rimbert Hemmer (University of Giessen) for his valuable comments and continuous guidance during the whole phase of my thesis. Without his sincere guidance, this work would not have been possible in its present structure and form. Prof. Hemmer has enlightened me with his enormous knowledge on poverty alleviation in Less Developed Countries.

I would like to thank Prof. Dr. Jürgen Meckl (University of Giessen) for his interest on my research and findings. My kind gratitude to him for spending his valuable time to advise me. I would like to thank Prof. Dr. Klaus Frohberg (ZEF, University of Bonn) for his enormous support and sincere guidance. I was encouraged by Prof. Dr. Joachim von Braun (IFPRI, USA) who gave me first advice at ZEF in 2002.

I have been benefited a lot from Prof. Dr. Ulrike Grote (University of Hannover) throughout the research time. She also helped to check the final draft of my thesis. Prof. Dr. Arnab Basu (College of W & M, USA) helped me a lot by his expertise on the "child labor" issue.

I would like to express my heartiest gratitude to Mr. Guido Lüchters (ZEF, University of Bonn) for the enormous supports he provides me throughout the empirical research. This research could not be finished successfully without his encouragement and kind guidance.

I acknowledge the help of the concerned officials and experts of ILO & GTZ for providing support in the research field. I would extend my special thanks to Mr. Andreas Proksch (GTZ, Eschborn) for his sincere and kind help. I would like to extend my thanks to Mr. Guy Thijs and Mrs. Sherin Khan for inviting me to present my research findings at ILO, Geneva. The ILO-IPEC experts helped me a lot by providing valuable comments on the empirical results and methodology of my thesis. I am grateful to Dr. Ernst Kreuzaler (ILO), Mr. Hamid Tabatabai (ILO), Mr.Shengjie Li (ILO), Mr. H. S. Sujeewa Fonseka (ILO), Mr. Ronald Berghuys (ILO), Mr. H. Berger (ILO), Mr. Yacouba Diallo (ILO), Mrs. V. Gayathri (ILO), Mrs. Shova Maharjan (ILO), Dr. Dietrich Kebschull (IGEP, New Delhi), Mr. James

Jennings (UNICEF), Mr. Ashok Nigam (UNICEF), Mrs. Charlotte Addy (GTZ), Mr. Naresh P. Sharma (GTZ).

I express my kind regards to Dr. Günther Manske (ZEF, University of Bonn), who is always in my side whenever I need any official help. He gives me a lot of moral support. My special thanks to Mrs. Rosemarie Zabel at ZEF.

I am grateful to the scholars who reviewed preliminary research proposal, namely Prof. Dr. Debasis Bandyopadhyay (University of Auckland), Prof. Dr. Aidan Hollis (University of Calgary), Prof. Dr. Raj Dhruvarajan (University of Manitoba), Prof. Dr. Rezai Karim Khondker (SUST, Bangladesh), Prof. Dr. Arnab Basu (College of W & M, USA), Prof. Dr. Arjun Bedi (ISS, Netherlands), .

I would like to express kind thanks to Prof. Dr. Muhammed Zafar Iqbal (SUST, Bangladesh), Mr. Asaduzaman Noor (Dhaka, Bangladesh), Mr. Tawfique Ahmed (MRC-MODE, Dhaka), Mr. Laxman S. Kunwar (Kathmandu) , Mr. Y. B. Gurung (Kathmandu), Mr. Ajay S. Karki (RUGMARK), Mr. Narayan Bhattarai (RUGMARK), for their kind assistance in the field research.

I would like to convey my thanks to Prof. Dr. Bal Kumar KC (TU, Kathmandu) and Prof. Dr. Alok N. Sharma (New Delhi) for their enormous support in the filed research. I was greatly encouraged by the invitation of Prof. Dr. Ellen Goddard (University of Alberta) to present my thesis in the Economics of food and health conference.

I owe a lot of debt to the households of my targeted population who supported me to conduct this field research and advice me in designing the questionnaire. The best support I got from my enumerators in this endeavor.

My heartiest thanks to Arpita Chakraborty (my wife) for her encouragement in the whole period of my Doctoral study. She had been accompanying me the crucial time of writing the thesis and helped me formatting the thesis in Latex. I would also like to convey special thanks to my sister Lopa Chakrabarty for her mental support.

I am grateful to DAAD (German Academic Exchange Service) and German Ministry for Cooperation and Development (BMZ) for the financial support. I am sure, the experience and knowledge that I have achieved throughout the whole Doctoral study in Germany will flourish my future academic life.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

Introduction

1.1 Background of the Thesis

Child labor is a common phenomenon in developing countries and a debatable global issue. Most normative studies on child labor arrive at the conclusion that child labor is detrimental to social welfare (Maffei *et al.*, 2004). A normative statement concerning child labor always implies a value judgment. The value judgments concerning child labor may vary among different cultures. This might explain why child labor in some countries (especially in Africa) is not judged as "bad" by natives, while it seems to be harmful from the viewpoint of foreign observers. Besides, the stage of both social and economic development influences the way in which child labor is perceived. Even within a given society, value judgments can vary. In the developed countries, child labor is nowadays mostly considered as evil, but during as well as before the industrial revolution child labor used to be widely accepted (Hemmer *et al.*, 1996). There is a large group of critics that disapproves and termed child labor as "stealing childhood", "economic exploitation[1]", "perpetuate poverty for the next generation[2] ", "reasons for adult unemployment[3]", "unfair trade[4]" etc.

According to recent estimates, 191 million children between the ages of 5 and 14 are economically active in the world in 2004, and this accounts for less than one-sixth (15.8 per cent) of the world's population of all children in that age (Hagemann, 2006); of those 166 million are child laborers[5]. In fact, 108 million child laborers in the world are younger than 12 years and more than 74 million children from the age

[1]Children are paid at the lowest rates, and sometimes not at all.

[2]Child laborers deprived of education or healthy physical development, are likely to become adults with low earnings prospects.

[3]Children often replace adult labor; employers prefer them because they are cheap and docile.

[4]Countries that allow child labor are able to lower their labor costs; thus they attract investors and also benefit from "unfair trade" due to their low production costs.

[5]The ILO treats any child as economically active as long as they work for one hour or more in a reference week during the school year. Economic activity excludes children seeking work or those who are currently unemployed. On the other hand, the ILO defines a child laborer as follows: between the ages of 5-11 it is treated as synonymous with economically active while for ages 12-14 it includes children who do 14 or more hours of non-hazardous work per week or 1 hour of hazardous work per week (Hagemann, 2006 ; Basu, A. *et al.* forthcoming)

group 5 to 14 are employed in hazardous jobs. In total, there are 20 million fewer working children in this age group (5 to 14) than there had been four years earlier in 2000. The global picture emerges that child work is declining, the number of child laborers globally fell by 11 per cent over the last four years, while that of children in hazardous work decreased by 26 per cent (ILO, 2006). Latin America and the Caribbean are contributing the largest share of reducing child labor - the number of children at work has fallen by two-thirds over the last four years, with just 5 per cent of children now engaged in work. The least progress has been made in Sub-Saharan Africa, where the rates of population growth, HIV/AIDS infection and child labor remain alarmingly high. The total number of child laborers increases by more than 1 million in 2004 compared to 2000 in Sub-Saharan Africa. The Asian-Pacific region accounts for the largest number of child workers in the 5-14 age category, 122.3 million in total in 2004. It is followed by Sub-Saharan Africa and Latin America & the Caribbean with 49.3 million and 5.7 million, respectively. Developed economies and transition economies have the lowest absolute numbers of child workers. Sub-Saharan Africa has the highest proportion of working children. The estimates show that about 1 in 4 children younger than 15 years is economically active in this region (26.4 per cent); 1 in 5 in the Asia-Pacific region (18.8 per cent), and 1 in 20 in Latin America and the Caribbean. In Asia-Pacific and Latin America & the Caribbean the incidence is 18.8 and 5.1 per cent, respectively. Relatively few children are working in developed countries (ILO, 2004). Humphries (2003) points out, child labor was more prevalent in the 19th century newly industrializing countries of Britain, France, Belgium, Western parts of Prussia and the United States than in today's developing economies (Basu, A. *et al.*, forthcoming). According to the Census of England and Wales in 1861, 36.9 % of boys in the 10-14 age-group were laborers and the statistics for girls were 20.5% (Basu, K. 1998). The activism and economic progress of the 19th and early 20th century saw some sharp reductions in child labor in industrialized nations (Basu, K. *et al.* 2003).

South Asia remains home to the largest number of working children in the world. While statistics on the number of economically-active children vary, a conservative estimate is that some 20-30 million live in the five large South Asian countries. Children's workforce participation rates (the ratio of the number of child workers to the child population) range from just above 1 percent in Sri Lanka to more than 27 percent in Nepal (World Bank, 2000). The South Asian Coalition on Child Servitude (SACCS) however estimates that there are more than 80 million

working children in South Asia under 14. On an average, the percentage of working children/ economically active children in the age group 5-14 years varies between 5-42 percent in five major countries in South Asia (Bangladesh: 19.1 percent, India: 5.4 percent, Nepal: 41.7 percent, Pakistan: 8.3 percent). In South Asia, Nepal leads in terms of the percentage of children who are economically active. Sri Lanka makes a significant improvement of reducing child labor in South Asian Countries while Nepal has the opposite situation. A look at the index of total child labor (10-14 years of age) in South Asia with 1970 as base year shows that in the years 1950 and 1960, Sri Lanka had a higher child labor index compared with all other countries of the region. In the year 1995, the same figure declined to become the lowest amongst the countries of South Asia. At the same time there was also a marginal decline in the index of child labor for India whereas the other three countries (Bangladesh, Nepal, and Pakistan) recorded an increase in the child labor index. Projecting this trend into the future indicates that by the year 2010, Sri Lanka would reach zero and Nepal would reach highest on the child labor index of South Asian Countries (CUTS, 2003). All other countries would also show a varying degree of decline, except Nepal which would be the highest (Appendix A.1). The incidence of child labor in Nepal is similar to that of Sub-Saharan Africa where the highest proportion of children are laborers. The estimates show that almost one child in three below the age of 15 is economically active in Sub-Saharan Africa as well as Nepal. Child labor is a hard reality for one in every three Nepalese children, with each child laborer being a tangible living symbol of a vulnerable and marginalized family (Gilligan, 2003). Child laborers typically contribute between 20-25% of household income in Nepal, though there is no evidence that this is sufficient to raise a family out of poverty (NLFS, 1999; Gilligan, 2003).

In the process of globalization, the labor-intensive industries in South Asian Countries do not only earn a large share of foreign exchange, but also provide a significant share of employment by emphasizing export-led growth. In addition, the growth and expansion of these industries is determined by intra and inter industry competition to gain better comparative advantage across the South Asian Countries. Children are generally fast and quick learners, they do not have any labor union for support, and they are very cheap laborers. Therefore, the opponents of globalization argue that market integration, by increasing labor demand, expands the earnings opportunities of children and thereby inevitably leads to more child labor. A study in Vietnam (Edmonds *et al.*, 2005) shows that the increased earnings opportunities

associated with globalization for children working in export-oriented sectors do not necessarily lead to more child labor.

In recent years, the discussion about the impact of globalization on the incidence of child labor has started to evoke a debate in different literature. Neumayer and de Soysa (2005) argue that countries being more open towards trade and/or having a higher stock of foreign direct investment also have a lower incidence of child labor. They conclude that globalization is associated with less, not more, child labor. Maskus (1997), however, considers globalization as an expanded opportunity to engage in international trade so that a larger export sector will raise the demand for child labor inputs. According to Maskus (1997) as long as children work in a sector, formal or informal, which supplies inputs to the export sector, increased trade can lead to a greater child labor incidence. According to Brown (2002), the rise in the demand for child labor will be accompanied by a rise in the child's wage. This change lowers the return to education and raises the opportunity cost of education, thereby stimulating child labor. On the other hand, Basu and Van (1998) and Basu (2002) argue that any positive income effects that accompany trade openness will help families by meeting or even exceeding the critical adult-wage level at which child labor begins to decline. Contrary to this argument, Edmonds (2002) postulates that increased earning opportunities for parents may change the types of work performed by parents. As a result, children may be forced to take over some of the activities usually performed by adults within their household.

It does not seem to be worth to debate whether changes in local labor markets caused by globalization increases or decreases child labor because no developing country can afford not to participate and/or accept the opportunity of receiving foreign investment by trade creation and trade diversion. However, it might be well argued that the globalization process has been playing a major role in pushing the issue of fair and ethical trade[6] as a priority issue in the international trade debate. That is why the above intellectual debate is very important to address the child labor problem in the international trade literature, especially after the nineties when consumers have learned from the media that a number of the products they purchase could have been produced by child labor.

Therefore, strong concern throughout the importing countries about the social status of the commodity as well as questions of ethical trade in the globalization

[6]Fair and ethical trade aims to ensure that conditions within mainstream production chains meet basic minimum standards and to eradicate the most exploitative forms of labor such as child and bonded labor and sweatshops. (Zadek *et al.*, 1998)

process have been raised. India's profits from exporting hand-woven carpets (in which a lot of child laborers are involved) increased from US$ 65 million to US$ 229 million between 1979 and 1983. Due to consumer boycotts that figure dropped to US$ 150 million in 1993, indicating the power consumers have to putting an end to child labor by not buying carpets made by children (Charl, 2001). Activists have been quick in blaming trade liberalization for the negative effects on local labor markets, and have suggested trade sanctions as tools to coerce policy changes aimed at mitigating child labor (Edmonds, 2004). Trade intervention has taken the form of either the threat of or the immediate imposition of trade sanctions.

Strong support to the idea of using trade interventions for abolishing child labor arose from the Harkin's Bill, also called the US Child Labor Deterrence Act from 1993. This bill proposed to partially or fully ban the import of goods produced by child laborers. It was based on concerns raised by Senator Harkin about the lack of child protection and the need to ensure mass education (UNICEF, 2003). The immediate influence of the bill, which eventually never became law, was dramatic in the case of Bangladesh. Fearing a trade sanction and a loss in market share, almost all child laborers were fired from the garments sector in Bangladesh. An estimated 50,000 children lost their jobs (UNICEF, 2003), and nearly 1.5 million families were affected (CUTS, 2003) by the secondary effects. According to UNICEF (2003), 77 percent of the children retrenched from the garment industries were adversely affected in Bangladesh. Majorities of the children were pushed into the informal sector, which offers more hazardous and lower paid jobs. Trade sanctions, thus, have severe limitations. Many doubt the ability of trade sanctions to eliminate child labor (Bhagwati, 1995; Maskus, 1997). Theoretical models by Maskus (1997) and Melchior (1996) show that trade sanctions or import tariffs against countries where the use of child labor is prevalent do not necessarily reduce the incidence of child labor. On the contrary, the multinational company insisting that its subcontractors fire all child laborers may be doing those children more harm than good (Freeman, 1994). After being displaced from the export sector, these children may find themselves worse-off if no viable alternative like education or better working conditions in other sectors exists (Hemmer, 1996). In many developing countries, children may also have to work for the economic survival of the family (Grote *et al.*, 1998).

The main theoretical finding of the normative theory of child labor is that trade restrictions/bans which are put on child labor tainted imports from developing countries in order to make such countries comply with internationally harmonized child

labor standards are not the first best measures to accomplish this aim. Rather, the first best policy to implement international child labor standards would be income transfers from developed countries to poor families in developing countries. These transfers would compensate poor parents for the family income loss if they send their children to school instead of sending them into employment (Maffei, 2005). The question then arises why demands from interest groups in the developed world persist to enforce international child labor standards through trade policies. The political economic approach could be clear from the Harkin's Bill. The aim of the Harkin's bill was to avoid the employment of children aged 14 or less by eliminating the possibility of exporting products made by children to the American market. The reason for this unilateral measure is partly the concern for the children and partly the fear that adult employees in the US may lose their jobs due to competitive imports. This has partly been achieved as the US have managed to include social standards in NAFTA (Wiig *et al.*, 1997). The import competing sector in a developed country could also get benefits from putting trade restrictions on imports produced by child labor. Therefore, governments in developed countries would take into account those interests and therefore may want to restrict imports produced by child labor. Moreover, the altruistic consumers in developed countries could also increase their utility by deriving a utility gain if children are not employed in the production of the importable goods.

As a result, several measures and initiatives like 'Social Labeling' or 'Codes of Conduct' are directed towards ending the use of child labor. They are increasingly suggested in the context of ethical trade and implemented as an alternative tool to trade sanctions. Social labeling for example acts as a signal in the market informing consumers about the social conditions of production, and assuring them that the item or service they purchase is produced under equitable working conditions (Hilowitz, 1997). It is praised as a market-based and voluntary, and therefore more attractive instrument to raise labor standards (Basu *et al.*, 2000). Social labeling initiatives play an important role within the category of extra-national institutions (Hilowitz, 1997). Extra-national institutions dealing with child labor are based on legislation and other measures enacted in developed countries in order to curb child labor in developing countries (Basu, 1999)

A Brief History of Social Labels

Social labels have a long history, and their alter-ego consumer boycotts an even longer one. The Boston-Tea Party was an example of consumer action by early American colonists. Boycotting of products has been used by abolitionists in opposing the slave trade, and going further back, to 1327, the citizens of Canterbury imposed a consumer boycott on the Christ Church Monastery. The first social labels within consumer society were associated with the trade union and the co-operative movements. One of the first 'ethical brands' was the Co-op brand linked with the co-operative movement spearheaded by the 'Rochdale Pioneers' in the UK in the 19th Century. This is continued today in the CWS 'Co-op' brand. In the USA, the National Consumers League (NCL) developed and oversaw the use of the White Label on women and children's underwear which guaranteed that they were made in factories that obeyed all factory laws, made all goods on the premises, required no overtime work, and employed no children under the age of 16. The label was backed up by NCL representatives and its use spread to 13 states. Founded in 1899, NCL is the US pioneer consumer group which works to bring consumer power to bear on marketplace and workplace issues. NCL worked for child labor provisions in the Fair Labor Standards Act (passed in 1938) and more recently, has helped to construct the Child Labor Coalition (CLC) which is committed to ending child labor exploitation in the U.S. and abroad. The National Consumers League (NCL), with over 100 years of experience in fighting child labor, was part of the Rugmark campaign.
The Rugmark Foundation (1994), Care & Fair (1995), STEP (1995) were created to encourage manufacturers of hand knotted carpets to produce them without child labor. While the NGOs differ in their approach and objectives, they operate within a broader common goal - the removal of child labor. The common basic goals of the NGOs are to eliminate child labor from the hand-knotted carpets and also to rehabilitate former child carpet workers. Most Rugmark carpets are shipped to Germany which accounts for 30% of the rugmarked market as the largest share of Rugmark-licensed importers are from Germany. Part of the Rugmark program is to rehabilitate and educate former child carpet workers.
Source: Modified from Zadek *et al.*, 1998

Many labeling programs have been developed, especially by non-governmental organizations (NGOs) like Rugmark, Care & Fair, or STEP. To make sure that these labels remain credible, regular monitoring of the programs is conducted. Generally, if after one or two inspections, children are found working, the licensee is decertified and no longer permitted to use the agency's label. Nevertheless, labeling programs have been criticized on grounds of the credibility of the claims made on their labels. Some organizations believe that credible monitoring is simply an impossible task.

For example, the Secretary General of Care & Fair, argues that there are "280,000 looms in India spread over 100,000 square kilometers" (U.S. Department of Labor, 1997, p. 46.). Thus, it is argued that credible monitoring of such a large number of geographically dispersed looms is simply not tenable.

Several recent studies have highlighted the fact that Nepal lacks basic data needed for monitoring employment and labor market conditions[7]. Therefore, the study presented here is an attempt to collect and analyze primary data from Nepali carpet industries. It will focus on the two labeling programs Rugmark and Care & Fair, which have been in operation now for 10 years in Nepal. The Rugmark Foundation, established by "Brot fur die Welt", "Misereor", "terre des hommes" and UNICEF in 1995, aims at eliminating the employment of children in the carpet industry by assigning the Rugmark-label to carpets made without child labor. A fund has been set up which is financed by contributions of the exporting companies. This fund is intended to support the establishment of schools and training institutions in those regions where many children were employed prior to the campaign (Hemmer, 1996). Care & Fair is an association established by the German federation of carpet importers. The label does not promise child labor-free products, and monitoring is therefore not needed. It rather supports rehabilitation and education programs for children, financed by the imposition of an export charge levied on all carpet imports of member companies to Germany from India, Nepal and Pakistan (Hemmer, 1996).

The effectiveness of these labeling programs in eliminating child labor in the Nepali carpet industries will be analyzed in the following. The results of this research will contribute to a better understanding of whether the marketing signals carried by the logos of labeling NGOs are reliable or credible in terms of reducing child labor and increasing school attendance. Schooling decision on the part of the parents or guardians can reduce child labor by keeping children in schools and away from the work place. However, poverty compels children in many less developed countries, including South Asian Countries, to work. In making a decision whether or not to send children to school, parents, especially the less fortunate ones have to consider the 'opportunity cost' even though they may not be at all familiar with the concept per se. This opportunity cost comprises of the direct schooling expenses plus the forgone earnings of a child had she/he been engaged in some gainful employment. Schooling typically raises future earnings. But even when schooling is made more

[7]See for instance the report: International Labor Organization Nepal Labor Statistics: Review and Recommendations - A report prepared by an ILO mission, 1-10 July 1996, Kathmandu.

attractive, it does not seem to reduce child labor (Ravallion, 2000). One often finds low school enrolment rates among the South Asian Countries. A common explanation is that schooling competes with various income-earning opportunities for children (wage labor, employment in family enterprises or collection activities) that supplement the current incomes of poor families.

A program that seeks to remove children from work place must have to raise revenue to replace the child's opportunity cost of not working or at least to improve the educational opportunities available to the family. Programs that remove children from work without addressing the alternatives available to the displaced child workers unlikely improve the welfare of children. One seemingly appealing policy option is to substitute child labor for schooling by 'social labeling'. To explore this question more deeply, this research concentrates on various social labeling agencies in Nepal and their impact on child schooling. These labeling NGOs provide an indirect incentive targeted to poor rural families by enhancing different welfare activities like nursery schools, schools, scholarship grants, training workshops, health promotion etc. The rehabilitation programs maintained by labeling NGOs are clearly an attempt to increase child schooling.

Rehabilitation projects and credible monitoring are two important instruments for the elimination of child labor and an increase in child labor welfare. But the labeling agencies are facing many problems in the rehabilitation projects (Brown,1999) and also in monitoring. Nevertheless, labeling programs have been criticized on grounds of the credibility of the claims made on their labels. Some organizations believe that credible monitoring is simply an impossible task. For example, the Secretary General of Care & Fair argues that there are "280,000 looms in India spread over 100,000 square kilometers" (U.S. Department of Labor, 1997, p. 46.). Thus, it is argued that credible monitoring of such a large number of geographically dispersed looms is simply not tenable. Also the question is whether the children are going to schools after they have been fired from the exporting companies. If they do not go to school and are employed in more hazardous jobs, it will obviously decrease their initial welfare. Therefore, empirical evidence from Nepal regarding the impact of social labeling on schooling will provide insights about whether social labeling can be used as an effective tool to reduce child labor as well as poverty.

This analysis will discuss the effect of social labeling on schooling as well as child labor in the context of Nepal. The study will also focus on the different welfare and rehabilitation measures of health and education of different labeling NGOs

to eliminate child labor. The results of this research will contribute to a better understanding of whether the marketing signals carried by the logos of labeling NGOs are reliable or credible in terms of reducing child labor supply.

1.2 Objectives of the Thesis

Motivated by a desire to reduce child labor, social labeling has become a popular tool in developing countries. If there is substitution between child labor and schooling through social labeling programs, then such programs will reduce child labor.

Child labor is strongly associated with poverty. Poor households need children's income to survive and/or to insure against unforeseen income losses. Successful poverty alleviation policies (see e.g. the recommendations in World Bank, 1990) will thus tend to reduce child labor and increase schooling.

Since in most countries poverty alleviation is a long-term objective, short-term actions aimed at reducing income risk for poor households through social labeling welfare programs will also have beneficial effects on child labor. Of course, social labeling could be also a market-based solution for reducing child labor. This thesis attempts to assess whether social labeling NGOs are successful in reducing child labor and increasing child schooling in Nepal.

The three labeling programs in the carpet industry, viz., Rugmark, STEP, and Care & Fair, are discussed at length in this study under the broad research question "Does 'social labeling' displace child labor and increase child schooling?" The specific research questions relating to this topic are

1. Does the 'luxury axiom' explain child labor supply in Nepal?
2. Is nutritional status a determining factor of the 'luxury axiom'[8]?
3. Does the 'nutritional efficiency wage argument' hold to explain child labor supply in Nepal?
4. Does social labeling decrease child labor and increase child schooling?

1.3 Importance of the Thesis

This thesis is considered as important due to the following reasons.

[8]The family will send the children to the labor market only if the family's income from non child labor source (adult income) drops significantly.

1.3.1 Narrow View

From a narrow view:

1. Findings of this study are expected to be used by developing countries to combat child labor from export-oriented industries.

2. This quantitative study will also suggest some policy guidelines of social labeling NGOs.

3. Big US importers like Wal-Mart and K-Mart put pressure on their local vendors to introduce labeling system in Bangladesh (Bhattacharya, 2002). So, finding of this study might be important for India, Nepal, Bangladesh and as well as other Developing Countries that are yet to implement a social labeling program.

1.3.2 Broad View

From a broad view, the following reasons underline the importance of the study:

1. *Ethics and Globalization*: In the surge of globalization, concerns about child labor have emerged as a major international issue. The changing international economic relations of bilateral trade and the ethical issues in trade about human rights and childhood have also contributed to increased attention of the child labor problem. This research is a closer contact between ethics and economics and can be beneficial for the future research in economics.

2. *Human Capital Formation for Future Growth*: A good portion of the human capital literature, pioneered by authors like Becker (1964) and Mincer (1958) analyzes the earning functions in the study of the effects of investment in schooling. A country's future production potential can be increased not only by increasing the conventional capital stocks, but also through investment in schooling that affects the productivity of labor. The opportunity cost of using child labor is very high for the long run economic growth even though its impact on the short run economic growth could be higher through increasing trade. This study will mainly focus on schooling variables to estimate the impact of social labeling on child labor. Therefore this analysis is very important with respect to human capital models of modern growth theory.

1.4 Structure of the Thesis

The whole thesis is mainly divided into three parts. Part I describes the theoretical framework of the thesis. Part I is comprised of two chapters (chapter 2 and chapter 3). Chapter 2 provides the basic conceptual framework of the thesis including definition of child labor and the economics of child labor market. Chapter 3 describes relevant theories associated with the empirical analysis. Part II describes the empirical framework of the thesis. This part is divided into two chapters (chapter 4 and chapter 5). Chapter 4 deals with a description of overall Nepali economy. This chapter emphasises the business cycle of the carpet industries and child labor situation in Nepal. Chapter 4 also describes the different social labeling NGOs in Nepal. Part III describes the empirical investigation by dividing three chapters (chapter 6, chapter 7 and chapter 8). Chapter 6 deals with the data collection procedure in Nepal, chapter 7 deals with the descriptive and analytical statistics of the survey, chapter 8 deals with the econometric results and interpretations. Chapter 9 closes the thesis and presents the summary and policy recommendations.

Part I

Theory

Chapter 2

Conceptual Framework

This chapter deals with the literature review which takes a critical look at the existing research on child labor and is going to provide the context for this thesis by looking at the relevant studies which have already been done. The following discussion does not only summarize the relevant studies but also finds out the relationships between different research areas, and shows how it relates to this study by grouping them into different categories. This chapter is also useful to provide insights about the originality of this research and establishes that it is the first empirical research on social labeling NGOs in Nepal.

This chapter begins with the definition of child labor in section 2.1. Section 2.2 describes the economics of child labor market by dividing the demand and supply side. Section 2.3 describes the trade policy effect on child labor. Section 2.4 briefly discusses about the demand and supply side interventions. Section 2.5 briefly summarizes the major results of this chapter.

2.1 Definition and Forms of Child Labor

A number of problems are involved in the definition and measurement of child labor. Any child labor estimates depends on how the terms 'child' and 'labor' are defined. According to Hemmer *et al.* (1996), "The definition of child, however, differs widely between and within societies (as well as within the scientific community). In many societies, particularly in the poorer ones, cultural and social factors are often more important than the age in determining the social status of a child. Hence, a generally valid boundary between childhood and adulthood cannot be drawn". A child is called laborer if he/she is economically active.[9]

As a legal framework in 1919, ILO convention no. 5 prohibited work of persons below the age of 14 in industries. ILO convention No. 138, adopted in 1973 came

[9]Productive activities, either for the market or not, paid or unpaid, for a few hours or full time, on a casual or regular basis, legal or illegal. To be counted as economically active in a survey, a child must have worked for at least one hour on any day during a seven-day reference period (ILO, 2004).

into force in 1976 along with the accompanying recommendation no.146 sets 15 as the minimum age for work in developed countries, but a child can become an apprentice at a younger age (14 years) or undergo vocational training. More than 130 countries have ratified this convention (ILO, 2004). The convention no. 138 was the first of the agreements which linked education and children's work by recognizing the link between the age of primary school completion and the minimum age for employment. The worst Forms of Child Labor Convention, 1999 (No. 182) concerns the worst forms of child labor, and its aim is to ensure that children in all countries, irrespective of their level of development, are protected from those extreme forms of labor.

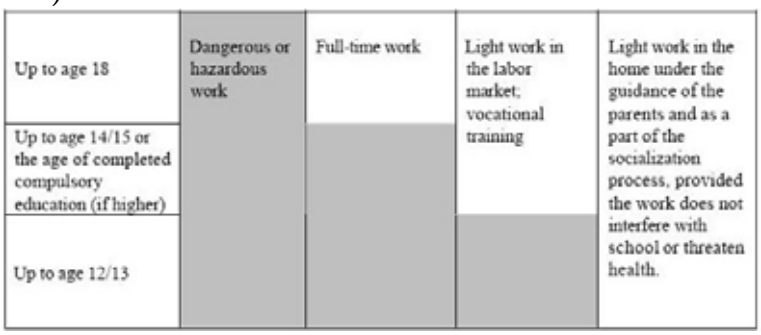
A Normative Definition of Child Labor

"Not all work done by children should be classified as child labor that is to be targeted for elimination. Children's or adolescents' participation in work that does not affect their health and personal development or interfere with their schooling, is generally regarded as being something positive. This includes activities such as helping their parents around the home, assisting in a family business or earning pocket money outside school hours and during school holidays. These kinds of activities contribute to children's development and to the welfare of their families; they provide them with skills and experience, and help to prepare them to be productive members of society during their adult life.
The term "child labor" is often defined as work that deprives children of their childhood, their potential and their dignity, and that is harmful to physical and mental development. It refers to work that:

- is mentally, physically, socially or morally dangerous and harmful to children; and
- interferes with their schooling: by depriving them of the opportunity to attend school; by obliging them to leave school prematurely; or by requiring them to attempt to combine school attendance with excessively long and heavy work.

In its most extreme forms, child labor involves children being enslaved, separated from their families, exposed to serious hazards and illnesses and/or left to fend for themselves on the streets of large cities - often at a very early age. Whether or not particular forms of "work" can be called "child labor" depends on the child's age, the type and hours of work performed, the conditions under which it is performed and the objectives pursued by individual countries. The answer varies from country to country, as well as among sectors within countries".
Source: Inter-parliamentary Union/ International Labour Office, 2002 (Cited in Hilowitz *et al.*, 2004)

Figure 2.1: International definition of child labor(activities listed in gray areas are considered child labor, activities in white areas are not).



Source: Grimsrud,2001.

Based on the ILO Conventions No. 138 and 182, child labor is defined as comprising (Figure2.1):

At age 5-11: all children at work in economic activity.
At age 12-14: all children at work in economic activity minus those in light work.
At age 15-17: all children in hazardous work and other worst forms of child labor.

The definition above does leave some questions open but nevertheless provides with the basic guideline to analyze child labor. The international standards on child labor (e.g. ILO Conventions) which have already been discussed in Figure 2.1 provide a normative system that would help to distinguish between child labor (which must be targeted for elimination) and acceptable activities/work for children. The shaded area indicates the work, which a child is not allowed to do subject to the horizontal line of the age box (the first left hand vertical side of the figure).

2.2 The Economics of Child Labor Market

A market is an institution, which brings buyers and sellers together to determine what will be exchanged at what price. In the case of child labor, the market includes those who provide child labor, such as the households the children live in, and those who utilize it. Therefore, the supply side of child labor market consists of all the forces leading households to offer their children's labor, while the demand side refers to the factors that induce employers to engage children as workers (Hilowitz, 2004). Markets rely on adjustments to price to coordinate individual decision mak-

ing relating to supply and demand. Together, the supply and demand sides influence the amount of child labor, and its productivity.

The more pressure is exerted on the supply side (i.e. the more households offer child labor), the less productive and remunerated this labor will tend to be. The more pressure is exerted on the demand side (i.e. the more uses for child labor are generated), the more productive and remunerated it will be. Although most working children are engaged in non-market activities, a significant proportion is employed in the labor market. In contrast to economic activities within the family this requires some kind of market relation between (more or less) independent individuals who are generally parents of the child (Hemmer, 1996). Of course, when the child is employed within the household the demand and supply sources will be the same, but the factors can still be distinguished which influences supply and demand (Hilowitz, 2004). Combating child labor is a matter of finding efficient ways to reduce the supply of child laborers and of reducing demand. A complete discussion of the economics of child labor would include the demand side as well as supply side. Therefore, the following discussion is important to focus on the important variables, which determine the demand and supply of child labor.

2.2.1 The Determinants of Child Labor Demand

In order to understand the various initiatives concerning child labor, it is necessary to investigate the economics of child labor, and to study why child laborers are in demand. Although this thesis concentrates on the supply side, it is crucial to understand the importance of the demand for child labor - factors that pull children to work and encourage the use of child labor - in order to design the supply side approaches in a realistic and logical way. For this reason, a review of demand considerations are briefly discussed here. On the demand side, the two main determinants of child labor identified in the economics literature are the structure of the labor market and the prevailing production technology (Majumdar, 2001).

2.2.1.1 Structure of the Labor Market

The first natural question should be asked is whether child labor is due to a lack of adult labor. By considering the whole labor market as one market, and excluding seasonal employment in the agricultural sector, a lack of labor does not seem to explain the phenomenon of child labor (Grimsrud, 1997). Unemployment can go hand in hand with child labor. Studies (Kanbargi, 1991) indicate that there

is a clear correlation between parents' unemployment and child labor. It might seem like a paradox that child labor is more widespread in areas with high adult unemployment (Grimsrud, 1997). Population growth, a surplus of labor in villages, immigration of laborers are all cited characteristics of economics where child labor is widespread (Grimsrud, 1997).

2.2.1.2 Technology and Adult Labor Substitution

The next question is whether there are technical reasons relating to production, which would increase the demand of child laborers by the manufacturers. There might be some special parts of the production process which are best be performed by children rather than adult laborers. Employers may prefer child labor for several reasons. From an economic point of view, the question is whether there are technological constraints (limitational production function) that prevent to substitute adult labor for child labor. In some production processes, the labor force of children might be indispensable for technical reasons (Hemmer *et al.*, 1997). This argumentation has often been, and still is, used to explain the existence of child labor in carpet production (Grimsrud, 1997). It is commonly believed that children are able to weave higher quality carpets than adults because their fingers are more "nimble".

A study conducted by ICFTU raised the point "the weavers say that children are employed because small hands tie intricate knots more easily" (ICFTU, 1994). Several studies (ICFTU, 1994; ILO,1996) have examined this issue in the carpet industry. Contrary to this argument, the substitution axiom (Basu *et al.*,1998) asserts that adult and child labor are substitutes, subject to some adult equivalency correction. More specifically, it means that adults can do what children do. The substitution axiom expresses a contrary view on the 'nimble fingers' argument. A study of the technology of production involving children by Levison *et al.* (1996) lends strong support to the substitution axiom.The study was initiated in by the International Labour Office (ILO), in collaboration with the Centre for Operations Research and Training (CORT), to determine whether children are indeed "indispensable" to the Indian carpet industry. The findings do not support the "nimble finger" assertion in the case of carpet production. The study shows that adults in India are as good if not better in producing hand-knotted carpets as children. Therefore, from a purely technical point of view it is possible to replace child labor with adults.Furthermore, as regards quality, the study found that child laborers are most commonly employed in the production of medium quality carpets (Levison *et*

al., 1996).

Furthermore, as Grootaert *et al.* (1995) mention, some other studies have shown that technological developments and mechanization reduce demand for child workers in agricultural, industrial and home production. Some studies have shown, on the other hand, that technology can have reverse effects on the demand for child labor. For example, in garment production (where the advent of multi-purpose sewing machines has made home-based production and subcontracting arrangements feasible) there has been an upsurge of demand for young hands to take care of routine and repetitive tasks (Majumdar, 2001). If the input output coefficient is the same for adult and child labor in the carpet production then substitution between child and adult labor is possible. In this case, the degree of substitutability between child and adult labor will be determined by relative factor prices and physical productivity. The extent of child labor demand depends primarily on relative wage levels, wage flexibility and productivity concerning child and adult labor respectively (Hemmer *et al.*, 1996).

2.2.1.3 Employers' Expectation or Attitude about Child Labor

In interviews with the employers in the third word, it often emerges that the employer views the act of giving children work as something that helps the children, who would otherwise have nothing to do and, through employment, are able to receive training and contribute to their family's income (Grimsrud, 1997). An ILO study (1996) reported "In all these cases children may meet the expectations of employers. They have no protection against unlawful dismissal and are likely to accept part-time work or short-term contracts. Children may undercut their adult competitors in terms of wages because they (or the parents who decide to supply the labor of their children) usually accept lower wages than adults can afford. Besides low wages, children are preferred by employers because they are usually highly obedient and rarely organise themselves in order to express and enforce their interests. In addition, children generally learn faster and are more flexible than adults. Thus, child labourers can be assigned more easily to changing occupations. All these features contribute to a significant demand for child labor, especially in the informal sector of the economy" (Hemmer *et al.*, 1996). In addition, children seem to be more willing to accept a poorer working environment, unpaid overtime and other measures which are cost saving for the employer (Grimsrud, 1997). Another indirect cause of the demand for child laborers is the demand from the family either

to help the parents or to make it possible for parents to go out for work (Grimsrud, 1997).

2.2.1.4 Law Enforcement and Child Labor

Many authors have doubt about the application of law against child labor. Since the law imposes effective restriction only in the formal sector, child labor demand in market activities will most probably be found in the informal rather than in the formal sector (Hemmer *et al.*, 1996). The demand for child labor in the textile industries in Britain had begun to decline due to rising family income even before the passage of the 1833 factory Act (Majumdar, 2001). Such a view receives some endorsement, though accompanied by other factors, in Galbi's analysis (1997) of the phenomenon of child labor in English cotton factories. He argues that the share of children employed in English cotton factories fell significantly before the introduction of child labor legislation, since with the development of a labor market for skilled adult factory workers there was a shift towards adult labor in the cotton factory workforce. New forms of technology made the task which had been performed by children superfluous. The qualifications for the task performed by children are generally so low that labor can easily be replaced (Wiig, 1997). Therefore, in Europe, child labor in the textile industry was eliminated even before it was prohibited.

2.2.1.5 Summary of Child Labor Demand

Based on field studies conducted in India regarding the economics of child labor in seven hazardous industries which employ large numbers of children, a number of non-pecuniary reasons for hiring children is identified (i.e. reasons other than the lower cost of child labor). These reasons can be divided into three main groups (Anker *et al.*, 1996) as indicated in Table 2.1.

In summary, the hypothesized effect of the demand curve of child labor depends on the following factors (Grote *et al.*, 1998):

1. Wage gap between adults and children: The greater the cost saving in hiring children are, the higher will be the demand for child labor.

2. Degree of substitutability of child and adult labor: In most cases, the greater the degree of substitutability between child and adult labor, the higher will be the demand for child workers. In some selected cases in which adults are

Table 2.1: The reasons of child labor demand

Awareness and innocence	**Tradition**	**Physical characteristics**
i) More docile and less troublesome.	i) Tradition of hiring child labor by employers.	i) Physical characteristics
ii) Greater willingness to do repetitive, monotonous work.	ii) Traditional occupations have children working alongside parent(s).	ii) Better health (as young, health is not yet spoiled by work).
iii) More trustworthy and innocent, so less likely to steal.	iii) Social role of employer to provide jobs to families in the community.	iii) Irreplaceable skills (note: not true in fact).
iv) Less absenteeism (none if bonded).	iv) Employers need labourers. Children are available and ask for jobs, so why not hire child labor.	
v) Do not form trade unions.		

Source: Anker *et al.*, 1996.

not considered to have the ability to do specific tasks done by children, this perceived lack of substitutability could increase demand for child labor.

3. Intensity of labor-law enforcement: The greater the penalties for hiring underage workers and the higher the probability of being caught, the higher will be the cost of child labor for companies.

2.2.2 The Determinants of Child Labor Supply

Generally, decisions concerning child labor supply are not made on economic reasons alone. However, economic determinants seem to be of major importance (Hemmer *et al.*, 1996).

2.2.2.1 Poverty, Child Labor and Child Schooling

The income elasticity of education and leisure is certainly positive. Education and leisure are normal goods, i.e. the demand for education and leisure increases along with the income level. Consequently, other things equal the extent of child labor decreases as the level of income increases. Therefore, absolute poverty is one major determinant of child labor (Hemmer *et al.*, 1997).The basic economic theory

of child labor identifies poverty as the main cause behind why altruistic households choose to send their children to work (Basu, A. *et al.* forthcoming). Basu and Van (1998) in their 'luxury axiom', reported that a household sends children to work only if the household's income (from non-child-labor sources) drops very low.

The luxury axiom asserts that households send their children to work only when driven to do so by poverty. In other words, child non-work (which would, typically,consist of schooling and leisure) is a luxury good: Households whose non-child labor incomes (or, in brief, adult incomes) are very low cannot afford to indulge in keeping children out of some productive activity. It is only when adult incomes begin to rise that households take children out of the labor force (Basu K., 2003). There is an altruistic view of this axiom that parents or guardians do not like to make their children work unless compelled by circumstances. Afterwards, Swinnerton and Rogers (1999) extend the BV (Basu and Van, 1998) model in the macro aspect and try to establish if non labor income is distributed with sufficient equality, then a market equilibrium with child labor cannot exist in the BV model. Their model adds the "distribution axiom" in the BV model, i.e. an 'improved distribution of income' for a given level of per capita income may reduce child labor.

Cigno-Rosati (2001) argue in favour of Swinnerton and Rogers (1999) that without redistribution, a country must achieve a very large increase in per capita income to have positive effects on child labor and that policies aimed at fostering growth may not have significant effects on child labor in the short run. The luxury axiom has been confirmed by different studies (Admassie, 2002; Grootaert *et al.*, 2002)though of course there are exceptions. The axiom that poverty causes child labor has, however, not been unquestioned. On the empirical side, Ray (2001) finds that the luxury axiom which is a crucial assumption for the positive effects of GDP growth on child labor is supported in Peru but not in Pakistan.

However, Basu(2003) argued that the income that a household targets as minimum acceptable may not coincide with the nation's or region's official poverty line. Therefore, if the study uses the head-count ratio based on the official poverty line to measure poverty, this may not explain the incidence of child labor. Another critique of poverty-based explanations of child labor has come from Bhalotra and Heady (2002), who have tried to establish, using data from Pakistan and Ghana, that households which own (or operate) larger amounts of land tend to make their children work more. Since a larger land-holding would typically mean greater wealth, this seems to suggest that greater poverty does not lead to greater child labor. The

main reason why greater land ownership may contribute to higher child labor is, as Bhalotra and Heady recognize, that, in the absence of a properly functioning labor market, owning or controlling land amounts to having the opportunity for more productive use of the household's labor, including child labor. Hence, if two households are equally disinclined to send their children to work but one has more land, then that household may choose to make the children work simply because such a household finds that child labor is more rewarding than the other. So it is not surprising that, on the margin, land-ownership makes a difference (Basu,2003).

A number of empirical studies show a trade-off between child labor and schooling. These include Nielsen (1998), Jensen and Nielsen (1996), for evidence of child labor-schooling trade-off in Africa. Studies by Psacharapoulos *et al.* (1997) finds evidence of a child labor-schooling trade-off in Latin America. Empirically there is a negative correlation between child labor and hours dedicated to schooling. Legislation can also affect child labor through compulsory schooling laws. The record of enforcement seems better here than with legislation banning child labor (Weiner, 1991). While child labor bans were eventually introduced in most of Europe during the nineteenth century, enforcement was very difficult, and it has been argued that other factors (rising incomes, and technological change) are more important in reducing child labor (Nardinelli, 1980; Heywood, 1988). Bellettini *et al.* (2003) provides an explanation for the existence of child labor which relies on the imperfect enforcement of compulsory schooling laws. Equally poor countries display similar compulsory schooling laws but different levels of child labor and school attendance. Ultimately then, and as it is argued in the various literature, child labor is addressed through a combination of legislation and economic incentives.

Discussing the factors which have influence on child schooling as well as child labor, Ravallion *et al.* (2000) argue that child labor comes at the expense of schooling, their theoretical model predicts that the subsidy increases schooling, but its effect on child labor is ambiguous. Their empirical model indicates that the subsidy increased schooling by far more than it reduced child labor. They argue that a rise in school attendance driven, for instance, by lower schooling costs may occur largely at the expense of childrens leisure with little or no reduction in child labor.

Evidence on the links between school quality and child labor is provided by Schultz (1997). The presence of a school in the village of residence is one possibility for attracting schooling (Rosenzweig, 1982). Other relating factors are the distance or travel time to the nearest school (Grootaert, 1999) or average out-of-pocket ex-

penditures on schooling in the area of residence (Cartwright, 1998). Evidence from rural India confirms that child labor plays a significant role in the self-insurance strategy (Grootaert *et al.*, 1995) or income insurance argument (Hemmer *et al.*, 1996) of poor households. It was observed that when the variability of household income increased (measured by the decline in income from peak season to low season), children's school attendance declined (Grootaert *et al.*, 1995). Because households often cannot afford an interruption of their income stream since they usually have no liquid assets and no access to capital markets to compensate current income losses (Mendelievich, 1979; Hemmer *et al.*, 1996).

In view of poverty, training on the job seems to be a viable alternative to (costly) schooling. It is perhaps the only way parents can support the formation of their children's human capital. The motive to seek for apprenticeship arrangements can be interpreted as demand for education rather than labor supply, at least to some degree (Hemmer at.el. 1996). Cartwright and Patrinos (1999) find a strong positive relationship between schooling costs and child labor force participation in urban Bolivia. In contrast, Cartwright (1999) finds that higher school costs are associated with a lower probability of working in Colombia. Grootaert *et al.* (1999) argue that this empirical ambiguity in the effects of schooling related policy measures on child labor force participation is largely due to data limitations.

The literature on the determinants of school enrollment as clearly established two effects (Grootaert *et al.*, 1995): First, there is a substitution effect between schooling of girls and labor force participation of mothers. When mothers go to work in the market, girls stay at home - in this sense, the opportunity cost of girls' schooling is not their foregone wages, but those of their mothers.

Second, the most important determinants of school enrollment are parents' education (especially mothers' education) and household income level. There is an income effect from mothers' earnings which will at some point establish a preference for 'quality' children.

From discussion it is evident that most of the authors discussed the poverty hypothesis as one of the main reasons of child labor and low child schooling, while few authors described poverty hypothesis as a 'mind set' and tried to focus on other relevant issues responsible for child labor. Children belonging to the backward castes, scheduled castes and tribes, and minority communities, are often highlighted by micro- survey- based studies to constitute a bulk of child labor (Burra, 1995; Chandrasekhar, 1997). Empirical evidence shows that falling below the poverty line does

not reduce years of schooling for Peruvian girls but does reduce years of schooling for Pakistani children. The schooling of Pakistani girls is more negatively impacted by poverty than for boys (Ray, 2000). Some researchers have pointed out that though it is important, poverty is not the only determining factor for employment of children in the labor force (Burra, 2001; Chaudhri, 2000). In the case of girl child labor too, this does not seem to be a crucial determinant. Furthermore, poor educational status of women may generate self reinforcing mechanisms. Mothers with poor human capital and low wage may confirm the expectation that women's human capital has low returns (Cigno, 1991). Not only child's gender but also his/her age plays a significant role concerning child labor decision. It is clear that older children are more likely to work than younger children. As children grow older and acquire skills, the opportunity cost of schooling rises. Sometimes, the oldest children acquire human capital in the form of on-the-job training and the youngest children receive formal education (Brown, 2002).

2.2.2.2 Credit Market Imperfection and Child Labor

The credit question comes up in the model of Baland and Robinson (1998). In a two-period model of child labor in which inefficiency occurs despite parental altruism, because parents may run out of resources needed to educate the child. The only option then is to borrow against the child's future income, and this is typically not possible. Parsons and Goldin (1989) and Ranjan (1999) find that child labor acts as a consumption-smoothening device for poor households in the absence of credit markets. Lahiri and Jaffrey (1999), Ranjan (1999) present models in which child labor arises because of the imperfect credit markets. Jacoby and Skoufias (1997) finds that child labor helps smooth the incomes of rural Indian families, consistent with poorly developed credit and risk markets. Schultz (1961) and Becker (1993) also highlight the problem that markets for credit and insurance to human capital investments tend to fail.

Basu and Chau (2003) suggest a strong correlation between the likelihood of the incidence of bonded child labor with the stage of development of an economy. This paper also presents a theoretical model that highlights the relative drawbacks and merits of a number of policies aimed at putting checks on child labor in debt bondage. Wydick (1999) also presents a theoretical model of a household enterprise which shows a "family-labor-substitution effect" might increase educational investment in children when households gain access to credit and hired labor is substituted

for family labor. Basu and Chau (2003) explore the link between debt bondage and fertility decisions. In certain situations, it can be shown that poor households have a greater than optimal number of children with the intention of paying off their debts which, in turn, depresses the harvest season wage further and makes the households worse-off over the long run. Obviously, the number of children in the household determines the potential supply of child labor, and hence fertility behavior is a determinant of the supply of child labor. Economic activities of children can largely be explained by analyzing fertility and time allocation decisions. The more children living in one family, the higher the propability that they (or some of them) will take part in economic activities (Hemmer *et al.* 1997).

2.2.2.3 Parental Education, Employment and Child Labor

The relationship between parental education and child labor was already evidenced by Marshall in 1920 (Becchetti and Trovato, 2005). More recent theoretical and empirical literature (Haddad and Hoddinot, 1994; Manser and Brown, 1980) emphasizes the role of mother educational and working status emphasizing that female empowerment may benefit children (*the women's agency hypothesis*). In rural India, mothers' education has a significant influence on the decision to send a child to school (Rosati and Tzannatos, 2001).

Children with more educated parents are less likely to work full time in Vietnam (Rosati and Tzannatos, 2001). Other authors suggest that mother's education has a strong positive influence because mothers care more than fathers for children (Eswaran, 2002). Alternative points of view cannot be excluded. Basu (1993) argues that if mothers have outside employment children are called to substitute them at home to work. Most case studies of child labor do indeed identify low level of parental education as important factors in determining child labor (ILO, 1992).

The nature of parents' employment also matters - if the parents have irregular employment, it creates the need for additional or more stable income sources to be provided by children(Grootaert *et al.*, 1995). The cross-wage elasticity with the labor supply of the mother was found to be negative, i.e. an increase in wages for females is likely to reduce the supply of child labor, especially of female children. The effect is strongest for younger children. In Egypt, a 10 percent increase in women's market wages would lead to a 15 percent decline in the labor of children aged 12-14 and a 27 percent decline in the labor of children aged 6-11. In India, a 10 percent increase in women's wage rates would decrease girls' labor force participation by 9-10 percent,

but have no effect on boys' participation. The opposite is true for men's wage rates which have a cross-wage elasticity of about -1 with respect to boys' labor supply, but close to zero for girls' labor supply (Levy, 1985, Rosenzweig, 1981). Therefore, it is evident from the empirical literature that parental education and as well as employment status have a significant influence on child labor and child schooling or any combination of these two activities. Mother's schooling and/or employment has a strong influence on child labor/schooling decision in less developed countries (LDCs).

2.3 Trade Policy and Child Labor

The link between labor standards and international trade was recognized as early as the nineteenth century (Brown, Deardorff, and Stern 1996). It has, however, recently gained prominence in the international trade policy debate. A topic closely related to the subject of child labor is that of 'international labor standards' and the use of 'social clauses' as a prerequisite for trade (Basu, 1998). One major area for setting international labor standards concerns child labor (Maskus *et al.*, 1997 ; Brown, 1998).

Trade policy has effect on both demand and supply sides of child labor. In forums, such as the ILO, GATT and now WTO, the subject of labor standards or social clauses has been a live one (K. Basu, 1998; Bhagwati, 1995) and mostly debatable issue. Although the issue of child labor standards ranks highly in international trade policy debates, there has been relatively little empirical work on the connection between trade and child labor. Some authors argued that one country's acquiescence to lower labor standards gives it trading advantages in labor-intensive goods, there should be multilateral sanctions against such a country; and social clauses should be used to deter such "illegitimate advantages" (Collingsworth *et al.*, 1994). Only export sectors where the importers have knowledge about child labor will be hit by a trade policy as a measure against child labor(Wiig, 1997).

Grimsrud (1997) use game theoretic approach as a normative framework to analyze the impact of ban on the competitiveness of two countries producing goods by child laborers. Let us assume that both countries A and B are producing goods using child labor. If country A abolishes child labor, the immediate effect of this will be that the price of the product will rise. If country B does the same, the competitive situation between the two countries will remain unchanged. However if country B fails to follow the action of country A, choosing instead to continue

Figure 2.2: Game between two countries which produce goods using child labor.

		Country A	
		No ban on child labor	Ban on child labor
Country B	No ban on child labor	No change in revenue (A) No Change in revenue (B)	Competitive loss (A) Competitive gain (B)
	Ban on child labor	Competitive gain (A) Competitive loss (B)	Higher prices (A) Higher prices (B)

Source: Grimsrud, 2001.

using child laborers in production, then country B will profit from the fact that country A is loosing out in the competition, and B will sell more goods. The same arguments will also apply when seen from the point of view of country B, and this produces a so-called game and outcome matrix. The basis of the game Grimsrud (1997) postulates is the immediate economic effect for both countries for a ban on child labor product.

Several economists have argued that a social clause in the WTO is not the right response to child labor and other problems of labor standards (Bhagwati, 1995; Srinivasan, 1996). Instead, Bhagwati argues for ILO to be the main international agency to strive towards better standards. Hemmer, Steger and Wilhelm (1996) posed arguments against trade sanction by emphasising the supply side of child labor. They argued, since child labor is strongly related to poverty, trade restriction would harm the less developed countries most. The use of multilateral threats is to practice protectionism, which is likely to hurt not just workers in the Third World but consumers in the developed nations as well (Basu, 1998).

The model (Figure 2.2) ignores the effect of unit cost for not using child laborers as well as price elasticity of demand for exportable goods. Interviews with carpet importers in the United States on the subject of price sensitivity clearly revealed that a price increase in one country would lead carpet importers to move to another country. If the price of carpets manufactured in India were to increase by more than 15 percent, imports of these carpets would cease completely (Levison, 1995; cited in Grimsrud, 1997).

Therefore, analyzing the change of unit cost for eliminating child labor in the carpet production is very important in determining the countries competitiveness.

Anker *et al.*, (1998) used simulated changes in the costs of elimination of child labor. Preliminary calculations suggest that replacing child workers with adults in the weaving stage of the hand-knotted carpet production would lead to an increase in the cost of carpets to consumers by only 5 percentage points. The probable impact of the elimination of child labor on the various actors in the carpet industry is shown in Appendix A.2 assuming 6% increase in weaving charges according to Anker et al. 1998 and Stella, 2003. All the estimates in Appendix A.2 are based on a combination of survey data, in depth information from industry and a range of assumptions made by Anker and his collaborators (cited in Stella, 2003).

Loom owners and exporters are observed to be affected more adversely than importers or foreign consumers because they have to face the cost of weavers' wages, which continues to be the major variable component, while the cost of raw materials and the other expenses remains fixed. Thus, any change in the weaving charges would have direct and immediate effect on the loom owners and exporters. Since importers and foreign retailers mark up the export price at about 65 and 185 per cent respectively, the impact of the elimination of child labor will have a lower impact on them, as clearly borne out in the Appendix A.2. An increase of 6 per cent in export price due to the elimination of child labor will be equivalent to about 60 per cent of the loom owner's revenues; it follows that loom owners have a strong economic interest in continuing to use child weavers. Moreover the cost of Indian carpets relative to revenues will go up by about 9 per cent for importer wholesalers and only 3 per cent for foreign retailers. The foreign buyer would end up by paying less than 2 per cent more. It is also very important to remember the game described in Figure 2.2 by Grimsrud, 1997 so that foreign importers and retailers do not shift to other countries for their carpet requirements because of the 2 percent increase in the price of carpets due to an effort to eliminate child labor. Analysis shows that if child labor is abolished, it is unlikely that production will be moved from the present producer nations to industrialised countries. Employees in today's producer countries will therefore be able to benefit from the abolition of child labor, while this would not produce any noticeable effects for employees in the industrialised countries (Grimsrud, 1997).

Brown (1998) discussed the issue of child labor exploitation in developing countries for the variety of trade and other policy options / programs that are available to the major industrialized countries to deter such exploitation and one of such program is 'Social labeling'. Basu, Chau and Grote (2000) provide a model of North-South

trade and explore the promise of social labeling in the context of its four oft-noted objectives: child labor employment, consumer information, welfare, and trade linkages. They highlight the market responses to social labeling when product market competition between the North and South is based on both comparative cost advantage and the use of child labor as a hidden product attribute. Brown (1999) analyzes the economic mechanics and consequences of product labeling. When product labeling is applied to child labor, he finds that even in the optimistic case in which consumers pay a labeling premium that exceeds the additional cost of adult-only technology, there is no net reduction in the labor force participation of children. Children are better off only when the fund (that is, a transfer from the North to the children in South) is used for their benefit.

Lopez (2002) discusses the legality of government-sponsored social labeling initiatives under WTO agreements. It first presents the basic characteristics, potential and shortcomings of the labeling initiatives and drive towards government sponsorship as a way to correct the shortcomings. It then moves on to analyze these initiatives under the relevant GATT and TBT agreement provisions. Hilowitz *et al.*,(1999) discuss of various issues related to voluntary social labeling with reference to child labor. Six initiatives are described and some examples are given for specific instances of labeling. Sharma *et al.*,(2000) examines the impacts of the labeling initiatives vis-a-vis child labor. It looks at working mechanisms and highlights the major strengths and weaknesses of social labeling.

2.4 Demand vs. Supply Side Intervention

In a social labeling process, consumers are willing to pay for the child labor free product. Studies show that consumers are willing to pay more for products which have not been manufactured using child labor (Grimsrud, 1997). This willingness to pay will, of course, depend on the consumer's knowledge. The rational expectation for the consumer is that the product would be child labor free. If there exists any moral hazard problem related to child employment then a rational consumer will withdraw his/her support from the labeled product. That is why the labeling NGOs have monitoring as well as supply side intervention welfare policies to control supply of child labor.

The introduction and enforcement of a code of conduct against child labor reduces demand, but is seldom effective unless accompanied by other supply side interventions. As the input output coefficient is fixed in the production process,

the demand for labor is inelastic in carpet production. Therefore, supply side intervention is crucial to combat child labor because of its more elastic nature than the demand side intervention.

When attention is focused on child labor without any supply side intervention, the problem (child labor) is merely shifted from one industry to another. Demand side intervention is sometimes very difficult; like in the United States, it may be claimed that pockets of child labor exists within the agricultural sector and in some small industries around New York (Grimsrud, 1997) though there exists different laws to combat child laborers on the demand side. Moreover, the demand side intervention may reduce the extent of child labor in some sectors, but it is not evident that the welfare of the children will be increased as a result of the initiatives. For instance, in Bangladesh, a survey among children showed that those working in the garment industry were better off than those performing other jobs, and even better off than many of those who only performed 'domestic' work. Additionally, they were even 'nutritionally' in better condition. Their food consumption was higher than that of children working in other occupations. On average, it was higher for those working outside the home than for those only working at home (Boyden *et al.*, 1995).

Social labeling as a market-based solution may reduce the extent of child laborers in some sectors, but there is no evidence that the welfare of the children will be increased as a result of the initiatives. This is another reason why supply side is so important to understand the effect of social labeling NGOs. Demand side intervention is difficult in a situation where the products are made by subcontractors, which is common in carpet industries according to the recent field research in Nepal. Some labeling carpet industries buy carpets from other looms by subcontracts.

Therefore, it would be very difficult to protect child laborers only with demand side intervention. Social labeling as a market-based solution has to take proper cognition on supply side intervention by different welfare measures. Demand factors originate primarily from outside the household though some demand factors originate from within the household itself. This is because some households demand child labor for employing in the household business. However, in all cases household supplies child laborers.

This research concentrates on a household survey to quantify the impacts of social labeling NGOs on the supply function of child labor. Therefore, this study has a special bias to analyze the supply side impacts of different welfare policies by

social labeling NGOs.

From the above discussion it is evident that there exists no study to examine the effect of child labor supply or/and child schooling of 'Social Labeling' initiatives - which is one of the major objectives of this thesis. Most researchers have their own specific methods concerning econometric estimation of child labor model, very few of them collected their own micro data from field research. This thesis is different in terms of methodology in the sence that it collected micro data from field research according to the demand of the research question and analyzed data using modern statistical and econometric techniques.

2.5 Chapter Summary

In this chapter, a discussion of the definition and determinants of demand and supply of child labor has been presented. The role of trade policy effect on child labor supply is also discussed as a conceptual framework of this chapter. As the definition of child varies across countries, this study defines child labor according to the framework of ILO convention No. 138 and 182.

However, the reality of poor countries often differs from the idealism expressed in international conventions and declarations (Anker, 1998). Because market forces sometimes result in an outcome, which often contradicts with the normative sense of economics. Therefore, it is important to formulate the positive economics of child labor market by its determinants of supply and demand.

Although poverty is generally believed to be the most important reason for child labor, other reasons such as credit market imperfection, large family size, family background, and parental education are also discussed. The demand side determinants of child labor include technology of production, employers' expectation, wage gap between child and adult, and the physical characteristics of a child as major determinants of child labor.

According to a recent study, elimination of child labor would cause only a small increase in the cost of production, almost always below 6 percent. The foreign consumers have to pay 2 percent more and the loom owners will lose 60 percent of their revenues. Thus, the loom owners have a strong economic interest of using child weavers for the high marketing margin. According to a study (Grimsrud, 1997) the consumers are willing to pay more for child labor free products.

Consumer's willingness to pay for child labor free products enable policy makers to adopt an alternative intervention of trade sanction by implementing social

labeling as a market based solution of child labor problem. The rational expectation for the consumer is that the product would be child labor free. If there exists any moral hazard problem related to child employment then a rational consumer might withdraw his/her support from the labeling process. That is why the labeling NGOs have monitoring as well as supply side intervention welfare policies to control supply of child labor.

Chapter 3

Review of Theoretical Literature and Hypotheses

Thus far, this thesis presented a conceptual framework of the "economics of child labor" and the possible direction of different socio-economic variables in relation to child labor demand and supply. The previous chapter also explained the relevant reasons of the 'supply side bias' of this thesis. The aim of this chapter is to provide a theoretical explanation of the phenomenon "child labor" and to describe empirical methodology to test the hypotheses derived from the theory. This thesis focuses on a discussion of the supply-side determinants of child labor introducing social labeling as a determinant of the supply equation.

Firstly, this thesis will consider the theory of household decision-making in a perfectly competitive context. Following Becker (1965), Rosenzweig and Evenson (1977), there is now widespread appreciation that decisions of fertility, child labor and child schooling are interdependent (Hemmer *et al.*, 1996; Ray, 2000). Secondly, this thesis turns to consider a dynamic multiple equilibrium model assuming altruistic parents. For example, Basu and Van (1998) model a family in which altruistic parents withdraw their children from the labor force once adult wages have reached some critical level. As a consequence, the supply of child labor is increasing if the wages range below this critical level. Then, once the critical level is reached, parents begin withdrawing their children from the labor force. Consequently, the supply of labor begins to bend back. Once child labor has been reduced to zero, the supply of labor resumes its upward slope.

Because of this configuration, the demand for labor may intersect the supply of labor more than once. There are then two stable equilibria, a low-wage equilibrium characterized by child labor and a high-wage equilibrium in which children are all attending school. Developing countries may be stuck in this low-wage child labor trap (Brown *et al.*, 2002). When an employer pays an adult worker a wage to enhance her/his productivity, part of it ends up augmenting her/his children's consumption and productivity (Genicot, 2005). Therefore, the critical point of the

Table 3.1: A typology of child labor

Activities	Family Decision	Child Decision
Non-Market Activity	**Work/labor within the family economy** household work / labor work /labor within a family enterprise assisting parents in market activities	**Self-determined work/labor** within a "single-person household" within a social unit (e.g. family)
Market Activity	**Wage labor** (including apprenticeship) Forced labor Bonded labor	**Wage labor** (including apprenticeship) Self- employment Food for labor

Source: Modified from Hemmer *et al.*, (1996)

multiple equilibria (Basu *et al.*, 1998) will be explained by the concept of the nutritional efficiency wage argument introduced by Leibenstein (1957), and Majumdar (1959) in the third step of the theoretical discussion. Then, the empirical implementation of this model will also be discussed in this chapter to estimate the derived hypotheses.

The chapter is organized as follows. It begins with a brief description of the typology of child labor in section 3.1. Two basic models of child labor supply follow in section 3.2. A theory of social labeling and child labor is discussed in section 3.3. The theory of nutritional efficiency wage is explained in section 3.4. Section 3.5 briefly discuss the hypothesis derived from the theories. Section 3.6 provides a brief summary.

3.1 A Typology of Child Labor

Child labor may be taken to consist of two broad types: engaged in the labor market or non-market activities. A theoretical explanation of the phenomenon should concentrate on typical forms of child labor. Thus, it is necessary to formulate a typology of child labor by using economically meaningful criteria for distinguishing different forms of child labor (Hemmer *et al.*, 1996).

For the purpose of constructing or choosing a theory, the following grouping is important: i) The principal decision maker of child labor vs schooling are either adults i.e. parents or the child. A study by ILO (1996) found that family decisions are generally made by adult household members. Economic activities based on a child's decision mostly apply in the case of street children. This thesis does not

consider any street children, therefore, one can consider that the decision comes from the parents or adult guardian of a child. ii) The form of economic relation or activity (market vs. non-market). Most of the non-market activities are defined by unpaid work on the family farm or enterprise, and unpaid domestic work. iii) According to the UNICEF there is a difference between child work and child labor. Children's participation in economic activity - that does not negatively affect their health and development or interfere with education, can be positive. Work that does not interfere with education (light work) is permitted from the age of 12 years under the International Labor Organization (ILO) Convention 138. On other side child labor is more narrowly defined and refers to all children below 12 years of age working in any economic activities, those aged 12 to 14 years engaged in harmful work, and all children up to age 18 engaged in the worst forms of child labor.

This research deals with child labor in the carpet industries in Nepal. The carpet industries in Nepal are mostly based on small and medium scale industry and are not considered as household based small enterprises.

3.2 Basic Models of Child Labor Supply

Hemmer *et al.* (1996) modifies the household production approach formulated by Becker (1965) to estimate the child labor supply function [10] The discussion of the determinants of child labor therefore starts with the literature on time allocation within the household. This literature usually treats the determination of fertility and time allocation of household members, especially labor supply, as a joint decision. Obviously, the number of children in the household determines the potential supply of child labor, and hence fertility behavior is a determinant of the supply of child labor.

According to this approach, households try to maximize their welfare or utility, which depends on the amount of several "commodities". [11] These commodities are "produced" by the household using two forms of inputs: purchased market goods

[10]This model and equations are described exactly from Hemmer *et al.*, (1996). According to Hemmer *et al.*, (1996), a theoretical framework for analyzing the supply of child labor as well as the children's economic activities within the family economy should capture the decisions about both fertility and time allocation. It should also be applicable to market and non-market activities as well as to decisions taken by the family or by the child. The "household production function approach" formulated by Becker is appropriate for this task and therefore seems to be adequate for the purpose of the study of child labor supply.

[11]The term "commodity" is defined broadly in order to include such objects as a composite consumption commodity representing the "standard of living", the number of children, the educational services consumed by the children as well as the children's leisure.

and the time of the household members. That is, households are regarded to be multi-personal economic units which are both consuming and producing. Formally the household's utility depends on the commodities like standard of living (S), the number of children (N), the educational services (E) and the children's leisure (L). Assume the household maximizes a twice-differentiable quasi-concave utility function,

$$U = U(S, N, E, L). \tag{3.1}$$

The commodities are produced according to the following production functions:

$$S = S(X_S, T_{AS}, T_{CS}), \tag{3.2}$$

$$N = N(X_N, T_{AN}), \tag{3.3}$$

$$E = E(X_E, T_{CE}), \tag{3.4}$$

$$L = L(X_L, T_{CL}). \tag{3.5}$$

The standard of living is produced using a purchased market good (X_S) as well as the parents' and the children's time (T_{AS}, T_{CS}) as inputs. The number of children as well as education and leisure are "produced" using market goods (X_N, X_E, X_L) and the time of parents and children (T_{AN}, T_{CE}, T_{CL}), respectively.

The scope of action is restricted by two constraints: The income constraint states that the household's expenditures must be equal to the household's money income in each period. According to the time constraint, the total time which is devoted to several activities, must equal the entire time available for each individual. In the case of children the time constraint is as follows:

$$T_C = T_{CW} + T_{CS} + T_{CE} + T_{CL} \tag{3.6}$$

That is, the children's whole time can be devoted to wage labor (T_{CW}), home work (T_{CS}), education (T_{CE}) and leisure (T_{CL}). The income constraint and the time constraint can be combined to get the "full income constraint". The full income can be interpreted as the household's money income if all time available to the members of the household is devoted to wage labor:

$$I = T_A w_A + T_C w_C, \tag{3.7}$$

$$I = \pi_S + \pi_N N + \pi_E E + \pi_L L. \tag{3.8}$$

Equation 3.8 shows that the full income "I" can be used to obtain the four commodities S, N, E and L. The π_S, π_N, π_E and π_L denote the "shadow prices" of the four commodities respectively. In order to calculate these shadow prices two aspects have to be registered:

- The costs of the market goods used as inputs and
- the opportunity costs of the family members' time[12] which is used as input likewise.

In the case of the "shadow price" of children, the economic contribution per child to the family's full income has to be subtracted to get the "net cost of children". The shadow price of the educational services per child, for example, can be expressed as follows:[13]

$$p_E = P_E \frac{X_E}{E} + w_C \frac{T_{CE}}{E} \tag{3.9}$$

In Equation 3.9, p_E is the price of the market good used in the production of E and w_C is the child wage rate. According to the utility maximising behaviour the amount of each commodity produced and consumed is strongly related to its shadow price; the higher the shadow price, other things equal, the lower is the amount demanded. The maximisation of the utility function subject to the full income constraint leads to a set of first order conditions, which imply that the following equation holds:

$$\frac{U_i}{U_j} = \frac{\pi_i}{\pi_j} \tag{3.10}$$

The ratio between the marginal utilities of two different commodities equals the ratio of the two corresponding shadow prices. The model's economic logic can be illustrated by discussing the effects of a change in the wage rates, the prices and the money income:

An increase in the *adult's wage* rate has two opposite effects:

- First, a rise in the adult's wage rate increases the opportunity costs of the adult's time. Because child rearing is a highly time intensive activity, the

[12]The opportunity costs in this context is the wage income which cannot be realised because the family member devotes a part of his time to the production of a commodity instead of working.

[13]The opportunity costs in this context is the wage income which cannot be realised because the family member devotes a part of his time to the production of a commodity instead of working.

shadow price of children increases and thus the number of children desired decreases (substitution effect).

- Second, a rise in the adult's wage rate means a rise in the family income. If the desired number of children increases due to a rise in income, i.e. children are a normal "good", a rising income level will increase the number of children demanded (income effect).

Whether or not the substitution effect dominates the income effect is not unequivocal and a priori accepted. The empirical evidence suggests, however, a negative relation between the number of children and the income level. This is supported by the fact that education seems to be a highly normal good. In this case the demand for education increases along with income. Then, the desired number of children decreases as far as the number of children and the education level are substitutes.

A rise in the *child wage* rate or in the children's productivity doing home work increases the children's potential contribution to the family income. Thus the shadow price or the net costs of children decrease and the number of children "demanded" increases. The increasing wage rate leads to a rise in the family income and therefore increases the desired educational services as well as leisure, as far as these are normal goods. Again, whether the former effect (the substitution effect) dominates the latter (the income effect) or not, is equivocal. However, because the children's contribution to the family income is mostly less than 20 percent, the substitution effect probably dominates the income effect. Consequently, the demand for educational services or leisure decreases so that child labor increases. A rise in the child's home work productivity has the same consequences concerning the child's time devoted to education and leisure. The distinction between market and non-market activities is not essential in the context of this model. Therefore the model can be used to analyse the children's economic contribution within the household, as well as children's labor market activities, i.e. child labor supply.

From an economic point of view child labor is simultaneously determined by several economic parameters. Hence, the mechanisms how changes of economic parameters affect child labor are manifold. The ultimate result of such changes can only be calculated within a fully specified general equilibrium model. However, to derive plausible implications partial analysis is applied which concentrates on the direct consequences of economic changes rather than on indirect effects. The direct effects of changes of main economic parameters influencing child labor are presented

Table 3.2: Impact of changes of selected economic parameters on child labor

Change of Economic Parameter	Substitution Effect	Income Effect	Total Effect
Wage rate of children (w_C) increases	+	-	+/-
Children's productivity in home production (S/T_{CS}) increases	+	-	+/-
Wage rate of adults (w_A) increases	0	-	-
Adults' productivity in home production (S/T_{AS}) increases	0	-	-
Children's productivity concerning education (E/T_{CE}) increases	-	-	-
Price of market goods complementary to non-economic activities (P_E, P_L) increases	+	+	+
Price of market goods complementary to home production (P_S) increases	-	+	+/-

Source: Modified from Hemmer *et al.* (1996)
(+) = Child labor increases
(-) = Child labor decreases
(0) = No direct impact on child labor
(/) = Or

in Table 3.2. In this context, again, substitution effect and income effect can be distinguished: The substitution effect in Table 3.2 only covers the direct impact of changes of prices or productivities on child labor. The income effect signifies the household's potential money income in real terms if all time would be devoted to wage labor ("full income"). It is assumed that education and leisure are normal goods.

There are, however, some intertemporal aspects to be discussed additionally. Since education strongly influences the future income situation, the demand for education comprises several intertemporal aspects which are not captured by the model described above because of its static character (Hemmer *et al.*, 1997). The neo-classical model of child schooling considers the simple question of a household choosing the optimal quantity of schooling which maximizes the present value of lifetime earnings by a child (Wydick, 1995). With no credit constraints, costs of education are viewed in terms of the opportunity cost of foregone returns to labor at

any education level h. In this respect the following model captures the fundamental ideas offered by Becker (1965) and Mincer (1974). Thus in a world without credit constraints, optimal schooling (human capital) h is chosen by

$$\max_{h} \int_{h}^{T} w(h) \exp^{-rt} dt \tag{3.11}$$

where T is the expected lifetime of the child, $w(h)$ represents returns to labor as a function of schooling, and r is the interest rate. Solving the maximization problem by integrating and evaluating the anti-derivative at T and h yields

$$-\frac{1}{r} w(h) \exp^{-rt} |_{h}^{T} = \frac{1}{r} w(h)(\exp^{-rh} - \exp^{-rT}) \tag{3.12}$$

Differentiating 3.12 with respect to h, $\frac{\delta(.)}{\delta(h)}$ and setting equal to zero, reveals the first-order conditions for the optimal choice of h[14]:

$$\frac{w^{'}(h)}{r}(1 - \exp^{r(h-T)}) = w(h) \tag{3.13}$$

The first-order condition shows that an optimal level of schooling is chosen at the point where the lifetime discounted benefits of an additional year of education equal the opportunity cost of one period of labor earnings.

Consuming educational services generates costs which occur in the present. The positive impact of education, a higher income level, arises in the future. The returns of education must therefore be discounted to get their present value. Thus, the present value of the future earnings is dependent on the household's time preference rate. It is plausible to assume that the time preference rate is negatively related to the income level. That is, the present value of future earnings, other things equal, decreases as the household income decreases. Thus the demand for education decreases (Hemmer *et al.*, 1996).

However, this standard model clearly leaves aside the issue of imperfections in credit and labor markets. Even if the (direct and indirect) costs of schooling in the present are high, investment in human capital might be rational if the additional future income is sufficiently high. In such a case it is sensible to raise a credit

[14] An interesting aspect of this result is that if one allows for a linear education-earnings function and remove the adjustment factor for a non-infinite lifetime, one finds that the optimal level of human capital investment is simply equal to the inverse of the interest rate, or $h^* = 1/r$ (Wydick, 1995).

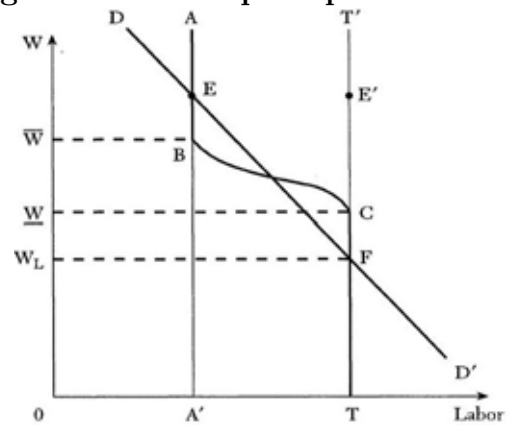
to finance education in the presence. This might be impossible because of capital market imperfections such as a lack of information or uncertainty. Thus capital market imperfections can be a source of a suboptimal low level of education and a high level of child labor (Hemmer *et al.*, 1997). The typology of non-market activities in Table 3.1 will also be effected by credit market failure. If family members face the option of laboring in household enterprises and households are credit-constrained, the opportunity cost of schooling becomes inflated since hired labor requires scarce working capital. In addition, if hired labor is an imperfect substitute for family labor because of the need for monitoring when the potential for moral hazard exists, the opportunity cost of schooling again increases since family labor is valued at a premium over hired labor. Thus in the presence of asymmetric-information-induced imperfections in capital and labor markets, the predictions of the standard schooling investment model become unreliable (Wydick, 1995).

Using a neoclassical model of household decision-making of production and consumption, children's time can be allocated between school, household chores or household production, labor supplied in the market, and other activities (Becker 1965). A household makes decisions about the number of children to have and their time allocation among these activities. In this model, traditionally known as a unitary model, a household is characterized as a single unit decision maker, where one parent decides what labor, if any, the child will supply, and parents and children have common preferences. This is a valid model if one person in the household happens to be a dictator or all persons have the same utility function (Basu, 1999).

Another limitation of the early models seemed to overlook multiple equilibria in the labor market when the children are considered as "potential workers". If there exists multiple equilibria in the labor market then a variety of interesting policy options could come into consideration. Basu and Van (1998) looked for the possibility of multiple equilibria in the labor market. A simplified BV (Basu and Van) model is presented exactly from Basu (1999) in this subsection.

The only two essential assumptions of BV model are the following: *Luxury axiom*: A household would not send its children out to work if its income from non-child labor sources were sufficiently high. *Substitution axiom*: Adult labor is a substitute for child labor, or more generally, adults can do what children do. To explain the above two assumptions it could be state that (i) for every household i, there exists a critical wage, Wi, such that the household will send its children

Figure 3.1: Multiple equilibria model



Source: Basu, K., 1999.

out to work if and only if the adult wage prevailing in the market is less than W_i. The understanding is that the poor, some in face of shocks and other just for daily survival, require their children to be sources of income (Basu *et al.*, 2003). and (ii) adult labor and child labor are perfect substitutes subject to an adult equivalence correction. Basu and Van (1998) assumes that child's labor and an adult's labor are two homogenous factors. The difference is simply that a child produces a fraction $\gamma(< 1)$ of an adult's labor, where $0 < \gamma < 1$. This is contrary to the pervasive, "nimble fingers" belief which is discussed in chapter 2.2.1.2. Each adult produces 1 unit of labor, while each child produces γ units of labor.

Whenever both children and adults work, the prevailing adult and child wages must satisfy the following condition (Basu, 2000):

$$w_c = \gamma_w \tag{3.14}$$

If this condition in the equation 3.14 does not hold, firms could do better by substituting one kind of labor for another. Given this simplifying assumption, it is clear that when adult wage is w, child wage must be γw, and what a firm will care about is the total amount of labor it has. What this total is composed of, that is, how much adult labor and how much child labor, is unimportant to the firm. Hence, it could be written that the aggregate demand function for labor in the economy as follows:

$$D = d(w) \tag{3.15}$$

where D is the aggregate labor demanded by all firms in the economy. We will

assume that $d(w) < 0$. This demand curve is illustrated by the line marked D in Figure 3.1.The vertical axis of Figure 3.1 represent adult wage (i.e. the wage paid to an adult for a full day's work). The minimum and maximum wages are defined by $\overline{W} \equiv max_i W_i$ and $\underline{W} \equiv min_i W_i$.

Consider a competitive model in which all agents are price takers. Let $AA^{'}$ be the supply curve of the aggregate adult labor in the economy. For simplicity it is shown as perfectly inelastic. Next consider the total amount of "effective labor" that all the children can supply. If there are X children in the economy, this will be equal to X. Add to the aggregate adult labor supply the effective labor that the children can potentially supply in the economy and draw another line representing this. Let $TT^{'}$ be this new line. Thus $AT^{'}$ is equal to γX, the total amount of labor available from the children in the economy. In other words, the aggregate supply curve of labor in the economy would indeed by $TT^{'}$.

Now it is easy to figure out the actual, aggregate supply curve of labor. If the market (adult) wage is below $\underline{W}$, then all children are sent to work; so total labor supply is OT. If the market wage exceeds , no child is sent to work; so total labor supply is $OA^{'}$. As wage rises from $\underline{W}$ to W, one household after another withdraws its children from the labor force; so the total supply of labor keeps decreasing, as shown by the curve CB. Hence the total supply of all kinds of labor (that is, adult plus child)plotted against alternative adult wages gives the curve $ABCT$. Basu(1999) termed this as the 'hybrid supply curve'; which should serve as a reminder that it is not quite the standard supply curve. Not only is this supply curve backward-bending but its composition keeps changing as it move along its contour. Along AB it consists of pure adult labor; as it moves from B to C it includes more and more child labor; and from C to T it consists of all available labor in the economy. The possibility of multiple equilibria is now transparent. Assume that whenever adult wage is W, child wage happens to be γW. Suppose the aggregate demand curve for labor in the economy is given by $DD^{'}$. That is, $DD^{'}$ shows the total effective labor demanded by firms for every possible adult wage W. Then there are three equilibria. Let us ignore the unstable one and focus on the ones depicted by E and F in Figure 3.1. If an economy is caught at point F, wages will be low (W_L for adults and γW_L for children) and children will be working. The same economy, however, can be in equilibrium at point E, where wages are high and children do not work.

If the economy is at equilibrium point F, there is scope for an interesting

policy intervention, which in Basu and Van (1999) called as a "benign intervention". Suppose child labor is banned. Then effectively, the supply curve of labor becomes AA'. So if demand conditions are unchanged, the economy will now settle at the only equilibrium, at E. What is interesting is that once the equilibrium settles at E, the law banning child labor is no longer needed (since E was anyway an equilibrium of the original economy). It is in this sense that the intervention is described as benign. After its initial effect, it goes dormant and can actually even be removed without loss.

If the demand curve intersects the supply curve only once and on the segment CT, then a ban on child labor may well cause a decline in welfare of the workers, including the child laborers. If this model were fitted into a Walrasian description of the entire economy, each equilibrium would be Pareto optimal. So between the equilibria depicted by E and F neither Pareto dominates the other. However, working-class households are necessarily better off at E. To see this, consider a (call it E'), where wages are the same as at E but all children work. Clearly worker households are better off at E' than at F since in both cases everybody works but in the former the wages are higher. Next, since given the wages at E households prefer not to send the children to work, by revealed preference it is known that E is superior to E'. Hence, by transitivity E is preferred to F.

If the economy is in a low equilibrium, Basu (1999) suggested two alternative policy options to reach at the high level of equilibrium:

(i) a collective ban on child labor reduce labor supply and raise wages and therefore improve the welfare of the carpet weavers' households (assuming that these households are pure wage earners).

(ii) technological change could make children less productive than adults, then β would fall. From Figure 3.1 it is evident that this would result in T moving left as long as child labor vanishes.

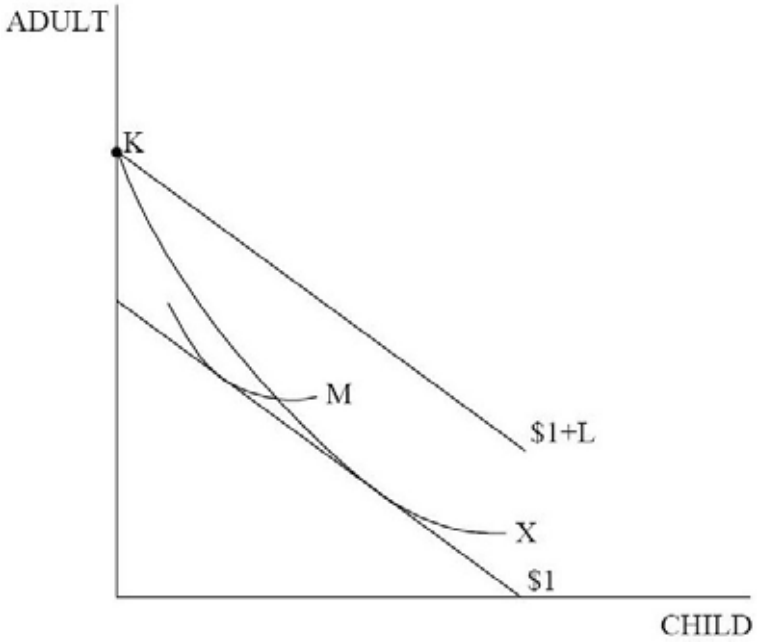
If the economy is at the low wage equilibrium and the high wage equilibrium exists, then a ban on child labor will move the economy to the high wage equilibrium, at which point the ban will become redundant (Basu, K. *et al.*, 1999). Using Basu, K. *et al.* (1998) general model as a starting point, Basu, K. (2000) shows that under certain conditions the implementation of an adult minimum wage will have the same effect on child labor as a ban. Obviously, this result from BV theory relied on the poverty hypothesis and would not apply if children were working for another reason than their parents' poverty (Dumas, 2004). The question addressed in this

thesis was not to find out the way to reach from low equilibrium to high equilibrium, rather the validity of the model depends on the existence of "luxury axiom" as well as multiple equilibrium. Whether or not this multiple-equilibria argument applies in a particular situation to implement ban on child labor is ultimately an empirical matter (Basu, 2003). Basu also argued in a different way: "if market has only one equilibrium which is likely in very poor countries, then a ban can worsen the condition of the labor households. Partial bans are especially likely to backfire and cause deterioration in labor conditions. The first best policy is to attack the problem at its source. This entails improving the condition and scope for adult labor" (Basu and Van,1998)." More technically, if the demand curve intersects the supply curve only once and on the segment CT, then a ban on child labor may well cause a decline in welfare of the workers, including the child laborers. Basu (1999) mainly emphasizes improving the condition of adult labor in the very poor countries. Therefore, the empirical context of Basu's model is extremely relying on the fact of "luxury axiom", which is going to be tested in this thesis [15].

If multiple equilibria exist in a transitional or developing economy, then it is very unlikely that a total ban on child labor can be implemented on the carpet industry; this is due to the difficulties in monitoring children who work in family enterprises like in Indian carpet industries (in India looms are basically household property). Many authors favor BV's (Basu and Van) argument that high adult wage could decrease child labor but opinion differs in policies targeted to increase adult wage. The intermediate time of converging from the low level equilibrium to the high level equilibrium in the BV model is also very important. In fact, there might be a risk for the subsistence of the family, the child is likely to be in the downward sloping part of labor supply curve. That is, a ban on child labor might produce product squeeze in the labor demand and a wage cut will induce the child to work more hours than before to keep his/her family in the subsistence level. Given the assumption of a negatively sloped supply curve, any ban or demand side intervention could worsen the child's and household's welfare. Therefore, social labeling has been suggested as an alternative approach to combat child labor, which applies both demand and supply side intervention through different welfare activities of NGOs for the retrenched children in the carpet production chain. If the net impact of a

[15]The "substitution axiom" has already been tested by Levison *et al.* (1996) in the Indian carpet industries by collecting information on actual productivity; they reach to the conclusion that adults and child laborers are substitutes. The present study finds that such substitution could be costly since adult wages are typically higher (please see Table 7.2)

Figure 3.2: Factor market equilibrium for adult and child labor



Source: Brown, 1998.

labeling program is to switch demand away from goods produced by children, the consequences for child workers could actually be the same as trade sanction. This is the reason why consumers pay a higher price for the labeled product, which finances the welfare activities of child laborers to control over the supply chain as well.

3.3 Theory of Social Labeling and Child Labor

To understand the outcome from labeling where child labor is concerned can be explained by the theoretical arguments of Brown (1998)[16]. Consider, for example, a two-good two-factor model of a price-taking developing country. Both the import-competing and export sectors employ adult and child labor, which are imperfect substitutes. The export sector, X, is taken to be child labor-intensive as compared to the import-competing sector, M. Factor market equilibrium for adult (A) and child (C) labor is depicted in Figure 3.2. The unit value isoquants for each sector are shown to be tangent to a $1 isocost line. The slope of the isocost line is, of course, the relative wage rates of child and adult labor. Now introduce product labeling. A premium, L, is paid by western consumers for a dollar's worth of the

[16]The model described in this subsection is exactly that of Brown (1998). Only the relevant part of the theory is described here.

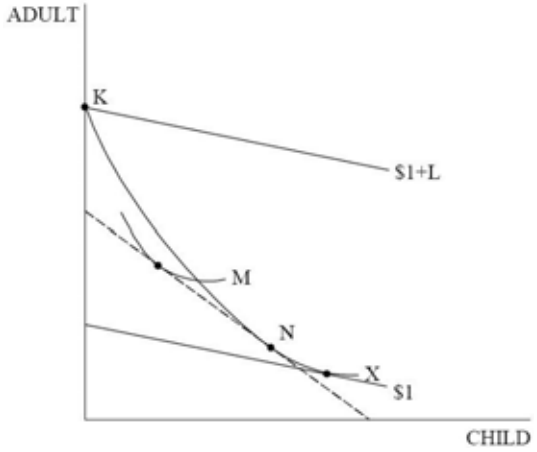
X-good that is labeled as has having been produced using adult labor only. In order to qualify for the label, producers in the X-sector must produce using an adult-only technology. That is, X producers must use the technique of production denoted by point K in Figure 3.2. In order to be viable, the adult-only technology must cost no more than \$1+L. If the \$1+L isocost line falls short of the adult-only technology, point K, then no firms will label. Child labor practices will continue as is. However, if the \$1+L isocost line intersects the A-axis exactly at point K, as shown in Figure 3.2, then firms are indifferent between using adult-only technology, applying the label and receiving the label premium or continuing with their current practice of hiring both adults and children.

Some X-sector firms may decide to adopt the adult-only technology. In this case, it is possible to draw two conclusions. First, since both factor employment and wages are unchanged, labor income must be unchanged. Furthermore, since the labeling premium was just barely enough to cover the increased cost of the adult-only technology, profits are unchanged. However, it is clear that western consumers are paying more for the labeled goods than before. As a consequence, it must be the case that the labeling premium, L, has been completely dissipated due to the use of the inefficient adult-only technology. The only social benefit obtained is the good feeling that western consumers experience knowing that they are consuming a good that was not produced by child labor. However, the amount of child labor and each child's family income are unchanged. Children are no better off than they were before labeling. Second, the one impact that labeling does have is to expand the export sector and contract the import-competing sector at fixed world prices. So it can be concluded that the developing country will trade more.

Now relax the assumption that the developing country is a price-taker, it can be concluded that a terms-of-trade deterioration is possible. Further, since child labor is the relatively abundant factor, the Stolper-Samuelson Theorem tells us to expect a decline in the wage-rate for child labor. Returning to 3.2, if the \$1+L isocost line intersects the Adult-axis above point K then all exporting firms will want to adopt the adult-only technology. The resulting increase in the demand for adult workers will raise the adult wage relative to the wage of child workers, ultimately stemming the flow of X-sector firms adopting the adult-only technology. The new labor market equilibrium is depicted in Figure 3.3.

The wage of child labor has fallen relative to the adult wage, as indicated by the flattened isocost line. The X-sector firms using an adult child technology

Figure 3.3: The new labor market equilibrium



Source: Brown, 1998.

have now adopted a more child-labor intensive process given by point N in response to the lower relative cost of child labor. Firms in the import-competing M-sector will also attempt to reduce cost by substituting children for adult labor. However, since the M-sector is adult labor-intensive as compared to the X-sector, the rise in the adult wage must raise costs for M-sector firms as compared to the X-sector firms which use the adult-child technology. Therefore, if X-sector firms are breaking even, the M-sector firms must have negative profits. As a consequence, no import-competing firms will survive once labeling is introduced. Since the M-sector has been eliminated, the relative wages of adult and child workers is determined so as to make X-sector firms indifferent between using an adult-only technology and an adult-child technology. Therefore, the adult wage will rise until the additional cost of producing X using the adult-only technology is just barely covered by the labeling premium, L. X firms using the adult-only technology are once again breaking even on the \$1+L isocost line at point K. The impact on children in all cases appears to be either zero or negative. Of course, the adults in the labor force are likely to be the parents of the children in the labor force. One might hope that raising the adult wage in the third case might reduce the need for the child's contribution to family income. Furthermore, the fall in the child's wage lowers the opportunity cost to the family for formal schooling. However, it must be kept in mind that, at least for this example, the total payment to a typical family (adult plus child workers) is virtually unchanged. As in the previous case, much if not all of the labeling premium has been dissipated through the use of the inefficient adult-only technology. Product labeling will raise the welfare of children only if the labeling premium is far more

than the amount necessary to compensate firms for the higher cost of the adult-only technology. In order to succeed, the labeling premium has to be large enough to raise the adult wage to the threshold level at which child labor begins to decline. In other words, when labeling succeeds, it succeeds because it provides an income transfer to families, not because it provides a disincentive to the firm to hire children.

However, labeling, will either reduce the child's wages or, at best, leave them unchanged (Brown, 1998). For a below subsistence family, the income effect of a child wage reduction could be very high, especially if the supply curve for child labor is negatively elastic. This would immediately result into a worst situation for a child laborer and his/her family. On the other hand, if the child wage is unchanged and adult wage is changed upward the cross elasticity of the child labor supply would be elastic in the below subsistence group of households for the nutritional efficiency wage argument. The result is obviously, an obstacle for social labeling NGOs. The question is whether social labeling NGOs could break the subsistence trap by its supply side intervention welfare policies. This question will lead one to explain the nutritional efficiency wage theory.

3.4 Theory of Nutritional Efficiency Wage

3.4.1 Consumption and Efficiency

When food is metabolized in the body, energy is released. Body requires this energy for all its activities. For all muscular activities and the function of vital organs like heart, lungs, alimentary canal, nervous tissues and glandular tissues energy is required. The energy requirement of a person depends on various factors. The most important factor in assessing the energy requirement is the basic metabolic rate[17] of the person. The rate at which energy translates into the performance of each of these functions is closely related to the current nutritional status of the individual concerned.

Let us consider body mass,m, as a proxy for this status. The basal metabolic rate, $r(m)$, is an increasing, convex function of m_t. Let m_t and m_{t+1} denote body mass at the beginning and the end of a period, t, x_t the energy consumption during the period, q_t the energy used on work, and $\phi(m_t, m_{t+1})$ the energy stored (released) in changing body mass from m_t to m_{t+1} . We have the fundamental energy balance

[17]This is defined as the amount of heat or energy required by the body to do the involuntary work of the body. Functions of brain, heart, liver , kidneys, lungs, secretary activities of the glands and intestinal movements are the basal activities in human body.

equation[18]:

$$x_t = r(m_t) + q_t + \phi(m_t, m_{t+1}) \tag{3.16}$$

The labor supply in a household (measured in efficiency units) is a concave function of the energy expended on labor and the body mass:

$$l_t = l(q_t, m_t), \quad l(0, m) = 0 \tag{3.17}$$

The marginal ability to transform energy into work increases with mass, which allows to sign the cross-partial:

$$\frac{\delta^2 l}{\delta m \delta q} > 0 \tag{3.18}$$

In general, if energy increases, the lower subsistence households will be able to work more hours.

3.4.2 Nutrition-Based Efficiency Wage Model

Among the several variants of efficiency wage models, one has been considered especially relevant for developing countries: the nutrition-based efficiency wage model. This model was first proposed by Liebenstein (1957) and Mazumdar (1959). According to the *nutrition-based* efficiency wage model, employers do not lower the wage because the worker would then consume less, thereby lowering his productivity; paying a lower wage may raise the cost per efficiency unit of labor (Swamy, 1997). Dasgupta and Ray (1986) have examined the nutrition-based efficiency wage model in a general equilibrium setting when workers possess different amounts of wealth. In such a model, wealthier workers have an advantage in the labor market. This is because for any given wage they consume more nutrients and are more productive.

At a very low levels of income and hence nutrition (below subsistence), the effort that household members are able to exert may be positively influenced by an increase of calorie intake as long as the household is in the subsistence level. Therefore, households might use their reserve labor[19] to work more hours in order to reach in the subsistence level. When they reach the subsistence level they have enough energy to work more hours with the increase of calorie intake and they do not need to use the reserve laborers to work any more. To make this framework more concrete, consider a labor market with N competitive loom owners that maximize

[18]The equations described of this section are exactly that in Bose (1997).

[19]Assume that child laborers are being treated as a reserved laborers by the household.

profits given by

$$\pi = F(eL) - wL \tag{3.19}$$

where $F^{'} > 0$ and $F^{''} < 0$. The idea here is that loom's output is a function of worker's effort e multiplied by their hours of work L. The wage w is the wage per hour worked. It is assumed that the worker's incentive to provide effort depends on the wage. That is

$$e = e(w) \tag{3.20}$$

where $e^{'}(w) > 0$. Finally, to emphasize that inelasticity of labor supply, assume that the supply of hours is fixed at $\bar{L}$ and does not vary with the wage. Suppose there is unemployment in this labor market, so that there is no effective competition between firms for workers. In such a situation, firms can choose L and w freely along its MP of labor curve, so as to maximize profits. In choosing the level of employment, the firm sets the marginal product of an extra hour of work equal to the marginal cost. The marginal product of one more hour worked is $eF^{'}$. The marginal cost is w, and so

$$eF^{'} = w \tag{3.21}$$

In increasing the wage by \$1, the firms induces an extra amount of effort from each worker given by $e^{'}(w)$. It follows that the total increase in effort is $e^{'}(w)L$ and the output generated (the marginal product) from the extra effort is $F^{'}e^{'}(w)L$. The marginal cost comes from the fact that all of the L workers have to be paid \$1 more, and so

$$e^{'}(w).F^{'}.L = L \quad \Rightarrow e^{'}(w).F^{'} = 1. \tag{3.22}$$

Using 3.21 to substitute out $F^{'}$ from 3.21, the so called solow efficiency wage condition :

$$e^{'}(w^*) = \frac{e(w^*)}{w^*} = 1. \tag{3.23}$$

This condition pins down the efficiency wage w^*. Note that it is completely independent of production and depends only on the relationship between effort and wages. The Solow condition states that the efficiency wage is such that the increment in effort arising from an extra \$1 of wages is equal to the effort per \$1.

As long as the efficiency wage is high enough, not all $\bar{L}$ workers will be hired and there will be excess supply of workers. This is a situation of involuntary unemployment in that there are workers who are willing to work at or below the market wage. However, firms do cut their wages in response because doing so would be

costly: it would reduce the effort levels of those currently working for the firm. Variations in demand would have no impact on the wage level, unless a full employment situation arises. In the latter case wages would be bid up above the efficiency wage and firms would have to behave as competitors for labor. If Basu and Van (1998) are right in their assumption that parents would use child labor only below a certain subsistence level, one could find a positive slope at the lower part of the spline and a horizontal slope at the upper part of the spline. If the slope at the lower part of the spline is high, this is consistent with the *Efficiency Wages Argument*.

3.5 Derived Hypotheses from the Theory

The hypotheses for empirical work are established through the above theories described in Table 3.3.

Hemmer *et al.* (1996) and Basu *et al.* (1998) treat that parents are altruistic to their children and the adult income elasticity of demand is positive for child leisure or schooling. Therefore, in both of the cases the income effect is positive in reducing child labor supply. The negative correlation between adult income and child labor is important to proof the poverty hypothesis.

In economics, an Engel curve shows how the demand for a good or service changes as the consumer's income level changes. It must be noted that income elasticity of demand is not constant with respect to income, and may change sign and coefficient at different levels of income. More precisely, a luxury good may become a normal good or even an inferior good at different income levels. This also means, however, below a certain income threshold if an increase in income would lead to a decrease in child leisure then it would contradict the above arguments of treating leisure as a normal Hemmer *et al.* (1996) or luxury good Basu *et al.* (1998). If the income elasticity of leisure or school were negative then the income elasticity of child labor supply would be positive under 'time constraints function'.[20]

A larger calorie intake reduces the number of required breaks or leisure and thereby increases the number of potential working hours (Hemmer, 1979). The idea of the nutritional efficiency wage theory then comes into consideration to explain such a situation where income elasticity of leisure or schooling is negative (inferior good) assuming that income equals consumption. "A certain minimum calorie intake is indispensable for 100% efficiency, and if this requirement is not met, the worker is incapable of persistent activity - there will be a major interruptions" (Hemmer,

[20]The time constraints function is described in Hemmer *et al.*(1996).

Table 3.3: A brief overview of selected theories and derived hypotheses

Theory	Derived hypotheses	Brief explanation
The economics of child labor (Hemmer *et al.* 1996; Basu *et al.*, 1998)	Poverty hypothesis (1): if adult wage/income increases then the probability of the incidence of child labor decreases and vice versa	A child's non-leisure time is available for either schooling, home production, or income earning work in the market. Assuming parental altruism, child labor is due to parents' low income
	Poverty hypothesis (2): Children do not work once subsistence level is reached	A "subsistence" hypothesis is a modified luxury axiom in the sense that households make their children work if they are below subsistence level (2,100 Kcal) To be more precise, this is going to test whether there exists a subsistence trap for cause of child labor or not
Theory on nutritional efficiency wage (Liebenstein, 1957; Mazumdar, 1959; Bose 1997; Swamy, 1997)	If food energy intake increases then child labor increases	Each child's productivity depends on nutrition, which in turn depends positively on the level of child's consumption of food
Theory on social labeling (Brown, 1998)	Social labeling decreases child labor and increases child schooling	The welfare impact of social labeling NGOs may reduce the number of employed children and shift the children to school who are still at work

1979). This line of argument would lead this study to subdivide the whole sample into two groups considering a certain poverty threshold, which will be described in the econometric model (Chapter 8 ; Figure 8.1.

The above discussions are related to poverty. The role of "social labeling" then come into consideration as depicted by Brown (1998) to analyze whether labeling NGOs have any influence on the child labor supply. More precisely, the last hypothesis in Table 3.3 refers whether the labeling NGOs could break the poverty argument of child labor supply and influence child schooling.

3.6 Chapter Summary

This chapter provides an outline of theoretical framework of child labor. The time allocation decisions determine the extent of child labor. The time allocation and fertility decisions are determined by the level of income and the relative shadow prices of several commodities (including standard of living, the number of children and education, wage rates of adults and children, prices of the market goods). A change of one of these determinants changes both the level of (real) income and the system of relative shadow prices which in turn related to an income and a substitution effect. The change in the level of income is particularly important for the allocation of the children's time in work and school: poverty can be seen as one main determinant of child labor (Hemmer *et al.*, 1996). Basu *et al.* (1998) introduced multiple equilibria in the labor market when the children are considered as "potential workers". If there exist multiple equilibria in the labor market then a variety of policy options could come into consideration. The two essential assumptions of BV (Basu and Van) model are luxury and substitution axioms.

- Luxury axiom: A household would not send its children out to work if its income from non-child labor sources were sufficiently high.
- Substitution axiom: Adult labor is a substitute for child labor, or more generally, adults can do what children do.

If the economy is in a low equilibrium, Basu (1999) suggested two alternative policy options like "a collective ban" or "technological change" to reach the high level equilibrium. But, given the assumption of a negatively sloped supply curve for child laborers, any ban or demand side intervention could worsen the child's and household's welfare. Therefore, social labeling has been suggested as an alternative approach to combat child labor, which applies both demand and supply side intervention through different welfare activities of NGOs for the retrenched children in the carpet production chain. However, Brown's model (1998) suggested that labeling will either reduce the children's wages or, at best, leave them unchanged. For a below subsistence family, the income effect of a child wage reduction could be very high. This would immediately result in a worst situation for a child laborer and his/her family. On the other hand, if the child wage is unchanged and adult wage is changed upward, the cross elasticity of the child labor supply would be positively elastic in the below subsistence group of households for the nutritional efficiency wage argument.

According to the nutrition-based efficiency wage model (Liebenstein, 1957) employers do not lower the wage because the worker would then consume less, thereby lowering his productivity; paying a lower wage may raise the cost per efficiency unit of labor (Swamy, 1997). At very low levels of income and hence nutrition (below subsistence), the effort that household members are able to exert may be positively influenced by an increase of calorie intake as long as the household reach the subsistence level. Therefore, households might use their child labor (reserve labor) to work more hours in order to reach the subsistence level. The result is obviously, an obstacle for social labeling NGOs.

Part II

Empirical Framework

Chapter 4

The Carpet Industry and Child Labor in Nepal

In this chapter, the general economic situation in Nepal as a whole and its carpet industry situation in particular will be discussed on the basis of different official statistics. After discussing the general economic situation, this chapter will then narrow down its discussion to characterize the child labor situation in Nepal. This discussion will serve as a macro foundation of understanding the micro results (empirical analysis) in the rest of the dissertation. This chapter is organized as follows: Section 4.1 gives an overview of general economic situation in Nepal, section 4.2 discusses about Nepal's carpet industry and carpet trade cycle and section 4.3 discusses the child labor problem in the context of Nepali carpet production. Section 4.4 provides a summary of the chapter.

4.1 The Overall Economic Situation in Nepal

Nepal is a small landlocked country in South Asia and one of the least developed countries in the world with nearly half of its population living below the poverty line. Agriculture is the mainstay of the economy, providing a livelihood for over 80% of the population and accounting for 40% of GDP (CBS, 2003). Low productivity of agriculture followed by some upcoming industrial activities led to the structural shift in GDP (Table 4.2). From 72 percent of the GDP in 1975, the share of agriculture came down to 51 percent in 1990 and further down to 40 percent in 2000. The share of manufacturing industries in GDP improved significantly with the rapid liberalization process of the economy in 1990s. From 5 per cent on average in the early 1980s, the share of manufacturing in GDP went up to 9 per cent during 1990s. In the fiscal year 2004-05, ended on July 15, 2005, the GDP growth rate remained at 2.33 per cent compared to 3.54 per cent in the last fiscal year, which was lower than the government's target of 4.5 per cent, according to a fresh yearly revised estimate by the Central Bureau of Statistics (CBS,2006).

Nepal's GDP growth rate in the fiscal year 2004-05 had gone down by 1.21 percent compared with the previous fiscal year, due to weak agricultural growth rate, low capital formation and dismal performance of non-agricultural sector. Real GDP growth averaged 2 percent during 2000/01-2004/05, compared to the 1990s when growth in agricultural productivity and significant trade liberalization contributed to average real GDP growth of 5 percent (Khatiwada *et al.*, 2002). Looking at the past 7 years, condition relating to basic crop production in Nepal is appeared to be improving (see Appendix A.3). The total food grain production is increased by over 5 percent. The production of paddy and wheat as two crops to meet the basic food requirement are increased by 7.82 and 3.20 percent. Since potato is consumed as basic crop in the Mountain region its production also increases by more than 7 percent.

Rapid population growth and increasing pressure on land resources to meet basic calorie requirement is a major challenge in the country. Agriculture is the major economic sector although it occupies less than one fifth of the total land area of the country (NLSS, CBS, 2004). Land is the primary resource for agrarian economies. According to JAFTA (Japan Forest Technology Association, 2001) the total cultivated (agriculture) land including grassland in the country is 4,061,631 ha which constitutes 27.6 percent of the total area of in Nepal. Regional variation is evident in the proportion of cultivated land and grassland. The Mountain region has 10 percent of its total area under cultivation in 2000. The corresponding proportions are 27.2 percent and 55.2 percent in the Hill and the Tarai. Variation by regions is also apparent. The two extremes in this case include Western Mountain with 0.1 percent and Eastern Tarai with 75.6 percent of total area under cultivation. The proportion of cultivated land decreases from East to West except Mid-western region (Subedi, 2003).

According to the NLSS 2003/04 out of the total households in the country, 78 percent are agricultural households with land [21] and about two percent are agricultural households without land. Cultivated land per capita for 2001 is 0.175 ha for the country as a whole. Among ecological regions the Hill has lowest per-capita land i.e., 0.163 ha. The Mountain on the other hand, demonstrates the highest value, a

[21] An agricultural holding is an economic unit of agricultural production under single management comprising all livestock and poultry kept, and all land used wholly or partly for agricultural production purposes, without regard to title, legal form, or size. Agricultural holdings are grouped into two categories: land holdings and holdings with no land. Holdings with land are those cultivating at least 0.013 hectares

Table 4.1: Availability of cultivable land in Nepal (in hectare)

Regions	Cultivated land per person	Cultivated land per household
Mountain	0.307121	1.620500
Hill	0.162554	0.840429
Tarai	0.167393	0.962222
Nepal	0.175438	0.954954

Source: JAFTA, 2001. (Cited in Subedi, 2003)

result of low population size. Although the per capita land in the Tarai is higher than the Hill, the difference is rather minimal whereas the difference between the Hill and the Mountain is far higher than the difference between the Hill and the Tarai (Table 4.1).

The distribution of cultivated land per household shows a similar situation. Land per household is lowest in the Hill followed by the Tarai. Land per household in the Mountain is nearly double that of the Hill. In the country as a whole, land per household is less than one hectare (Subedi, 2003). According to NLSS 2003/04 there are 45 percent of small farmers (operating less than 0.5 ha of land) and 8 percent large farmers (operating 2 ha and more land). There is an uneven distribution of the agricultural land in the country. Small farmers operate only 13 percent of total agricultural land while 31 percent of the land is operated by "large" farmers. Gini concentration index estimated for 2003/04 is 0.50, compared to 0.54 in 1995/96, indicating marginal improvement in the distribution of total operated land (NLSS,2004).

Brief Political History in Nepal

Nepal remained in isolation and obscurity for more than 100 years of the Rana rule from 1846 to 1951 when the rest of the world was industrializing and promoting international economic linkages. In 1951, the Nepalese monarch ended the century-old system of rule by hereditary premiers and tried to establish a cabinet system of government. It was only after the advent of democracy in 1951 that Nepal broke the regime of long isolation and started establishing links with the globe. The first public budget was announced in 1952. Prior to that, all revenue used to go to the hands of the Ranas and spending was on their own discretion. Until 1956 when the first five-year development plan was introduced, Nepal lacked even basic physical infrastructures, for instance, there were only 624 km of roads, 335 telephone lines and 450 KW of electricity. Reforms in 1990 established a multiparty democracy within the framework of a constitutional monarchy. A Maoist insurgency, launched in 1996, has gained traction and is threatening to bring down the regime, especially after a negotiated cease-fire between the Maoists and government forces broke down in August 2003. In 2001, the crown prince murdered ten members of the royal family, including the king and queen, and then took his own life. In October 2002, the new king dismissed the prime minister and his cabinet for "incompetence" after they dissolved the parliament and were subsequently unable to hold elections because of the ongoing insurgency. While re-establishing parliament, the king in June 2004 reinstated the most recently elected prime minister who formed a four-party coalition government. Citing dissatisfaction with the government's lack of progress in addressing the Maoist insurgency, the king in February 2005 dissolved the government, declared a state of emergency, imprisoned party leaders, and took over the power.

Table 4.2: Composition of gross domestic product (in percentage)

Fiscal Year	1975	1980	1985	1990	1995	2000
Sectors						
Agriculture, Fisheries & Forestry	71.6	61.8	51.2	50.6	40.8	39.5
Non-agriculture	28.4	38.2	48.8	49.4	59.2	60.5
Mining & Quarrying	0.1	0.2	0.4	0.5	0.5	0.5
Manufacturing and Industry	4.2	4.3	5.7	6.0	9.3	9.2
Electricity, Gas, & Water	0.2	0.3	0.4	0.5	1.4	1.6
Construction	3.7	7.2	8.5	9.0	11.0	10.2
Trade, Restaurant & Hotel	3.4	4.1	10.3	10.5	11.6	11.7
Trans, Comm & Storage	4.3	7.0	6.0	5.7	6.7	8.0
Finance & Real Estate	6.9	8.4	9.0	9.3	9.8	10.1
Community & Social Services	5.7	6.8	8.6	7.9	9.0	9.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Economic Survey, MOF (cited in Khatiwada *et al.*, 2002).

Compared to domestic savings, investments remain relatively higher in Nepal (Table 4.3).

Table 4.3: Savings and investment in Nepal (percent of GDP)

	1976-80	1981-85	1986-90	1991-95	1996-2000
Total Investment (I)	16.6	19.2	20.7	23.4	25.4
Domestic Savings (S)	12.2	10.7	10.7	13.2	14.6
Private Saving	12.0	10.9	10.9	12.2	12.6
Public Saving	0.2	-0.2	-0.2	1.0	2.0
S-I Gap	4.4	8.5	10.0	10.2	10.8

Source: Quarterly Economic Bulletin, Nepal Rastra Bank (Cited in Khatiwada *et al.*, 2002).

The gross investment to GDP ratio stood more than domestic saving throughout the review period resulting in a saving investment gap as high as 10 per cent of the GDP. The gap has been widening over the years. In the late 1970s, gross investment to GDP ratio was less than 17 per cent and as domestic savings rate was more than 12 per cent of GDP, the saving-investment gap stood at not more than 5 per cent of the GDP. In the 1980s, gross investment increased to 20 per cent of the GDP on average whereas domestic saving was less than 11 per cent. This implied a saving-investment gap of more than 9 per cent of the GDP. This gap was financed by foreign official borrowings, as there was very limited private capital inflow. Low savings in Nepal results in over-dependence on foreign capital for investment. In the 1990s, investment to GDP ratio went up substantially for the reason that private investment grew substantially following the speed up of economic liberalization measures. In the first half of 1990s, the investment to GDP ratio increased to more than 23 per cent on average whereas the same went up to 25 per cent in the in the second half. The share of private sector in gross capital formation went up from 53 per cent in 1980 to 63 percent in 2000. However, as domestic savings could not grow in the same pace, there was a wide saving investment gap and the gap stood as high as 11 per cent of the GDP in the later half of 1990s. Inflation has remained in the low single digits, although it rose to 7.75 percent in mid-October 2005. Growth also has been affected by the political turmoil and conflict, although inflation has remained moderate and international reserves are adequate (Khatiwada et.al, 2002).

In the 1990s, the external sector remained robust in general (Table 4.4), this was the period of massive economic liberalization and reforms. Trade relation with India is rather crucial to Nepal particularly due to her landlocked geographic characteristics. Bilateral trade with India is indispensable to Nepal. Nepal's dependence

Table 4.4: External sector (trade) indicators as percent of GDP

	1976-80	1981-85	1986-90	1991-95	1996-2000
Total Trade	18.9	21.9	23.7	33.6	40.7
Export	6.0	4.9	5.3	9.0	10.1
Trade Deficit	-6.9	-12.1	-13.1	-15.7	-20.5
Current a/c Deficits	-0.2	-3.0	-6.2	-6.2	-4.5
Service Income	2.9	3.9	3.2	5.7	10.0
BOP (Surplus +)	1.3	-0.4	1.6	2.7	2.3
Exports/ Imports Ratio	47.5	29.2	28.8	36.8	33.7

Source: Quarterly Economic Bulletin, Nepal Rastra Bank (Cited in Khatiwada *et al.*, 2002).

on the Indian market for most of its imports and exports are increasing sharply as depicted in the Appendix A.4. Trade with India rose rapidly after conclusion of the 1996 bilateral trade treaty between the two countries, and in 2002-03 it accounts to 53% of all exports from Nepal to India.Nepal's foreign trade and balance of payments have suffered setbacks, and exports have not increased enough to pay for imports of consumer goods and basic supplies. Trade statistics show an increasing trend of trade in both the exports and imports. However, it is noteworthy that the trade balance is not in favor of Nepal though the trend of Nepal's export trade shows an increasing trend of exports (see Appendix A.4).Germany was the major country to import goods and commodities from Nepal for 1995/96 and 1996/97. But India has been the major country to import from Nepal since 1997/98. USA stands to be the second country in Nepal's export followed by Germany and other countries for the last couple of years (Shrestha,2003).

After 1990s trade, industry, finance, and foreign exchange regime were deregulated, price administration and subsidies were streamlined, public enterprises privatized, and the economy was opened to external world with massive tariff reductions and foreign exchange liberalization. This followed in a satisfactory rate of economic growth of 5 per cent on average, mostly contributed by the non-agricultural sector. The growth of agricultural sector remained at two per cent and a half, and not more than the population growth. Therefore, there was not much improvement in the income level of the rural households where the incidence of poverty is the highest. That is also the main reasons why economic growth could not bring about any improvement in poverty situation.

Nepal is one of the poorest countries in the world with over half of the population living on less than one dollar a day. The incidence of poverty rates in different

time periods across Nepal are summarized in Table 4.5. During this period (1976/77-1995/96), the poverty incidence did not increase in urban areas, but the worsening of poverty occurred mostly in rural areas. Based on this comparison, if one attempts to analyze the poverty trend during the period 1976/77 -1995/96, it would be reliable to say that poverty situation in Nepal does not seem to be improving. Apart from its high incidence, poverty situation in Nepal is characterized by wide variations between urban and rural areas, ecological zones, development regions, gender and ethnic and caste groups. Several important conclusions can be drawn from Table 4.5. Poverty in Nepal is largely a rural[22] phenomenon. In 1995-96, 44% of the rural population was living in poverty. Poverty was significantly lower, only 23%, in urban areas. Counting by the absolute numbers of the poor, the extreme rural nature of the poverty problem is even more striking. According to the survey data, over 90% of the poor live in rural areas of Kathmandu Valley. Currently, poverty is said to be primarily a rural phenomenon in Nepal.

When ecological zones are compared, poverty in both the (low land) Terai and the Central Hills is close to the national average. However, poverty in the Mountain region is much higher (56%). The survey data also show wide variations in poverty within rural areas. For example, poverty rate is the highest in the more remote rural areas-the Mid-Western and Far-Western hills and mountain regions where it is as high as 72%. The rural Mid-Western and Far-Western Terai regions are also much poorer (53% incidence) than the national average (World Bank, 1999).

Apart from income levels, poverty levels can be measured more broadly in terms of access to basic social and economic infrastructure, which help to improve the quality of life at different levels of income. Among these, education is by far the most important, since it would enable the poor to get rid of poverty over time. Other important indicators are access to healthcare, safe drinking water etc. contribute to improve living standards and life expectancy. Of the household amenities in Nepal, 24.6% of households had electricity, 49.7% had radio, 13.9% television 3.4% telephone, 24.7% bicycle, 2.1% motorcycle, 0.8% motor vehicle, and 1.4% had refrigerator(CBS, 2001). Nepal has made significant progress over the past two decades in terms of such human development indicators (HDI). Table 4.6(derived from Nepal Human Development Reports 1996 and 2001) shows both recent progress and current situation in this regard.

[22]The definition of "rural" and "urban" is not an economic one. It is generally set by administrative authorities. These definitions do not only varry across countries, they also change time to time (Hemmer *et al.*, 2000).

Table 4.5: Trend in poverty situation in Nepal

	Percentage of population below the poverty line		
	Rural	**Urban**	**Nepal**
Comparison between 1976/77 and 1995/96			
(i) Poverty incidence in 1976/77 (SEIDCP, 1977)	33	22	33
(ii) Poverty incidence in 1996 (CBS/World Bank 1996)	44	23	42
Comparison between 1984/85 and 1995/96			
(i) Poverty incidence in 1984/85			
Terai	35.4	24.1	34.5
Hills	52.7	14.5	50
Mountains	44.1	–	44.1
Total Nepal	43.1	19.2	41.4
(ii) Poverty incidence in 1995/96 (NLSS)			
Terai	37.3	28.1	36.7
Hills	52.7	14.5	50
Mountains	62.4	–	62.4
Total Nepal	46.6	17.8	44.6

Source: World Bank (1999)

Despite significant progress in recent years, human development indicators are still low for Nepal and they show significant urban/rural and geographical variations, which reminds the income poverty differentials noted earlier. For example, the HDI for urban areas (0.616) far exceeds that for rural areas (0.446), because of far better access in urban areas to services, resources and opportunities. Similarly, there are significant differences among ecological zones. The HDI for mountains (0.378) is far below that for the hills (0.51). The broad scattering of communities in the mountains sharply limits access to services and resources and severely disadvantages people who live there. Human development in the hills is higher than in the Terai (and the national average), because many large towns and cities (including Kathmandu Valley) are located in the hills. Among the development regions of Nepal, HDI is highest for the central region (0.493), followed closely by the Eastern (0.484) and Western (0.479) regions. This is largely due to the fact that most of Nepal's trading centers and productive economic activities are concentrated there. In contrast, the Mid-Western (0.402) and Far-Western (0.385) regions, far from the center of power, have been traditionally neglected. Despite recent efforts to include them in the

Table 4.6: Human development indicators in Nepal, 1996 and 2000

	Adult literacy (rate above 15 years)		Average life expectancy		Percentage of population having drinking water		Human development indicators (index1.00)	
	1996	**2000**	**1996**	**2000**	**1996**	**2000**	**1996**	**2000**
Ecology Zone								
Mountain	27.5	44.5	52.7	49.8	-	79.2	0.271	0.378
Hill	40.2	55.5	58.0	65.1	-	76.2	0.357	0.51
Terai	35.9	46.8	59.5	62.4	-	83.4	0.344	0.474
Urban/Rural								
Urban	63.5	69.0	55.0	71.1	62.0	92.3	0.518	0.616
Rural	34.5	48.0	53.7	58.7	61.0	78.1	0.306	0.446
Nepal	36.7	50.7	55.0	59.5	61.0	79.9	0.325	0.466
Dev. Region								
Eastern		43.4		62.0		77.7		0.484
Central		47.1		61.3		85.1		0.493
Western		48.3		62.8		83.8		0.479
Mid-West		50.4		53.2		65.5		0.402
Far-West		42.6		52.1		82.3		0.385

Source: Nepal Human Development Reports, 1996 and 2001 (Cited in IMF, 2003)

country's modernization process, these areas (except for Mid-Western Terai) have also made the least progress in terms of the level of improvement in HDI between 1996 and 2000.

The population distribution by broad age groups indicated that 38.9% were aged 0-14 years, 53.9% were 15-59 years, and 7.2% were in the 60 years and above age group, giving a dependency ratio of 85.6. The dependency ratio was higher in the 1991 Census at 93.1, indicating a decline in fertility and mortality. The adult illiteracy rate is 60 percent. Of the total household heads, only 9.1% of the household heads were female. Slightly more than half (52.4%) of the household heads were literate, the rate for female heads (19.2%) being much lower than that (55.6%) for male heads (CBS, 2001).

4.2 Nepal's Carpet Industry

This section briefly reviews the historical and economic perspectives of Nepal's carpet industry. It is very important to know about the historical development of Nepali's carpet industry to address the whole discussion later in this study. There-

fore, this section starts by giving a historical overview of the development of carpet industry in Nepal and then the trade cycle.

4.2.1 History of the Carpet Industry in Nepal

The art of weaving is an old tradition in the Kingdom of Nepal, especially in the mountainous region of the country. Radii, Pakhi, Bakkhu, Darhi (with pile) are well-known Nepalese products produced in these regions using indigenous wool. The marketing of these products was confined to the domestic market.

The development of an export quality carpet was initiated with the influx of the Tibetan refugees in the early sixties. Credit goes to the Swiss Agency for Technical Assistance (SATA) for their contribution, in the development of the carpet industry in Nepal through financial & technical support to the Tibetan refugees re-settlement programs. In the beginning, it was launched as a source of livelihood for the Tibetan refugees and marketing was limited to tourists visiting the kingdom. Efforts to gain access in the international market arena paid-off in 1964 when the first commercial shipment left to Europe, namely Switzerland. With vision and entrepreneur skill it transformed into a nationally recognized commercial commodity and remains the most important export product from Nepal.

The Nepalese- Tibetan carpets contain a very high degree of hand processing and qualities ranging from 60-150 knots per square inch. Regularity safe guards are in place to ensure that only highest quality fleece wool is imported for use in these carpets.

The traditional design of the Nepalese-Tibetan carpet are basically influenced by Buddhism but in recent years the Nepalese manufacturers have introduced modern design and colors in line with the present day market tastes. The traditional size has been replaced by a wide range of sizes from 0.25Sq.m. to 56m2 in shapes such as round, octagon and customs shapes. The desired designs, styles and shades are the creation of local designers and engineers with regular feedback from the market.

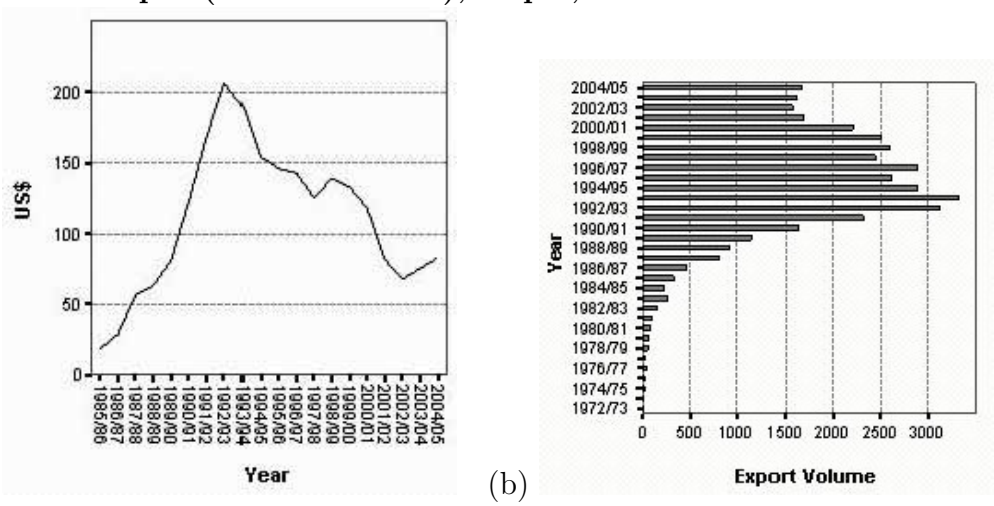
At present, 95 percent of the production of carpet is concentrated in the Kathmandu valley with the remaining 5 percent is spreading over a number of other districts of the country[23].

[23]This part is taken exactly from the website of Central Carpet Industrial Association CCIA, 2005. http://www.nepalcarpet.org/history.html

4.2.2 Carpet Trade Cycle in Nepal

This section analyzes the data (Appendix A.5 - A.8) of Carpet and Wool Development Board and Central Carpet Industrial Association (CCIA) in Nepal to cite past and present performance of carpet trade. This section is divided into three parts of business cycle after identifying the general trend of export volume and/or export earnings of carpet from Nepal (see Figure 4.1 and Figure 4.1). In particular, the trade cycle characteristics need to be understood in the context of time and historical setup. For example, it is noted that the reasons of 'recession stage' is directly pointing the research question of this study which will be analyzed in the following chapters. Thus, this section starts by giving an overview of the trade cycle of Nepali Carpet Industry.

Figure 4.1: (a) Volume of carpet exported (in 000 square Metre), Nepal, 1972-2005 and (b) Trend in earnings through the export of carpet (in million US$), Nepal, 1985-2005



(a) (b)

Data Source: Wool Development Board and Central Carpet Industrial Association (CCIA)

4.2.2.1 Growth Stage (1972 – 1994)

Nepal's carpet sector experienced its first export boom in 1976. The volume of exports more than doubled within one year, increasing from close to 20,000 square meters in 1975 to 47,500 square meters in 1976 (KC *et.al.* 2002). Year after year, from the early eighties to the mid nineties, the carpet sector continued increasing production and export volumes. After the mid-nineties, the European market for Tibeto-Nepalese hand-knotted carpets was saturated. In 1992, the carpet industry

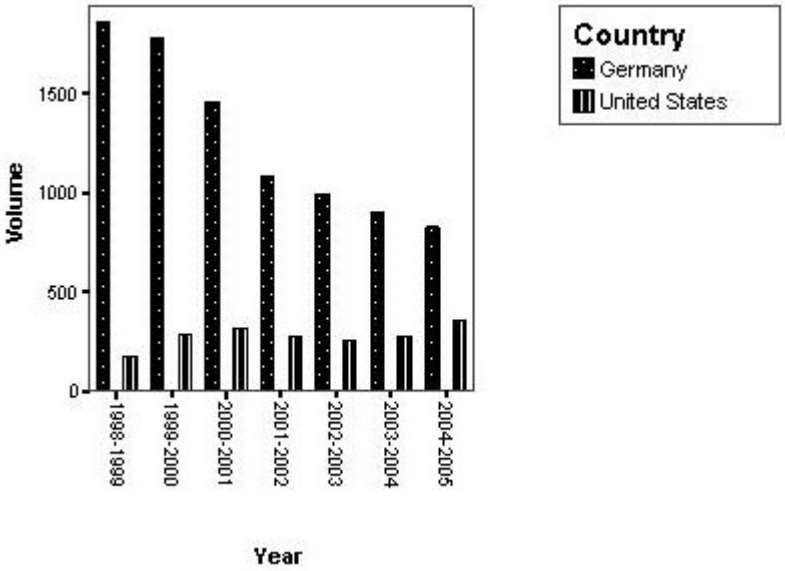
earned almost double the export earnings of the year 1991 (CWIN, 1993). By 1991, this sector contributed to more than 50 percent of the nation's total exports (Shrestha, 1991). The year 1993-94 recorded the highest ever volume of exports: 332.5 thousand square meters of carpets which earned $190 million. At this point, the sector was believed to be employing more than 300,000 laborers; most of them came from rural and remote areas of the country (KC *et.al.* 2002).

4.2.2.2 Recession Stage (1995 – 2002)

Growth escalated from around the mid-eighties until the year 1994, when it established a record high, began to decline. The sector was still capable of making a significant contribution to the national output; however, producing 2.3 per cent share of GDP in the year 1999-2000. In the fiscal year 2001-02, the situation became worse. The quantity of carpet exports (in square meters) declined by 24.5 per cent, even more than the previous year (2000-01). The amount of foreign currency (in US$) earned by the Nepalese carpet sector for the year 2001-02 showed a drop of 30 percentage points, from US$ 117.86 million to US$ 81.60. Among the reasons for this heavy decline included a worldwide economic recession and the decline in purchasing power of consumers in developed countries; the inability of Nepalese products to compete with Indian and Chinese carpets in both price and quality; and political instability in Nepal which detracted new investments and threatened the operation of existing factories (Kantipur, August 28, 2002). International competition and a price war with the Indian carpet sector is also a reason for decreasing demand of Nepalese Carpets. However, from 1995 the stagnating carpet economy forewarned a more gloomy future than expected. In addition to external market factors, many internal problems such as the use of child labor are often responsible for the stagnation of the carpet sector.

The Carpet Shock of 1994/95: The industry which had grown from an infant handicraft industry in the sixties to be Nepal's largest industry by the nineties was on the verge of collapse in 1994-95. One of the main reasons of the Carpet Shock in 1994-95 seems to be the anti child labor demonstration in Germany and other importing countries and accusations by national and international non governmental organizations that the Nepalese carpet industry was using child labor almost led to the complete boycott of Nepal's carpets. By destination of Nepalese carpet, German market accounts biggest share and USA market accounts second biggest share on total export absorption, but the German share is decreasing as in Figure 4.2.

Figure 4.2: Share of export volume of carpets by Germany and United States (in 000 square Metre) from Nepal 1998 – 2005.



Data Source: Wool Development Board and Central Carpet Industrial Association (CCIA), Kathmandu, Nepal.)

Kantipur (June 22, 1994), a Nepali Daily Newspaper, reported that after the Panorama TV news in Germany transmitted the documentary on the use of child labor in Nepali carpet production in April 1994, about 40 percent of orders were cancelled (NESPEC, 1994). This is one of the major reasons of the carpet shock in 1994-95. Strong resistance of German buyers regarding the use of child labor is assumed to have pushed export down by 36 percent in the first four months of the 1994/95 financial year (World Tibet Network News, 1995). In 1996 CNN[24] reported "Germany backs ban on child labor for Nepali carpets. Germany will provide financial aid for the marketing of Nepali carpets using the Rugmark label, which certifies that the carpet manufacturers do not use child-labor and that their products are environmentally friendly. Germany is the world's largest buyer of Nepali carpets, and is among the top aid donors to Nepal, one of the world's 10 poorest countries."

4.2.2.3 Recovery Stage (2003 – 2005)

Despite suffering minor jolts, the carpet industry - one of the largest exportable industries in Nepal - recorded a double digit growth of 10.15 percent in export in

[24]CNN, October 29, 1996. http://edition.cnn.com/WORLD/9610/29/briefs.am/nepal.html

value terms during 2004-05 (Kantipur, 2005). The total export volume of Nepali hand knitted woolen carpet in 2004-05 went up to 1664.11 thousand square meters. It was 1617.76 thousand square meters in 2003-04 and that was an increment of almost 3 percent yearly in the consecutive two years as compared to the export recorded 1567.00 thousand square meters during the same period of 2002-03. Export in value terms during 2004-05 was recorded at US$ 82.93 million from US$ 75.29 million recorded during 2003-04. The export of Nepali carpet in value terms had grown by over 10 percent in 2003-04 as well. The gap between the export in terms of value and export in terms of quantity clearly shows that the Nepali handmade woolen carpets are enjoying a sound pricing in the international market.

4.3 Child Labor in Nepal

The common primary objective of the social labeling program in Nepal is to eliminate child labor from carpet industries. Nepal ratified ILO convention 138 and 182 in the year 1997 and 2002. According to the report on the Nepal Labor Force Survey (NLFS) 1998-99, there are an estimated 3.7 million households in Nepal with a total population of about 19.1 million. The estimated number of Nepalese children under the age of 15 amounts to 7.9 million or 29.3% of the total population (Gilligan, 2003). Child labor is a widespread problem in Nepal, and can be found with respect to many economic activities. About 500,000 children aged 5 to 9, and 1.5 million children aged 10 to 14 are classified as economically active. This means that their labor force participation rate is 21 percent, and 61 percent respectively (NLFS, 1998-99).

There are some provisions regarding children in the Nepal Labor Act 2048 (1991). According to the Act, a 'child' is defined as a person who has not attained the age of 14 years (Chapter 1, para. 2). The Act also establishes that "no child shall be engaged in work of any enterprise" (Chapter 2, para. 5). In addition, Nepal ratified the ILO Minimum Age Convention 138[25] in 1997, and the Worst Forms of Child Labor Convention 182 in 2002.

The national child labor and Nepal labor force surveys indicated that children who do not attend school have a 50% higher work participation rate. In rural areas only 36% of working children are illiterate, while this rise to 54% in urban

[25]International Labor Organization, Convention concerning minimum age for admission to employment (Convention No. 138), Geneva 1976. See also Ministry of Labor, main provisions of the constitution of ILO and collection of some of ILO conventions ratified by His Majesty's Government of Nepal, HMG, Nepal, 1997

Table 4.7: Rates of school attendance and labor force participation of children aged 5 to 9, and 10 to 14, by gender and locality (in '000')

	Total			Urban			Rural	
	Total	Male	Female	Total	Male	Female	Total	Male
Age group								
			Number of children attending school					
5 to 9	1653	919	735	225	122	103	1428	796
10 to 14	1800	1056	744	247	133	114	1554	923
Total	3454	1975	1479	472	255	217	2,982	1720
			Percentage of children currently at school					
5 to 9	67.8	74.5	61.0	86.1	89.2	82.7	65.6	72.7
10 to 14	74.3	84.7	63.3	88.6	91.7	85.2	72.4	83.7
Total	71.1	79.6	62.1	87.4	90.5	84.0	69.0	78.2
			Percent of those at school who are currently active in labor					
5 to 9	19.1	17.9	20.7	6.5	6.1	6.9	21.1	19.7
10 to 14	52.6	50.2	56.1	24.3	23.3	25.5	57.1	54.0
Total	36.6	35.2	38.5	15.8	15.1	16.7	39.9	38.1
			Percent of those not at school who are currently active in labor					
5 to 9	24.7	19.5	28.3	12.7	9.0	15.2	25.3	20.0
10 to 14	85.0	82.7	86.0	74.3	74.3	74.3	85.6	83.3
Total	51.4	43.4	55.9	41.4	38.2	43.5	51.9	43.7

Source: NLFS Nepal, 1998-99.

areas. Studies also indicate that labor participation rates decreases with the level of education of the household head. Girls are more likely than boys to work by about 14.4 percent percentage points, and to neither attend school nor work by about 10 percent. As a consequence, girls' probability of attending school is around 25 percentage points lower than that for boys (UCW, 2003). Data indicates that the economic participation rates of children have dropped substantially over time (e.g. from 51% in 1971 to 29% in 2001 for children ten to fourteen years) due mainly to school enrolment. The larger rate drop for boys (59% to 27%), compared to girls (40% to 30%), can be explained by a male bias in school enrolment (Gilligan, 2003).

Table 4.7 shows the number of children attending school, and demonstrates how the rates of economic activity for children are affected by whether or not children are at school. It also demonstrates how the work participation rates rise as children get older.

About 68 percent of the children aged 5 to 9, and 74 percent of children aged 10 to 14, currently attend school. The rate of school attendance for those aged 5

to 14 is much higher in urban areas (87 percent) than in rural areas (69 percent). The contrast in the attendance rates for boys and girls is particularly marked in rural areas, with 78 percent of boys, but only 60 percent of girls, in this age group attending school. As one would expect, labor activity rates are higher amongst those not attending school than amongst those attending. Positively, data indicates that the economic participation rates of children have dropped substantially over time due mainly to school enrollment (e.g. from 50.5% in 1971 to 28.8% in 2001 for children ten to fourteen years). The larger rate drop for boys (59.2% to 27.3%), compared to girls (40.1% to 30.4%), can be explained by a male bias in school enrollment (Gilligan, 2003). But even among children currently attending school, as many as 40 percent are recorded as currently active in labor, because they did at least one hour of 'work' activities in the past seven days (NLFS 1998-99). Approximately 8% of children between five and fourteen years are migrant workers, while four out of five children in the worst forms of child labor are migrants (Gilligan, 2003). This is an indication of child labor migration and exploitation. There is also a correlation between the incidence of child labor and district-level poverty, with the highest prevalence of child labor in the poorest districts . These districts have not only the highest rates of child labor, but are also suppliers of child laborers to more prosperous areas (Shrestha and Edmonds, 2002; Gilligan, 2003).

Table 4.8 highlights the kind and amount of work that children do. Two million children aged 5 to 14 who are classified as employed. They work a total of 44 million hours per week, representing 22 hours a week on average for every child who is currently employed. Boys and girls do about the same amount of work (22.1 and 22.7 hours respectively). Most (76 percent) of the boys who are working also attending school. Girls who use to work are less likely to continue with their schooling, only 53 percent of employed girls attend school. The work participation rate of girls (47.6%) is higher than boys (36.1%). This is due to higher participation in non-economic activities. Gender analyses have indicated that girls are more likely to not complete their primary education and to become involved in work in larger numbers and at a younger age. Among Economically Active Children, boys outnumbered girls, indicating a tendency for girls to work at home (Gilligan, 2003).

It is estimated that in Nepal, 127,000 children are trapped in what are referred to as the worst forms of child labor, or forms of child labor whose conditions are intolerable. The definition of what constitutes a worst form of child labor is contained in the ILOs Worst Forms of Child Labour Convention (discussed in Figure 2.1).

The seven worst forms of child labor were identified in the Time-Bound Programme for the Elimination of the Worst Forms of Child Labor. These forms include trafficked children, bonded laborers, porters, mine and carpet factory workers, domestic workers, and rag pickers (Gilligan, 2003).

After 1994, however, it became internationally well known that the carpet industry intensively employs child laborers - for long hours in any given day. The children work as wool spinners and weavers, and some also dye and wash carpets (CUTS, 2003). In a study by the Child Workers in Nepal Concerned Centre (CWIN, 1993) from the early nineties, 365 carpet factories within the Kathmandu Valley were surveyed, and it was estimated that about 50 percent of the total 300,000 laborers were children. Of them, almost 8 percent were below 10 years old, 65 percent between 11 and 14, and the remaining 27 percent were between 15 and 16 years (CWIN, 1993). A recent study by ILO (2002) estimated that about 7,700 or 12 percent of the total 64,300 laborers were child laborers in the carpet industries of the Kathmandu Valley. According to a survey of 17 carpet factories by the Nepal office of the Asian-American Free Labor Institute (AAFLI), 30 percent of the workers were found to be less than 14 years of age (CUTS, 2003).

4.4 Chapter Summary

This chapter highlights the overall economic situation in Nepal focusing specially on child labor and carpet industries. Agriculture is the mainstay of the Nepalese economy, providing a livelihood for over 80% of the population and accounting for 40% of GDP. Nepal is a small landlocked country in South Asia and one of the least developed countries in the world with nearly half of its population living below the poverty line. When ecological zones are compared, poverty in both the (low land) Terai and the Central Hills is close to the national average. However, poverty rate is the highest in the more remote rural areas (the Mid-Western and Far-Western hills and mountain regions). The intra country income disparity influences the child laborers to migrate from mountain regions to low-land areas where the migrant children start working in hazardous occupations like carpet weaving, mining etc. Child labor is a reality for one in every three Nepalese children.

The carpet industry (employs a large part of hazardous child laborers), which had grown from an infant handicraft industry in the sixties to be Nepal's largest industry by the nineties, was on the verge of collapse in 1994-95. One of the main reasons of the carpet shock in 1994-95 was due to anti child labor demonstrations in

Germany and other importing countries. Accusations by national and international non-governmental organizations almost led to a complete boycott of Nepal's carpet export.

Despite suffering minor jolts, the carpet industry - one of the largest exportable industries in Nepal - recorded a double-digit growth in export in value terms during 2004-05. Still child labor is a challenge for the expansion of the carpet industry in Nepal.

Table 4.8: The occurrence of child labor in Nepal, by hours worked, occupation, sector, and gender (in '000')

				Whether currently attending school					
	Total			Yes			No		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Total number aged 5-14	**4860**	**2480**	**2380**	**3454**	**1975**	**1479**	**1406**	**505**	**901**
Number employed	1982	911	1072	1263	694	569	719	216	503
Total hours worked per week (million hours)	44	20	24	23	13	10	22	7	14
Average hours per week per person	22.4	22.1	22.7	18.1	18.5	17.5	30.1	33.8	28.5
Occupations	**1982**	**911**	**1072**	**1263**	**694**	**569**	**719**	**216**	**503**
Service workers	39	23	17	33	19	14	6	4	2
Housekeeping	13	7	6	9	4	5	3	3	1
Shop salespersons	26	15	11	23	14	9	3	1	2
Agricultural producers	1686	788	899	1084	617	467	602	170	432
Animal producers (market)	53	23	30	39	18	21	14	5	9
Subsistence agriculture	1617	761	856	1037	597	440	581	164	417
Craft and related trades	22	9	13	8	3	5	14	6	8
Plant and machine operators	4	2	2	3	2	2	1	1	0
Elementary occupations	231	90	142	135	54	82	96	36	60
Agricultural laborers	39	17	23	8	3	5	31	14	17
Fetching water	78	28	50	70	27	43	8	1	7
Collecting firewood	78	25	53	44	19	25	34	6	27
Industries	**1982**	**911**	**1072**	**1263**	**694**	**569**	**719**	**216**	**503**
Agriculture, hunting & forestry	1725	804	921	1094	620	474	631	184	448
Manufacturing	26	11	16	12	4	8	14	6	8
Construction	10	7	3	3	1	2	7	6	1
Wholesale & retail trade	29	17	12	24	15	9	5	2	3
Hotels & restaurants	16	9	7	11	4	7	5	4	1
Private with employed persons	165	58	107	114	47	68	51	11	40
All other categories	10	5	5	4	2	2	6	3	2

Source: NLFS Nepal, 1998-99.

Chapter 5

Social Labeling NGOs in Nepal

After being informed about the use of child laborers in the Nepalese carpet sector, consumers in the German market refrained from buying Nepalese carpets (KC, 2002). Therefore, from 1995 onwards the carpet sector in Nepal experienced a declining trend in terms of production volume and export earnings. Until the mid nineties, Germany was buying over 80 percent of Nepali Carpets (Graner, 1999) but it then decreased to 64% of the total carpet export from Nepal to Germany (Bajracharya, 2004).

The decline in the demand for Nepali carpets motivated the government, manufacturers and exporters to participate in child labor-free labeling schemes. Subsequently, a number of social labeling initiatives in Nepal such as Rugmark and Care & Fair were introduced after 1994. Therefore, the base of social labeling is consumer power. The label became a legally binding international trademark in Germany in December 1995, and in 1996 in the US; these are the largest markets for carpet exports from South Asia (CUTS, 2003). Rugmark is a product label that is affixed to individual carpets. Currently, almost 70% of the Nepalese carpet industry is licensed by the Rugmark certification system. STEP and Care & Fair are company certification programs. Although all these labels have the professed aim of reducing child labor in the carpet industry, they differ in some important respects. The aim of this chapter is to discusses the important features of different NGO programs.

This chapter begins with addressing 'Rugmark' and its various activities in section 5.1. Section 5.2 gives an overview of 'Care & Fair'. 'STEP' is discussed in section 5.3. Section 5.4 compare different labeling NGOs in terms of welfare activities and management. The link between social labeling and supply of child labor is discussed in section 5.5. Description of welfare activities after the removal of child laborers from carpet industry is discussed in section 5.6. The last part (section 5.7) constitutes a summary of the whole chapter.

5.1 Rugmark

Nepal Rugmark Foundation was established in December 1995 as a joint collaboration of carpet entrepreneurs, child rights NGOs and International Development Organizations, viz. UNICEF (The United Nations Children's Fund), GTZ (The German Agency for Technical Co-operation) and AAFLI (Asian American Free Labor Institute). According to the 'Rugmark Bulletin' the main objectives of Rugmark are given below:

- The carpet producers/exporters abide by the legal and social responsibilities through licensing of RUGMARK to prevent use of illegal child labor.
- To inspect/monitor carpet factories of the licensees and their suppliers.
- To rehabilitate displaced child laborers working in carpet industries with education and training and give them a new hope for future.
- To conduct preventive/welfare programs for carpet workers and their children.
- To promote socially responsible and environmentally sound business practices (taking carpet industry as a model).
- To influence the concerned government and non-government organisations, donor agencies, business sectors and the general public for protection and care of the rights of the child.

5.1.1 Program Structure of Rugmark in Nepal

The Rugmark trademark is licensed to carpet producers and exporters for their commitment to maintain child labor free environment in factories owned by themselves or by their suppliers. The head office of Rugmark is located at Kathmandu. The office has staff members of 14 persons, besides the staffs of rehabilitation center. The three main instruments of Rugmark labeling program are licensing, monitoring and the rehabilitation of child workers. The Rugmark exporters as well as carpet industries have a common agreement with Rugmark that they will not employ any children under 14 years of age in the production of carpets.

There is a structured application form for Rugmark license. Along with the application form, the exporter/ producer has to submit some other following documents:

1. A copy of firm registration certificate

2. A copy of tax renewal registration certificate

3. List of all factories, including that of suppliers with details as factories or activities with addresses, number of looms, contact / responsible persons, amount of stock carpets etc.

Once the application is received, Nepal Rugmark Foundation carries out a preliminary inspection in all the factories and collects information regarding child laborers, wage and other working conditions of the workers like environmental and sanitation aspects. While signing license agreement the licensee will be given a synopsis of preliminary condition of each of its factories asking them to improve in areas of their weaknesses. The licensee has to display the Rugmark signboard at the entrance of its factories. The license has to be renewed every year. Signing the license agreement should be completed within a month from the date of application.

5.1.2 Inspection and Monitoring Mechanism

Rugmark has its own inspection and random monitoring system of its member's loom. Nepal Rugmark Foundation (NRF) undertakes inspection and monitoring of carpet factories of its licensees as a primary activity towards fulfilling the broader goal of elimination of child labor from carpet industries in Nepal (Rugmark Bulletin, 2004). The Rugmark office at Kathmandu employs four inspectors who oversee the inspection and monitoring of the carpet factories. Rugmark inspectors under the supervision of program officer conduct random visits to the factories of the licensees on a regular basis. The inspectors work throughout the whole working days in a week from 6:00 AM to 8:00 PM and move around with their motorcycles. The frequency of the factory visits varies from two to three times in a week to once in two months, depending on the confidence of Rugmark on the factory's commitment and performance with regard to non-use of child labor (Rugmark Bulletin, 2004). Generally, if after one or two inspections, children are found working, the licensee is decertified and no longer permitted to use the agency's label. However, some organizations believe that credible monitoring is simply an impossible task. For example, the Secretary General of Care and Fair argues that there are 280,000 looms in India spread over 100,000 square kilometre. Thus it is argued that credible monitoring such a large number of geographically dispersed looms is simply not tenable (U.S. Department of Labor, 1997). There are three stages of actions taken by Rugmark if children are found working in carpet industries. In the first stage,

the licensee is warned verbally for the first time. In the second stage, the licensee is warned in written for the second time. If children are found working in the third time within one year of second time warning then the issue is raised in the meeting for necessary action. The decision of the meeting could be out-listing of the factory from the list of suppliers of a Rugmark licensee and disqualifying for any further association with Rugmark.

The empirical research performed in this thesis found that sometime the labeling industries purchase carpets from other non-labeling carpet industries especially when the export demand is very high. Therefore, it could happen that the other non-labeling carpet industries are using child laborers and the labeling industries are purchasing the carpets, which could have been produced by a child labor. However, according to the Rugmark officials, they know the production capacity of a specific carpet industry, therefore when its export exceeds its total production capacity then Rugmark make a special query. Licensees have to submit relevant information for the Labeling e.g. size of carpets, the factories of manufacture and copies of invoice. The Nepal Rugmark Foundation verifies relevant information with its database and ensures that the carpets are eligible for certification. Nepal Rugmark Foundation has developed a mechanism of calculating the Normal Production Capacity (NPC) of each licensee by assuming that a normal weaver weaves 52 Sq. Mt of 60 knots carpet in a year if he/she works 6 hours per day. While issuing labels, Nepal Rugmark Foundation can cross check to ensure whether it is within the range of normal production capacity of the licensee. If the capacity is already exhausted, labels cannot be issued. According to the Nepal Rugmark Foundation, they carry out inspections of factories that are not under Rugmark umbrella to cross check whether they are getting orders from Rugmark licensees. Information for such cross check could be received from concerned trade union organizations.

5.1.3 Rehabilitation and Welfare Activities

Rugmark has undertaken several rehabilitation and welfare measures like schooling, rehabilitation center, daycare center, awareness program for carpet workers and their families. Schooling is the most important component of welfare and rehabilitation activities by Rugmark. In Nepal, four rehabilitation centers with one vocational training program dealing with tailoring, textile making and screen printing are established by Rugmark. The program at the four rehabilitation centers are focused on providing Non-Formal Education (NFE) for 12 to 18 months and later they are

admitted to formal primary schools. If it is not possible to enrol them in schools due to parents/guardians' financial incapability or unwillingness or parents'/guardians' absence, the children are taken to Rugmark Rehabilitation Centers.

Rugmark & UCEP Vocational Training and Rehabilitation Center

Samuna (13) was forced to stop her studies after class 3 because of poverty reason. She started working as a made servant and later she got another job in a carpet industry by the help of an intermediary person. Rugmark inspectors rescued her from the carpet industry because she was a child labor. When the research team first visited Rugmark in 2003 she was seating in a sofa at Rugmark Foundation Office in Kathmandu. The Rugmark's officials were trying to trace out her address and other information. She looked very nervous when the inspector was filling out the required information in a structured questionnaire of Rugmark. When the research team went for the final field research in 2004 Samuna was found in Rugmark rehabilitation center, she was looking very happy, and she could recognize the main researcher. The researcher asked, "how are you Samuna?" In reply, she smiled and told, "I am fine here". Samuna was receiving vocational training from Rugmark and UCEP (Underprivileged Children's Education Programmes) joint program. The rehabilitation program was launched by UCEP to train girls who are working in hazardous condition with the help of Nepal Rugmark Foundation.

In 2003-2004 Nepal Rugmark foundation runs two rehabilitation-cum-education and training centers and one day care centre. Generally, a rescued child is first sent to non-formal education (Centre for Child Studies and Development) where they are given a foundation to carry on their regular studies in formal institute. The research team of this study finds that the teachers at this non-formal education are well motivated and well trained by the national and foreign instructors.

Some older children are also receiving vocational training like carpentry, sewing, cutting, electronics, and painting. Rugmark also provide health facility like regular check-up of both older as well as the newly rescued children.

The Table 5.1 illustrates the different welfare and rehabilitation program achievements of Rugmark Foundation in Nepal.

Table 5.1: Status of rehabilitation and welfare activities by Rugmark Foundation, Nepal

No.	Details	Number of children
1	Children Rescued (Since 1995 till Dec 2002)	494
	Boys	339
	Girls	155
2	Children in rehab centers	127
	- CSB, Bungamati	81
	- CSSD, Balaju	46
3	Children reunited with families	360
	-with long-term support from NRF	83
	-without long-term support	216
	-after completing vocational training	61
4	Children sponsored by other NGOs	7
5	NRF sponsorship to carpet workers' children	41
6	Day Care and education centers	65
7	Counseling	559
	- individual children	206
	- group counseling	121
	- by parents'/guardians	60
	-other	172
8	Follow-up under factories education sponsorship	1168

Source: Sinha and Sharma, 2003.

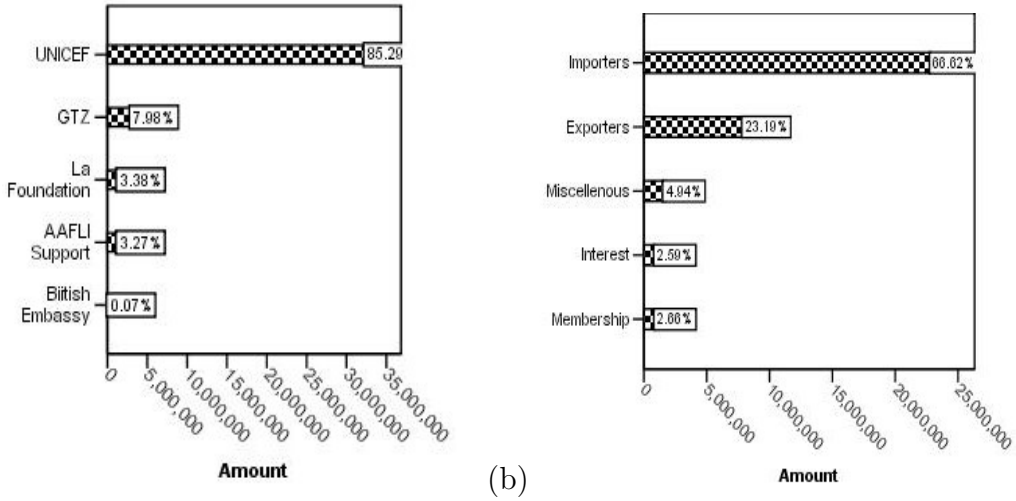
5.1.4 Financial Structure

The financial analysis of Rugmark foundation is important to understand how different stakeholders are funding the welfare activities for the child laborers to uphold the fair trade issue. The welfare activities for the child laborers are directly related to the funding situation of the labeling NGOs. The financial condition also represents the importance of labeling NGOs to the external and internal donors. This section analyzes the data (Appendix A.9) of Nepal Rugmark Foundation (NRF) to estimate external and internal source of income.

External Source of Income

UNICEF (The United Nations Children's Fund) had financed some of the major requirements since Rugmark's establishment, contributing about 86 percent of the total external funds as depicted in Figure 5.1(a). This fund was mainly used for the rehabilitation programs conducted for the former child laborers. GTZ (German

Figure 5.1: (a)Yearly external contribution (in Nepali Rupees), Rugmark, Nepal, 1996-2003 and (b)Yearly internal contribution (in Nepali Rupees), Rugmark, Nepal, 1996-2003.



Data Source: Nepal Rugmark Foundation, 2004.

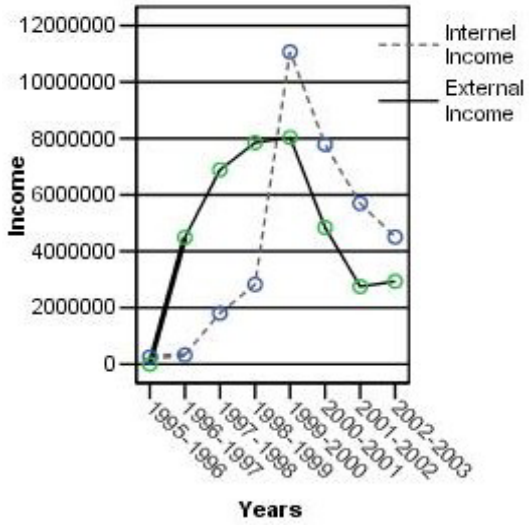
Technical Cooperation) had financed some of the initial requirements, especially relating to the establishment of the foundation and its office infrastructure i.e. assets, equipment and furniture. Asian American Free Labour Institute (AAFLI) supported in the initial two years for the inspection, monitoring and certification programs. Swiss organization La-Foundation supported for the advocacy and promotional activities. British embassy supported Rugmark to purchase some playing materials for the kids in the Day Care Center. BMZ Germany also supported Euro 7,800 in the year 2002-2003.

Internal Source of Income

The Figure 5.1(b) presents the internal source of income generated by Nepal Rugmark Foundation from its various internal sources since it's establishment to the end of fiscal year 2002-2003. Rugmark licensees are required to pay 0.25 percent of the FOB (free on board) value of the carpets exported with a Rugmark label. The major part of this money is used to maintain office and administration. The money contributed by the importers is 1 to 1.75 percent, of which 0.75 to 1 percent is sent to Nepal Rugmark Foundation. A major share of the total this income is used for rehabilitation programs.

Figure 5.2 illustrates the trend of internal and external income of the Rugmark

Figure 5.2: Yearly internal and external income comparison (In Nepali Rupees), Rugmark, Nepal, 1996-2003.



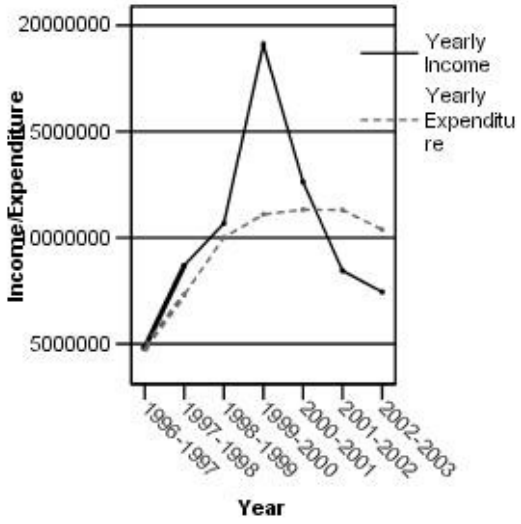
Data Source: Nepal Rugmark Foundation, 2004.

Foundation in Nepal. In 1999-2000 the external income decreased very sharply. The internal income also decreased very sharply after 1999-2000. But after 2001 -2002 the external income showed slightly upward trend.

Deficit and Surplus of Income

This section analyzes the data (Appendix A.10 and Appendix A.9) of Nepal Rugmark Foundation (NRF). Figure 5.3 shows that there is a continuous downward trend of the income of Nepal Rugmark Foundation since 2000-2001, which is a result of substantial drop in the export figures of carpet from Nepal and thus reducing usage of Rugmark labels. As a result, the expenditure and income gap started to increase after 2000-2001 which was negative before 2001. Therefore, the budget deficit of Nepal Rugmark Foundation has been increasing continuously after 2000-2001 (Figure 5.4). According to a Rugmark official the demand for Rugmark label in the European Union is decreasing, because the consumers are not interested in child labor issue as there were in previous time. Rather they are concerned about the quality of the carpet. According to the findings of a study by Klaus Linkenheil conducted in Europe over a period of six weeks with support from GTZ found that 40% consumers are interested to label by wool quality standards, 28% are interested for no-child-labor, 23% eco-standards, i.e. AZO free and 9% believe in

Figure 5.3: Yearly income and expenditure comparison (in Nepali Rupees),Rugmark, Nepal, 1996-2003.



Data Source: Nepal Rugmark Foundation, 2004.

other standards.

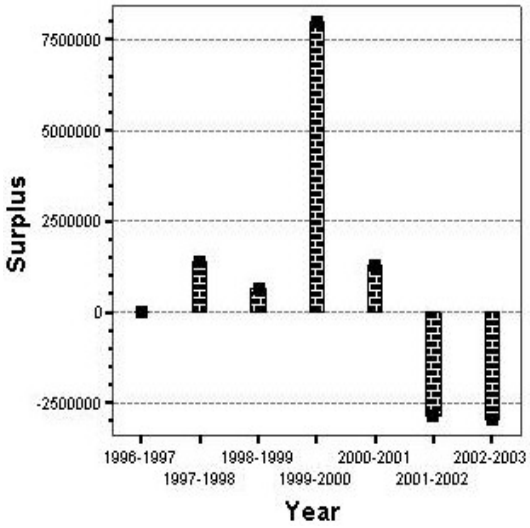
The concerted effort to promote Rugmark labeling in all carpet exports requires high level of awareness among exporters, importers and the consumers. Presently, registration of carpet exporters and manufacturers with Nepal Rugmark Foundation is done only on a voluntary basis. A total of 147 carpet exporters and 467 factories, which make almost 67 percent of the total industry capacity, are currently registered with the foundation and fall under Rugmark monitoring (The Kathmandu Post, Nov29, 2002).

Therefore the decreasing percentage of the demand of certification for carpet export, and decreasing the total quantity of carpet export are two main reasons of the budget deficit of Rugmark Foundation in Nepal as described in the Figure 5.4.

5.2 Care & Fair

Teppichhandel gegen Kinderarbeit is a professional association of the European carpet trade. It was founded in 1995. The members of Care & Fair are trying to eliminate child labor in the carpet production. They are obliged to pay one percent of the value of imported carpet from Nepal into a fund. This fund enables Care & Fair to finance different welfare projects. Care & Fair is a company certification program and not a product labeling initiative i.e. participating companies use these

Figure 5.4: Yearly budget surplus (in Nepali Rupees),Rugmark, Nepal, 1996-2003.



Data Source: Nepal Rugmark Foundation, 2004.

labels for advertising and marketing purposes, but not on individual carpets. The Care & Fair office is located in the Lalitpur District of Kathmandu Valley.

The charter of Care & Fair has the following provisions:

- The exporter must undertake not to use child labor in the production process
- Bonded labor must be abolished
- Provide education facilities to the carpet workers children
- Workers should be paid the minimum wages as per statutory enactment
- The carpet producers must abide by all the employment laws and regulations
- Workers and their families should be provided basic medical care

All members are instructed to ensure that their suppliers comply with all the above code of conducts. By signing the purchasing conditions, producers/suppliers agree to produce/supply carpets only in accordance with the conditions above. Failure to observe the purchasing conditions gives the purchaser the right to withdraw from the purchase contract immediately, and to suspend further deliveries.

5.2.1 Program Structure of Care & Fair in Nepal

The organization is headed by the president, and has a board of Trustees as well as an executive committee. Care & Fair reflects the concern of several carpet importers and retailers in Germany about the conditions prevailing in the carpet industry and need for improvement. The organization sponsors rehabilitation projects in Nepal intended to benefit weaver households, including their working children. Its members are expected to honour the terms of Care & Fair and its code of conduct. The major objectives of the Care & Fair are to look after health, fair wage, education etc.

5.2.2 Inspection and Monitoring Mechanism

Care & Fair thinks that the question of child labor has to be solved by overall social development, particularly in education, health care and awareness raising campaigns. However, Care & Fair does not engage in inspection and monitoring of the carpet production but relies solely on the moral communication of its members. CARE & FAIR members are demanding that their producers and suppliers do not use child labor. If any member is confronted with child labor during one of the various buying trips, the member would be withdrawn from their purchasing contract and stop all further business-action with this manufacturer or supplier. Care & Fair believe that the fear of economic loss is the best instrument to prevent child labor. According to the findings of a study by Klaus Linkenheil conducted in Europe over a period of six weeks with support from GTZ found that 74% people are interested to build a steering committee for inspection, 21% are interested for independent inspections, 5% believed monitoring system without inspection.

5.2.3 Rehabilitation and Welfare Activities

In accordance with its objectives, Care & Fair Nepal is involved in several health care and education projects. Care & Fair has been actively involved in the enhancement of education of the children by granting scholarships to the following institutions and schools in Nepal:

1. Modern Preparatory Boarding School, Itahari
2. Mary Ward School, Lalitpur
3. Siraha Deaf Association, Lahan

4. Bal Kendra, Kathmandu
5. Shree Okharpouwa Primary School
6. OCT-Social Chapter, Kathmandu
7. Helpless Women Welfare Centre, Tarahara

Care & Fair also maintains medical centers, where doctors and medications are free. Care & Fair has three clinics at Jorpati, Jawalakhel, Boudha. When research team visited the clinics, it was evident that the clinics were well equipped with ambulance and laboratory.

5.3 STEP

The STEP[26] Foundation is dedicated to improve working and living conditions and fighting abusive child labor in the production of manufactured and hand-woven carpets. STEP was founded in 1995 by the development organizations Berne Declaration, Bread for All, Caritas Switzerland, Swiss Catholic Lenten Fund and Swissaid together with the IGOT (Swiss Association for Clean Oriental Carpet Trade). As well as trying to improve the working and living conditions of the people in regions where hand-woven carpets are made, especially those of the weavers, STEP fights against abusive child labor and promotes ecologically harmless production methods. STEP Foundation also supports development projects in carpet producing areas. In order to improve the living conditions of the weavers and their families STEP Foundation offers training and education programs (empowerment, medical advice, schools etc.) STEP Foundation supports socially fair conditions in the production process i.e. pay fair prices to ensure fair wages, eliminate abusive child labor, ecologically harmless production, education for children and adults. STEP emphasize on women literacy, and health care. They also generate alternative incomes for adults to enable them to send their children to school.

The Main objectives of STEP foundation are:

- Provide better working conditions and remuneration for adult workers
- Elimination of abusive child labor

[26]This research does not consider STEP foundation in Nepal as the coordinator of STEP in Nepal refused to deliver any loom lists.

- A support of alternative income for families to reduce child labor
- A support of educational programs, both for children and for illiterate adults
- Better working and health condition for the carpet workers

In pursuance of its objectives, the organization has signed code of conducts with its stakeholders. STEP Foundation also supports development projects in carpet producing areas.

Monitoring and verification of the producers working for the Swiss partners are carried out by STEP Foundation. The verifications are carried out on the basis of the list of the suppliers drawn up at least every six months.

5.4 Comparison of Social Labeling NGOs

Types of labeling NGOs differ across the various initiatives as described in Table 5.2. Rugmark and Kaleen label individual products whereas STEP and Care & Fair label entire company as a whole. While some initiatives monitor production sites to ensure the label's claim like Rugmark, Kaleen and STEP hire external agencies to monitor.

Rugmark labels each carpet so that it could guarantee that the carpets have not been made with any contribution of child labor. However, Care & Fair is abstaining from this monitoring method, rather it expects the individual producers to monitor themselves. Care & Fair concentrates on child schooling and other welfare activities. It guarantees that one percent of the import value of the carpet will go to educational and welfare initiatives for laborers in the carpet industry. The major differences of social labeling NGOs are in the approaches, monitoring systems, source of funding and social projects as shown in the Table 5.2.

5.5 The Link Between Social Labeling and Supply of Child Labor

Child labor is demanded by profit-maximizing firms (producing carpet), it is expected that social labeling controls the demand of child labor by registering all the carpet firms within a particular industry and label on the carpet. However, social labeling has also supply side effect on child labor by it's rehabilitation and welfare activities. The labeling NGOs like Rugmark and Care & Fair have different programs to educate the members of the household working under the labeling umbrella. The

Table 5.2: Overview of labeling initiatives

		Rugmark	Kaleen	STEP	Care & Fair
Number of Exporters	India	215	256	22	138
	Nepal	149	N/A	8	72
Monitoring	Self	Yes	No	No	No
	Hired External Agency	No	Yes	Yes	No
Rehabilitation and Welfare Measures	Schools	Yes	Yes	Yes	Yes
	Rehabilitation Center	Yes	No	No	No
	Medical Facilities	Yes	Yes	Mobile	Hospitals, Dispensary, Schools, Clinics
	Adult Education	Yes	No	No	No
	Carpet Weaving Training Center	No	No	Yes	No
Certification	Individual Carpets	Yes	Yes	No	No
	Company	No	No	Yes	Yes
Collaboration With NGOs			Yes	Yes	
Source of Financing	% of FOB Contribution by Exporters	0.25%	Govt. of India	N/A	0.25%
	External Funding	Yes	Yes (ministry)	Yes	Yes

Source: Sharma, 2002.

welfare activities like i) sponsorship for education of carpet worker's children, ii) day care centers, iii) awareness programs for carpet workers and their families, iv) health care facilities, might have some direct and/or indirect influence on child labor supply decision, which is mostly taken by the adult members of the family.

By offering families with different welfare programs to send their children to school, one can obviously alter the calculus of their decision-making on child labor. The retrenched child has a chance to work in different sectors other than carpet industries or non-labeling carpet industries where labeling NGOs have no control. If social labeling NGOs have no influence on child labor supply reduction, the whole labeling program might be worth less, it would indicates that social labeling fails to reduce child labor supply rather shifting child labor from one industry to other,

therefore, it has no sustain/permanent effect on child labor problem. If the effects of the welfare programs by labeling NGOs are successful the household would not send the child to any work.

The idea of establishing the social labeling NGO is to protect the child labor problem by offering different welfare programs. Therefore, the supply effect of social labeling is very important to address child labor problem. This study is an attempt to see whether social labeling NGOs have any influence on child labor supply. More precisely this study wants to see whether there is any difference between the decision of labeling and non-labeling households concerning child labor.

5.6 Removal of Child Laborers from Carpet Industry and Their Welfare

Only legislation, however sincere it might be in purpose, is unlikely to solve the child labor problem. Contrary to the argument of banning child labor, some of the economists (who focused on child's welfare) like Prof. H-R Hemmer from University of Giessen, Germany argued that a ban on child labor, however, does not eliminate the factors that force households to rely on their children's work force. The same is true for any measure that aims at banning products made by using child labor (e.g. boycotts, import prohibition). Promising policies should refer to causes rather than symptoms. Hence, the main points of departure concerning the elimination of child labor in the long run are to alleviate poverty and to offer acceptable alternatives to children (e.g. better access for poor families to educational facilities) (Hemmer, 1996). Since the nature of the problem is rather economic than legal, the labeling NGOs provide schools, health care facilities and hospitals for the displaced child laborers and their family members. If any child is found working by the inspector, then the child and his/her parents or guardians (if available) are interviewed to have a complete information about the affordability of the parents to send their child to school. In case of failure or if the children are destitute or orphan, they are taken into the rehabilitation centre of Rugmark for long term rehabilitation. The rehabilitation centre also provides the opportunity for children to meet with their parents and guardians. These centers have complete hostel facilities, where the children get counseling, medical treatment, recreational activities, etc. Children over 14 years are encouraged to join vocational training programs, which are also financed by labeling NGOs. An emphasis is also put on physical fitness and extra-curricular pursuits such as music and art for the children.

In addition, various supporting programs like school tuition exemption, books, uniforms, and even food are offered by the labeling NGOs to former child laborers and other children of the households of it's licensee or subsidiary factory. Thus, they aim at compensating some opportunity cost of child schooling. By the middle of December 2002, the Nepal Rugmark Foundation had removed 478 child laborers from the carpet industries in 40 different districts in Nepal (Rugmark Bulletin, 2004).

The NGOs are not only targeting the displaced child from carpet industry but also they offer welfare programs for other children and adult members of the household who are attached to labeling NGOs. According to the Rugmark Bulletin (2004) "hundreds of children are living in carpet factories and helping their parents or guardians in daily chorus like cooking, taking care of younger babies or just doing nothing. They are already of school going age or older. Some of these children are there without parents but not enrolled in school and some have parents but the parents are economically unable to send their children to school. These children, if not sent to schools, soon join carpet work becoming child laborers". Therefore, to minimize the risk of children to become child laborers in future the labeling NGOs have established school, day care cum education centers. Rugmark has supported 11-day care centers being run by licensees themselves covering around 275 children (Rugmark Bulletin, 2004).

Labeling NGOs are often giving priority to community-based rehabilitation. This means that every effort is made to reunite the children with their families, so that they do not become alienated from their communities. Children who return to their families are given for example four levels of support depending upon their need, like support for school fees, books, uniforms and other materials. The foundation has developed and implemented an awareness program for carpet workers in factories under Rugmark license: i) child rights, including education and gender issue, ii) family planning, girl trafficking, HIV AIDS, iii) health, nutrition, sanitation and working environment. These programs are basically targeted to the carpet workers and their families (Rugmark Bulletin, 2004).

Serious illness and injury are largely unpredictable events. They can have potentially devastating effects on individuals and households, both through a loss of income and expenditures associated with medical care. The willingness to pay for medical service increases with the level of relative income risk which the individual has to forgone for sickness. The willingness to pay due to recover from sickness for the

poor might be higher due to low saving to cover income loss and high opportunity cost of sickness, but their ability to pay is much lower. The opportunity cost of illness is higher in the poor household especially for wage laborers. Generally, the carpet workers cannot go to work while they are sick and the industry does not pay any money for the absent time. Serious illnesses are often needed a high costs of care, which can be catastrophic to the households in developing countries like Nepal. Few households have sufficient current income or savings to cover the costs of care, and formal health or disability insurance is rare (World Bank, 1993).Therefore, they have no way to face this income loss while they are sick.

Any effort that is directed at breaking out of vicious cycle of poverty must take proper cognizance of the importance of health care system. Maintenance and improvement of health of the carpet weavers and their family members is an important area of concern for social labeling NGOs as it has a wide range of impact on the welfare of poor households. Affordability of health care for the poor households is a critical issue to be addressed by the health care delivery system of Care & Fair and Rugmark. Health and nutrition services contribute to other aspects of human welfare, such as protecting people from catastrophic health spending (World Bank, 2004). Care & Fair has established clinics for the children and family of the carpet community in Kathmandu Valley - they have four different clinics at Jorpati, Bhainsepati, Jawalakhal and Boudha. Immunization, family planning and first aid services are provided to the visiting patients. Ambulance service is also available in the clinics. Realizing the importance of the health service Rugmark has initiated to monitor and provide health facilities to the children at the rehabilitation center. The Rugmark Foundation has also developed and implemented an awareness program like family planning, health, nutrition, sanitation and HIV/ AIDS in 2003. According to Rugmark officials, they regularly monitor the health status of children in the rehabilitation centers. Children's health complaints are properly addressed and they are taken to hospitals, health posts or doctors if necessary. The rehabilitation centers maintain individual health profiles. This analysis shows the effect of social labeling NGOs on child labor as well as health and nutrition in the context of Nepal.

Government failure and market failure are two main reasons of third party intervention into the health sector in less developed countries. In general, market

failures arise because of non-excludability[27] and/ or non-rival[28] consumption of a good where market system of exchange cannot operate and a concern for equity call for some government financing of health and nutrition service. One type of market failure is the under provision of services to prevent or treat individual illness that spill over to the general populace. Another is the breakdown in insurance and credit markets, impoverishing people (World Bank, 2004). Government often intervenes in markets to correct the market failure and regulate where there is perceived inequality or inefficiency. Unfortunately, Government in developing countries often fails to correct the market mechanism. Government fails to protect individuals and groups in society and provide a safety net for those unable to help themselves. Government failure usually means functional failure of government in providing allocative efficiency, for example, government-operated enterprises not only have little efficiency, but also always result in 'rent seeking'[29] or 'log rolling'[30] and cause corruption. In a situation where Government is taking care of public interest, while market is taking care of private interest and both fails eventually to provide merit goods (such as health care) to the poor client. In such a meaning, Government failure and market failure brings the demand for a third sector in front, which could provide merit goods through voluntary mechanism. This is the rationale for NGO intervention in health sector.

Table 5.3 describes the institutional sources of health facilities by Care & Fair. In accordance with its philosophy, Care & Fair Nepal has different health care projects to maintain better working and health conditions for the carpet workers. Care & Fair thinks that the question of child labor has to be tackled by overall social development, particularly in education and health care program. In all the welfare and rehabilitation measures by Care & Fair, health occupies the central position. The clinics are located within the most important carpet knotting area in Kathmandu valley and involved in health care of the villagers in the carpet belt.

The Rugmark initiative has no clinical facility to provide health care to the households while the children in rehabilitation centers receive health benefit, a ma-

[27]Non-excludability means that individuals who have not paid for a good cannot be prevented from enjoying its benefits. For example, everyone benefits from clean air whether they contributed to an anti pollution program or not.

[28]Non-rivality means means that consumption by one person does not preclude its enjoyment by anyone else.

[29]Where decisions are made leading to resource allocation that maximizes the benefit to the decision maker at the expense of another party or parties.

[30]Where decisions may be made on resource allocation to projects that have less importance in return for the support of the interested party in other decision making areas.

Table 5.3: Healthcare facilities by labeling NGOs

Name of Clinic & Address	Patients Visiting Per Day	Patients Benefited		Number of Doctors & Nurses	Types of Facilities
		Adult	Children		
Care & Fair Clinic, Jorpati	60-70	23,909	26,315	5	Immunisation, Family Planning, First Aid Services, Xray, Laboratory Test
Care & Fair Clinic, Bhainsepati	50-70	15,838	12,579	5	Immunisation, Family Planning, First Aid Services, Xray, Laboratory Test, Ambulance
Care & Fair Clinic, Jawalakhal	N/A	6,958	4,740	4	Immunisation, Family Planning, First Aid Services, T.B. Services, X-Ray, Ambulance
Care & Fair Clinic, Boudha	40-50	N/A	N/A	4	First Aid Services, Ambulance

Source: Care & Fair, Nepal.

jority of children outside are not receiving any direct health benefit by Rugmark. According to the Rugmark officials, children in the Rugmark rehabilitation centers receive health and medical care. A doctor visits the centre each week to carry out a regular check-up the rescued children. Depending upon the extent of the health problem, children are referred to different hospitals.

5.7 Chapter Summary

This chapter concentrates on the social labeling NGOs operating in Nepal. Among the carpet importing countries, the label became a legally binding international trademark in Germany in December 1995, and in 1996 in the US; these are the largest markets for carpet exports from South Asia (CUTS, 2003). The idea of establishing social labeling NGOs like RUGMARK, STEP and Care & Fair is to protect the child laborer after being retrenched from the carpet industries. Although all these labeling NGOs have the professed aim of reducing child labor in the carpet industries, they differ in some important respects.

The major differences of social labeling NGOs relate to the approaches, monitoring systems, and source of funding. Rugmark is a product label that is affixed to individual carpets. STEP and Care & Fair are company certification programs. Rugmark labels each carpet so that it could guarantee that the carpets have not been produced by any contribution of child labor. However, Care & Fair is abstaining from this monitoring method; rather it expects the individual producers to monitor themselves. In accordance with its philosophy, Care & Fair Nepal has clinics to provide health care facilities for maintaining better working and health conditions for the carpet weavers and workers. The Rugmark initiative has no clinical facility to provide health care to the households, however they provide health benefit in rehabilitation centers. There are some special schools constructed and managed by Rugmark for a better opportunity of child schooling throughout the carpet weaving areas. The major aim of these welfare activities by labeling NGOs is to compensate opportunity cost of child schooling. Therefore, the supply side effect of child labor market through social labeling NGOs is very important to address the child labor problem.

Part III

Empirical Investigation

Chapter 6

Data Collection in Nepal

This chapter deals with the data collection and survey methodology in Nepal in the years 2003-2004. The objectives, sampling design, the questionnaire as well as the training of enumerators and reliability of data etc. are briefly discussed in this chapter. The first step in planning a scientific survey is to specify the objective. Clarifying the main aim of this survey is to answer the question, whether social labeling displaces child labor and increases child schooling in Nepal or not.

Child laborers are invisible in most of the official statistics in South Asian Countries because current data generating instruments do not collect information on child labor rather they try to focus on adult labor. In most of the countries, child labor is illegal and it is often very difficult to collect data on illegal activities. Normally children are working in informal or underground sector of an economy. In the informal sector sometimes child laborers are visible in the street corners but one finds it very tough to collect data on those children who are working in the underground economy.

Therefore, this study is an ambitious project to collect data on child labor within the context of a sample survey[31]. Also the universe of child labor in carpet sector for sampling design is unknown or debateable[32] in many literatures because of its hidden pattern and extreme variation.

The pre-test and pilot survey had been performed from September to December 2003 in Nepal, and the final survey was conducted during eight months beginning in February, 2004. The results that are presented in this thesis are based on the collected primary data from Nepal.

Section 6.1 describes the structure of the survey. The pre-test quantitative survey is discussed in section 6.2. The pilot quantitative survey is discussed in section 6.3. The detailed final quantitative survey is discussed in section 6.4. Section 6.5 provides a brief summary.

[31] Levy and Lemeshow (1999)

[32] e.g. CWIN in Nepal cited that 50 percent of the total labor force were children while the Government in Nepal estimated 9 percent of total labor force were children in 1993.

6.1 Structure of the Survey

This survey targeted those households who were involved in carpet industries and at least one member (5 to 23 years of age) of the household was working in any of the carpet industries. These households were regarded as the elementary units (ELUs, elements of the target population). For some special questions ELUs were children of these households. Observational units were mostly the head of the households. The characteristics (variables) of the ELUs which would later be described in detail are mainly: household, demographic and socio economic information; Child information (if ELU is child) and related information to labeling NGOs'.

The sampling design considered partitions of the target population in respect to principal biography cases of children (e.g. first working and then schooling, or other combinations), labeling status of households and spatial partitions (e.g. districts in Kathmandu valley).

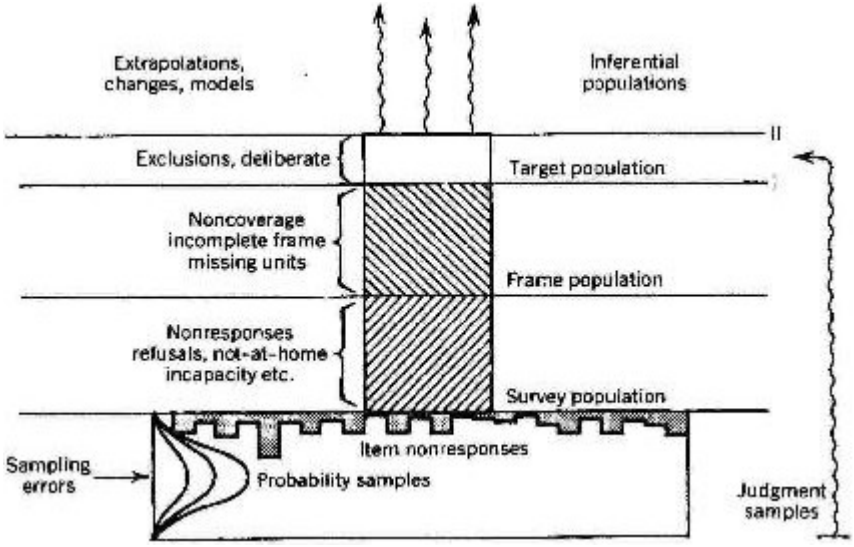
6.1.1 Target Population

The target population[33] in this survey were all households involved in carpet industries where at least one member aged 5 to 23 was working in any carpet industry. This latter restriction was necessary in order to trace the impact of labeling NGOs, as labeling NGOs started their activities in 1995. A child who was 14 years old in 1995 would be 23 years of age in 2004 and a child who was 5 years old in 1995 would be 14 years of age in 2004. Therefore, the target population was defined implicitly by the time frame of the existence of labeling NGOs and focused on those households who were working in carpet industries.

The target population (Figure 6.1) was defined early in the survey-designing process. However, some members of the target population had to be excluded because of operational constraints: the high risk of collecting data in some remote areas of Pokhara for so called 'Maoist' insurgency. When some of the members of the target population were excluded, the included population is termed as the survey population or, observed population (frame population). The target population is the population the researcher wants to observe while the survey population is the population the researcher can really observe. As a rule the survey population should be as close as possible to the target population. But political turmoil in Nepal costs

[33]The target population is the entire group a researcher is interested in; the group about which the researcher wishes to draw conclusions. The target population is the total population for which the information is required.

Figure 6.1: The frame and survey population.



Source: Kish, 1965.

about 20% of the target population which were excluded from the survey population. This research concentrates only on Kathmandu Valley where 80 percent of the carpet industries are located. As the survey population considers 80 percent of the total targeted population, this research use the country name 'Nepal' in the title of this thesis.

6.1.2 Survey Frame

In Nepal the carpet industry was constructed with a number of looms under one roof where many laborers were working. Most of them passed their night inside the factory premises. Therefore, this survey tried to get a list and area of the carpet industries from CCIA (Central Carpet Industries Association), Rugmark and Care & Fair. CCIA provided a members' directory where one could get 1,189 addresses of different carpet industries. Unfortunately, no industry or house had numbering system in Kathmandu valley; one could have only access to the post box number and area name from this list. Therefore, it was difficult to locate the survey frame according to the list provided by CCIA, Rugmark and Care & Fair. However, the survey frame[34] was chosen according to the different areas of the list. Then, the

[34]The survey frame, also called the sampling frame, was the tool used to gain access to the population. There were two types of frames: list frames and area frames. A list frame is just a list of names and addresses that provide direct access to 'individuals' (e.g., a list of carpet industries, a list of schools). Area frames are a list of geographic areas that provide indirect access to individuals.

survey units were divided into three parts: the household was the sampling unit, parents or a legal guardian was the reporting unit and child or ex child labor was the reference unit.

6.1.3 Qualitative Survey

A qualitative/quantitative divide permeates much of social science, but this research considers this debate as a continuum rather than as a dichotomy. At one end of this continuum is quantitative research marked by sharply defined population, case, variables, and well-specified theories and hypotheses. At the opposite end of this continuum is qualitative social research that helps in designing a questionnaire. This research deals qualitative research as the initial stage of starting quantitative research, it was important because of constructing questionnaire on a complex social issue like child labor.

- Key Person Interviews

The key persons were village leader, NGO professional, ILO (International Labor Organization) officials, UNICEF (The United Nations Children's Fund) officials, GTZ (German Technical Cooperation) officials, University Professors and representative of local media. Interviews were designed primarily to elicit the interviewee's reactions and suggestions. The goal was to learn about the person's views and constituency, and his/her perceptions of the problem. All of the key individuals were involved in policymaking, research or activists of child labor. The key persons interview took place at his/her office, sometimes at home. The key person interviews were recorded in a movie camera, tape recorder, or written in a notebook.

- Focus Group Discussion (FGD)

Focus groups[35] can be used at the preliminary or exploratory stages of a study (Kreuger 1988); they can help to explore or generate hypotheses (Powell and Single 1996) and develop questions or concepts for questionnaires and interview guides (Hoppe *et al.*, 1995; Lankshear 1993). This research experienced focus group discussions as an excellent source of a wide range of opinions on a specific subject.

[35]A group of individuals selected and categorized by researchers to discuss and comment on personal experience, the topic that is the subject of the research.

FGD provided insights that were crucial for a structured close-ended survey questionnaire[36]. The group consisted of 12-15 people who shared some common traits, i.e. all of them were working in carpet industry. The discussion time was between 3 to 4 hours. It was usually recorded in a tape.

The benefits of FGD was to gain insights into people's shared understandings of their own problem and the ways in which individuals were influenced by others in a group discussion. This study, however, did not generalise findings from FGD to a whole population, because a small numbers of people participated in FGD and the likelihood that the participants were not be a representative sample. This research considered FGD as a primary tool to understand how labeling NGOs were working in the grass root level and how people termed different economic concepts and problems in their everyday life. By its nature focus group research was open ended and undetermined. Therefore, the main purpose of FGD was to draw upon respondents' attitudes, feelings, beliefs, experiences and reactions in a way which could be termed as an elementary unit of close ended questionnaire design.

During the 'FGD' moderator raised a debate by asking an open question "do you think child labor is good for the well-being of your family?" and then by showing Rugmark and Care & Fair logo the moderator asked another question "Do you know Rugmark, Care & Fair?". This types of questions were asked to draw out people's differences, and diverse range of meanings on the topic under discussion. While the discussion was continuing, the moderator avoided giving any personal opinions so that the participants were not biased towards any particular position or opinion. When the participants of the FGD got opportunity to be involved in focusing opinion (raising voice of the poor), they valued themselves as experts, and worked more collaboratively with researchers.

6.2 Pre-Test Quantitative Survey

In the first phase, the field supervisory staffs responsible for the filed research operation were trained by the main researcher[37]. The supervisors were trained in such a way that they were in a position to remove the doubts and difficulties of the enumerators. Then the field supervisors used to train the field enumerators in front of the main researcher. Since the supervisors were entrusted with the super-

[36] In contrast to open-ended questions, closed-ended questions require participants to choose from a limited number of responses predetermined by the researcher. There are 5 basic types of closed-ended questions: Multiple-choice; Categorical; Likert-scale; Numerical; and Ordinal.

[37] The author of this thesis

vision of the field work of 15-20 numbers of enumerators with different academic backgrounds, the main researcher kept aside and became a trainee like other enumerators. This process ensured the best quality training of the enumerators and increased the responsibility of the field supervisor. As the training was very intensive and long, sometimes the main researchers posed some interesting stories to overcome the fatigue of the long lectures.

After a detailed discussion of the questionnaire for three days, the field researchers went to field with the main researcher and supervisor, this was termed as 'accompany call' in the questionnaire. The data collection of this stage was mentioned as a pre-test of the final questionnaire. In the pre-test survey the respondent were not selected in a random basis[38] but selection was based on area specific. After pre-test there were four days discussion about the problem and ambiguity of the questionnaire. A major source of error could arise due to the ambiguity of the questions on the questionnaire in the field. Then, a demo survey was done internally between the enumerators themselves. The main objective of this demo survey was to finalize the concepts and definitions, the arrangement and sequence of the questions, the appropriateness of the language, format of the questionnaire, spacing between two questions, adequacy of space for writing answers, etc.

The objective of the pre-test surveys was focused mainly to formulate concepts and definitions, survey questionnaires, instruction manuals for the field supervisors and enumerators, etc., and the evaluation of alternative methodologies and data collection techniques. The pre-test survey was particularly important for the formulation and wording of the questionnaire and to develop appropriate concepts and definitions, which later would be communicated to the enumerators for data collection. For example, this study distinguished full time and part time child laborers in the pre-test survey. Part time child labor was defined by the work length of less than 20 days (8 hours per day) in the last two months and full time child laborer was defined by the work length of more than 20 days (8 hours per day) in the last two months under 14 years of age. This step was very important because any ambiguity in the concepts and definitions could affect the final results. A major source of error was improper wording of questions on the questionnaire. The enumerators

[38] Pre-test surveys differ from the pilot census in that they are usually relatively small-scale exercises and the selection of respondents is often not on a random basis. This is the final step in questionnaire design to test a questionnaire with a small number of interviews before conducting the main interviews. Ideally, one should test the survey on the same kinds of people he/she will include in the main study.

came from different education levels might not be able to follow the vocabulary used in statistics or economics. In cases where questions were ambiguous a considerable amount of discussion and experimentation was made to redesign the questionnaire. Therefore, the pre-test survey mainly considered to test the suitability of questionnaires in actual field conditions.

This survey was organized as the first time research targeting social labeling NGOs, therefore information from other surveys could not be used. Otherwise the pre-test procedure could have been made easy, but it could also be argued that information from other surveys or other countries might produce a 'mind set' which was not good for scientific research. It was rather a good option to improve questionnaires based on actual field experience. After pre-test this study critically examined every question included in the questionnaire from the point of view of (i) the reaction of the respondents and quality of the answers; (ii) the reaction of the interviewer and difficulties they faced in extracting the information; (iii) usefulness of every question from the point of view of objective of the research and (iv) the right order of asking questions. The report of the field workers gave concrete and constructive suggestions on the revision of questionnaires. The enumerators asked a lot of interesting questions to the main researcher and all the questions were solved in the group discussion which was written in a paper. Later all the questions and answers were printed in a paper and distributed to the enumerators as a brief manual. Before planning a pilot survey, the conduct of pre-test surveys was highly desirable in scientific work.

6.3 Pilot Quantitative Survey

The main objective of the pilot survey was to finalize the concepts, definitions, sequence of the questions, the appropriateness of the language, format of the questionnaire, spacing between two questions, adequacy of space for writing answers, etc. It was possible to finalize the various aspects of the questionnaire by interviewing only 20 households in each of the three countries in South Asia. The main researcher used the pilot survey to determine whether the enumerators were familiarized with the concepts and definitions in a uniform manner, whether respondents understood the questions, whether the order of the questions was acceptable, and how long it took to obtain the information. Some of the data entry persons were also employed as enumerators or they observed the interviews conducted by the staff dealing with data collection. Pilot survey was an excellent tool to evaluate on-the-job training to

all supervisory staff. A critical analysis of time records helped the field supervisor to manage staffs to distribute the workload among field enumerators. Pilot survey also helped in assessing equipment requirements. Testing data entry and data processing procedures with raw data helped to assess the computer equipment and data entry requirements (choosing the right software).

6.4 Final Quantitative Survey

In Nepal data collection mechanism was based on primary and some secondary information on carpet working household and carpet production in Kathmandu Valley. In order to decrease the variances and therefore to increase efficiency of the tests and precision of the estimators it was necessary to control the influence of confounding variables, which might disturb the main question of the research. This was done by partitioning the population in respect to three main factors[39]. The main suspected sources of heterogeneity of this study were:

1. Administrative and social difference of regions (see Table 6.3)
2. Important time points (e.g. before and after NGO came into operation (before and after 1995))
3. Different situations/ problems and stories of focused population (see Table 6.1)

In the first step stratification was decided in respect to spatial partitioning i.e. taking a sample from Kathmandu as well as from Pokhara. However, because of the high risk of collecting data in some remote areas of Pokhara for so called 'Maoist' insurgency this research was forced to restrict to Kathmandu valley (i.e. spatial clustering 1 of 2). Then, within Kathmandu valley, this research followed the plan of stratifying in sub spatial partitions i.e. took independent random sample from each of the three sub regions of Kathmandu valley (see Table 6.3). The rest of the sampling design was also done consistently by stratifying (i.e. taking independent samples from each subset built by meaningful combinations of factors (see plan Table 6.2).

Because sizes (numbers and variances) of population subsets were unknown, stratified sampling could only be done by equal sized (and therefore most likely be

[39]Sampling means selecting and studying a relatively small number of individuals in order to find out something about the population from which they are selected.

disproportional). This sampling method would then need post stratification (which again would require sizes) to yield global unbiased estimators. On the other hand, concerning comparisons between groups, this method had the highest power and was also robust against heteroscedascity (Underwood,1997). Although a lot of energy was invested to make the sampling procedure as optimal as possible, new programs (e.g. SPSS 14: complex survey procedures) could not be used as basic information are missing (i.e. population sizes). But as only stratification techniques were used in this survey (despite in the very first step of clustering Kathmandu valley and Phrokara), design effects of test and confidence intervals should be less than one[40].

Therefore, the estimated results (done by regular statistics) which will be presented in the following chapters are reliable and scientifically improved in the sense which is quite conservative and in the safe side of any conclusion. Concerning the very first step (clustering Kathmandu valley and Phrokara) this study would suggest either to restrict conclusion of the results based on Kathmandu valley instead of Nepal, or because of the way the sample had been designed, it might be possible to consider the high significant results for whole Nepal as 80% of the carpet industries were located in Kathmandu valley.

6.4.1 Stratification Technique

Stratification is important if various strata in the population differ considerably from one another in their average values or variability. The crucial question, then, is "how can a sample be designed so as to be representative of the population?" The answer is: first, every individual in the population must have a chance of being drawn in the sample; and second, the choice of the individuals in the sample must be random. Unless the requirements are met, there is no way to know whether the sample is representative; that is, there is no way to judge the conclusions about the population. If the design of the investigation is such that some individuals cannot be drawn, then unknown biases may affect the sample. The advocates of non-random sampling often admit the possibility of bias but plead the high cost of random sampling. But the advantage of random sample is that it is essentially unbiased, whereas biases may suddenly and unaccountably appear in any selected sample. This means that randomness in sampling reduces the element of risk.

[40]Because this thesis used disproportional instead of proportional stratified sampling, theoretically the design effect could be higher than 1 if the mean of the variances of the subgroup is bigger than the total variance. Please see the Appendix, Table A.11, that this is not the case of the stratifying variables in this survey.

Table 6.1: Categories of the surveyed households

Category	Description	Age Limit
Cat1	Who worked in carpet industries in 1995 as a child laborer and is still working in carpet industries.	15 to 23
Cat2	Child laborers and former child laborers who are continuing education/ finished education/ rehabilitation centre at Rugmark/ Care & fare/ Step.	5 to 23
Cat3	Who was removed from carpet industry after 1995 for working as a 'child laborer' but did not enrolled to labeling NGO school or any school and working in carpet.	5 to 23
Cat4	Child laborers and ex child laborers of carpet industries who dropped out from govt. and NGO schools provided by Rugmark/ Care & Fair/ Step.	5 to 23
Cat5	Child laborer in the intermediate sector of carpet production (cleaning / mixing / spinning / carding / dying / packing)	5 to 14
Cat6	Child laborers and ex child laborers who got vocational training like tailoring, textile making, screen printing after they had retrenched from their job in carpet production by the labeling initiatives.	5 to 23
Cat7	Children who are not working but accompany their parents while working in carpet industry/part time child worker.	5 to 14
Cat8	Children who are not working but accompany their parents while working	5 to 14
Cat9	No child is working in a carpet weaving family from the same locality where children are working (control group).	5 to 14
Cat10	Family of the child laborers and ex child laborers who are getting benefit from the health care service of labeling NGO.	5 to 14

Table 6.2: Stratification study of the households

Category	Full time Worked as child	Part time Child Labor	Today Working	Carpet Weaving	Intermediate Sector of Carpet	Education/ Rehabilitation of Rug/C&F	Education finished	Vocational training	Medical Treatment	Age today
1	+	-	+	+	-	-	-	-	+/-	15-23
2	+	-	+/-	+/-	+/-	+	+/-	-	+/-	5-23
3	+	-	+	+	+/-	-	-	-	+/-	5-23
4	+		+/-	+/-	+/-	+	-	-	+/-	5-23
5	+		+	-	+	-	-	-	+/-	5-14
6	+		+	+/-	+/-	+	+	+	+/-	5-23
7	-	+	+	+	-	-	-	-	+/-	5-14
8	+	-	+	+	-	-	-	-	+/-	5-14
9	-	-	-	-	-	+/-	-	-	+/-	5-14
10	+	-	+/-	+	-	-	-	-	+	5-23

Therefore, to focus on the heterogeneity this research divided the population into sub-populations or strata, then a simple random sample were drawn from each stratum. We stratified the sample size by 10 categories of households as depicted in Table 6.1 after randomly visited carpet industries from the list of Rugmark and Care & Fair to locate the labeled carpet industries and visited the non-labeled carpet industries from the same area as well. The Categories were selected on the basis of the main objectives of the study.

The methodology designed for this study was to test the impact of the social labeling initiatives to eliminate child laborers working in the carpet industries and this would lead to trace a statistically representative sample of the different categories of households (Table 6.2). As a rule of thumb the target was to select 30 persons from different household of each category randomly. If there were more than one individual in a family from the same stratum, then the research team selected one individual randomly using the randomisation function of a pocket calculator for the 'category questions' in the questionnaire.

The major challenge of this study was to locate the stratified households and getting a large enough random sample for each of the categories (Table 6.1), so that a reasonable degree of confidence could be reached at statistically significant results. There was no base line survey after 1993 to lists the children who lost their job from the carpet industries by the social labeling initiatives but the researcher got a list of the children who were educated by the labeling NGOs schools in different parts of

Table 6.3: The distribution of the surveyed household in different districts of Kathmandu Valley

Area Name	Frequency of Households	Percent
Kathmandu	138	33.7
Lalitpur	128	31.2
Bhaktapur	144	35.1
Total	410	100.0

Kathmandu valley. The other three lists were the addresses of the carpet industries provided by CCIA (Central Carpet Industries Association), Rugmark and Care & Fair[41].

As the influences of regional differences could not be denied, the research deals to stratify sample in respect to regions of Kathmandu Valley. Politically Kathmandu Valley is divided into three different districts (Kathmandu, Lalitpur and Bhaktapur) and most of the carpet industries in Nepal are concentrated on these three districts. Therefore the target was also to choose industries randomly and equi- proportionately from the three different districts of Kathmandu valley. The survey site was chosen on the basis of concentrated carpet industries in the three districts of Kathmandu Valley (Table 6.3). Table 6.4 shows the total number of surveyed households is 410, among those this survey tried to pick the household randomly by stratifying the three different districts in Nepal equally.

Table 6.4: Survey location in different districts of Kathmandu Valley

Name of Districts	Kathmandu	Lalitpur	Bhaktapur
Name of the Location	Bauddha	Bhaisepati	Surya Binayak
	Bhungmati	Ekantakuna	Sanothimi
	Chabahil	Nakhkhu	Jagati
	Jorpati	Jawalakhel	Thimi
	Kirtipur	Sat Dobato	
	Mahankal		
	Swayambhu		
	Koteshwor		
	Sallaghari		

In selecting the sample frame, the status of industry registration by the labeling NGOs was taken into account. So, the sample universe was stratified by labeling household and non-labeling household (Table 6.4). Labeling household was defined

[41]STEP Foundation in Kathmandu was not able to give any lists of their licensees.

by those households where at least one person was working in industries registered by labeling NGOs and no member was working in other non-labeling carpet industries. Non-labeling household was defined by those households where at least one member was working in unregistered (non-labeled) carpet industry and none of this household member was working in any registered (labelled) carpet industry.

Table 6.5: The labeling status of the sample households

Labeling Status	Frequency of Households	Percent
Labeling	229	55.9
Non-labeling	181	44.1
Total	410	100.0

To compare the situation of labeling and non-labeling households, approximately 50 percent of the surveyed households were targeted from labeling household (Table 6.5) and vice versa. Table 6.5 divides the frequency of labeling and non-labeling households in the total sample size.

Table 6.6 explains that the quantitative study covered 1,971 persons in 410 households. Among them 56 percent of the households were involved with Labeling NGOs and 44 percent were not involved with Labeling NGOs (Table 6.5).

The above mentioned categories (Table 6.1) were then filled up randomly after visiting households.

6.4.2 Sample Surveys: Probability vs. Non-Probability Sampling

In non-probability sampling design, the three main problems are 'weak conclusiveness', 'weak representativeness', and 'biases for estimations'. As in non-probability sampling designs the influence of potential but unknown[42] confounding variables might not be distributed randomly or equal over sampled units, a number of non random designs (e.g. case control) has been developed to mimic the ideal setting[43]. Unfortunately, some methods are vulnerable to certain flaws so that convincing cause-effect-conclusions could hardly be reached by non-probability designs (Armitage, 1999; Moore, 1999)

[42]in the state of planning

[43]The ideal setting would be that confounding variables are either completely been controlled (experiment) or distributed randomly (probability sampling) over groups to be compared. The latter option has the advantage that we do not have to know or identify all confounding variables in the state of planning.

Table 6.6: The district wise labeling status of thelabeling households

Area Name	Labelled Household Members	Non-Labeled Household Members	Total Household Members
Kathmandu	307	326	633
	48.5%	51.5%	100.0%
Lalitpur	311	288	599
	51.9%	48.1%	100.0%
Bhaktapur	489	250	739
	66.2%	33.8%	100.0%
Total number of household members	1107	864	1971
	56.2%	43.8%	100.0%

Although it is long known[44] and widely accepted that only probability sampling could guarantee a known degree of representativeness of a sample[45], many surveys cannot be performed in such an ideal way[46]. A further shortcoming of non-probability sampling surveys might be that they also suffer from the "lacking of population" as it is sometimes not possible to define the population to which conclusions from a given sample could be generalized.

The third shortcoming in non-probability sampling is that biases caused by missing data could hardly be corrected in the state planning. As data analysis in such surveys is mostly been done in a retrospective way, there is often no way to avoid such biased data through a specific de-sign rather than to impute them afterwards. For some specific linear models, techniques (e.g. Tobin or Heckman regression) have been developed to correct biased estimators calculated from such data (Wooldridge, 2002)

The above shortcomings of non-probability sampling confined to situations where we would like to summarize "what do we see?" or where we use a sample to generate hypotheses rather than testing them (Moore, 1999).[47]

[44]"Probability sampling denotes the only feasible method recognized by survey samplers in most practical situations to achieve the aim (mirror or miniature of the population)", Kish, 1965

[45]In one way this is quite trivial from the definition of probability sampling "A probability sampling has the characteristic that every element in the population has a known, nonzero probability of being included in the sample" Levy, *et al.*, 1999

[46]"We also know that we must accept many empirical data obtained without representative sampling and without probability sampling. But that is no justification for not keeping the definitions straight." Kish, 1965

[47]In the last years, this insight brought by the UN-agencies to formulate the research-policy that "must employ a probability sampling design" (WHO, 2006). Also in new textbooks of statistics,

To avoid the above shortcomings of non-probability sampling the only convincing way to reach conclusions from a sample to a population is to test parameters of structural models or to estimate parameters with known precision and confidence, which is only possible by applying probability sampling (Levy, 1999; Moore, 2000; Armitage, 1999). As the objective of this survey was to test hypotheses, a carefully planed stratified sampling design had been devel-oped using probability sampling techniques.

Missing Data and Sample Selection

"A selected sample is a general term that describes a non-random sample" (Wooldridge, 2002). In other way, selection bias is a bias that arises when individuals include in a study are not representative of the target population for the study. Selection bias can arise because of an inappropriate sampling frame, or an inappropriate sampling methods are applied or because some of those sampled refuse to participate in the study (Gail, 1999).

Unfortunately, the sample survey procedure with probability sampling is sensitive against missing data. The missing data can lead to a sample selection problem in the case of a random survey. This is true for a simple random sampling (SRS) on the whole population as well as for elaborated designs which use stratifying or clustering techniques. A wide variety of techniques have been developed in avoiding[48] or correcting[49] biases due to missing data. In all designs the extent of biasness, less precision or less confidence of estimators due to missing data depends on the proportion of missing data (Levy, 1999).

Whereas in many surveys where it may take a considerable effort to achieve a response rate even as high as 50% so that the problem of missing data is one of the most difficult problems confronting investigators (Levy, 1999). If the percentage of non-response is relatively large, say more than 5%, it is quite likely that the results of the study will be biased an unknown amount by the exclusion of those individuals who did not provide complete data (Brock *et al.*, 1999). This thesis provides almost no logically missing response. Therefore, the survey data contains no "item nonresponses" to items which are used in the analysis and there is no

these methods are emphasized. As these new requirements call for complete revised statistical tests, statistical packages like SPSS, SAS, and STATA incorporated such procedures in their newest versions.

[48]E.g. double sampling techniques lowering bias due to nonresponse (Levy, 1999)

[49]For various imputation methods depending on the mechanism for the occurrence of missing values. see Levy, 1999

selection bias because the sample design is stratified random with less than 5% missing data.

6.4.3 Difficulties of the Field Research

The pilot survey was conducted by the direct help of Rugmark inspectors[50]. It was evident that people rarely like to criticize labeling NGOs in the front of the Rugmark inspectors what they normally expressed in the final field research to the third party[51]. The bias was evident after analyzing the data from pilot study, for example, it was reported in 100 percent cases that the labeling industries were monitored by the Rugmark inspectors twice in a month, while in the final field survey it was reported that only 4 percent of the industries were monitored by the Rugmark inspectors twice in a month, 15 percent of the cases reported that the Rugmark inspectors visited once in a month.

It was very difficult to enter into the carpet industries without Rugmark inspectors but there was a considerable 'bias' caused by accompanying Rugmark inspectors in the field. Therefore, as an alternative the main researcher wrote an application to Rugmark for providing an official letter so that the independent enumerators could easily enter into the industry premises. The Rugmark Foundation in Nepal was kind enough to provide an official letter in local language where the authority asked their licensees to help the enumerators of this survey. But the problem still persisted sometimes to go inside the carpet factory in Nepal, especially when the manager of the industry understood the research topic. To avoid such complexity this research used a title "ZEF Study on Social Labeling" on the top of the questionnaire so that the term 'child labor' could be avoided at the first glance of the questionnaire. Because most of the carpet workers used to live inside the factory premises they were highly dependent. To avoid biases from that dependency one had to conduct some interviews outside of the carpet industry which was not easy to perform always. So in some cases one had to find special location (like tea canteen, smoking shops outside) to interview the respondents.

In many developing countries in South Asia parents are not used to keep records of their child's birth registration. Collecting data through an interview faced many problems under such circumstances. Often, the household members had no quantitative concepts and it was not easy to obtain age information through simple

[50]Rugmark inspectors identified the carpet industries and accompanied with the main researcher while filling out the questionnaire.

[51]Independent interviewer.

oral inquiries. In fact, different methodologies of procuring the data from households were developed. Pre-tests surveys provided a guideline on the methodology to be adopted to collect data on different specific items, for example, sometimes the age data were collected by memorizing a national event to the respondent. If there was any confusion regarding the age of a person in the household, a question was asked "what was his/her age/height when the king Birendra Bir Bikram Shah Dev was killed[52]?"

A large extent of political problems in Nepal, mingled with so-called MAOIST insurgency transformed the situation more problematic. These problems influenced the research team to add a "risk averse" bias to sampling technique. Though the initial target was to go for 30 households randomly (as described above) in each category, the number was then increased up to 50 in the execution phase of the survey, 20 households were selected more to be in the safe side. This field survey was helped by International Labor Organization (ILO), German Technical Cooperation (GTZ), The United Nations Children's Fund (UNICEF), Central Department of Population Studies (CDPS) at Kathmandu; and their help and inspiration leaded us to a success with at least 40 households in each categories and that constructed the total sample of 410 households in the targeted 10 categories. Therefore, by targeting 500 households this field research was succeed to reach more than 400 households which was quite satisfactory as one needed only 300 households (rule of thumb).

6.4.4 Quality Control

The fieldwork was carried out by a mixture of experienced (who had previous field work experience) and inexperienced postgraduates. The interviewers were trained for seven days including the pre-test of the survey. In order to maximize the 'authenticity' of data and therefore reduce the 'moral hazard' problem, the research teams were mixed to guarantee at least one experienced field worker and one inexperienced field worker in each group.

Almost all of the field workers had a good idea about the locality where they were working. It was evident from the pilot survey that the respondents were sometimes looked better to talk with a known face, and he/she seemed to be more frank during the interview. This was the reason why this survey employed some known

[52]Birendra Bir Bikram Shah Dev was king of Nepal from 1972 until 2001, Nepal's stability was threatened even more when he and most of his family (including Queen Aiswarya) were killed by his eldest son and heir, Dipendra. The June 1, 2001 incident had shocked the whole nation.

faces from the locality as enumerators. At the time of conversation, the respondent sometimes volunteered information which was not related with the research. As a rule, the respondents were not getting any money for answering the questions but he had some 'opportunity cost' of time. On the other hand the interviewers were getting money for asking the questions. Therefore it was instructed to the interviewers that their responsibility in such situation was to keep listen with having a lot of patient. Usually the interviewers were trained to be very tactful in leading the conversation back to the original topic.

Advised by some experts from ILO (International Labor Organization) standard quality control mechanisms were followed to ensure data quality in Nepal. Time to time, field supervisor along with principal researcher visited randomly to see the work of the field researchers. Preliminary checking of entries in the questionnaires were done by the main researcher, supervisors and enumerators at field level. After a through scrutiny and cross check the field researcher sometimes sent back to field again if there was any type of serious problem regarding data collection. This was termed as 'back check' in the front page of the questionnaire.

Focusing on main objectives of the study, the questionnaire was designed until the pilot survey step by step. The initial questionnaire was modified for the first time after having a lot of comments, ideas and debate while presented the research proposal at ZEF (Center for Development Research, Bonn). The draft questionnaire had been changed for 11 times (reported in the left corner of the questionnaire) in the pre-test procedure to reach its final shape. The most of the questions in the questionnaire was close ended. Closed questions provided a set of answers that the main researcher considered as potential responses based on prior experience of the responses in the pre-test and pilot survey.

6.4.5 Non-Sampling Errors

Non-sampling errors[53] can be classified into two groups: random errors and systematic errors. Random errors are the unpredictable errors resulting from estimation. They are generally cancelled out if a large enough sample is used. Systematic errors are those errors that tend to accumulate over the entire sample. For example, if there is an error in the questionnaire design, this could cause problems with the respondent's answers, which in turn, can create processing errors, etc. These types

[53] A survey is subject to a wide variety of errors. These errors are commonly referred to as non-sampling errors. Non-sampling errors can be defined as errors arising during the course of all survey activities other than sampling.

of errors often lead to a bias in the final results. Unlike sampling variance, bias caused by systematic errors cannot be reduced by increasing the sample size.

The study tried to overcome the nonsampling errors in the following ways:

- **Coverage Errors**: A coverage error may occur when there is an omission, duplication or wrongful inclusion of the units in the population or sample. Coverage errors occur in field procedures (e.g., a survey is conducted, but the interviewer misses several households or persons). To overcome of this type of error the questionnaire was designed specially by including 'back check', 'accompany call' and 'scrutiny'. There were some linked questions posed in the questionnaire for a manual and through scrutiny in computer program. The field supervisor knew about the linked questions, therefore he could check it easily for any coverage errors.

- **Response Errors**: Response errors result from data that have been requested, provided, received or recorded incorrectly. The response errors might occur because of inefficiencies with questionnaire, interviewer, respondent or survey process. For example, it was a normal behavior of almost every respondent that they did not want to disclose their income. Therefore, the final questionnaire was designed as such to ask at first "what was your expenditure in the last month?", then the main question would follow "what was your income in the last month?" If the gap between income and expenditure was high (more than 20 percent), then the field workers asked the respondent whether the whole income-expenditure gap was being spent for saving. So, the order/sequence of the questions do matter the correction of response error.

- **Interview Bias**: An interviewer can influence how a respondent answers the survey questions. This may occur when the interviewer is too friendly or aloof or prompts to the respondent. To prevent this, interviewers were trained to remain neutral throughout the interview. The interviewer also kept close attention to the way they asked each question.

- **Problems with the Survey Process**: Errors can also occur because of a problem with the actual survey process. Using proxy responses (taking answers from someone other than the respondent) or lacking control over the survey procedures are just a few ways of increasing the possibility for response errors. Therefore, it was instructed that no question should be asked to a person who was less than 15 years of age in the household.

- **Complete Non-Response Errors**: These errors can occur when the survey fails to measure some of the units in the selected sample. Reasons for this type of error might be that the respondent was unavailable or temporarily absent, the respondent was unable or refuses to participate in the survey, or the dwelling was vacant. If a significant number of people did not respond to a survey, then the results might be biased since the characteristics of the non-respondents might differ from those who participated. This research experienced 5% non-response errors.

- **Partial Non-Response Errors**: This type of error deals with incomplete information obtained from the respondent. For certain people, some questions may be difficult to understand. To reduce this form of bias, a special care was taken in designing and testing questionnaires. Appropriate edit and imputation strategies were also helpful to minimize this bias.

- **Processing Errors**: Processing errors sometimes emerge during the preparation of the final data files. For example, errors could occur while data are being coded, captured, edited or imputed. 'Coder bias' is usually a result of poor training or incomplete instructions, variance in coder performance (i.e., tiredness, illness), data entry errors, or machine malfunction (some processing errors are caused by errors in the computer programs). To minimize this type of error this research employed only professionals and experts to code, and entry the data. The data code and entry was verified in the second time.

6.5 Chapter Summary

The major purpose of this chapter is to present the survey methodology employed for collecting primary data in Nepal. This chapter also provides a detailed insight of the data set, which will become the main source of all empirical findings of this thesis. The whole phase of data collection procedure was mainly divided into three parts: i) pre-test survey, ii) pilot survey, and iii) final survey. There were 410 households interviewed in Kathmandu Valley by stratified random selection process. The sampling frame was constituted from the list of carpet industries of CCIA (Central Carpet Industries Association).

In order to decrease the variances it was necessary to control for the influence of confounding variables. This was done by partitioning the population with respect to the main suspected sources of heterogeneity. Because sizes (numbers and

variances) of population subsets were unknown, stratified sampling could only be done by equal sized groups (and therefore most likely be disproportional). Concerning comparisons between groups, this method had the highest power and was also robust against heteroscedasticity (Underwood, 1997). The total 80% of the carpet industries were located in Kathmandu valley. The survey site was chosen on the basis of concentrated carpet industries in the three districts of Kathmandu Valley: 138 (33.7%) households were interviewed from Kathmandu, 128 (31.2%) households were interviewed from Lalitpur and 144 (35.1%) households were interviewed from Bhaktapur.

The questionnaire was focused on the three main aspects: i) information about household, ii) information about a particular member and iii) child wise information. In order to maximize the 'authenticity' of data and therefore reduce the 'moral hazard' problem, this research followed three self-defined methods: i) 'accompany call'[54], ii) 'scrutiny'[55] and iii) 'back check'[56]. The front page of the questionnaire deals with the above stages to minimize the risk of moral hazard. Some other techniques were also followed manually to minimize the non-sampling errors and to control quality of the fieldwork.

[54]This refers to a situation when the researcher and the enumerator visit the field for the first time for data collection. This is not a 'random' visit and the enumerator has prior information about the visit

[55]After coming from the field research the filled questionnaire was crosschecked by some specific questions termed as 'validation questions'. The 'validation questions' were some link questions by logic. For any missing link of the answer, the enumerator was asked to explain.

[56] After a detailed scrutiny and cross check of the filled questionnaire the enumerators were sometimes sent back to the field again if there was any type of serious problem regarding data collection or the field supervisor / principal researcher visited randomly to check the data collection by the enumerators. This was termed as 'back check' in the front page of the questionnaire.

Chapter 7

Descriptive and Analytical Statistics of the Survey

This chapter attempts to explain the important descriptive and analytical statistics involved in the survey. The descriptive statistics have been explained in order to facilitate the empirical analysis. The analytical statistics are to examine the precise impact of labeling NGOs on child schooling as well as child labor.

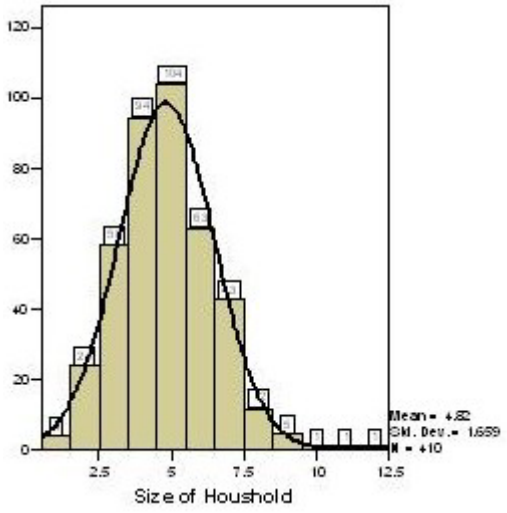
Section 7.1 presents the descriptive statistics of the survey. The analytical part is described in section 7.2. Section 7.3 provides the chapter summary.

7.1 Descriptive Statistics

7.1.1 Characteristics of the Households

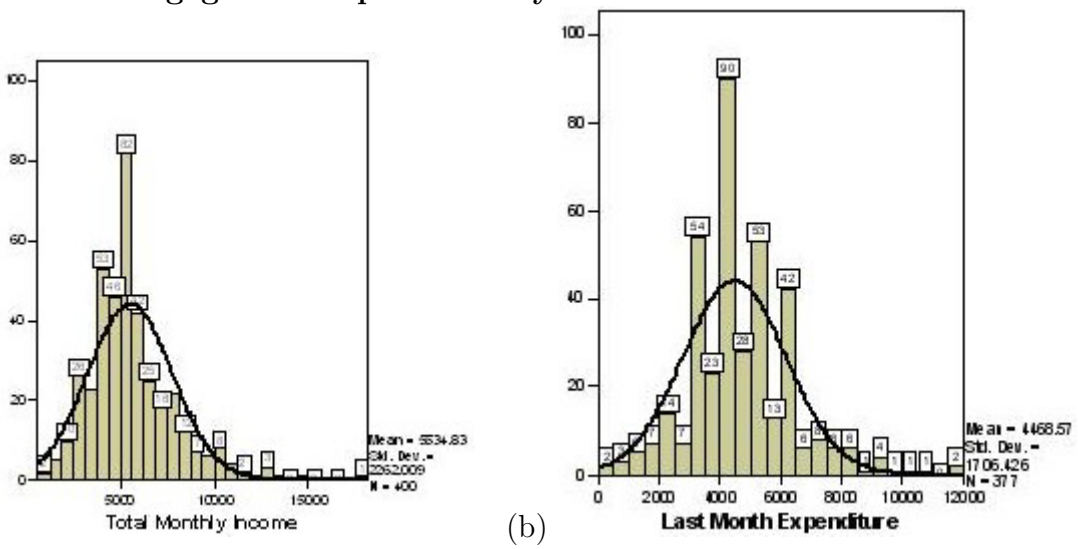
According to the Nepal Labor Force Survey the average household size in Nepal is 5.1. It is slightly higher in rural areas (5.1) than in urban areas (4.8), but it does not vary significantly between different parts of the country, the mean household

Figure 7.1: Size of households engaged in carpet industry



Source: Own survey, 2004.

Figure 7.2: Total monthly (a) income and (b) expenditure of households engaged in carpet industry



(a) (b)

Source: Own survey, 2004.

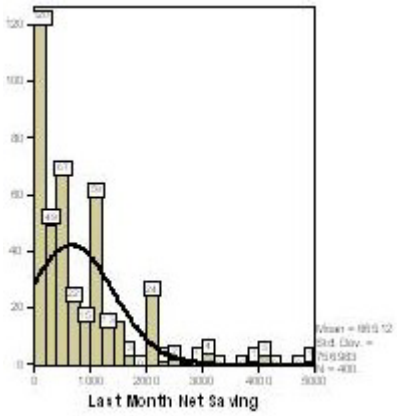
size in Kathmandu Valley is 4.6. (NLFS, CBS 1999).

According to the survey of this research the carpet weaving households at Kathmandu Valley (Figure 7.1) showed a mean household size of 4.8 ([4.6;4.9]95%CI), digits in the parenthesis is the confidence interval[57]

The mean monthly income of the carpet weaving household in the survey is 5,535Rs (Figure 7.2(a)) and the mean per capita income of the household is 1,284Rs ([1229;1340]95%CI). According to the Nepal Living Standards Survey Report in 1996 this figure of per capita income is 2,007Rs for Kathmandu and 6,41Rs for the whole country. The average per capita income in the carpet belt of Kathmandu Valley is significantly lower than that of overall per capita income estimated in 1996 for the Kathmandu Valley, but certainly carpet workers household in Kathmandu valley have a bigger per capita income than the whole country estimated in 1996. This immense wage gradient between Kathmandu valley and the rest of the country might induce an intra country migration of child laborers to Kathmandu Valley.

[57]Whenever it is explained from the context, confidence intervals are denoted as ([x,y]95%CI). A confidence of e.g. 95% means, that under e.g. 100 repetitions of the same experiment with the same sample size, 95 confidence intervals would cover the real parameter (real value). It has this meaning when one states: the probability that the confidence interval is covering the real parameter is 95%. The width of the confidence interval is a function of the standard error of the estimate, which is a measure of reliability (how reproducible the estimator is over repetitions of the whole process). Therefore the width of a confidence interval reflects the reliability of the estimation.

Figure 7.3: Monthly net saving by the household engaged in carpet industry

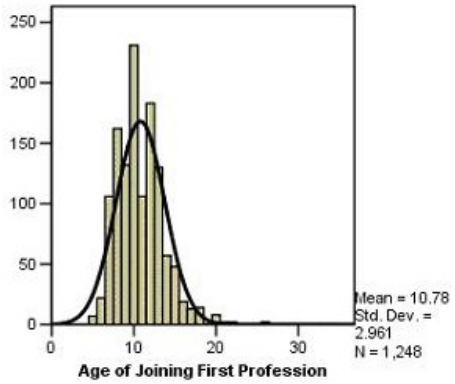


Source: Own survey, 2004.

The question of intra country migration based on carpet industry in Kathmandu Valley is discussed in a Rapid Assessment by ILO (KC, *et al.*, 2002).

The mean monthly expenditure of the household is 4,469Rs (Figure 7.2(b)). Therefore, the estimated mean consumption expenditure of the household is 83% ([81%;85%]95%CI) of their income, and the estimated mean net savings rate is 12% ([11%;14%]95%CI) as the monthly savings is 6,65Rs (Figure 7.3), the remaining 4-5 percent of the income is assumed to be spend to meet up household's loan. The net savings of a household in this study are derived from the total income earned

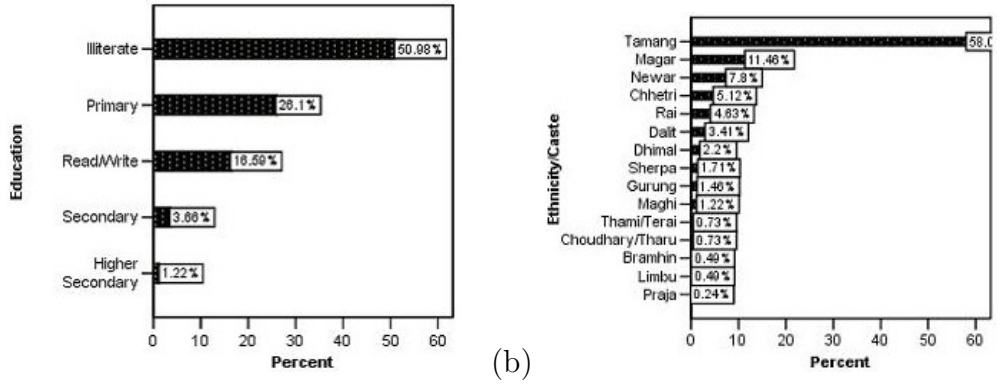
Figure 7.4: Age of joining in the first profession by the household engaged in carpet industry



Source: Own survey, 2004.

by the household members (all sources) minus the consumption expenditure during

Figure 7.5: (a) Education status and (b) ethnicity/caste of the head of the household engaged in carpet industry



(a) (b)

Source: Own survey, 2004.

the reference period minus loan payment. Consumption expenditure includes the amount spent by household on food and noon food items.

In 91 percent of the cases the household members joined in their first job when they were child. The mean age of joining in the first profession is 11 (Figure 7.4), and the mode is 10, median is also 10. It means almost all of the household members were child laborer when they joined in the first job other than schooling. The mean age of starting school is 8 years for children ([7;8]95%CI).

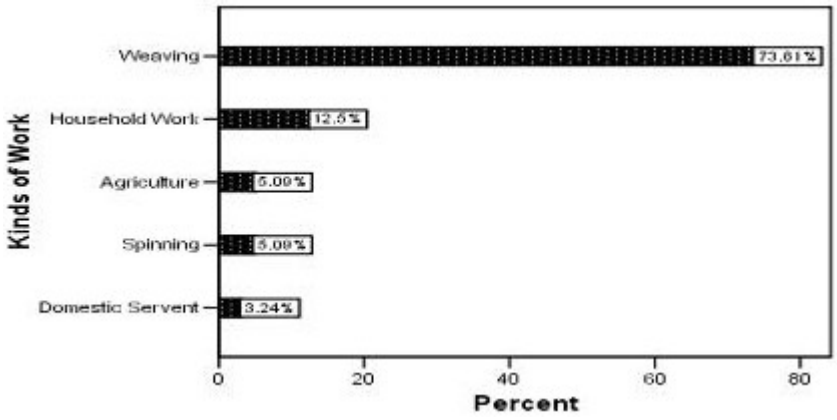
The education level of the head of the households working in carpet industry is summarized in the Figure 7.5(a). The education scenario indicates that most of the head of the households (51 percent) have no education or are illiterate. Among the literate households, only 26 percent of them have formal primary education, 17 percent of them can only read and write, 4 percent of them have secondary education and 1 percent of them have completed higher secondary school. The ethnicity/caste of the households working in carpet industry is summarized in the Figure 7.5(b). The survey evidence shows that almost 58 percent of the households in carpet industry come from Tamang[58] ethnic group. There are also substantial number of households originating from Magar[59] and Newar[60].

[58]In Tibetan language Tamang means horse traders. It is believed that they originally came from Tibet. The majority of Tamangs live in the hills surrounding Kathmandu Valley. Their social practices and customs are based on Buddhism and they have their own language, Tamang.

[59]Their origin is basically found in hill regions of western Nepal.

[60]Newars are mainly settled in Kathmandu Valley and in major trading centers throughout the kingdom. They have Mongolian features and their own language and script, Newari, believed to have its origin from Tibeto-Burmans. Hinduism and Buddhism are their main religions.

Figure 7.6: Different kinds of work by children engaged in carpet industry



Source: Own survey, 2004.

Figure 7.6 provides the estimated percentage of different kinds of child work by occupational categories. The survey data estimates that almost 74 percent of the children are involved in carpet weaving as a part time[61] and/or full time basis. However, less children are working in agriculture (5 percent) and spinning (5 percent). Sometimes, children are involved in combination of works like spinning and weaving, agriculture and weaving etc. But the occupational categories divided in the Figure 7.6 are based on the main/principal job they perform in the last two months of the survey time.

Table 7.1: Working hour distribution for children of labeling and non-labeling carpet industries

	Child Labor			
	Up to 8 hours	Up to 14 hours	More than 15 hours	Total
Labeled Industry	53.00	23.00	11.00	87.00
	60.9%	26.4%	12.6%	100.0%
Non-Labeled	50.00	33.00	24.00	107.00
Industry	46.7%	30.8%	22.4%	100.0%
Total	103.00	56.00	35.00	194.00
	53.1%	28.9%	18.0%	100.0%

Source: Own Survey , 2004.

Table 7.1 represents the daily working hours of the child laborers in carpet industries. Almost 53 percent ([46;60]95%CI) of the children are working up to 8

[61]Part time work is defined by the work length of less than 20 days (8 hours per day) and full time is defined by the work length of more than 20 days (8 hours per day) in the last two months.

Table 7.2: Daily nominal wage comparison between adult labor and child labor

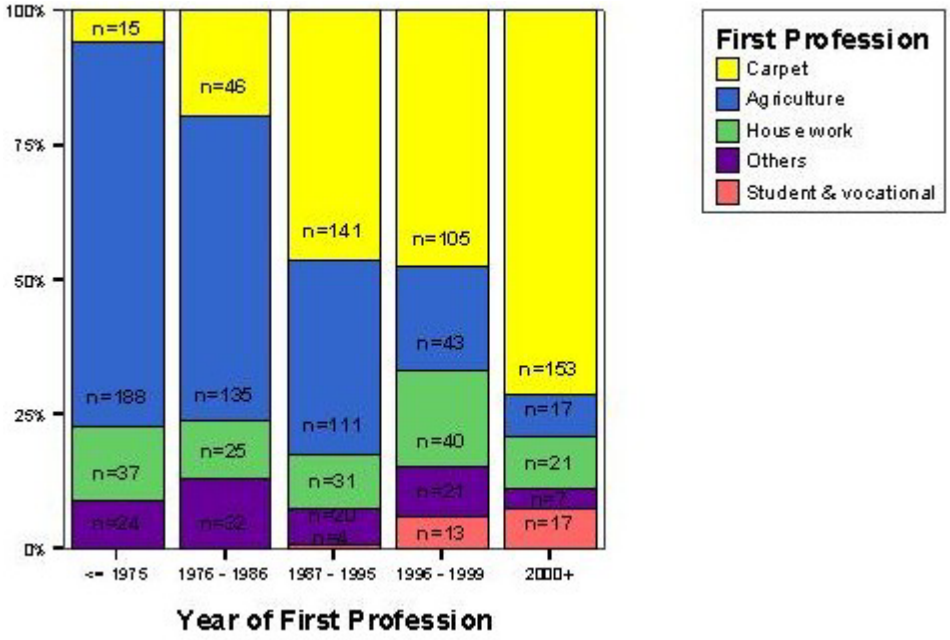
	Adult wage 1995-1999 (Nepali Rs.)	Adult wage 2000-2004 (Nepali Rs.)	Child wage 1995-1999 (Nepali Rs.)	Child wage 2000-2004 (Nepali Rs.)
Mean	64.38	81.19	37.26	55.66
Median	60.00	80.00	30.00	50.00
Mode	60.00	70.00	20.00	50.00
Std. Deviation	10.63	13.39	17.71	21.59
Minimum	33.00	40.00	10.00	20.00
Maximum	100.00	150.00	80.00	100.00

Source: Own Survey , 2004.

hours and of them 27 percent ([21;34]95%CI) are working in labeling carpet industries and 26 percent ([20;32]95%CI) are working in non-labelled carpet industries. Roughly 29 percent ([23;35]95%CI) of the total child laborers are working more than 8 hours and maximum 14 hours per day in both labeling and non-labeling industries, of them 12 percent ([7;16]95%CI) are working in labeling carpet industries and 17 percent ([12;22]95%CI) are working in non-labeling carpet industries. Almost 18 percent of the child laborers are working more than 14 hours per day in both labeling and non-labeling carpet industries, of them 6 percent ([3;10]95% CI) are working in labelled industries and 12 percent ([8;17]95%CI) are working in non-labeled carpet industries.

With regard to the question of payment, the finding of the research shows that children are paid less than adult laborers (see Table7.2). But adult wages increased by 21 percent and child wages increased by 34 percent in the same time period of before and after 2000. This shows a positive wage increment for child and adult laborers. The rate of wage increment for child laborer is more than the adult. The wage gap between adult and child laborers decreases by 8 percent in the time period of before and after 2000. On the whole, children are paid more than half of the amount paid to adult laborers. Mostly the carpet industries in Nepal do not pay daily basis, the payment depends on per square meter of weaving carpet. Therefore, the wage disparity may partly be explained by the difference in productivity. However, in a number of industries that employ child laborers, payment is based on *food for work* system, which neutralises the above argument. Whether children actually do substitute adult workers remains an open question. This question is solved in Indian carpet industries by Levison *et al.*, 1996 discussed

Figure 7.7: Year wise distribution of different first profession.



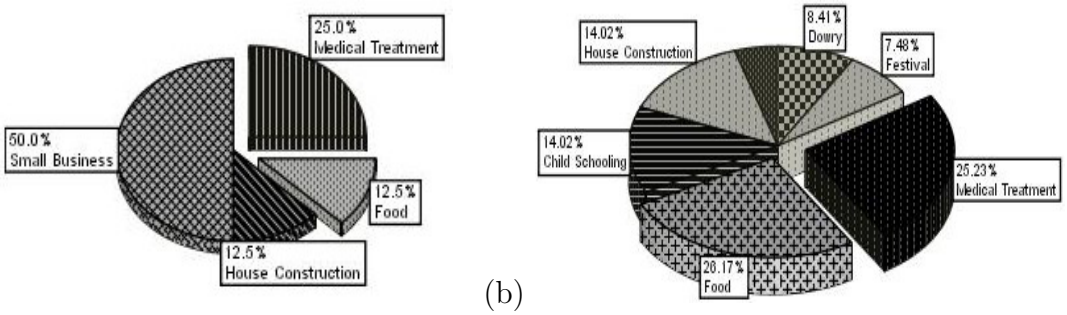
Source: Own survey, 2004.

in Chapter 2.2.1.2.

The first activity (any type of working or schooling) of a participant after his 5 years of age irrespective of whether he/she received payment or not for services is termed as 'first profession' in Figure 7.7. The first profession refers to the initial decision of that household in respect to schooling or working. Figure 7.7 shows the trend of "first decision" regarding profession over a period of time. The share of education as a first profession has been increasing from the year 1995 and it signifies changing patterns of choice for first profession. Thus, the share of schooling choice as a first profession in the carpet weaving areas shows a monotonic increase during the last 10 years. Education as a first profession has been detected in this survey after 1995 which could be due to the activity of labeling NGOs in the carpet weaving areas as they started their awareness activities from 1995.

The market and government failure to provide medical facilities is often evident from the situation where the sickness forces the carpet industry workers to go to formal and informal credit market for compensating the income loss and cost of treatment. It is evident from this survey that almost 65 percent of the households have different types of loans. They take loans from two major sources: i) formal and ii) informal. However, only 3 percent of them have access to formal credit market.

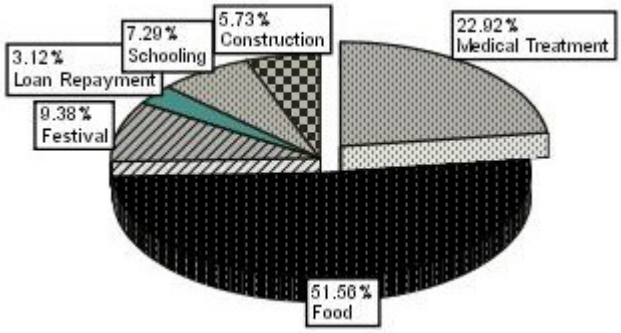
Figure 7.8: Distribution of the loanable fund (a) formal credit and (b) informal credit



Source: Own survey, 2004.

Mostly informal loans are taken from relatives, friends, shopkeepers and from industry owners as an advanced payment. This study separates the 'advanced payment' taken from the industry owners. While analyzing the shares of expenditure of the loanable funds (Figure 7.8(a), 7.8(b) and 7.9), one often finds quite an important picture about the sources of expenditure share of the borrowed money. Most of the cases they borrow a significant share of money for food and health.

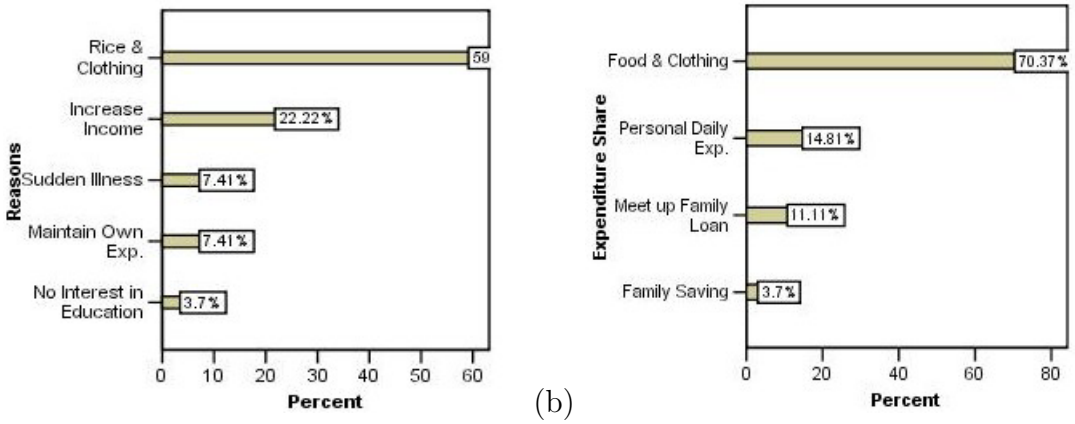
Figure 7.9: Distribution of the loanable fund (advanced payment)



Source: Own survey, 2004.

A major part (almost 25 percent) of formal and informal credit is being spent on medical purpose (Figure 7.8(a), 7.8(b) and 7.9). 25 percent of the formal credit is being spent on medical treatment. Distance to hospital may affect the utilization of primary health care. Most of the cases the distance of hospital/clinic is more than 1000 meters. Almost 50 percent of the households are under subsistence level, the per capita calorie intake is less than the standard level. Therefore, the survey evidence shows that the demand for food is also one of the major reasons of household's debt

Figure 7.10: (a) Regions for being child labor and (b) Expenditure share of child's income



Source: Own survey, 2004.

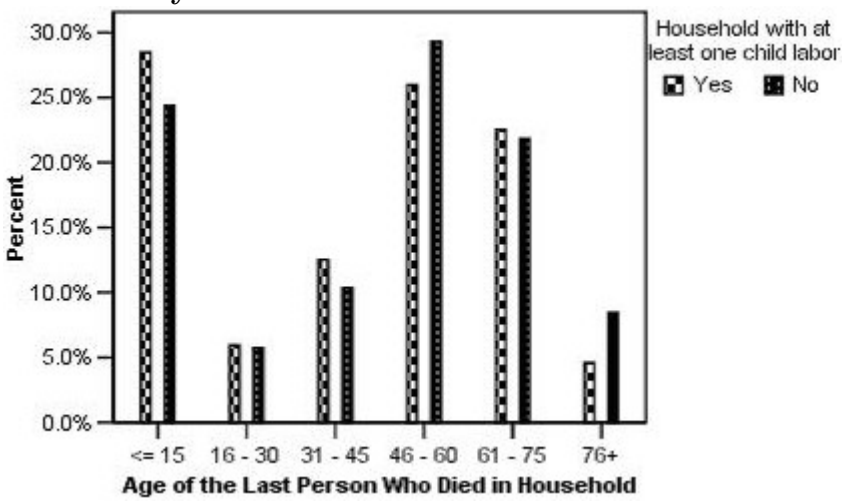
burden (52 percent of the advanced payment are spent on food). They also take advance payment form the industry owner for their medical treatment, more than 47 percent of the total carpet workers are getting advanced payment from the industry owner and 23 percent of this advanced payment are being used to meet up medical treatment. The majority of the households borrow money from the land lord or other informal sources with high interest rate.

7.1.2 Vulnerability of Children

The children are vulnerable because they are mostly exposed to diverse health risks of their parents. More specifically, parental chronic illness is responsible for 8 percent cases of child laborers in the carpet weaving households at Kathmandu Valley (see Figure 7.10(a)). As the households spend approximately 25 percent of the total loans for health care (Figure 7.8(a), 7.8(b) and 7.9), one of the findings of this study is that 12 percent of the child's income is being spend to repay the household loan (Figure 7.10(b)). So, directly or indirectly children are the most vulnerable group for the health risk of their parents. Given these health risk, there is concern about the effects on more vulnerable members of the household, particularly children. Healthy parents are less likely to use children to earn for the family (KC, 2002).

Child mortality in households with at least one child laborer is higher than those households with no child labor. The household response targeting the last person died in the family is plotted in Figure 7.11. Larger percentages (close to

Figure 7.11: Life expectancy of the household members engaged in carpet industry



Source: Own survey, 2004.

30 percent) of children are dying in those households who have at least one child working. However, a smaller percentage of children are dying (less than 25 percent) to those households who have no child laborer. It is not wise to establish any causality between child labor and child mortality from the Figure 7.11, because the chi square statistics is not significant. It is evident from the Figure 7.11 that the adult mortality rate in the age group (46-60) is relatively higher in those households who have no child labor than those households who have child labor. The average life expectancy[62] in Nepal is 60 and 61 years of age for male and female (WHO, 2003).

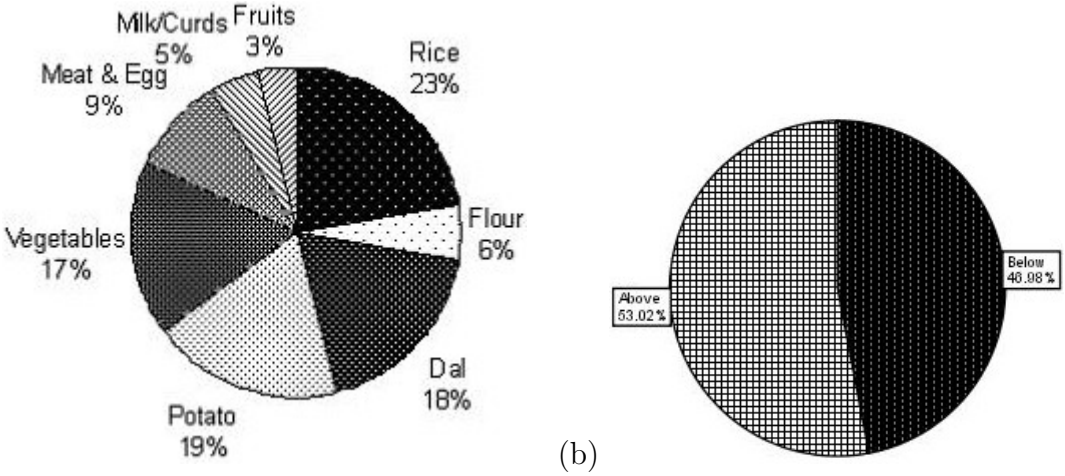
Food security[63] is one of the major and primary concerns of the household. This implies that each member of the household is secure, if the household in general has access to adequate food. The Figure 7.12(a) shows that rice, dal, potato and vegetables are the main items of food they take. Almost half of the households are below the subsistence level (Figure 7.12(b)).

Table 7.3 formulates the descriptive statistics of micronutrients with standard deviation in Nepal. Energy is defined as the capacity for doing work. While the intake of proteins and other nutrients may be critical in situations of extreme deprivation such as famine, it seems that under normal conditions energy is the crucial

[62]Life expectancy (LEX) is the average number of years of life that a person can expect to live if they experience the current mortality rate of the population at each age.

[63]access to adequate food by households over time.

Figure 7.12: (a) Distribution of household's food habit. (b) Distribution of households poverty status



(a) (b)

Source: Own survey, 2004.

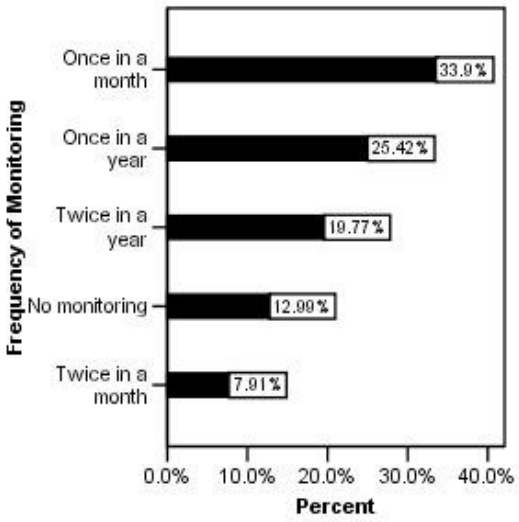
Table 7.3: Per capita micronutrients of the households

Nutrient	Mean intake	SD
Calories per person (Kcal)	2476	653
Iron per person (mg)	18	12
Vitamin A per person (g)	475	594
Vitamin C per person (mg)	44	58
Fat (gm)	31	21
Calcium (mg)	240	130
Carbohydrate (gm)	475	135
Protein (gm)	73	29

Source: Own Survey , 2004.

variable to concentrate upon (Bose, 1997). Considering other micronutrients, iron deficiency is the most common nutritional disorder in the world. The numbers are staggering: as many as 4-5 billion people, 66-80% of the world's population, may be iron deficient, 2 billion people - over 30% of the world's population - are anaemic, mainly due to iron deficiency. Iron deficiency and anemia reduce the work capacity of individuals and entire populations, bringing serious economic consequences and obstacles to national development (WHO). Fat is also an important determinant of the economic status of the households. People in higher income nations consume more added sugar and fats than do people in lower income nations (Drewnowski, 2003).

Figure 7.13: Frequency of monitoring by Rugmark



Source: Own survey, 2004.

7.1.3 Monitoring and Welfare Activities by Labeling NGOs

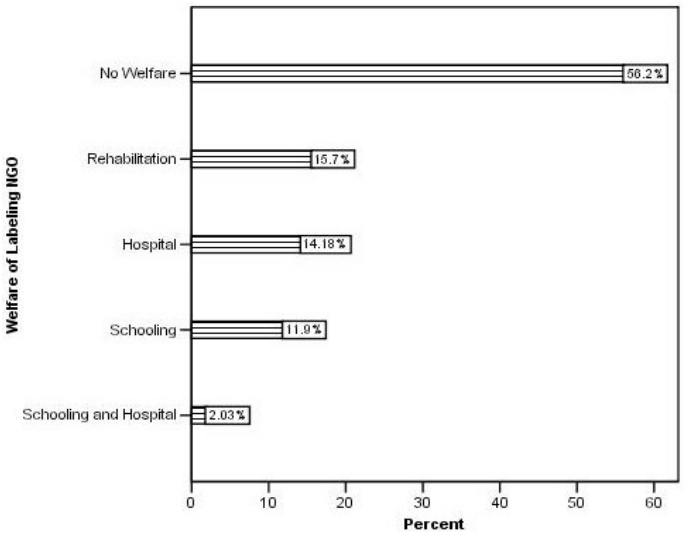
The frequency of the factory visits varies from two to three times a week to once in two months, depending on the confidence of Rugmark on the factories commitment and performance with regard to non-use of child labor (Rugmark Bulletin, 2004). However, this study observes that the Rugmark inspectors visit 40 percent of industries once in a month, while 13 percent of the labeled industries were reported as never being monitored (Figure 7.13).

The area of inspection within Kathmandu valley has been divided into four zones. There are only four inspectors employed in Nepal Rugmark foundation who are carrying out regular inspections in the widespread location of the Kathmandu valley. During the period from the second half of 1996 until the end of December 2003, the four Rugmark inspectors have carried out 26,826 numbers of inspections of the factories of Nepal Rugmark Foundation licensees in Nepal (Rugmark Bulletin, 2004).

During the fieldwork of this study, it was noticed that Rugmark has taken initiative to monitor only the weaving of carpets but Rugmark inspectors do not monitor the other intermediate sectors like washing, dyeing, or spinning of carpets. However, the Rugmark officials claim that they are planning to cover the spinning sector as well.

The different welfare activities of labeling NGOs are presented in Figure 7.14.

Figure 7.14: Different welfare activities of labeling NGOs



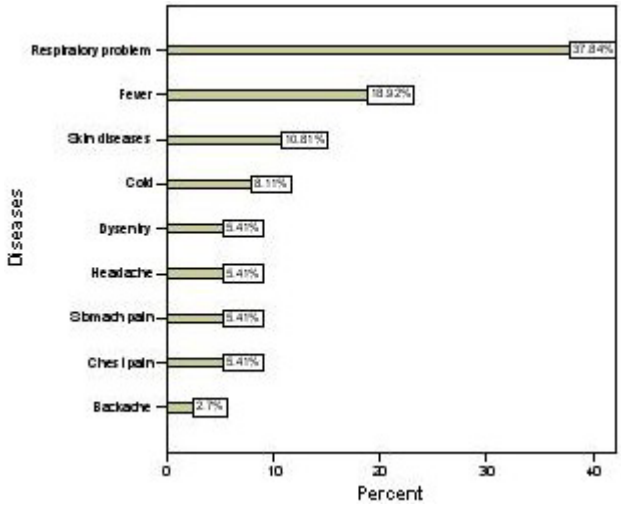
Source: Own survey, 2004.

It shows that the 56 percent of the households working in carpet industries are not receiving any welfare measure taken by labeling NGOs. However, 16 percent of the households are getting rehabilitation center for their children, 15 percent of them are receiving health benefit, 12 percent are receiving schooling benefit and 3 percent are receiving both schooling and health benefit. The rehabilitation center has hostel, food, school, and health benefit for the retrenched children in the carpet industries.

Figure 7.15 shows the pattern of sickness among the carpet workers. There were some health related complaints like respiratory problems, fever, skin diseases, cold, dysentery, headache, stomach problem, chest pain, backache. The incidence of respiratory diseases among the carpet workers is nearly 40 percent. For each episode of illness, the respiratory problem is recorded as the most acute disease. This indicates the susceptibility of these workers to respiratory illness due to exposure to dust from the work, combined with awkward posture, cramped working environment and lack of access to proper health care facilities (KC, 2002). Almost 80 percent of the carpet workers at Kathmandu valley are living inside the factory premises at night. Therefore, wool dust can cause allergies of the respiratory system and long term exposure may result in obstructive lung diseases.

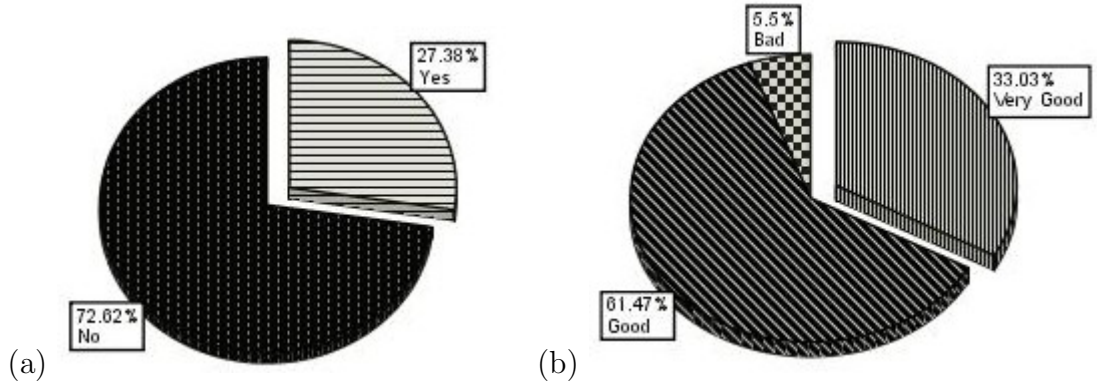
The findings suggest that only 28 percent of the households (at least one member) receive medical treatment by the labeling NGOs (Figure 7.16(a)) and 33 percent of them reported very good medical facilities by the labeling NGOs (mostly

Figure 7.15: Prevalence of different kinds of sickness among carpet workers



Source: Own survey, 2004.

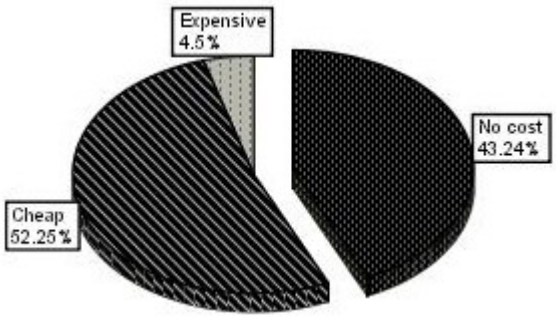
Figure 7.16: (a) Received medical treatment by labeling NGOs, (b) Evaluation of medical facility



Source: Own survey, 2004.

Care & Fair), 62 percent evaluate the medical facility as 'good', 6 percent of them reported bad medical facility by labeling NGOs (Figure 7.16(b)). Regarding the cost of the medical facility, 52 percent of the respondents reported that it was cheap and 44 percent reported 'no cost', remaining 5 percent reported 'expensive' (Figure 7.17).

Figure 7.17: Cost of medical facility



Source: Own survey, 2004.

7.2 Analytical Statistics

7.2.1 Substitutability of Child Labor and Child Schooling

The question is whether the childlaborers are going to schools after they have been fired from the carpet industries. If they do not go to school and are employed in more hazardous jobs, then the situation will obviously decrease their initial welfare. The fact of substitutability between child labor and child schooling is related to a theoretical understanding of 'substitution effect' between child labor and child schooling (Becker, 1965; Rosenzweig, 1977). One of the objectives of labeling NGOs is to shift child laborers from workplace to school. Labeling NGOs started their activities in 1995. The age group 5-23 is very important for this study to have a clear idea about the 'sustainable effect' of labeling NGOs on the child laborers , because a child who was 5-14 years old in 1995 (when labeling NGOs started their activities) now (during the field research in 2004) he/she was 14-23 years of age. This research covers the whole target group of labeling NGOs starting from 1995. Therefore, the whole treatment group of labeling NGOs were considered between 5-23 years of age who might be influenced by labeling initiatives started from 1995.

From the total 1,971 members of the household, the survey contains data for 1,767 members regarding their first and present profession. The remaining 204 household members have no information about present and first profession because they are 'not applicable' cases (less than 5 years of age). From the Table 7.4 it can be seen that 70 percent of the household members of age 5-23 joined the carpet industry from agriculture, while 37 percent of the household members of age group 24 and above joined the carpet industry from agriculture. Thus, it is evident that

Table 7.4: Cross tabulation between first profession, present profession & age group (N(total) = 1767, n_1(age limit 5-23) = 1011, n_2 = (age limit 24 & above) = 756).

			Present Profession				Total
			Carpet	Agriculture	Others	No job	
Age = 24 & Above	First Profession	Carpet	111	4	13	1	129
			86.0%	3.1%	10.1%	0.8%	100.0%
		Agriculture	173	232	58	4	467
			37.0%	49.7%	12.4%	0.9%	100.0%
		Others	57	14	85	0	156
			36.5%	9.0%	54.5%	0.0%	100.0%
		No job	0	2	0	2	4
			0.0%	50.0%	0.0%	50.0%	100.0%
		Total	341	252	156	7	756
			45.1%	33.3%	20.6%	0.9%	100.0%
Age= 5-23	First Profession	Carpet	271	5	68	8	352
			77.0%	1.4%	19.3%	2.3%	100.0%
		Agriculture	84	27	8	1	120
			70.0%	22.5%	6.7%	0.8%	100.0%
		Others	82	11	173	0	266
			30.8%	4.1%	65.0%	0.0%	100.0%
		No job	3	2	116	152	273
			0.0%	50.0%	0.0%	50.0%	100.0%
		Total	440	45	365	161	1011
			43.5%	4.5%	36.1%	15.9%	100.0%

Data Source: Own Survey , 2004.

a large share of household members changed their profession from agriculture to carpet industry.

Now, the target is to concentrate on the impact of labeling NGOs in respect of changing job from carpet to schooling for child laborers since 1995, the query considers the stability of the change of jobs from carpet weaving to education induced by Social labeling NGOs.

Firstly, this analysis concentrates on those persons who are 5 to 23 years of age so that it could cover those who had been child laborers (5-14 years of age) in the carpet sector since 1995 (starting year of NGO operation). Secondly, this analysis separates the above group of people into two categories i.e. i) who were retrenched by the labeling NGOs for being child laborers, and ii) who were retrenched for other reasons.

Table 7.5: Reason of changing job by child laborers from carpet to other sectors (Age limit 5-23; $n = 176$)

Reason	Frequency	Valid Percent
Other reason	54	30.7
Reason NGO	122	69.3
Total	176	100.0

Data Source: Own Survey , 2004.

There is "natural" fluctuation from carpet to school or back to carpet, which might be due to socio-economic reasons and/or for socio-environmental reasons (not for social labeling NGOs). The sustainable shift of child laborers to a school via NGOs should be measured against this "normal" fluctuation. From the Table 7.5, it is observed that only 176 persons of 1,011 from age group 5 to 23 changed their job from carpet to other sectors and of them 122 persons changed their job for being caught as a child laborer by labeling NGOs and 54 persons changed their jobs for other reasons. Now the following analysis would be restricted to these 176 persons to see the whether labeling NGOs were successful to send the ex. child laborers to school.

Stylized Fact[64]*: For children who are retrenched from carpet industries by the labeling NGOs the probability of schooling is increased and the incidence of child labor is decreased.*

Estimation Methodology of the Stylized Fact: The 'success' of labeling NGOs is the target variable[65] of the analysis. Success means that labeling NGOs are capable to substitute child labor by child schooling.

The success/ failure of a labeling NGO is described by the following model[66]:

$$\text{logit}(\text{Prob}(\text{NGO\_Success} = \text{Y/N})) = \alpha + \beta\ \text{NGO\_Retrenched}$$

In words, the model is to find out whether the NGOs have any influence on the probability of displacing child laborers from workplace to school.

[64]The stylized facts are based on inductive-empirical approaches.

[65]The target variable is the variable whose values are to be modeled and predicted by other variables. It is analogous to the dependent variable (i.e., the variable on the left of the equal sign) in linear regression.

[66]To test the above hypothesis this research use a simple binary logistic model. It is not possible to test the hypothesis by the relative risk. Because the variable 'NGO_Retrenched' is case controlled. This is a type of retrospective study. In retrospective studies, one can estimate odds ratios but one cannot estimate relative risks. Interpretation of coefficients in terms of odds ratio is certainly the easiest way to approach the logit model.

'NGO_Success' is defined by the following two ways:

1. Previously worked as a child laborer in carpet industry (after 1995) and then (before 2004) the same child was in school (Yes=1/ No=0). Here idle[67] status of the former child laborers are treated as a failure of labeling NGO.

2. Previously worked as a child laborer in carpet industry (after 1995) and then (before 2004) the same child was in school or idle (Yes=1/ No=0). Here idle status of the former child laborers are treated as a success of labeling NGOs.

The influencing variable is:

NGO_Retrenched = Child laborer lost job (in 1995 or after) in carpet industry because of social labeling NGOs influence (Yes =1/ No=0)

Null hypothesis: NGO_Success is independent from NGO_Retrenched, i.e. from the above equation

$$\beta = 0 \;\Leftrightarrow \pi_1 = \pi_2 \;\Leftrightarrow \text{odds ratio} = 1.$$

From the Table 7.6 the fitted model is below

$$\log(\text{ODDS}) = b_0 + b_1 x = -3.22 + 3.28x$$

where x = NGO_Retrenched.

The odds ratio is given on the Table 7.6 as 26.60, where idle status (not in school and labor) of former child laborers after retrenching from carpet industries are being treated as a failure case. An increase of one unit of the log 'retrenched' child laborer by the labeling NGO is associated with a 27 fold increase in the odds that a child would go to school. The odds of schooling increase by a factor of 27 for each unit increase in the log 'retrenched' child laborer who lost job for the labeling NGOs than the retrenched child for other reasons (socio economic). Thus the null hypothesis that the slope is zero or the odds are 1 is clearly rejected.

If this study includes idle children (no school and no work) after being retrenched as child laborers from the carpet industry in the 'NGO_Success' variable, it might be considered that the odds of schooling increase by a factor of 11 for each

[67]'Idle' means no work and no school.

Table 7.6: Regression output (idle means not success of NGO)

Variable	DF	Estimate	Std. error	Wald Chi-square	Pr.>Chi-square	Odds Ratio	95.0% C.I. for odds ratio	
							lower	upper
NGO_Retrenched	1	3.281	1.040	9.954	0.002	26.60	3.46	204.14
Constant	1	-3.219	1.020	9.963	0.002			

Data Source: Own Survey , 2004.

Table 7.7: Regression output (idle means success of NGO)

Variable	DF	Estimate	Std. error	Wald Chi-square	Pr.>Chi-square	Odds Ratio	95.0% C.I. for odds ratio	
							lower	upper
NGO_Retrenched	1	2.349	0.647	13.16	0.000	10.47	2.94	37.24
Constant	1	-2.037	0.614	11.011	0.001			

Data Source: Own Survey , 2004.

unit increase of the log 'retrenched' child laborer by the labeling NGOs than for other reasons. Thus, the null hypothesis is clearly rejected.

From the two Tables (7.6 and 7.7), it is evident that inclusion or exclusion of idle children in the success variable of NGO has an impact over the result of odds ratio. 'Idle children' results a lower probability in terms of schooling against not schooling after a child laborer has been retrenched from the carpet industry by the labeling NGOs.

Spillover benefit of child schooling[68]: It could be argued that a social labeling program stimulates schooling for the younger brother/sister by a spillover benefit (positive externalities) through its schooling program for the targeted child and therefore it could stimulates the micro foundation of macro economic trend in development. This is particularly relevant to the concept of education as a merit good. The idea of positive externalities by schooling is simply the influence of NGOs activities to the targeted child, which may not be restricted to that child only but spill over to others children as well. Schooling of older son/daughter might also have an influence on the schooling decision of the youngest son/daughter. This argument provides a new insight on how labeling success affect schooling decision for

[68]Schooling rate at a specific time depends on many factors, therefore it is hard to isolate the stated effect against others. The result should be interpreted as correlative rather than a causal explanation.

the other children who are not directly involved in the welfare activities of labeling NGOs. According to the estimation of this study the positive spill over effect is 24 percent ([13;38]95%CI). The positive spillover benefit rate by labeling NGOs is quite satisfactory. To find out the cause of no spillover benefit (76 percent of cases), this study focuses on another important insight: the dependency of the younger brother's/sister's education on the elder brother's income. Almost 14 percent ([5;27]95%CI) of the estimated children depend on elder brother's income for their schooling directly or indirectly. Therefore, the spillover benefit for the elder brother is low compared to the younger one.

7.2.2 Monitoring Program of Social Labeling NGOs and Child Labor

Rugmark has its own inspection and random monitoring system of its member's loom as described in chapter 5.2.2. It would be importnat to answer the question: is there any association between monitoring by the labeling NGOs and child laborers working in carpet industry?

***Stylized Fact**: A presence of monitoring strategy by the labeling NGOs decreases the incidence of child labor in carpet industries.*

This hypothesis deals with the associations between the following two categorical variables in a contingency table.
Child_Labor = child working in last two months (Yes=1 /No=0)
NGO_Monitoring = monitoring by labeling NGO within last two months (Yes=1 /No=0)

Null hypothesis: Child working (Child_Labor) is independent from monitoring by labeling NGO (NGO_Monitoring), i.e.

$$\Leftrightarrow \pi_1 = \pi_2 \quad \Leftrightarrow \theta = 1.$$

where

$$\pi_1 := P(\text{child working}|\text{not monitoring NGOs})$$

$$\pi_2 := P(\text{child working}|\text{monitoring by NGOs})$$

$\theta := \frac{\frac{\pi_1}{1-\pi_1}}{\frac{\pi_2}{1-\pi_2}}$ = The odds of not monitoring against the odd of monitoring = Odds Ratio.

Table 7.8: Cross tabulation of monitoring status and child labor

Monitoring Within Last Two Months by Labeling NGO	Child Labor Yes	No	Total
No	114	334	448
	25.4%	74.6%	100.0%
Yes	9	91	100
	9.0%	91.0%	100.0%
Total	123	425	548
	22.4%	77.6%	100.0%

Data Source: Own Survey , 2004.

Table 7.8 represents a 2 x 2 contingency table, cross classifies $n = 548$ respondents (5 to 14 years of age) by their monitoring status and full time working status for more than 20 days within last two months in the survey time. In Table 7.8, child labor is a response variable and monitoring is an explanatory variable. We therefore study the conditional distributions of child labor, given monitoring status. The proportions (25.4% for child labor, and 74.6% for no child labor) are non-monitoring sample conditional distribution of child labor. For positive monitoring, the sample conditional distribution is 9% for child labor and 91% for no child labor.

The sample relative risk[69] is 2.78 ($\frac{p_1}{p_2} = \frac{0.25}{0.09}$), i.e. the sample proportion of child laborer with no monitoring is 2.78 times the proportion of positive monitoring cases. Using CIA (computer software), this study finds that the lower and upper limits of relative risks are 1.49 and 5.38 (95% confidence interval). The proportion of child laborer for no monitoring cases is between 1.49 (lower limit) and 5.38 (upper limit) times higher the proportion of monitoring cases with 95% confidence interval. The confidence interval for the relative risk indicates that the risk of child labor is at least 49 percent higher for the non-monitoring group.

Targeting the above stylized fact there is another measure of association in the 2 x 2 contingency tables, called the odds ratio. When the conditional distribution are identical in two rows, the odds satisfy $odds_1 = odds_2$. The variables are then independent according to the null hypothesis. The estimated odds ratio in this case is 3.45, which means that the odds of child labor are 3.45 times higher for those with no monitoring than for those with monitoring. Thus the null hypothesis is clearly rejected.

[69]Testing this hypothesis allows an estimation of the relative risk as data were neither sampled nor analysed retrospectively (Case control).

Table 7.9: Cross tabulation of monitoring status and NGO success

Monitoring by	NGO Success		
Labeling NGO	No	Yes	Total
No	246	31	277
	83.7%	53.4%	78.7%
Yes	48	27	75
	16.3%	46.6%	21.3%
Total	294	58	352
	100.0%	100.0%	100.0%

Data Source: Own Survey , 2004.

***Stylized Fact**: Monitoring by the labeling NGOs has a positive influence on transferring child laborers from carpet industry to school.*

This hypothesis deals with the associations between the following two categorical variables in a contingency table.
Carpet_School = change of profession from carpet industry to school while working as a child laborer (Yes=1/ No=0),
NGO_Monitoring = monitoring by labeling NGO.

Null hypothesis: NGO success (Carpet_School) is independent from monitoring by labeling NGO (NGO_Monitoring), i.e.

$$\Leftrightarrow \pi_1 = \pi_2 \;\; \Leftrightarrow \theta = 1.$$

where

$$\pi_1 := P(\text{NGO success}|\text{not monitoring NGOs})$$

$$\pi_2 := P(\text{NGO success}|\text{monitoring by NGOs})$$

$\theta := \frac{\frac{\pi_1}{1-\pi_1}}{\frac{\pi_2}{1-\pi_2}}$ = The odd of not monitoring against the odd of monitoring = Odds Ratio.

Table 7.9, a 2 x 2 contingency table, cross classifies $n = 352$ respondents (5 to 23 years of age) by their monitoring status and their working status while they are/were child laborer. In Table 7.9, NGO success is a response variable and monitoring is an explanatory variable.

Targeting the above hypothesis the ultimate measure of association for 2 x 2 contingency tables is called the odds ratio. The estimated odds ratio is 4.47, which means that the odds of NGO failure is 4.47 times higher for those with no

Table 7.10: NGO failure and monitoring

	Child working/ Working again in labeling industries	Monitoring quality Working in non-labeling industries	Total
NGO Failure	27	12	39
	69.2%	30.8%	100.0%
Total	27	12	39
	69.2%	30.8%	100.0%

Data Source: Own Survey , 2004.

monitoring than for those with monitoring. Thus the null hypothesis is clearly rejected. Therefore monitoring by the labeling NGOs has strong influence on the success of shifting child from workplace to school.

7.2.3 Monitoring and Tracking by Labeling NGOs

If children worked in other 'labeled' carpet industries after being retrenched by the 'labeling NGOs', it signifies very poor monitoring by the labeling NGOs. If children worked in other 'non-labeling' carpet industries after being retrenched by the labeling NGOs, it signifies that NGOs are failed to keep track on the retrenched children. Because labeling NGOs are not directly responsible for those children who are working in non-labeling carpet industries rather the NGOs should keep a track of the children who were retrenched by them.

Table 7.10 represents the children who went to work for other carpet industries (labeling or not labeling) after being fired by the labeling initiatives. This table represents compare between bad monitoring and/or bad tracking for the NGO failure. The estimated percentage of children (only those who did not go to school after being retrenched from carpet industries by labeling initiatives) working again in labeling industries is 69 percent ([52;83]95%CI) after being retrenched by the labeling initiatives (Table 7.10 does not consider any case of NGO success). Therefore, the main reason of NGO failure is for bad monitoring. The real prevalence of very bad monitoring by the labeling NGO is 69 percent and the prevalence of bad tracking is 31 percent.

This study now focuses on the holidays (Saturday/ Sunday) work of the child laborers in labeling and non-labeling carpet industries. If a number of children were working in labeling carpet industries in holidays compare to normal working days, the issue could be raised that 'monitors absence' is one of the influencing

variables that stimulate child work in the holidays[70]. This survey (2004) observed that roughly 54 percent ([37;71]95%CI) of the total child laborers (full time and part time) working in labeling carpet industries in the weekly holidays. The real percentage of working child laborers in the weekly holidays is at least 37 percent in the labeling carpet industries.

7.3 Chapter Summary

The labeling NGOs are partially successful to send the children from workplace to school. It means that labeling NGOs have a significant influence on the labor-school substitution; but the NGOs are not the sole engine of the substitution process of child labor by child schooling. Success of NGOs depends on the monitoring and tracking quality of the labeling NGOs. The empirical evidence shows that the absence of monitoring leads to an increase of child labor in carpet industries. Monitoring by the labeling NGO has a positive influence on transferring child laborers from the carpet industry to school. However, this study observes that the Rugmark inspectors visit 40 percent of the labeled industries once a month, while 13 percent of the labeled industries are reported as never monitored. This shows that regular monitoring of such a large number of geographically dispersed looms in Kathmandu valley is simply not tenable by the three or four monitors. This study also finds that many children are working during their weekly holidays in carpet industries at Kathmandu Valley. The probability of being caught as a child labor is zero in the weekly holidays as the main office of labeling NGOs are closed on these two days (Saturday and Sunday).

It is evident from the empirical fact that the children who are retrenched by the labeling NGOs have a higher probability to go to school than the child who lost his/her job for other reasons. The child retrenched by the labeling NGOs increases the probability of schooling and decreases the incidence of child labor participation in the carpet industries. In few cases labeling NGOs are successful by stimulating a spillover effect of schooling to the other children of the household. The advice in favor of child schooling by labeling NGO may positively affect not only the targeted child but also the other children of the same household, especially if the targeted

[70]There might be some other major influencing variables which could stimulate child labor in the carpet industries especially in the holidays, but this study highlights the correlation between zero monitoring and possibility and the incidence of child labor. The probability of being caught as child laborer is 0 in the weekly holidays as the main offices of labeling NGOs are closed on these two days (Saturday and Sunday).

child is older and the other child is younger. Therefore, it stimulates the micro foundation of macro economic trends of development. This is particularly relevant to the concept of education as a merit good. The idea of positive externalities by schooling is simply the influence of NGOs activities to the targeted child, which may not be restricted to that child only but may spill over to other children as well.

Chapter 8

The Econometric Results and Interpretations

Schooling decision on the part of parents or guardians can reduce child labor by keeping children in schools, and away from the work place. In making a decision whether or not to send children to school, parents, especially the less fortunate ones have to consider the 'opportunity cost' even though they may not be at all familiar with the concept per se. This opportunity cost comprises of the direct schooling expenses plus the forgone earnings of a child had she/he been engaged in some gainful employment. Only legislation, however sincere it might be in purpose, is unlikely to solve the problem. The commonly cited determining factors that lead to child labor are related to the lack of schooling and illiteracy of parents, and inability of low-income families to meet their basic needs. The empirical analysis of this chapter shows whether social labeling NGOs welfare policies have a positive effect on child schooling and/or negative effect on child labor supply in the context of Nepal.

In section 8.1 of this chapter, the econometric methodology for empirical analysis is described. This section describes the methodology of the empirical work by explaining the link with the research questions. In section 8.2, the empirical result related to child labor supply is analyzed. Section 8.3 estimates the influences of social labeling NGOs on child labor supply. The modified luxury axiom is estimated in section 8.4. The nutritional efficiency wage argument is discussed in section 8.5. Finally the main findings of the empirical analysis of this chapter is summarized in section 8.6.

8.1 Econometric Methodology

This section is an attempt to validate the rationale behind the selected research design and provide justification of why it is appropriate to solve the selected research questions. Logistic regression is the most appropriate statistical method to assess the

influence of the independent variables on a dichotomous or polytomous dependent variable. A list and description of the dependent and independent variables is to be found in Tables 8.1 and 8.2. A binary multiple logistic regression is used to define the probability that a child is being employed in the following way:

$$logit(P) := \ln \frac{P}{1-P} = \alpha + \beta' X \tag{8.1}$$

where
P= Probability (Child is employed $|X$),
α = Intercept parameter,
β = Vector of slope parameters,
X = Vector of explanatory variables.

The null hypothesis is $\beta_i = 0$ for all i. The explanatory variables are divided into two sets: variables describing household characteristics and variables describing each individual child of a household. This procedure will lead to two approaches: the first sub-model 8.2 concentrates on household characteristics as explanatory variables (X_H) (see Table 8.1) and determine the probability that at least one child in a household is employed.

$$logit(P_H) := \ln \frac{P_H}{1-P_H} = \alpha + \beta' X_H \tag{8.2}$$

where P_H = Probability (HH_IsAnyChildLab $|X_H$).

In equation 8.3, this research is interested to find out the probability of an individual child to work. In this case, household and individual characteristics are used as explanatory variables (X_{HC}) (see Tables 8.1 and 8.2) to determine whether a child was employed in the last two months

$$logit(P_C) := \ln \frac{P_C}{1-P_C} = \alpha + \beta' X_C \tag{8.3}$$

where P_C = Probability (Ind_IsThisChildLab $|X_{HC}$).

The above econometric approach is to estimate the odds of child labor by using binary multiple logistic regression.

However, the equation 8.3 does not consider whether and to which extent social labeling NGOs' activities influence choices of child activities between the previous time (before June 2004) and at the present (June 2004). From all combinations of

previous and present status of children with respect to six not ordered, mutually exclusive, options are selected:

- previously child labor and now schooling
- previously idle and now idle
- previously idle and now child labor
- previously schooling and now child labor
- previously schooling and now schooling
- previously child labor and child labor.

A multinomial logistic regression with baseline-category logits is performed to test the influence of social labeling NGOs activities on these six options. More formally, if the dependent variable takes K nominal values then the multinomial logistic regression model with baseline-category logit is defined as:

$$\log \frac{P_j}{P_K} = \alpha_j + \beta_j^{'} X, j = 1, \cdots K-1 \tag{8.4}$$

The model consists of $K-1$ logit equations, with separate parameters for each $j = 1, \cdots, K-1$. For each $j = 1, \cdots, K-1$:
$\log \frac{P_j}{P_K}$ = baseline-category logit,
P_j = Probability (Child chose option j $|X$),
P_K= Probability (Child chose option $K|X$) Baseline option K: 'previously working and now working',
α_j = Intercept parameter,
β_j= Vector of slope parameters,
X = Vector of explanatory variables.

Empirical Estimation of Modified Luxury Axiom with Other Determinants

The econometric framework underlying the empirical analysis is based on a logistic regression model of the child labor supply. Suppose there are two groups of households with different nutritional status, one group is below subsistence and

Table 8.1: Variables used for econometric analysis at household level

Variable name (SAS)	Variable Description	Type of the Variable
HH_Id	Household Id	Key
HH_HoH_Age	Age of the Head of Household	Continuous
HH_HoH_Sex	Gender of the Head of Household	Binary Categorical
HH_HoH_Edu	Education of the Head of Household	Categorical
HH_Size	Actual total permanent members of the household	Continuous
HH_IncGT14	Last month total income of family members older than 14	Continuous
HH_Debts	Actual total outstanding debts incl. interest and costs	Continuous
HH_N_ChildLE14	Total actual number of children (≥ 14)	Continuous
HH_LabelInd	Is anybody of the family working in a labeled industry?	Binary Categorical
HH_IsAbsDolPov	Absolute poverty	Binary Categorical
HH_IsAnyChildLab	At least one child has been working since last two months for full time or part time	Binary Categorical
HH_KalPC	Per capita calorie intake	Continuous
HH_N_Child0514School	Total number of school going child	Continuous
HH_Iron	Per-capita iron intake	Continuous
HH_Fat	Per-capita fat intake	Continuous
HH_Vitamin A	Per-capita vitamin A intake	Continuous
HH_CalorieAbovSubsis	Is per-capita calorie above subsistence level?	Binary Categorical

Source: Own Study

the other group is above subsistence in terms of calorie consumption. Both of the households treat children as a reserve labor according to *luxury axiom*. The logistic regression model allows for a dummy variable of *below subsistence* and *above subsistence* households. This model is illustrated in Figure 8.1.

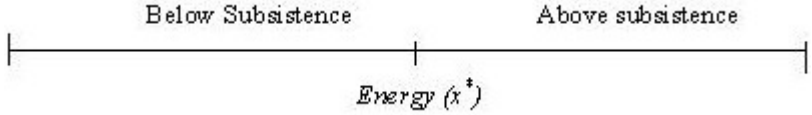
There is a threshold level of energy intake x^* below which the households employ child laborers to work because their adult per capita productivity is so low that they have to employ child laborers to reach their least basic energy requirement. A

Table 8.2: Variables used for econometric analysis per child in household

Variable name (SAS)	Variable Description	Type of the Variable
Ind_IsThisChildLab	Has this child (age 5-14) been working in the last two month full time or part time?	Binary Categorical
Ind_NGOAssistChild	Is the child helped by labeling NGO?	Binary Categorical
Ind_Sex	Gender of the child	Binary Categorical
Ind_Mother's_Job	Mother's Job of the child	Categorical

Source: Own Study

Figure 8.1: Grouping between two types of household



person is counted as "food poor" if the nutritional content of the food(s) he consumes is less than the prescribed threshold (x^*). As a simplifying assumption, most countries use dietary energy as a proxy for overall nutritional status, i.e., if a person gets enough energy, then she also gets adequate protein and the other essential nutrients (David, 2005). Countries are guided by FAO/ WHO recommended daily allowance for energy, defined as the amount needed to maintain health, growth, and an appropriate level of physical activity. WHO, as shown in Table 8.4, use different thresholds for different population groups, in urban and rural areas respectively, in LDCs.

National food poverty lines are based on minimum nutritional requirements or thresholds. FAO uses 2,100 kilocalories (kcal) consumption per person per day as the threshold to estimate the prevalence of undernourishment. Some countries, as shown in Table 8.3, use different thresholds for different population groups, e.g., 2,124 kcal per person per day respectively, in Nepal.

As it was discussed earlier, the members of the carpet weavers' household often suffer from respiratory problems. Malnutrition[71] is a double burden: almost

[71]There can be quantitative as well as qualitative malnutrition. Quantitative malnutrition is a state in which the available food does not meet the indispensable energy requirements. Qualitative malnutrition is a situation in which the amount of food measures up to the indispensable energy requirements but not correspond in composition, and especially in its content of protein, vitamins and minerals, to the physical needs (Hemmer, 1979). This research refers to "quantitative

Table 8.3: Dietary energy thresholds used by a sample of countries, 2000-2004

Single threshold (kcal)	**Threshold Country**
2000	Maldives, Philippines (but also specifies 80% of protein RDA which is equivalent of 50 milligrams).
2030	Sri Lanka
2100	Cambodia, China, Indonesia, Laos, Mongolia, Thailand, Vietnam, Fiji, Turkey, Armenia
2124	Nepal
2133	Madagascar
2138	Malawi
2207	Paraguay
2238	Oman
2282	Moldova
2250	Kenya
2283	Burkina Faso
2288	Albania
2300	Cameroon
2309	Jordan
2300	Iran
2436	Iraq
2400	Senegal, Morocco, Bahamas
2470	Belarus
2700	Sierra Leone
3000	Uganda
Multiple thresholds	
1805 and 2120	Bangladesh–lower and upper poverty lines
2100 and 2400	India–urban and rural areas
2180 and 2220	Mexico–urban and rural areas
2730 and 2110	Russia–able-bodied men and women

Source: Report of UNSD Sub-Regional Workshops (2003-2004)

50 percent of the households are below the subsistence calorie level. Malnutrition and undernourishment[72] are often regarded as a major reason for many types of illness among the poor households. Although food availability in the household level is a key issue, there are intra-household factors that may affect equitable and adequate access to food by all members. The head of the household may have more

malnutrition"

[72]When all nutrients are below the requirement, the condition is known as undernourishment. Undernourishment may be defined as a state of partial starvation.

Table 8.4: Minimum calorie requirement of the household members

	Urban		Rural	
Age(years)	male	female	male	female
(: 1]	820	820	820	820
(1 : 2]	1150	1150	1150	1150
(2 : 3]	1350	1350	1350	1350
(3 : 5]	1550	1550	1550	1550
(5 : 7]	1850	1750	1850	1750
(7 : 10]	2100	1800	2100	1800
(10 : 12]	2200	1950	2200	1950
(12 : 14]	2400	2100	2400	2100
(14 : 16]	2600	2150	2600	2150
(16 : 18]	2850	2150	2850	2150
(18 : 30]	3150	2500	3500	2750
(30 : 60]	3050	2450	3400	2750
(60 :)	2600	2200	2850	2450

Source: http://www.ifpri.org/training/material/poverty/training_tuftspma.ppt

power in determining the use of food resources and may misappropriate it. Moreover, household members' nutritional requirements may vary according to the Table 8.4. When all the essential nutrients are present in a correct proportion as required by the body, it is called optimum nutrition or adequate nutrition. Optimum nutrition is required to maintain good health.

Income is one of the key determinants of household's food consumption. When households are unable to maintain minimum consumption because of income variability, these shocks generate a welfare loss. Cultural factors can also deprive members of the household (i.e., women and children) from getting an equitable share. However, the assumption of the empirical part of this study is that household members' strong family ties would ensure that each shares food equally.

The household food consumption in this study is obtained via a 24-hour recall for all the members of the household. The total energy consumption, $(\sum kcal)$, of each sample household is derived from the net amounts of food commodities consumed converted into energy and different micronutrients. Per capita values are generated by dividing $(\sum kcal)$ by the number of consuming members in the households in last 24 hours.

8.2 Econometric Estimates of Child Labor Supply

The results of testing the influence of variables on the chance of child labor at the household level (Equation 8.2) or the individual level (Equation 8.3) are shown in Table 8.5 and 8.6 respectively:

1. The labeling status of a household is an important factor in decreasing child labor participation. A comparison of Tables 8.5 and 8.6 shows that for each family as well as for each child, the magnitude of the estimated child labor decreases with labeling NGO's intervention. The estimated odds ratio of the labeling status are 0.48[73] for the household-wise regression. This means, that the odds of having a child laborer in the family not being assisted by an NGO are more than 2 times[74] the odds of having a child laborer in an NGO-assisted family. For the child-wise model this research gets an odds ratio of 0.12 which means, that the odds for a child from an unassisted family to work are more than 8 times[75] higher than the odds for a child to work from an NGO-assisted family. Thus, the null hypothesis of "NGO has no influence" is not only rejected but also the NGO influence turns out to be the most important factor in preventing child labor.

2. Following the luxury axiom[76] of Basu and Van (1998), this study tests whether there is a relationship between child labor and adult income ('HH_IncGt14' scaled adult's income in 5,000 Rupies). It can be concluded that the sign and the statistical significance of the estimated adult income coefficient support the Basu and Van model. The estimated odds ratio for adult income are 0.46 in the household level regression and 0.64 in the individual level regression. This means, that for each additional 5,000 Rupies increase in adult income, the odds for child labor decreases more than halved (44 percent) in the household level or around 36 percent lower in the individual level. This shows a strong

[73] In Table 8.5 the point estimator of the odds ratio of HH_LabelInd of registered vs. unregistered is 0.48 which is defined as:

$$0.48 = \frac{\text{odds (any child in the family working|any one in family working in registered industry)}}{\text{odds (any child in the family working|all in family working in unregistered industry)}}$$

[74] $2.08 = \frac{1}{0.48}$

[75] $8.33 = \frac{1}{0.12}$

[76] The family will send the children to the labor market only if the family's income from non child labor sources drops significantly.

Table 8.5: Logit regression (Equation 8.2) results for the probability of child labor, dependent variable: 'HH_IsAnyChildLab' (Yes/No), (household level, N = 410)

Analysis of Maximum Likelihood Estimates				Odds Ratio Estimates		
Parameters		Estimate		Points Estimate	90% Confidence	Limits
Intercept		0.79				
HH_LabelInd	Registered vs. Unregistered	-0.37	***	0.48	0.30	0.77
HH_IsAbsDolPov	No vs. Yes	0.82		5.10	0.93	28.1
HH_HoH_Sex	Female vs. Male	-0.15		0.74	0.30	1.87
HH_HoH_Edu	Primary education vs. No education	-0.39	**	0.46	0.27	0.79
HH_IncGT14		-0.78	**	0.46	0.26	0.82
HH_N_ChildLE14		1.30	***	3.69	2.45	5.54
HH_Debts		0.15	*	1.16	1.00	1.33
HH_HoH_Age		0.22	**	1.24	1.05	1.46
HH_N_Child0514School		-1.27	***	0.28	0.20	0.39
HH_Size		-0.42	***	0.66	0.51	0.85

***,**,*: Significant at 1%, 5% and 10%.
Source: Own regression result.

and negative association between the adult income and child labor in the household.

3. In the household level and individual level regressions, there is a positive correlation between child employment and family debts ('HH_Debts' scaled household's debt in 5,000 Rupies). In both cases, the odds are increased by around 8 to 16 percent. That means that the odds of child employment are increased by around 8 to 16 percent if the debt burden of the household rises by 5,000 Rupies.

4. Improvement of the head of the household's education ('HH_HoH_Edu') significantly decreases the probability of a child's employment in the labor market. This is confirmed by the negative and significant estimates in the odds ratio of 'at least primary education' and 'no education' in the individual level and household level regressions. The estimated odds ratio for 'head of the household's education' are 0.46 in the family-wise regression and 0.57 in the child-wise regression. This means that the odds of child labor are about 54 percent and 43 percent lower for those households and children where the

head of the household completed at least primary school compared with those households where the head of the household has no education. This shows a strong and negative association between the education status of the head of the household and child labor.

5. The age of the head of the household ('HH_HoH_Age' Scaled head of the household's age in 5 years of age) shows a significant and positive effect on child labor supply in household level regressions. The use of children as a form of insurance (Portner, 2001) also provides some insight into the role of the 'age of the head of the household' in determining child labor. The idea behind this might be that the older the head of the household is, the more aware will he be of his dependency for livelihood in the future. Child laborers could be seen as an 'economic insurance' in old age for the head of the household. Thus, the probability of a child to work is increasing with the age of the household head. The estimated odds ratio for 'age of the head of the household' are 1.24 in the family-wise regression and 1.09 in the child-wise regression, which means that the odds of child labor are 24 percent and 9 percent higher for each 5 years increase of the age of the household head. This shows a positive association between the age of the head of the household and child labor.

6. The sign of the coefficient of the size of a household 'HH_Size' shows that with an increase in the household size, the probability of child labor decreases in both of the individual level and household level regressions. This is a contrary to what would have been expected, however, it might be explained by an increased number of adults - and not children - in the household. In fact, the more adults there are in the household, the less likely it is that a child works. The variable 'total number of children' ('HH_N_ChildLE14') shows a statistically significant and positive relation with the occurrence of child labor. This indicates that the higher the number of children in a household, the more likely it is that some children of this family will go to work. The estimated odds ratio for 'total number of children' are 3.69 in the household level regression which means that the likelihood (odds) of a child to work increases by the factor 3.7 for each additional child in the household. This shows a strong and positive association between 'total number of children' in a family and child labor, which is described frequently in the literature (Patrinos *et al.*, 1995). The higher the probability that a child will work, the higher the probability

Table 8.6: Logit regression (Equation 8.3) results for the probability of child labor, dependent variable: 'Ind_IsThisChildLab' (Yes/No),(individual level, N = 525)

Analysis of Maximum Likelihood Estimates				Odds Ratio Estimates		
Parameters		Estimate		Points Estimate	90% Confidence	Limits
Intercept		0.98				
Ind_NGOAssistchild	Yes vs No	-1.08	**	0.12	0.02	0.65
HH_IsAbsDolPov	No vs Yes	0.27		1.70	0.43	6.69
HH_HoH_Sex	Female vs Male	0.01		1.03	0.53	1.98
HH_HoH_Edu	Primary education vs. No education	-0.28	**	0.57	0.38	0.85
Ind_Sex	Female Male	0.22	**	1.55	1.11	2.18
Ind_Mother's Job	Employed vs Housewife	-0.64	**	0.40	0.26	0.62
Ind_Mother's Job	Expired vs Housewife	0.37		1.10	0.27	4.48
HH_IncGT14		-0.44	*	0.64	0.42	0.97
HH_N_ChildLE14		0.28	*	1.33	1.03	1.70
HH_Debts		0.08	*	1.08	1.00	1.17
HH_HoH_Age		0.09		1.09	0.98	1.21
HH_N_Child0514 School		-0.87	***	0.41	0.34	0.51
HH_Size		-0.33	***	0.72	0.60	0.87

***,**,*: Significant at 1%, 5% and 10%.
Source: Own regression result.

of an additional birth (Cigno *et al.*, 2000).

7. The estimated odds ratio for 'Ind_Sex' are 1.55 in the child-wise regression. This means that the odds of child labor are about 55 percent higher for female child compare to male child. This indicates that the higher the number of female children in a household, the more likely it is that child will work.

8. Mother's employment plays an important role on child labor supply. This study finds that mother's employment significantly decreases the probability of a child's employment in labor market. This is confirmed by the negative and

significant estimates in the odds ratio of 'employed' vs 'housewife'. The odds ratio indicates that the likelihood of a child to work decreases by 60 percent for each child in a household if his/ her mother is employed.

9. This study neither finds a significant influence of absolute poverty ('HH_IsAbsDolPov' household per capita income less than US $ 1per day) nor a significant influence of the 'gender of the head of the household' ('HH_HoH_Sex') on child labor supply of the household. This result is likely to have been caused from the fact that 98 percent of the households report that they live in absolute poverty (less than US$ 1 income). In addition, most people generally underestimate their income if they are asked in a survey. Also 93 percent of the households are male-headed. Thus, influences of the 'head of household's gender' on child labor supply might still be hard to detect.

8.3 Influence of Social Labeling NGOs on Previous and Present Status of Children

Results of testing whether and to which extent social labeling NGOs activities and other variables influence choices of child-activities between previous time and present (Equation 3.22) are presented in Appendix A.12.

1. NGO assistance ('IsNGOAssist') has a significant positive impact on the present school attendance of ex. child laborers. The variable 'NGO assistance' is almost perfectly discriminating[77] the outcome. Labeling NGOs have also a positive impact on those children who once were in school and still attending school. The estimated odds ratio are 54.9. This means, that the odds for a child of continuing school are on average 55 times higher for those children who are helped by labeling NGOs than those children who are not helped by labeling NGOs.

2. The adult's income ('HH_IncGt14' scaled adult's income in 5,000 Rupies) has a significant positive influence on child schooling. The estimated odds ratio is 4.6. This means that the odds of continuing school for a child are about 4.6 times higher for each 5,000 Rupies increase in adult income. This finding again supports the luxury axiom (Basu and Van, 1998).

[77] One can predict the sample outcomes perfectly by knowing the predictor values (except possibly at a boundary point). In such cases, an ML parameter estimate for logistic regression model is infinite.

3. The total number of children in a household ('HH_N_ChildLE14') has an impact on child activities between previous and present time. The result indicates that the higher the number of children in a household, (a) the more likely it is that a previously idle child is still idle (odds are 2.4 times higher for one more child), (b) the less likely that a school going child would continue his/her school (odds are 79 percent smaller for one more child), and (c) the less likely that previously school going child is now working (odds are 72 percent smaller for one more child), because the child might be idle or searching for work.

4. The age of the head of the household ('HH_HoH_Age' Scaled head of the houshold's age in 5 years of age) has played a significant positive role for those children who were previously idle and now working. The estimated odds of working for the idle children increase by 47 percent for each 5 years increase of age of the head of the household. Also, the odds of the children's drop out rate increase by 24 percent for those who have an older head of the household than others.

5. As the number of school going children in a household ('HH_N_Child0514School') increases, the likelihood of schooling for the ex child laborer increases. The estimated odds of school attendance for the ex child laborers are 23 times higher for one more school going child in the family. Also the previously idle child does not want to remain idle when the household has more school going children than a household with less school going children. The estimated odds of a previously idle child to be idle presently are 70 percent lower in the case where the more children are going to school in a household than the less. The drop out rate from school decreases by the increased number of school going child in a household. The odds of continuing schooling for a school going child are 22 times higher for the household where at least one more child is going to school. Odds for 'previously schooling now working' are 11 times higher per one more child going to school.

8.4 Modified Luxury Axiom with Other Determinants

1. Following the luxury axiom of Basu and Van (1998) discussed in section 3.2, this study tests whether there is a relationship between child labor and calorie intake (instead of adult income). The luxury axiom follows poverty hypothesis and poverty can be better explained by 'calorie intake' instead of 'adult

Table 8.7: Logistic regression for the modified luxury hypothesis (household level, dependent variable: atleast one child labor in household (Yes/No), N=410)

Analysis of Maximum Likelihood Estimates				Odds Ratio Estimates		
Parameters		Estimate		Points Estimate	90% Confidence	Limits
HH_LabelInd	Registered vs. Unregistered	0.31	**	0.53	0.33	0.87
HH_IsAbsDolPov	No vs. Yes	0.27		1.72	0.34	8.90
HH_HoH_Sex	Female vs. Male	-0.20		0.67	0.27	1.68
HH_HoH_Edu	Primary education vs. No education	-0.41	***	0.44	0.26	0.78
HH_KalPC		0.64	***	1.90	1.39	2.61
HH_N_ChildLE14		1.69	***	5.41	3.52	8.33
HH_Debts		0.17	**	1.19	1.04	1.35
HH_HoH_Age		0.20	**	1.22	1.03	1.45
HH_N_Child0514School		-1.40	***	0.25	0.18	0.35
HH_Size		-0.58	***	0.56	0.43	0.73
HH_CalorieAbovSubsis	Above vs. Below subsistence	-0.52	**	0.36	0.16	0.79

***,**,*: Significant at 1%, 5% and 10%.
Source: Own regression result.

income'. Table 8.7 includes a dummy variable 'HH CalorieAbovSubsis' to compare between below and above subsistence level of households. The variable 'HH CalorieAbovSubsis' indicates the households who are above and below the subsistence level in terms of per capita calorie intake according to the IFPRI standard depicted in Table 8.3.

The odds of child employment are decreased by around 64 percent if the household is above the subsistence level in terms of calorie intake. In other words, the odds of having a child laborer in the family below subsistence level is nearly 3 times[78] the odds of having a working child in a family above the subsistence level. A significant increase does occur in the odds ratio of child labor when the household is below the subsistence level or poverty line in terms of calorie

[78] $2.78 = \frac{1}{0.36}$

intake, i.e. a remarkable change in the probability of child labor will occur at the point where the household crosses the poverty line in terms of calorie intake. The results suggest that the link between adult income and child labor supply (Luxury Axiom)[79] is much stronger in terms of calorie intake than income variable. Therefore, this study emphasize calorie intake as one of the proxy variable of the poverty status in order to maintain the idea luxury hypothesis[80].

The modified "Luxury Hypothesis" is using calorie intake (instead of income) as a proxy for basic consumption and introduce a differentiation between subsistence levels of families.

2. The labeling status of a household is an important factor in decreasing child labor participation. Table 8.7 represents overall (both below and above subsistence) estimation of the logistic equation and shows that the magnitude of the estimated child labor decreases with labeling NGOs intervention. The estimated odds ratio of the labeling status are 0.53[81] for the family-wise regression. This means, that the odds of having a child laborer in the family not being assisted by an NGO is nearly 2 times[82] the odds of having a working child in an NGO-assisted family.

   A comparison of Tables 8.8 and 8.9 shows that for each family (above and below subsistence), the magnitude of the estimated child labor decreases with labeling NGO intervention. However, in the below subsistence level the NGO intervention is not significant. Therefore, the NGO has only significant influence on the above subsistence level of households. The estimated odds ratio of the labeling status are 0.47 for the above subsistence households. This means, that the odds of having a child laborer in the family not being assisted by an NGO are more than 2 times[83] the odds of having a working child in an

[79] The family will send the children to the labor market only if the family's income from non child labor sources drops significantly.

[80] Maybe it's not a good idea to rely on personal communicated income statements - the opposite is obviously true if you ask people what are the items they took as a food in the last 24 hours

[81] In Table 8.7 the point estimator of the odds ratio of HH_LabelInd of registered vs. unregistered is 0.53 which is defined as:

$$0.53 = \frac{\text{odds (any child in the family working|any one in family working in registered industry)}}{\text{odds (any child in the family working|all in family working in unregistered industry)}}$$

[82] $1.89 = \frac{1}{0.53}$

[83] $2.13 = \frac{1}{0.47}$

NGO-assisted family. Thus, the null hypothesis of "NGO has no influence" is clearly rejected in the above subsistence level of households but accepted for the below subsistence level of households.

Debt Bondage

Sunil(12) and Suresh (10) are two brothers working in a carpet factory in Kathmandu valley. These two children are hailed from 'Kamaiya' community. Their father is an agricultural day laborer and he is in debt to his landlord (employer). The poor father pledges his children as collateral for his loan. Sunil and Suresh had no chance to go to school or study. Their work begins at 6a.m. and continues until late evening. One day a broker who collects children to work in carpet industry came and rescued them from the debt bondage of the landlord. Their father was happy to send them in Kathmandu valley to work in the carpet industry. Now they are learning to weave carpet and they are getting two times full meals. They are not receiving any salary for their daylong work. According to their employer, "I rescued them from the debt bondage and now they are learning to weave carpet. I paid money to the broker to rescue these two children out of inherited debt bondage. After finishing their internship, they have to work in my carpet industry as long as I compensate my own cost to rescue them from the landlord. After compensating the money which I paid to the landlord I will pay them monthly salary".

3. There is a positive correlation between child employment and family debts as depicted in the Table 8.7. The odds of child employment are increased by around 19 percent if the debt burden of the household rises by each 5,000 Rupies[84]. A comparison of Tables 8.8 and 8.9 shows that for each family (above and below subsistence), the magnitude of the estimated child labor increases with debt burden of the household. However, in the above subsistence level the amount of debt is not significant in relation to child labor. The amount of debt of the household has only significant influence on the below subsistence level of households. The estimated odds ratio of the debt coefficient are 1.33 for the below subsistence households. This means, that the odds of having a child laborer in the family who have 5000Rs debt are 33 percent higher the odds of having a working child in a family without any debt.

4. Improvement of the head of the household's education, total number of school going child significantly decreases the probability of a child's employment in

[84]Household debt is scaled in 5,000 Rupies.

the labor market. An additional child birth in the household increases the probability of child employment. This results are confirmed by the significant estimates in the odds ratio in Table 8.7.

8.5 Nutritional Efficiency Wage Argument

It can be concluded that the sign and the statistical significance of the estimated adult income coefficient support the Basu and Van (1998) model. The estimated odds ratio for per capita calorie intake are 1.90 in the household level regression (Table 8.7). This means, that for each additional increase of 500 Kcal in the family consumption, the odds for child labor increases by 90 percent. This shows a positive association between the calorie consumption and child labor in the household. The result is more likely related to 'efficiency wage argument', i.e. when calorie intake goes up, children are more healthy, work more hours and get more paid and contribute more to their family. The results suggest that the link between poverty and child labor supply (Luxury Axiom) is much stronger in terms of calorie intake than adult income variable as it is in the original literature.

Grouped regression by calorie intake in the table 8.8 and 8.9 consistent to test the "efficiency wage argument" find a positive relationship between child labor and calorie intake under the subsistence level, ceteris paribus, the relationship is not significant in the above subsistence level. The statistical significance of the 'calorie intake' coefficient below the subsistence level suggests a significant increase of child employment with the increased calorie intake. In contrast to above subsistence level, the statistical significance of the estimated energy coefficient in below subsistence group provides support to the idea of a link between nutrition status and child labor, which is relevant to the efficiency wage argument. Therefore, the statistically significant poverty trap under the subsistence level stimulates child labor.

However, what is more important in this study is to note whether social labeling NGOs could neutralize the subsistence trap through its welfare activities. In fact, although social labeling NGOs has not yet ratified this very important intervening mechanism by nutrition intake, the labeling NGOs could increase household's welfare but could not neutralize or reduce the effect of 'food poverty trap' in the below subsistence households.

Table 8.8 and 8.9 present the coefficient estimates in the logit regressions of child labor participation in two different cases, i.e. above and below subsistence level. Both conditions agree that labeling status of the households (HH LabelInd) leads to

Table 8.8: The modified luxury hypothesis with micronutrients of the households who are above the subsistence level: logit model, dependent variable: HH_IsAnyChild0514Lab, household level, N = 290.

Analysis of Maximum Likelihood		Odds Ratio Estimates				
Parameters		Estimate		Points Estimate	90% Confidence Limits	
HH_LabelInd	Registered vs. Unregistered	-0.37	**	0.47	0.26	0.86
HH_IsAbsDolPov	No vs. Yes	-0.14		0.76	0.16	3.66
HH_HoH_Sex	Female vs. Male	0.05		1.13	0.30	4.27
HH_HoH_Edu	Primary education vs. No education	-0.47	**	0.39	0.19	0.79
HH_KalPC		0.37		1.45	0.98	2.14
HH_N_ChildLE14		1.65	***	5.22	3.19	8.56
HH_Debts		0.17		1.18	0.93	1.52
HH_HoH_Age		0.11		1.12	0.91	1.37
HH_N_Child0514School		-1.39	***	0.25	0.16	0.38
HH_Size		-0.71	***	0.49	0.36	0.68
HH_Iron		-0.10		0.98	0.96	1.01
HH_Fat		-0.01	*	0.98	0.97	0.99
HH_Vitamin A		-9.05		1.00	1.00	1.00

***,**,*: Significant at 1%, 5% and 10%.
Source: Own regression result.

a decrease of child labor. In contrast, the statistical significance of the coefficient of the Labeling Status variable (HH LabelInd) is different in two regressions. Labeling status has no significant influence on those households who are below the subsistence level. The odds of a child labor for labeling households are 53 percent lower for the above subsistence group than the below subsistence group.

The labeling status has no significant influence on child labor in the below subsistence group, while the calorie intake variable has significant positive influence on child labor. Because the efficiency wage condition[85] is working in the below

[85]When calorie intake goes up, children are more healthy, work more hours and get more paid and contribute more for their family. Leibenstein (1957) originated the earliest efficiency wage model in the development literature. The linkage between higher wages and greater effort is related to health and nutrition under the hypothesis that in poor economies wages determine workers consumption

Table 8.9: The modified luxury hypothesis with micronutrients of the households who are below the subsistence level: logit model, dependent variable: HH_IsAnyChild0514Lab, household level, N = 120.

Analysis of Maximum Likelihood		Odds Ratio Estimates				
Parameters		Estimate		Points Estimate	90% Confidence Limits	
HH_LabelInd	Registered vs. Unregistered	-0.40		0.45	0.17	1.22
HH_IsAbsDolPov	No vs. Yes	8.49		> 999.99	< 0.001	> 999.99
HH_HoH_Sex	Female vs. Male	-0.87		0.18	0.023	1.36
HH_HoH_Edu	Primary education vs. No education	-0.32		0.53	0.17	1.59
HH_KalPC		1.67	***	5.31	1.69	16.67
HH_N_ChildLE14		1.40	***	4.47	1.84	10.83
HH_Debts		0.28	*	1.33	1.01	1.74
HH_HoH_Age		0.43	*	1.54	1.03	2.29
HH_N_Child0514School		-1.71	***	0.18	0.084	0.38
HH_Size		-0.32		073	0.38	1.43
HH_Iron		-0.13	**	0.88	0.78	0.98
HH_Fat		-0.01		0.99	0.95	1.02
HH_Vitamin A		0.00		1.00	0.999	1.02

***,**,*: Significant at 1%, 5% and 10%.
Source: Own regression result.

subsistence group, one can conclude that there is no association between the labeling status and child labor e.g. a child living in an below-subsistence income environment is more likely to experience work when his calorie intake is increasing, while the opposite is true for children of families who are above the subsistence level.

It is unlikely (not significant) that calorie intake could influence child labor in the above subsistence group as it is found in Table 8.8, the 'calorie' influence as well as efficiency wage argument has been neutralized by the labeling NGOs. Labeling NGOs are successful to remove child labor in the above subsistence households, and nutritional efficiency wage argument is not working in that particular group of households. In other words, the impact of 'efficiency wage argument', as measured

levels.

by the calorie intake variable (HH KalPC), on child labor is neutralized by the labeling status variable in the above subsistence group of households. Children from below subsistence households want to be engaged in working because of the subsistence trap due to nutritional efficiency wage. Therefore, labeling status of the household has no significant impact on the chances of a child's working status. Therefore, the labeling status has no significant influence on child labor supply in the below subsistence households but has a significant influence on the above subsistence households.

8.6 Chapter Summary

This chapter examines the major research questions empirically. The trade-off between child employment and child schooling, as reflected in the negative and highly significant coefficient estimates of the corresponding variables, confirm that a child's labor market participation as a laborer puts the biggest obstacle to her/ his school enrolment.

The sign and the statistical significance of the estimated adult income coefficient supports the poverty hypothesis of the models by Hemmer *et al.* (1996) and Basu *et al.* (1998). This study finds that improvement in the child's and household's welfare through the intervention of social labeling NGOs is an effective way of combating child labor and vis a vis increasing child schooling. One of the main factors, which could influence the success of labeling NGOs, is 'monitoring frequency' as discussed in the previous chapter. However, this chapter does not consider 'monitoring frequency' as an explanatory variable because of the high collinearity with 'HH_LabelInd' (Is anybody of the family working in a labeled industry?) and 'Ind_NGOAssistChild' (Is the child helped by labeling NGO?).

In the household level analysis, the most important factor is the number of children under 14 years of age; a household with more children is much more likely to send a child to work than a household with fewer children. The age of the head of the household shows a significant and positive effect on child labor supply. This research estimates a positive correlation between child employment and family debts. The higher the number of children in a household, the more likely it is that some children of this family will go to work. More precisely, the higher the number of female children in a household, the more likely it is that the child will work. Mother's employment plays an important role in child labor supply. This study finds that mother's employment significantly decreases the probability of a child's

employment in labor market.

This thesis aims at quantifying the luxury axiom in terms of calorie intake and the substitution between child labor and child leisure is possible by nutritional efficiency wage argument because positive effects of nutritional status increases productivity which yield more child laborers in the leisure time (after school). Therefore, the 'child leisure' is substituted by 'child labor' according to the modified luxury hypothesis of this study. Nutrition elasticity for child leisure demand increases positively as calorie intake increases and it reaches more than one when the households are above the subsistence level. Since child leisure is a luxury item, the demand of child leisure is higher in the above subsistence group than the below subsistence group. With regard to the substantive question addressed in this chapter, this research finds substantial positive effects of nutrition on child labor decision in the below subsistence households. The Nepali evidence, therefore, is more likely related to the 'nutritional efficiency wage argument' under the subsistence level meaning that when calorie intake goes up, children are healthier, work more hours and get better paid and contribute more to their family income, which is obviously not the case in the above subsistence group.

It is unlikely (not significant) that calorie intake could influence child labor in the above subsistence group, therefore, labeling NGOs are successful to remove child labor. On the other hand, calorie intake increases child labor in the below subsistence group of households because of the subsistence trap due to nutritional efficiency wage. Therefore, labeling NGOs have no significant influence on child labor decision in the below subsistence group of household though it has a significant influence on the above subsistence household in reducing child labor.

Chapter 9

Overall Summary and Policy Implications

9.1 Summary

Child labor is a major problem and debatable global issue in developing countries. In the globalization process, the recent rise in global trade has strengthened the trend that consumers buy products that are produced in foreign countries and under social conditions that are fundamentally different from the standards customary in their home countries. The elimination of child labor is therefore the focus of attention at the international level (Hemmer *et al.*, 2000).

On the demand side if consumers are sensative and refuse to purchase products that are made by children, then any doubt of the consumer about the social status of the commodity would lead carpet importers to move to another country, which produces carpets without child labor. This would result in less demand for goods produced by child laborer, which in turn may deteriorate the terms of trade for the country that produces carpets by employing child laborers. The consumer choice, which affects export prices in this way, is therefore more likely to help reduce the extent of child labor by a suitable trade policy like "social labeling". The idea of social labeling schemes is to inform consumers about the social status of the commodity i.e. the product is child labor free. On the other hand, the consumers are willing to pay a price premium for the labeled product and the NGOs which are responsible for labeling carpets will take welfare measures for the retrenched child laborers and their household members.

This thesis is undertaken to understand social labeling initiatives operating in Nepali carpet industries and their impact on child labor supply. The specific research issue is whether social labeling NGOs could displace child labor and increase child schooling in Nepal. To date, policy makers are uncertain about the possible effect of different welfare measures taken by the labeling NGOs (financed by the consumers and some donor agencies of developed countries) on the supply of child labor. This thesis mainly focuses on the empirical assessment of the success and failure of labeling programs attempting to eliminate child labor. Field studies were conducted

during 2004 in the carpet belt of Kathmandu Valley in Nepal. This field study involved the collection of empirical data from quantitative survey questionnaires and qualitative in-depth discussion with the stakeholders. The key questions addressed in this study are:

1. Does the "luxury axiom" explain child labor supply in Nepal? The objective is to find whether the increase in 'adult income' could decrease the incidence of child labor supply and vice versa.

2. Is the nutritional status a determining factor of the "luxury axiom"? The objective is to test the poverty hypothesis in the sense that households make their children work if they are below the subsistence level (2,100 Kcal).

3. Does the "nutritional efficiency wage argument" hold to explain child labor supply in Nepal? The objective is to test the hypothesis "food energy intake increases the incidence of child labor.

4. Does social labeling decrease child labor and increase child schooling? The objective is to test the hypothesis "social labeling decreases child labor and increases child schooling".

Throughout the study, particular attention is placed on the poverty hypothesis in explaining child labor supply and emphasis is given on the welfare of the children. Therefore, a basic model of "household production function approach" is introduced as a starting point according to Hemmer *et al.* (1996) and "multiple labor market equilibrium" approach from Basu *et al.* (1998).

To explore the first question, this thesis has estimated significant negative relationships between 'child labor' and 'adult income' that supports the luxury axiom. To address the second question, this thesis shows a difference between below and above subsistence households with respect to child labor supply decision and empirically prove the "poverty hypothesis". Children in poor households are sent to work because of poverty. Although poverty is generally believed to be the most important reason for child labor, other reasons are also mentioned, such as credit market imperfection, large family size, family background, and parental education. Regarding the third question, this thesis empirically proves the "theory of efficiency wage" argument in the below subsistence group of households as well as disproves the same theory for the above subsistence group of households. The answer of the fourth question signifies that labeling NGOs have significant influence on the above

subsistence households but no significant influence on the below subsistence households. Monitoring by the labeling NGO has a positive influence on transferring child laborers from the carpet industry to school. However, this study observes that the Rugmark inspectors visit 40 percent of the labeled industries once in a month, while 13 percent of the labeled industries are reported as never monitored.

This empirical study looks systematically at the connection between social labeling NGOs and their ability to skew household incentives in favour of educating their children. The current study has also contributed to measure the "luxury axiom" of child labor literature in terms of calorie intake of the households.

In the household level analysis, the most important factor is the number of the children under 14 years of age; a household with more children is much more likely to send a child to work than a household with fewer children. The age of the head of the household shows a significant and positive effect on child labor supply. This research estimates a positive correlation between child employment and family debts. The higher the number of children in a household, the more likely it is that some children of this family will go to work. More precisely, the higher the number of female children in a household, the more likely it is that the child will work. Mother's employment plays an important role on child labor supply. This study finds that mother's employment significantly decreases the probability of a child's employment in labor market.

9.2 Conclusion and Policy Implications

The thesis has argued that labeling alone is at best a partial solution to the problem of child labor and increases child schooling. The effect of social labeling NGOs is not visible on the households who are below the subsistence calorie intake. It might be argued that households who are driven by food poverty either shift their children to less visible sectors (e.g. from carpets to handicrafts), or across the production chain (e.g. from weaving to spinning), or move into the informal sector where conditions are likely more exploitative. Any welfare enhancing activity will increase child labor if the households are below subsistence level because of the nutritional efficiency wage argument. To prevent this, the Nepal Rugmark Foundation (NRF), which operates the Rugmark label in Nepal, rescues and rehabilitates child laborers from the carpet factories, supports rehabilitation and schooling projects for them, and later provides subsidies for their education and vocational training. Any reunion policy aiming at sending a child laborer to his/her family who are below the

subsistence level would cause a worst result for the child laborers. The reunion with the parents of the child laborers could be successful if and only if policies are targeted towards a sustainable improvement of the poverty status of the poor households.

Poverty is a multidimensional problem requiring comprehensive pro-poor growth policy linked to national policy-making. Pro-poor growth policy suggests that the poor's per capita income should grow faster than the average income i.e. the proportion of poor people who are below the subsistence level decreasing faster than average income per person is increasing. The reduction of the proportion of poor population is not important. Often the proportion of people who are poor can decline even as their numbers are increasing. Therefore, pro-poor growth results in a reduction of the absolute number of poor people.

However, it is easy to observe that income poverty in most cases is associated with so-called human poverty with low health and education levels that are either the cause or the result of low income. Income and human poverty also tend to be accompanied by such social deprivations as high vulnerability to adverse events (for example, disease, economic crisis, or natural disaster), voicelessness in most of society's institutions, and powerlessness to improve one's living circumstances. According to the World Bank (1990), poverty proposed the following strategies: promoting labor-intensive growth through economic openness and investment in infrastructure and providing basic services to poor people in health and education. Services can work for poor people, but too often they fail. They can be made to work for poor people by empowering them and strengthening the incentives to service providers to serve the poor people (Chakrabarty *et al.*, 2005).

Since "poverty alleviation" is the ultimate route to curve the child labor problem, this section first provides a general framework of "adjustment policies" for identifying the major factors, which determine the extent of poverty and how development policy can influence the operation of these mechanisms to ensure a favourable impact on incomes of the poor. Then this chapter deals with some target-oriented policies aimed at directly improving the conditions of identified groups of poor households.

Figure 9.1 highlights a framework of the "adjustment policy" based on the impact on poverty and child labor. Adjustment policies can be divided into two parts: stabilization policies and structural adjustment policies (Hemmer *et al.*, 1996). Stabilization policies intend to stabilize the aggregate demand for goods and services mainly by monetary and fiscal policy in order to achieve macroeconomic stability.

Figure 9.1: The Impact of Adjustment Policy Framework

Adjustment Policies	Instruments of Adjustment Policies	Macro Economic Determinants of Pro-Poor Growth with Relation to Poverty and Child Labor
Stabilization Policies	Fiscal Policy Monetary Policy Exchange Rate Policy	Inflation (+) Income / Sectoral growth (-)
Structural Adjustment Policies	Internal Adjustment Policies External Adjustment Policies	Employment (-)

"+" means positive relation with poverty / child labor
"-" means decrease in poverty /child labor

The structural adjustment policies intend to achieve macroeconomic supply flexibility to promote economic growth, and generate income. Since the late 1990s, the term "structural adjustment" has been somewhat replaced by an emphasis on "poverty reduction" by an analogous term Poverty Reduction Strategy Papers (PRSPs). According to this framework, various instruments of adjustment policies affect macroeconomic determinants of poverty, with 'inflation' likely to cause an increase in poverty and child labor, while income and employment growth expected to cause a decrease in poverty and child labor. A successful policy is one that operates with increase in income and employment with low level of inflation. Under this framework a 'stagflation' would be the worst consequence to mitigate poverty or child labor.

9.2.1 Impact of Stabilization Policy

The stabilization policies which are adopted by developing countries are mainly based on reduction in the public deficit, a tight monetary policy and an exchange rate adjustment i.e. devaluation (Hemmer *et al.*, 1996). Therefore, the following discussion will only focus on the tight monitory and fiscal policies taken by the developing countries.

Fiscal Policy

A general reduction of public deficit means reducing government expenditure and/or rising government revenues. The first point is associated with a cut in social, education, health and infrastructure programmes, removal of subsidies. On the revenue side government can increase direct and indirect taxes. A general reduction in public expenditure associated with a decrease in aggregate demand for goods and services and thus reduces the demand for labor. The overall effect depends on

the size of public expenditure cut and the value of multiplier. But obviously the consequences would be a decrease in employment in the short run. Assuming a CES (constant elasticity of substitution) production function the ratio of child and adult labor remains unchanged. The unemployed child and adult laborers will shift to the informal sector where wages are paid less than the formal sector. An increasing pressure of labor supply decreases the wage further in the informal sector. Therefore the overall wage will be decreased and consequently a fall in the shadow price of education will results an increase in the demand for education. According to the 'substitution effect' the supply of child labor decreases. However, the fall in national income decreases the percapita income of the family and therefore child labor will be increased by income effect. Therefore, as a consequence of the substitution effect, child labor decreases and as a consequence of the income effect, child labor increases (Hemmer *et al.*, 1996).

The particular area of reduction of public expenditure typically means a cut in expenditure on education, transport, transfer payments and food subsidies. A cut in educational expenditure means an increase in the direct increase in schooling expenditure. Which in turn increases the supply of child labor. A rise in tax would also results in an increase in child labor for the negative income effect as shown in Figure 9.1.

Monetary Policy

A tight monetary policy aims at reducing the inflation rate. The severity of the stabilization crisis-with its effects on child labor- depends heavily on the governments credibility to stand the anti-inflationary policy (Hemmer *et al.*,1996). It has been argued that inflation affects the poor directly through a decline in their real wages and distributional consequences of the resources. If inflation is unanticipated, the poor will be the ultimate victim as they have weaker bargaining power and are generally unable to protect against inflation. On the contrary, since the poor are frequently indebted, the real cost of their debt falls with inflation. If the source of inflation is higher in the food market, then this could have an ambiguous impact on the level of poverty. On the one hand, farmers who market their surplus food production benefit, but on the other hand, the landless in rural areas, marginal farmers and the urban poor are adversely affected. A tight monetary policy and a high degree of price stability are likely to increase income per capita and reduce the incentives for child laborer in the medium to long run (Hemmer *et al.*, 1996).

Exchange Rate Policy

Exchange rate policy should aim at preventing an overvaluation of the currency, to avoid loss of competitiveness. A real devaluation induces competitiveness in the export sector. Most of the developing countries exports labor intensive goods. Therefore the rise in the export sector requires more labor and for a given technology (a constant ratio of adult to child labor) and child labor is likely to increase in the short run. Most South Asian countries have operated a managed floating exchange rate regime and allowed their currency to depreciate in real terms at a faster rate than in the 80's. The objective clearly was to stimulate exports and limit the size of any trade deficit. If economic growth trickles down to the poor, the extent of child labor will be reduced in the long run due to the dominating income effect (Hemmer *et al.*, 1996).

9.2.2 Impact of Structural Adjustment Policy

A structural adjustment policy is one which seeks to enhance the role of markets so as to promote development followed by policies to change the structure of the economy to make it better suited to a global market environment. Loans from the IMF and World Bank are now almost invariably made conditional on the implementation of such policies.

Internal Adjustment Policies

In the short run, the abolition of government interventions in goods and capital markets generally results in an increase in prices (or interest rates, respectively) and influences the poverty situation adversely for the households. Deregulation of goods market results in the rise of food price. It has a negative impact on household's income. If real income decreases poor families will most likely be forced to use child labor. Deregulation of capital market could also results high interest rate. Due to the income effect families are forced to use child laborers so that they can repay the loan. On the other hand, interest rate ceilings cause credit rationing and results inefficiencies in the credit market. Therefore, in the long run it would not be easier for the households to get access in the credit market. Labor market deregulation could cause decrease in adult wage and the income effect of the low adult wage would results in reallocation of child's time from non-economic to economic activities. Initially privatization results adult unemployment and consequently child labor increases for the time being. In the long run, if unemployed adults find new

jobs in the private sector then child labor decreases again.

Institutional reform in education, health care and transportation have influences on poverty as well as child labor. Resources are reallocated in favour of primary and secondary school which reduces the incidence of child labor. As a result of institutional change of public health care households often have to share a percentage of their health and medical cost. There are almost no health insurance system in the developing countries and the opportunity cost of the sickness is very high for the poor households. Therefore, any institutional reform in which households have to pay money for medical treatment could increase the incidence of child labor.

An excessively equal income distribution can be bad for economic efficiency. Income redistribution brings low inequality (with no private profits and minimal differences in wages and salaries) deprive people of the incentives needed for their active participation in economic activities and a barrier for entrepreneurship. As a consequence of income redistribution the economic growth process will be affected and which in turn results more poverty. In some high-income countries relatively low inequality of incomes is achieved through considerable transfer payments from the government budget. However, economists often argue that mitigating inequality by increasing the burden of government taxes tends to discourage investment, slow economic growth, and undermine a country's international competitiveness and loss of economic efficiency. On the other hand, excessive income inequality adversely affects people's quality of life, leading to a higher incidence of poverty, and contributing more child labor. High inequality threatens a country's political stability because more people are dissatisfied with their economic status, which makes it harder to reach political consensus among population groups with higher and lower incomes. Political instability increases the risks of child labor. As the income redistribution has serious bottlenecks, economy needs social justice so that all the stakeholders have the equal opportunities to become a potential entrepreneur. Business and market should open for everyone. Social goals can replace greed as a powerful motivation force (Yunus, 1998).

External Adjustment Policies

External adjustment policies are aimed at reaching and securing an equilibrium in external economic relations, which in turn is expected to promote efficiency and growth (Hemmer *et al.*, 1996). Trade liberalisation intensify competitive pressure on the import substituting industry. Competition increases the demand for child

laborers. On the other hand new machine can be imported and production process could be changed to get access in the world market competition. Therefore child labor would be substituted by new technology. The demand for child laborers in the export sector depends on the technology and substitution between adult and child laborers. But consumer pressure from the importing countries might lead to treat of a boycotts of the products, which would decreases child labor. Liberalisation of international capital movements is likely to increase domestic capital supply. A higher supply of capital implies lower interest rate and cheaper credit for firms to buy new technology instead of relying on the children's work force.

As discussed above the adjustment policies can increase child labor in the short run. This is due to an increase in adult unemployment and decrease in adult wage. In the long run the target "adjustment" and "reduction of child labor" are harmonic rather than conflicting (Hemmer *et al.*, 1996). In the long run poverty cannot be eliminated or reduced without structural changes in the system (Hemmer, 1994). Thus, adjustment policies are not to be rejected but ought to be augmented by policy measure that protect the below subsistence groups in the short run. Therefore, "target oriented policies" should be implemented in the short run so that the poor can ultimately share the benefit of long run adjustment policies.

9.2.3 Target Oriented Policies for Alleviation of Child Labor

The first two millennium development goals[86] are related to the child labor problem directly or indirectly. If the two targets are really achieved then the child labor problem will be solved in the long run. Before implementing any short run policy the first target is to identify the target group. To identify the relevant target groups for poverty alleviation is the first priority of the target oriented policy. One suggestion could be to identify the absolute poor by the food intake method (24 hours recall procedure) as people sometimes do not want to express their actual income. Therefore, the policy tools should be different in targeting the two groups of households (who are 'food poor' and who are not 'food poor'). At first, a tracer study is important to identify the households who are 'food poor' and then a combination of policies need to promote the 'food poor' (below subsistence households) into above subsistence level. Without proper identification of the absolute poor people

[86]The millennium development goals are eight goals that all 191 United Nations member states have agreed to try to achieve by the year 2015. The first goal is to eradicate extreme poverty and hunger and the second goal is to achieve universal primary education

the target oriented policy might have some leakage.[87] The factors affecting income levels of the poor below subsistence level pinpoints to two possible types of child labor alleviation strategies: the "direct approach" and "indirect approach". The "direct approach" relies on targeted programs aimed directly at increasing incomes of identified poverty groups. The definition of "indirect approach" is not defined as a passive reliance upon "trickle down" processes alone. Rather it should be interpreted as making an attempt to identify the total policy framework, which is most likely to ensure pro-poor growth. The difference between the direct and the indirect approach is principally that the former focuses directly on the present status/occupation of the poor, and seeks to increase adult income earning capacity in those occupations whereas the indirect approach focuses on identifying strategies which will influence the total operation of the economy to strengthen the pro-poor impact of growth. The indirect approach has the advantage since it focuses on the operation of the whole economy, successful indirect strategies are likely to make a much larger impact than any possible direct intervention programs. The direct approach has the advantage of responding immediately in support of identified target groups. To avoid complexity This section examines the following key factors, which are likely to have a powerful impact on child labor by considering target oriented policies.

Indirect Approach

The indirect approach focuses on the operation of the whole economy and it has a much larger multiplier effect to increase the overall income of the poor people in the economy.

- **Land Reform**

The poorest people are usually land-poor; improved access to land provides shelter and food by allowing a household to increase food consumption and increase household income. Therefore, ownership of land is an important determinant of poverty among rural households. In a situation where land is already scarce and demographic pressures are mounting, one would expect to see continuing fragmentation of landholdings. One policy option is to redistribute the existing stock of land through land reforms, and the other is to rely on technological change. Land reform is a potentially powerful direct instrument for improving access to land for the poor

[87] Leakage refers to those transfers that exceed the amount necessary to cross the poverty line or that people receive who live already above the poverty line (Hemmer *et al.*, 2000).

and creating a set of favourable initial conditions for economic growth. The land reform leads to a shift from large-scale farming to smaller sized. Technical changes are also needed to combine with better irrigation and drainage, application of higher yielding varieties.

- **Human Resource Development**

Poor people's inadequate resources of human capital often prove to be a major cause of their poverty (Hemmer, 1994). Generally, the unskilled or poorly trained labor can hardly be absorbed productively in the non-agriculture sector. On the other hand, an abundant supply of skilled and well-trained labor is likely to encourage the establishment and expansion of labor-intensive industries and generate both wage employment and self-employment possibilities. Investment in formal education may not appear to make an immediate impact on employment generation or the alleviation of poverty. As increasing numbers of the educated youth enter the labor market with high job expectations, the first impact may be to create a visible problem of educated unemployment especially in urban areas. Therefore vocational and skill training related to industrial production is necessary. To solve the capacity bottleneck it is important not only to establish skill training canters but also decentralization should go together with an expansion of the capacity building (Chakrabarty *et al.*, 1995).

- **Controlling Population Growth**

Rapid population growth is one of the most important factors which disturbs the pro-poor growth. Generally, faster population growth obviously means a slower growth in per capita incomes for any given rate of growth of gross domestic product (GDP), and therefore lower the rate of improvement in average living standards. Growing pressure of population on land also weakens the position of smaller tenant and marginal farmers, and then they employ children to work. Child labor is increased by worsening the land-man ratio and promoting fragmentation and landlessness, all of which operates against the interest of the poor in rural areas. Rapid population growth contributes to more rapid growth of the child labor force in the economy generally. Since facilities for child schooling and skill training are limited, the adult income is also very low for lower marginal product and competition with child laborers. Reduction in population growth should therefore be a key element in any strategy for poverty alleviation as well as child labor. Female education

and employment are two major issues which could influence the child labor supply indirectly by reducing population growth. If women are employed in other income generating activities then they have less time to produce addition child and the birth rate would be low.

- **Media**

The media can serve to raise awareness among the people in exporting and importing countries. The media can also inform people of the importing countries about the logo of the labeling NGOs and its meaning. The media can take a role against child labor in the exporting countries. Most of the carpet workers switch on the radio while working in carpet industries. The radio programs could broadcast drama serials against child labor and in favor of child schooling. This may create a social mobilization and people can rethink about the myths they believe in. Media can play a proactive role in highlighting various social issues including child labor phenomenon from various angles. International media groups should come forward to focus the various issues of child labor in the international TV channels targeting the welfare of the poor children. Information might play a very important role on the consumer's willingness to pay for child labor free goods. Sometimes it is also important to focus the idea of children in the electronic media so that they can raise their own voice. For example, UNICEF organised a two-day national consultation on "Children's Participation in Media" in Dhaka, Bangladesh on 17th and 18th March, 2004.

- **Choosing the Right Production Technology**

"The extent to which production is labor intensive or capital intensive depends essentially on the factor price ratios between unskilled labor and capital: the lower the interest/wage ratio is, the cheaper the employment of capital goods, the more capital intensive production, the lower the numbers of workers employed and the greater the probability of poverty will be" (Hemmer, 1994). It is important that the pattern of growth in a labor abundant country should be based on labor-intensive technology, so that maximal employment gains are registered and the benefits of growth are spread as widely as possible through the population. Adult labor friendly technology could lead to increase adult productivity in line with substantial increases in real wage. Clearly, capital investment is urgently needed to support adult laborers, but not for substituting them.

To summarize, full exploitation of the scope for reducing child labor through the indirect approach requires operating on several critical areas in the pro-poor growth process. On the contrary, the target of designing such policy is to ensure that the nature of the growth process will bring about significant reductions in absolute poverty.

Direct Approach

The direct approach has the advantage of responding immediately and visibly in support of identified target groups though it has no full multiplier effect for the whole economy.

- **Employment Creation, Adults Wage and Monitoring**

Creation of more jobs, including self-employment opportunities, is probably the most effective way of reducing poverty especially if one thinks to combat child labor. Labor requires better education and training to increase its productivity and therefore wage. Policies are required to improve access to working capital for being self employed. Since agricultural growth will provide only limited possibilities for labor absorption, the burden of absorbing additional labor force must be shared by rapid employment expansion in the non-agriculture sector. Clearly, the creation of jobs is primarily a task for the private sector. However, the state can support this change in economic policy by providing incentives for the increased employment of workers (Hemmer, 1994).

If adults are employed with competitive wage, then they should send their children to school. This thesis shows a strong and negative association between the adult income and child labor in the household. The labeling NGOs should monitor the minimum adult wages in the carpet industries. This study finds no wage regulation in the carpet industries though the official of the NGOs always claim to monitor minimum wage. Normally the industries pay in terms of weaving per square meter of the carpet but the payment varies from industry to industry. Therefore, a minimum wage regulation should be charted in an open notice board in every industry and the monitors should query about the wage of the adult workers.

During the fieldwork of this study, the research team noticed that Rugmark took initiative to monitor only the weaving carpets but Rugmark inspectors did not monitor the other intermediate sectors like washing, dyeing, spinning carpets. The survey team observed that a number of children were working in spinning industries.

Therefore, it is important to monitor the intermediate sector of carpet production by the labeling NGOs.

- **Access of Credit and Insurance**

This research estimates a positive correlation between child employment and family debts. Credit market imperfection always deters the households to join in the formal credit institutions. Mostly the uneducated people feel uncomfortable to go to the institutional credit market for paper works and bureaucracy, therefore the demand for informal credit is very high among the carpet workers. On the supply side the poor people sometimes do not have any credit access to the government and private banks. Banks think that poor people are not credit worthy because they do not have any collateral. As a result, the interest rate is very high in the informal credit market. Among the informal sources, the majority of the households receive loans from the industry owners, sometimes as an advanced payment. Advance payment makes the debtor liable to finish the work in time in order to receive another advance payment and therefore, they use child labor to finish the work as early as possible. One of the instruments to break the credit cycle is 'micro credit'. The Grameen Bank model in Bangladesh could be followed in this regard. Micro credit organizations send agents to distribute credit and collect payments from the door of the customers. The customers do not visit banks rather the banks always come to their doors, the agents also help the customers to organize the paper work and they have less paper work and mostly micro credit is collateral free. One of the interesting results of this survey is that most of households have a little saving; saving habit could be one of the elements of the success of micro credit because the customers have to pay the interest payments in weekly basis. Both 'micro credit' and 'good advice' are important to send children to school.

The labeling NGOs could collaborate with the micro credit banks that distribute loans among the carpet weavers family. The labeling NGOs then will give 'advice' to send their child to school - 'child schooling' could be treated the only collateral of the micro credit. To motivate 'self monitoring mechanism' another group of households (group B) could be selected in such a way that if the targeted (group A) households are successful to send their children to school then the other group of (group B) households will be offered micro credit. This will reduce the monitoring risk and cost of the labeling NGOs. The school registrar could be used as a document of child schooling. Group-lending contracts effectively make a borrower's neighbors

co-signers to loans and the neighbors have incentives to monitor each other and to exclude risky borrowers from participation in the micro credit program (Morduch, 1999).

The age of the head of the household shows a significant and positive effect on child labor supply. One of the reasons might be the absence of insurance in the old age. Parents treat a child as insurance for their old age. Therefore, a micro insurance policy could resolve the problem for old parents who might consider every child's birth as an insurance against their income loss. Improvement of the head of the household's education significantly decreases the probability of a child's employment in the labor market. The positive role of adult education can play in reducing child labor problem.

- **Technology of Carpet Production**

The technology of carpet weaving is still very primitive in nature. Most weavers work with a hooked knife. A weaver uses a finger to push the yarn through the warps, and then uses the hook on the knife to catch the yarn behind the warps and pull it to the face of the rug. For the naive 'child friendly' technology in carpet production it is commonly believed that children are able to weave higher quality carpets than adults because their fingers are more "nimble". A study was initiated in 1993 by the International Labour Office (ILO), in collaboration with the Centre for Operations Research and Training (CORT), to determine whether children are indeed "indispensable" to the Indian carpet industry. The findings do not support the "nimble finger" assertion in the case of carpet production, doubt is also thrown on the validity of the "nimble fingers" assertion for other products which children help to produce. But the general people are not so much concerned with scientific research, sometimes they believe on myths. Therefore it is very important to update the technology of carpet weaving and make a common social certification scheme using 'adult friendly' technology to get rid of the child labor problem.

Adoption of new technology can fight against the irrelevant myth of "nimble finger". The new technology should be adopted so that the quality of carpet production increases by implementing child unfriendly technology. Therefore, technology would be the driving force to substitute child laborers by adult laborers, and it stimulates adult wages in carpet industries. Besides changing the technology, legislation should be implemented so that the new technology is mandatory for the carpet industries. A micro credit scheme could be implemented by the NGOs or

Government for the industry owners to change the primitive hand woven technology into new 'adult friendly' technology[88]. Therefore, the monitoring risk or moral hazard problem could be avoided by substituting traditional technology with modern child labor free technology. As a result, the modern technology can make child labor non-beneficial to the industry owner. Another complementary policy option could be to provide skill training to the adult women in the households for adopting new technology. There is no logic in providing skill training if the particular skill has no impact on the income generation process. The skill training could be weaving of carpets by using new adult friendly technology so that the adult women replace child labor in carpet weaving.

- **Child Schooling**

Educational materials are lacking in schools. Therefore, policy should be targeted to supplement school materials. Supplementary nutrition in conjunction with education should be offered free of charge. This further reduces the shadow price of education and increases the incentive to "consume" educational services (Hemmer *et al.*, 1996). The demand for education depends negatively on its shadow price. For keeping the shadow price of education low the policy makers has to be concentrated on free primary education, free transport services for students, adequate teaching materials and quality teachers. Malnutrition is also partly responsible for extremely high failure rates. This is why in many developing countries investment in education do not become fully effective until adequate nutritional conditions have been created (Hemmer, 1979).

- **A Combination of Direct Target Oriented Policy Intervention**

No single policy is able to alleviate poverty. A combination of policies like labeling NGO's welfare activities, birth spacing, access to the formal credit and insurance market, adult job availability and better wage, could be suggested to remove a child from the 'work place' to 'school'.

The findings have tremendous implications for intervening through nutrition that allows a family to get over the subsistence trap, albeit through an increase in household nutrition engendered by increase in child labor below the subsistence level. Once the households raise themselves above the subsistence level they will stop using child labor. Therefore, sustainable welfare enhancing instruments like

[88]Use of technology to foster the decrease in child involvement.

improved nutrition and medical facility should be provided to the households. This means that improvements in child nutrition resulting from policy changes (Food for Education, food stamp, food rationing), are likely to have productivity effects through inducing child labor specifically for the below subsistence group as they want to reach at least in the subsistence level.

At first a policy should be aimed at the below subsistence group who are the most vulnerable in society. Therefore, a tracer study is important to identify the below subsistence households. Then a combination of policies such as micro credit, food for education and micro insurance is needed to enhance adult income as well as child nutrition so that the households could get rid of the food poverty. Child schooling could be treated as the only 'collateral' of the micro credit so that the risk of the child labor in the intermediate stages of reaching at the above subsistence level could be reduced. Recently KFW (Kreditanstalt für Wiederaufbau) has also implemented a micro credit program in Bolivia. Sixty percent of the Bolivians have no choice but to make their livelihood in the informal sector[89]. These poor people have no access to the Government Banks or credit market. People who work in the informal sector, however, have no legal protection. This also meant they have no chance to actually escape from poverty and legalise their operations. In Bolivia since the mid-1990s KfW Entwicklungsbank has provided the state development bank NAFIBO with EUR 15 million for a term of 40 years. It channels these funds as loans to micro and small enterprises through microfinance institutions. This thesis prescribes analogously the same policy intervention for Nepali carpet workers so that the below subsistence group of households could reach the above subsistence level. Then the intervention by social labeling NGOs could ensure a child labor free carpet.

[89] http://www.kfw-entwicklungsbank.de/EN_Home/Topics/FinancialS15/Microfinan.jsp

BIBLIOGRAPHY

Allison, P. D. 2003. *Logistic regression using the sas system theory and application.* Cary, NC: SAS Institute Inc.

Anker, R., and H. Melkas. 1995, December. "Economic Incentives for Children and Families Intended to Eliminate of Reduce Child Labour." Technical Report, Labour Market Policies Branch Employment Dept, ILO, Geneva.

Armitage, Peter, and Theodore Colton, eds. 1999. *Encyclopedia of Biostatistics.* Volume 1. John Wiley & Sons.

Baland, J.M., and J.A. Robinson. 1998. "A Model of Child Labor." Papers 206, Notre-Dame de la Paix, Sciences Economiques et Sociales.

Basu, A. K., and N. H. Chau. *An Exploration of the Worst Forms of Child Labor: Is Redemption a Viable Option?* The Economics and Ethics of Contemporary Slave Redemption Programs. Edited by A. Appiah and M. Bunzl. Princeton, NJ.: Princeton University Press. forthcoming.

———. 2003. "Targeting Child Labor in Debt Bondage: Evidence, Theory, and Policy Implications." *World Bank Economic Review* 17 (2): 255–281 (December).

———. 2004. "Exploitation of Child Labor and the Dynamics of Debt Bondage." *Journal of Economic Growth* 9 (2): 209–238 (06).

Basu, A. K., N. H. Chau, and U. Grote. 2000. "Guaranteed Manufactured without Child Labour." Working paper 2000-04, Department of Applied Economics and Management Cornell University Ithaca, NY.

Basu, K. 1993. *Lectures in Industrial Organization Theory.* Oxford.: Blackwell Publishers.

———. 1999. "Child Labor: Cause, Consequence, and Cure, with Remarks on International Labor Standards." *Journal of Economic Literature* 37 (3): 1083–1119 (September).

———. 2003. "Policy Dilemmas for Controlling Child Labor." Cae working paper 03-17, Cornell University.

Basu, K., and Z. Tzannatos. 2004. "The Global Child Labor Problem: What do We Know and What We Can Do?" *World Bank Economic Review*.

Basu, K., and P. H. Van. 1998. "The Economics of Child Labor." *American Economic Review* 88 (3): 412–27.

Becchetti, L., and G. Trovato. 2005. "The Determinants of Child Labour: The Role of Primary Product Specialization." *Labour* 19 (2): 237–271 (June).

Becker, G. S. 1965. "A Theory of the Allocation of Time." *Economic Journal* 75:493–517.

———. 1975. *Human Capital*. Second Edition. New York: Columbia University Press.

Becker, S. G. 1993. *Human capital: a theoretical and empirical analysis with special reference to education*. 3. The university of Chicago.

Bellettini, G., C. B. Ceroni, and G. I. P. Ottaviano. 2003, Sep. "Child Labor and Resistance to Change." Working papers, Fondazione Eni Enrico Mattei.

Berk, N. K. 1977. "Tolerance and Condition in Regression Computations." *Journal of the American Statistical Association* 72, no. 360.

Bhagwati, J. 1995. "Trade Liberalization and 'Fair Trade' Demands: Addressing the Environment and Labor Standards Issues." *World Economy*, vol. 18.

Bhattacharya, D. 1996. International Trade, Social Labelling and Developing Countries: The Case of Bangladesh's Garments Export and Use of Child Labor.

Bose, G. 1997. "Nutritional efficiency wages: a policy framework." *Journal of Development Economics* 54 (2): 469–478 (December).

Boyden, J. 1995. "Exploring Alternative Approaches to Combating Child Labour: Case Studies from Developing Countries." Innocenti occasional papers, child rights series iopcrs95/4, UNICEF Innocenti Research Centre.

Brown, D., A.V. Deardorff, and R. M. Stern. 1996. *International Labor Standards and Trade: A Theoretical Analysis*. Harmonization and Fair Trade: Prerequisites for Free Trade? Edited by J. N. Bhagwati and R. E. Hudec. Cambridge: MIT Press.

Brown, D. K. 1998. "A Transactions Cost Politics Analysis of International Child Labor Standards." Discussion papers series, department of economics, tufts university, Department of Economics, Tufts University.

Brown, D. K., D. V. Alan, and S. M. Robert. 1999. U.S. Trade and Other Policy Options and Programs to Deter Foreign Exploitation of Child Labour.

Brown, D. K., A. V. Deardorff, and R. M. Stern. 2002, May. "Pros and Cons of Linking Trade and Labor Standards." Discussion paper 477, The University of Michigan, Ann Arbor, Michigan 48109-1220.

Burra, N. 1995. *Born to Work: Child Labour in India*. Delhi: Oxford University Press.

Canagarajah, S., and H. Coulombe. 1997. "Child Labor and Schooling in Ghana." World bank working paper 1844, World Bank, Washington D.C.

Cartwright, K. 1998. *Child Labor in Colombia*. The Policy Analysis of Child Labor: A Comparative Study. Edited by Grootaert C. and Patrinos H.A. London: St Martins Press.

———. 1999. *Child Labor in Columbia*. The Policy Analysis of Child Labor: A Comparative Study. Edited by C. Grootaert and H. Patrinos. New York: St. Martins Press.

Cartwright, K., and Patrinos, A. 1999. *Child Labor in Urban Bolivia*. The Policy Analysis of Child Labor: A Comparative Study. Edited by C. Grootaert and H. Patrinos. New York: St. Martins Press.

CBS. 1997. "Nepal Living standard Survey Report 1996." Technical Report 2, Central Bureau of Statistics, Kathmandu, Nepal.

———. 1999. "Report on the Nepal Labour Force Survey 1988/99." Technical Report, Central Bureau of Statistics, Kathmandu, Nepal.

Chakrabarty, S. 2006. *Do Social Labeling NGOs have any Influence on Child Labor? Empirical Evidence from Nepal*. Frontiers in Environmental and Social Labeling. Edited by U. Grote, A. Basu, and N. Chau. Heidelberg: Springer-Verlag. Forthcoming.

Chakrabarty, S., H. Daniel, C. Friedland, E. Hanninen, H. Ihne, I. Kustov, and P. Schreinemachers, eds. 2005. *Making Services Work for Poor People: From Knowledge to Practice*. Bonn: Capacity Building International.

Chakrabarty, S., U. Grote, and Lüchters, G. 2006, February. "The Trade-Off Between Child Labor and Schooling: Influence of Social Labeling NGOs in Nepal." ZEF-discussion papers on development policy 102, Center for Development Research ZEF, Bonn.

Chandrasekhar, C. P. 1997. "The Economic Consequences of the Abolition of Child Labour: An Indian Case Study." *The Journal of Peasant Studies* 24 (3): 137–79.

Charl, S. 2001. "Rescuing the 'carpet kids' of Nepal, India and Pakistan." Technical Report, Ford Foundation.

Chaudhri, D. P., and E.J. Wilson. 2000. "The Challenge of Child Labour in Rural India: A Multi-Dimensional Problem in Need of an Orchestrated Policy Response." Economics working papers wp00-02, School of Economics and Information Systems, University of Wollongong, NSW, Australia.

Cigno, A. 1991. *Economics of the Family.* Oxford: Clarendon Press.

Cigno, A., F.C. Rosati, and Z. Tzannatos. 2001. "Child Labor, Nutrition and Education in Rural India: an Economic Analysis of Parental Choice and Policy Options." Working paper 0131, World Bank.

Collingsworth, T., J. W. Goold, and P. J. Harvey. 1994. "Time for a New Global Deal." Technical Report, Foreign Affairs.

Coulombe, H. "Child Labour and Education in Cote d Ivoire." Technical Report.

CUTS. 2003. "Child Labour in South Asia Are Trade Sanctions the Answer?" Technical Report, CUTS Centre for International Trade, Economics & Environment, Jaipur, India.

CWIN. 1993. "Misery Behind the Looms: Child Labourers in the Carpet Factories in Nepal." Technical Report, CWIN, Kathmandu, Nepal.

Dar, A., N.H. Blunch, B. Kim, and M. Sasaki. 2002, August. "Participation of Children in Schooling and Labor Activities: A Review of Empirical Studies." Social protection discussion paper series, Social Protection Unit, Human Development Network, The World Bank.

Dasgupta, P., and D. Ray. 1986. "Inequality as a determinant of malnutrition and unemployment: theory." *Economic Journal* 96, no. 384 (Dec).

David, F. N., and W. Joshua. 2005. "Food for thought: the effects of school accountability plans on school nutrition." *Journal of Public Economics* 89 (2-3): 381–394 (February).

Davis, C. E., J. E. Hyde, S. L. Bangdiwala, and J. J. Nelson. 1986. *An example of dependencies among variables in a conditional logistic regression.* Modern

statistical methods in chronic disease epidemiology. Edited by SH Moolgavkar and RL Prentice. John Wiley & Sons, New York.

Deb, P., and F. Rosati. 2002. "Determinants of Child Labor and School Attendance: The Role of Household Unobservables." Understanding childrens work research paper.

Drewnowski, Adam. 2003. "Fat and Sugar: An Economic Analysis." Technical Report, Center for Public Health Nutrition, University of Washington, Washington.

Dugger, C. 2004, July 28. World Bank Challenged: Are Poor Really Helped? New York Times.

Edmonds, E. V., and N. Pavcnik. 2002, January. "Does Globalization Increase Child Labor? Evidence from Vietnam." Nber working papers 8760, National Bureau of Economic Research, Inc.

———. 2004, March. "International Trade and Child Labour: Cross-Country Evidence." Discussion papers 4309, The Centre for Economic Policy Research.

———. 2005. "The effect of trade liberalization on child labor." *Journal of International Economics* 65 (2): 401–419.

Eric, N., and de S. Indra. 2005. "Trade Openness, Foreign Direct Investment and Child Labor." *World Development* 33 (1): 43–63 (January).

Ersado, L. 2002. "Child labor and school decisions in urban and rural areas." Fcnd briefs 145, International Food Policy Research Institute (IFPRI).

Eswaran, M. 2002. "The empowerment of women, fertility, and child mortality: Towards a theoretical analysis." *Journal of Population Economics* 15 (3): 433–454.

Freeman, R. B. 1994. "A Hard-Headed Look at Labor Standards." Technical Report, International Institute for Labor Studies, Geneva.

Galbi, D.A. 1997. "Child labor and the division of labor in the early English cotton mills." *Journal of Population Economics* 10, no. 4.

Genicot, G. 2005. "Malnutrition and Child Labor." *Scandinavian Journal of Economics* 107 (1): 83–102 (March).

Gilligan, B. 2003, January. "Child Labour in Nepal: An Analysis of the Determinants of Child Labour in Nepal, the Policy Environment and Response." Technical Report, UCW, Kathmandu, Nepal.

Giovanna, P. 1999. "Nepal: Poverty at the Turn of the Twenty-First Century Main Report and the Background Studies." Technical Report, World Bank.

Graner, E. 1999. "Nepalese Carpets: An Analysis of Export Oriented Production and Labour Markets." *The Economic Journal of Nepal* 22, no. 4.

Grimsrud, B. 1997. *Child labour in Norwegian imports*. Edited by B. Grimsrud and A. Melchir. Institute for applied Social Science and Norweigian Institute of International Affairs.

———. 2001, October. "Measuring and Analyzing Child Labor: Methodological Issues." Social protection discussion paper series, Human Development Network, The World Bank.

Grootaert, C. 1999. *Child Labor in Cote d Ivoire: Incidence and Determinants*. The Policy Analysis of Child Labor: A Comparative Study. Edited by C. Grootaert and H. Patrinos. New York: St. Martins Press.

Grootaert, C., and R. Kanbur. 1995a. "Child Labor: A Review." Policy research working paper, World Bank, Washington, DC.

———. 1995b. "Child labour: An economic perspective." *International Labour Review* 134, no. 2.

Grootaert, C., and H. Patrinos. 1999. *The Policy Analysis of Child Labor: A Comparative Study*. New York: St. Martins Press.

Grote, U., A.K. Basu, and D. Weinhold. 1998. Child Labour and the International Policy Debate - The Education/Child Labor Trade Off and the Consequences of Trade Sanctions.

Hagemann, F., Y. Diallo, A. Etienne, and F. Mehran. 2006, April. "Global child labour trends 2000 to 2004." Technical Report, International Programme on the Elimination of Child Labour, International Labour Office, Geneva.

Hemmer, H-R. 1979. "Possible Consequences of Nutritional Improvements for the Economic Development." *Intereconomics*.

———. 1992. "The Fight against Poverty: Between Evolution and Revolution." *Development and Cooperation* 14, no. 1.

———. 1994. "Possible Approaches of a Poverty -Oriented Development Policy: A General Survey." *Economics* 49/50:57–79.

Hemmer, H-R, T. Steger, and R. Wilhelm. 1996. "Child Labour in the Light of Recent Economic Development Trends." Working paper, ILO, IPEC, Geneva.

———. 1997. "Child Labour and International Trade : An Economic Perspective." Discussion papers in development economics, University of Giessen.

Hemmer, H-R, and R. Wilhelm. 2000. *Fighting Poverty in Developing Countries*. Peter Lang.

Heywood, C. 1988. *Childhood in nineteenth-century France: Work, health, and education among the classes populaires*. New York, N.Y: Cambridge University Press.

Hilowitz, J., J. Kooijmans, P. Matz, P. Dorman, M. de Kock, and M. Alectus. 2004. *Child Labour: A textbook for university students*. Edited by Louise Carleton-Gertsch. International Labour Office.

Hilowitz, T. 1999. "Labeling Child Labour Products: A Preliminary Study." Technical Report, International Labour Organization (ILO).

H-Lopez, C. 2002. "Social Labelling and WTO Law." *ournal of International Economic Law* 5, no. 3.

Hoddinott, J., and L. Haddad. 1994. "Does Female Income Share Influence Household Expenditures? Evidence from Cote d'Ivoire." Working papers series 94.17, Centre for the Study of African Economies, University of Oxford.

Hoppe, M. J., E.A. Wells, D.M. Morrison, M. R. Gilmore, and A. Wilsdon. 1995. "Using focus groups to discuss sensitive topics with children." *Evaluation Review* 19 (1): 102–114.

Humphries, J. 2003. "Child Labour: Lessons from the Historical Experience of Today's Industrial Economies." *World Bank Economic Review* 17, no. 2.

ICFTU. 1994. "The best kept secret child labour round the world." Technical Report, International Confederation of Free Trade Unions, Brussels, Belgium.

ILO. 1996. "Child Labour Surveys : Results of Methodical Experiments in Four Countries 1992-93." Technical Report, ILO.

———. 2002. "A future without child labour : Report of the Director General." Technical Report, International Labour Office, Geneva.

———. 2006. "The end of child labour: within reach." Global report under the follow-up to the ILO declaration, International Labour Office, Geneva.

IMF. 2003, September. "Nepal: Poverty Reduction Strategy Paper." Technical Report, International Monetary Fund, Washington, D.C.

Jacoby, H. G., and E. Skoufias. 1997. "Risk, Financial Markets, and Human Capital in a Developing Country." *Review of Economic Studies* 64 (3): 311–35 (July).

Jafarey, S., and L. Sajal. 2002. "Will Trade Sanctions Reduce Child Labour? The Role of Credit Markets." *Journal of Development Economics* 68:137–156.

Jensen, P., and H.S. Nielsen. 1996. "Child Labour or School Attendance? Evidence from Zambia." Papers 96-14, Centre for Labour Market and Social Research, Danmark.

Kanbargi, R. 1991. *Child labour in the Indian subcontinent: Dimensions and implications*. New Delhi, Newbury Park: Sage Publications.

Kantipur. 2002, August 28. Twenty-five per cent Down in Export of Woolen Carpet. Kantipur Publication, Kathmandu, Nepal.

———. 2005, July 25. Carpet Export Rises. Kantipur Publication, Kathmandu, Nepal.

KC, B. K., G. Subedi, Y. B. Gurung, K. P. Adhikari, and D. V. Shakya. 2002. "Child Labour in the Nepalese Carpet Sector : A Rapid Assessment." Working paper, ILO-IPEC, Kathmandu.

Khatiwada, Y. R., S. K. Sharma, V. R. Satyal, and R. S. Kharel. 2002. "Nepal: Sources of Economic Growth." Project report, Institute for Integrated Development Studies, Kathmandu, Nepal.

Kish, L. 1965. *Survey Sampling*. New York: Wiley Classics Library.

———. 2004, July. *Statistical Design for Research*. Wiley classics library ed. New Jersey: John Wiley & Sons Inc.

Kreuger, R.A. 1988. *Focus groups: A practical guide for applied research*. London: Sage.

Levison, D., R. Anker, S. Ashraf, and S. Barge. 1996. "Is Child Labour really necessary in India's Carpet Industry?" Technical Report, ILO.

Levy, P. S., and S. Lemeshow. 1999. *Sampling of Populations*. New York: Wiley.

Levy, S. P., and L. Stanley. 1999. *Sampling of Populations Methods and Applications*. 3rd ed. WILEY & SONS.

Levy, V. 1985. "Cropping Pattern, Mechanization, Child Labor, and Fertility Behavior in a Farming Economy: Rural Egypt." *Economic Development and Cultural Change* 33 (4): 777–91 (July).

Liebenstein, H. 1957. *The Theory of Underemployment in Densely Populated Backward Areas*. Efficiency Wage Models of the Labor Market. Edited by G. Akerlof and J. Yellen. Cambridge: Cambridge University Press.

Lindelow, M., and A. Wagstaff. October 2005. "Health Shocks in China: Are the Poor and Uninsured Less Protected?" World bank policy research working paper 3740, The World Bank, Washington DC.

Linkenheil, K. 2003. "Introduction of an appropriate labeling system for Nepals hand knotted carpet industry." Technical Report, GTZ, Kathmandu, Nepal.

Lire, E. 2002. "Child labor and school decisions in urban and rural areas." FCND briefs 145, International Food Policy Research Institute (IFPRI), Washington, DC.

Liu, A. Y. 1998. "School Childrens Participation Behaviour in Vietnam: An Empirical Analysis." The twelfth annual conference of the European society for population economics, Amsterdam, Netherlands.

Maffei, S., N. Raabe, and H. Ursprung. 2004. "Political Repression and Child Labor: Theory and Empirical Evidence." CESifo working paper series, CESifo GmbH.

Majumdar, M. 2001. "Child Labour as a Human Security Problem: Evidence from India." *Oxford Development Studies* 29, no. 3.

Manser, M., and M. Brown. 1980. "Marriage and household decision-making: A bargaining analysis." *International Economic Review* 21 (1): 31–44.

Mansfield, E. R., and B. P. Helms. 1982. "Detecting multicollinearity." *American Statistician* 36 (3): 158–160.

Maskus, K. 1997. "Should core labor standards be imposed through international trade policy?" Policy research working paper 1817, World Bank Development Research Group, The World Bank, Washington DC.

Maxwell, S., and T. Frankenberger. 1992. "Household food security: Concepts, Indicators, Measurements." A technical review, UNICEF, New York, NY, USA.

Mazumdar, D. 1959. "The marginal productivity theory of wages and disguised unemployment." *Review of Economic Studies* 26:190–197.

Melchior, A. 1996. *Child Labour and Trade Policy*. Child Labour and International Trade Policy. Edited by B. Grimsrud and A. Melchior. OECD-DNMEs Workshop.

Mincer, J. 1958. "Investment in Human Capital and Personal Income Distribution." *The Journal of Political Economy*, pp. 281–302.

Moore, David S., and George P. McCabe. 1999. *Introduction to the Practice of Statistics*. Edited by 3rd. New York: W.H. Freeman and Company.

Morduch, J. 1999. "The Microfinance Promise." *Journal of Economic Literature* XXXVII:1569–1614.

Musgrove, P. 1993. World Development Report: Investing in Health.

Naiken, L. 2003, June. "FAO methodology for estimating the prevalence of undernourishment." Proceedings of international scientific symposium on measurement and assessment of food deprivation and undernutrition, Food and Agriculture Organization of the United Nations, Rome.

Nardinelli, C. 1980. "Child Labor and the Factory Acts." *Journal of Economic History* 40, no. 4.

Neumayer, Eric, and Indra de Soysa. 2005. "Trade Openness, Foreign Direct Investment and Child Labor." *World Development* 33 (1): 43–63 (January). available at http://ideas.repec.org/a/eee/wdevel/v33y2005i1p43-63.html.

Nielsen, H.S., and N. Westergard-Nielsen. 1998. "Returns to Schooling in LDCs: New Evidence from Zambia." Papers 98-10, Centre for Labour Market and Social Research, Danmark.

NPC. 1998. "The Ninth Plan 1997-2002." Technical Report, National Planning Commission (NPC), Kathmandu, Nepal.

———. 2001. "The Mid-Term Evaluation of the Ninth Plan (1997-2002)." Technical Report, National Planning Commission (NPC), Kathmandu, Nepal.

Parsons, D. O., and C. Goldin. 1989. "Parental Altruism and Self-Interest: Child Labor among Late Nineteenth-Century American Families." *Economic Inquiry* 27 (4): 637–59 (October).

Patrinos, H. A., and G. Psacharopoulos. 1995. "Educational Performance and Child Labor in Paraguay." *International Journal of Educational Development* 15, no. 1.

Portner, C. C. 2001. "Children as insurance." *Journal of Population Economics* 14 (1): 119–136.

Powell, R.A., and H.M. Single. 1996. "Focus groups." *International Journal of Quality in Health Care* 8 (5): 499–504.

Psacharopoulos, G., and H.A. Patrinos. 1997. "Family size, schooling and child labor in Peru - An empirical analysis." *Journal of Population Economics* 10 (4): 387–405.

Ranjan, P. 1999. "An Economic Analysis of Child Labor." *Economics Letters* 64 (1): 99–105.

Ravallion, M., and Q. Wodon. 2000. "Does Child Labour Displace Schooling? Evidence on Behavioural Responses to an Enrollment Subsidy." *Economic Journal* 110 (462): C158–75 (March).

Ray, R. 2000. "Analysis of child labour in Peru and Pakistan: A comparative study." *Journal of Population Economics* 13 (1): 3–19.

———. 2001a, September. "Child Labour and Child Schooling in South Asia: A Cross Country Study of their Determinants." Asarc working papers 2001-09, Australian National University, Australia South Asia Research Centre.

———. 2001b, October. "Simultaneous Analysis of Child Labour and Child Schooling: Comparative Evidence from Nepal and Pakistan." Asarc working papers 2001-10, Australian National University, Australia South Asia Research Centre.

Rosati, F. C., and Z. Tzannatos. 2000. "Child Labor in Viet Nam: An Economic Analysis." World Bank working paper, Washington DC.

Rosenzweig, M. R. 1982. "Educational Subsidy, Agricultural Development, and Fertility Change." *Quarterly Journal of Economics* 91 (1): 67–88.

Rosenzweig, M. R., and R. E. Evenson. 1977. "Fertility, Schooling, and the Economic Contribution of Children in Rural India: An Econometric Analysis." *Econometrica* 45 (5): 1065–79 (July).

Rosenzweig, M .R. 1981. "Household and Non-household Activities of Youths: Issues of Modelling, Data and Estimation Strategies." Child work, poverty and underdevelopment, ILO, Geneva, ILO.

RUGMARK. 2004. "RUGMARK Bulletin." Technical Report, RUGMARK Foundation, Kathmandu, RUGMARK Foundation, Kathmandu, Nepal.

Russell, S. 2004. "The Economic Burden Of Illness For Households In Developing Countries: A Review of Studies Focusing On Malaria, Tuberculosis, And Human Immunodeficiency Virus/Acquired immunodeficiency Syndrome." *The American Journal of Tropical Medicine and Hygiene* 71 (2 suppl): 147–155.

Schultz, P. T. 1997. *Demand for Children in Low Income Countries.* Volume 1A of *Handbook of Population and Family Economics.* Edited by R. Rosenzweig and Oded Stark. Amsterdam: Elsevier.

Schultz, T. W. 1961. "Investment in Human Capital." *American Economic Review* 51 (1): 1–17 (March).

Sharma, A. N. 2003. "Impact of Social Labelling on Child Labour in Carpet Industry." *Economic and Political Weekly* 37 (52): 5196–5204.

Sharma, A. N., R. Sharma, and N. Raj. 2004. *Child Labour in Carpet Industry.* Institute for Human Development.

Shrestha, B., and C. Edmonds. 2002. "Child Labour Situation in Nepal." Status paper, ILO.

Sinha, S., and B. Sharma. 2003, July. "International Labour Standards and Living Standards of Poor Households - How do They Relate?" Technical Report, Institute of Development Studies.

Srinivasan, T. N. 1996. *International Trade and Labor Standards from an Economic Perspective.* Challenges to the New World Trade Organization. Edited by P. D. Van and G. Faber. Amsterdam: Kluwer Publishers.

Stella, M. 2003. "A ban on child labour: the Basu and Vans model applied to the Indian carpet-belt industry." Technical Report, Universit degli Studi di Pavia.

Subedi, B. P. 2003. *Population and Environment : A Situation Analysis of Population, Cultivated Land and Basic Crop Production in Nepal in 2001.* Edited by First. Kathmandu: Central Bureau of Statistics.

Swamy, A. V. 1997. "A simple test of the nutrition-based efficiency wage model." *Journal of Development Economics* 53 (1): 85–98 (June).

Swinnerton, K. A., and C. A. Rogers. 1999a. "The Economics of Child Labor: Comment." *American Economic Review* 89 (5): 1382–1385 (December).

———. 1999b. "The Economics of Child Labour: Comment." *American Economic Review* 89 (5): 1392–85.

Underwood, A. J. 1998. *Experiments in ecology*. Cambridge: Cambridge University Press.

UNDP. 2002. "Nepal Human Development Report 2001." Technical Report, United Nations Development Programme (UNDP).

UNICEF. 2003. "Assessment of the Memorandum of Understanding (MOU) Regarding Placement of Child Workers in school Programmes and Elimination of Child Labour in the Bangladesh Garment Industry (1995 to 2001)." Technical Report, UNICEF.

US Department of Labour. 1997. *By The Sweat & Toil of Children Consumer Labels and Child*. Volume IV. Bureau of International Labour Affairs, Washington, DC.

Verner, D., and N-H Blunch. 2000, November. "Revisiting the link between poverty and child labor - the Ghanaian experience." Policy research working paper series 2488, The World Bank, Washington, DC.

Weiner, M. 1991. "The child and the state in India: Child labor and education policy comparative perspective." Technical Report, Princeton University Press, Princeton.

Wiig, A. 1997. *Trade sanctions and child labour in Bangladesh*. Edited by B. Grimsrud and A. Melchir. Institute for applied Social Science and Norweigian Institute of International Affairs.

World Bank. 1993. "World Development Report: Investing in Health." Technical Report, World Bank.

———. 1999. "Nepal: Poverty at the Turn of the Twenty-First Century, Main Report and the Background Studies." Technical Report, The World Bank.

———. 2001, January. "Addressing Child Labor in South Asia, Issue Brief." Technical Report, World Bank Group.

———. 2004. "World Development Report: Making Services Work For Poor People." World development report, World Bank.

WTNN. 1995. World Tibet Network News.

Wydick, B. 1999. "The effect of microenterprise lending on child schooling in Guatemala." *Economic Development and Cultural Change* 47, no. 4.

Xiao, Y., D. Mazumdar, and S. Canagarajah. 1998, October. "The structure and determinants of inequality and poverty reduction in Ghana, 1988-92." Policy research working paper series 1998, The World Bank.

Yunus, Muhammad. 1998. "Towards Creating a Poverty-Free World." *Adjustment and Beyond the Reform Experience in South Asia*.

Zadek, S., S. Lingayah, and M. Forstater. 1998. "Social Labels: Tools for Ethical Trade Final report." Technical Report, New Economics Foundation for the European Commission.

Appendix A

Box and Tables

Multicollinearity Detection

The whole econometric analysis was done by SAS 9.1. Multicollinearity (or collinearity) is the fact that an independent variable (IV) is a linear combination of other IVs. The stronger this dependency, the larger the standard errors for estimators of this variable (i.e. estimators become unstable, confidence intervals larger and test on parameters for this IV are more likely not significant).
A first indication for multicollinearity would be high first stage (bivariate) correlations between independent variables (IVs). But as it is known that this method is not sufficient (Allison, 2003) two approaches are commonly used.
The first approach measures directly the correlation between an IV and all other IVs. Let $RX, Other$be the correlation between X and all other IVs, then "Tolerance" (TOL) is defined as

$$TOL := 1 - R^2_{X,Other}$$

A small value of TOL indicates that X is highly correlated to the rest of IVs. TOL, therefore measures the percentage of variation of an IV that could not be "explained" by all the other IVs and as the standard error of the estimated parameter of X is depending on 1_TOL, a small TOL value causes a large standard error, large confidence interval and likely a not significant test result for the affected parameter. Mostly the "Variance inflation factor"

$$VIF = \frac{1}{TOL}$$

is used instead, as it could be interpreted more easily. It shows directly how much the standard error of the estimation is inflated by the multicollinearity. A VIF of 25 for a variable X, for example, means that the standard error for the parameter of X is 5 times higher (inflated) due to the correlation between X and all the other IVs (multicollinearity). There is no test available, neither for TOL nor for VIF. In practise $VIF > 10$ (equivalently $TOL < 0.1$) would indicate a multicollinearity problem.
The second approach uses the eigenvalues of the model matrix and leaves it to the user to decide whether eigenvalue are extreme, indicating that the dimension of the problem could be (or should be) reduced. There are three measures "eigenvalues" "condition index" and "condition number". In case of no collinearity all eigenvalues would be 1. Eigenvalues smaller or larger than 1 would indicate departures from the ideal situation. "Too" small or large eigenvalues would indicate multicollinearity problems. While the condition index is the ratio between a specific eigenvalue and the maximum of all eigenvalues, the condition number is the root of largest eigenvalue divided by the smallest. As an informal rule a condition index between 10 and 100 or condition numbers between 15 and 30 would indicate weak to serious problems. Unfortunately, as there are different methods how to scale the model matrix or using the correlation matrix instead, this second approach has some draw backs.

Table A.1: Index of child labor in the South Asian Countries (1970=100)

Country	1950	1960	1970	1980	1990	2000	2010
Bangladesh	67.74	76.26	100.00	114.98	124.50	142.36	101.06
India	86.75	87.49	100.00	104.75	92.63	80.23	49.55
Nepal	79.98	84.27	100.00	11.44	127.53	152.21	155.54
Pakistan	60.47	68.91	100.00	121.45	134.12	142.05	117.70
Sri Lanka	114.61	107.87	100.00	74.16	58.43	39.33	0.00

Sources: Castle et.al.2000 CUTS,2003

Table A.2: Implications from elimination of child workers (assuming 6% increase in weaving charges)

Recipients	Impact on gross revenues cost (%)	Remarks
Loom owner receive 10 % of export price	60	Has expenses of loom, building, supervising, ensuring quality control.
Exporter has a gross revenue of 20-28% of export price	25	Expenses include office, ware house, staff, travel, etc. An important expense is working capital required to make advance payments for wool, cotton, weaving charges, etc.
Importer (mark up about 65% of exporter price)	9	Has expenses at office, staff, travel, stocking, etc.
Foreign retailer (mark up of export price)	3	Expenses include shop, staff, about stocking, advertisement, etc.
Foreign consumer pays export price	2	Includes local and/or national sale taxes

Source: Anker *et al.*, 1998, (Cited in Stella, 2003)

Table A.3: **Production of major agriculture crops**

Agricultural Commodities	**Unit**	**1997/98**	**1998/99**	**1999/00**	**2000/01**	**2001/02**	**2002/03**	**2003/04**
Foodgrains		**6331050**	**6465318**	**6985277**	**7171782**	**7247289**	**7360403**	**7744539**
Paddy	MT	3640860	3709770	4030100	4216465	4164687	4132500	4455722
Maize	MT	1367340	1345910	1445450	1484112	1510770	1569140	1590097
Wheat	MT	1000770	1086470	1183530	1157865	1258045	1344192	1387191
Millet(Kodo)	MT	285130	291370	295380	282852	282570	282860	283378
Barley	MT	36950	31798	30817	30488	31217	31711	28151
Cash Crops		**2781600**	**3201701**	**3427661**	**3678194**	**3875462**	**4019795**	**4101748**
Sugarcane	MT	1717550	1971646	2103426	2211781	2247990	2343054	2305326
Oilseeds	MT	109260	119731	122751	132331	134950	124931	132865
Tobacco	MT	4560	3911	3809	3973	3763	3460	3310
Jute	MT	15350	15195	15175	16392	16000	17035	16890
Potato	MT	934880	1091218	1182500	1313717	1472759	1531315	1643357
Other Crops		**2053470**	**2027420**	**2174324**	**2383548**	**2462107**	**2575736**	**2663797**
Pulses	MT	215670	228840	237325	243243	250400	256900	262300
Fruits	MT	425600	456013	447334	487326	473621	518863	511397
Vegetables	MT	1412200	1342567	1489665	1652979	1738086	1799973	1890100

cont. next page

Agricultural Commodities	**Unit**	**1997/98**	**1998/99**	**1999/00**	**2000/01**	**2001/02**	**2002/03**	**2003/04**
Livestocks		**1669625**	**1718604**	**1766983**	**1825714**	**1895848**	**1957191**	**2015830**
Milk	MT	1048040	1072945	1097023	1124132	1158780	1195931	1231853
Buffalo meat	MT	117350	119562	121769	124848	127495	130791	133600
Motton	MT	38543	39108	39790	40625	41407	42456	43319
Pig meat	MT	13090	13924	14646	15239	15594	15626	15389
Poultry meat	MT	11692	12440	12955	13546	14148	15026	16104
Eggs	000 Nos.	440910	460625	480800	507324	538424	557361	575565
Fishery	**MT**	**24866**	**25750**	**31723**	**33270**	**35000**	**36530**	**39947**

CBS, 2004

Table A.4: External payments and foreign trade (in million rupees)

Description	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03
Total Exports	**17639.2**	**19881.1**	**22636.5**	**27513.5**	**35676.3**	**49822.7**	**55654**	**46944.8**	**49930.6**
(a) To India	3124.3	3682.6	5226.2	8794.4	12530.7	21220.7	26030	27956.2	26430
(b) To Other Countries	14514.9	16198.5	17410.3	18719.1	23145.6	28602	29624	18988.6	23500.6
Total Imports	**63679.5**	**74454.5**	**93535.4**	**89002**	**87525.3**	**108505**	**115687**	**107389**	**124352**
(a) From India	19615.9	24398.6	24853.3	27331	32119.7	39660.1	54701	56622.1	70924.2
(b) From Other Countries	44063.6	50055.9	68700.1	61671	55405.6	68844.8	60986	50766.9	53427.9
Trade Balance	**-46040**	**-54573**	**-70917**	**-61489**	**-51849**	**-58682**	**-60033**	**-60444**	**-74422**
(a) With India	16491.6	-20716	-19627	-18537	-19589	-18439	-28671	-28666	-44494.2
(b) With Other Countries	-29549	-33857	-51290	-42952	-32260	-40243	-31362	-31778	-29927

Table A.5: Total carpet exports from Nepal to World

Fiscal Year	Quantity in m^2	Value in NRs'000'
1972-1973	10,000	2,472
1982-1983	1,51,000	1,37,756
1992-1993	31,26,290	95,25,649
1993-1994	33,25,123	95,18,055
1994-1995	28,96,090	77,03,760
1995-1996	26,17,645	80,32,233
1996-1997	28,91,225	91,44,635
1997-1998	24,47,050	85,16,344
1998-1999	26,04,476	10,287,749
1999-2000	25,09,452	9,96,55,60
2000-2001	22,42,693	8,22,26,67
2001-2002	16,93,197	6,27,76,46

Sources: Carpet and Wool Development Board, Nepal.

Table A.6: Total carpet exports from Nepal to Germany

Fiscal Year	Quantity in m^2	Value in NRs'000'
1991-1992	19,00,612	57,34,890
1992-1993	26,15,343	79,97,699
1993-1994	27,04,007	77,45,408
1994-1995	22,99,825	62,46,162
1995-1996	21,11,886	64,47,309
1996-1997	23,21,656	72,54,904
1997-1998	18,98,104	64,47,482
1998-1999	19,76,422	77,42,949
1999-2000	17,82,243	70,77,287
2000-2001	15,52,698	64,55,286
2001-2002	10,88,136	40,73,981

Sources: Carpet and Wool Development Board, Nepal.

Table A.7: Total carpet exports from Nepal in US

Fiscal Year	Quantity in m^2	Value in NRs'000'
1991-1992	22,716	64,119
1992-1993	34,648	1,06,304
1993-1994	37,144	1,23,844
1994-1995	70,337	2,31,942
1995-1996	72,195	2,68,119
1996-1997	1,04,471	4,30,347
1997-1998	1,82,932	8,21,100
1998-1999	2,26,537	8,87,495
1999-2000	2,84,523	11,29,841
2000-2001	2,96,058	12,31,009
2001-2002	2,73,623	10,24,444

Sources: Carpet and Wool Development Board, Nepal.

Table A.8: Total carpet exports from Nepal in the top ten countries (2001/2002)

Country	Quantity in m^2	Share%
Total	16,93,196.75	100.00
Germany	10,88,136	64.26
USA	2,73,623	16.16
Belgium	71,554	4.22
Switzerland	52,470	3.09
UK	48,260	2.85
Netherlands	38,387	2.26
Austria	23,015	1.35
Canada	17,263	1.01
Turkey	12,556	0.74
France	11,366	0.67
Others	56566.75	3.39

Sources: Carpet and Wool Development Board, Nepal.

Table A.9: Internal and external income flows of Nepal Rugmark Foundation (in Nepali Rupees)

Comparative Overview of Inflow of Fund										
Year	Membership Fees	Label Fees Importer	Label Fees Exporter	UNICEF Support	GTZ Support	British Embassy	La Foundation	AAFLI Support	Bank Interest	Miscellenous
1995-1996	250000									
1996-1997	80250		249757	2830471	762887			899211		
1997-1998	58625	1026863	674796	6164458	390162			334200		50568
1998-1999	52875	1422969	1331001	7057267	793786				13114	4710
1999-2000	78750	8871443	1990874	7131215	900680				53660	72500
2000-2001	71500	4845357	1804488	3783612	168240	26806	862460		392646	676167
2001-2002	157250	3762618	1006585	2334169			415723		426686	343619
2002-2003	161100	2907613	893413	2914677						

Table A.10: Comparative overview of annual expenditure of Nepal Rugmark Foundation (NRF)

Comparative Overview of Annual Expenditure				
Year	**Program Cost**	**Admin and General & Service Cost**	**Promotion Cost**	**Equipment and Other Assets Cost**
1996-1997	1989471.04	1892652.10	11420.00	923344.00
1997-1998	5068780.33	2006577.73	219800.00	32253.00
1998-1999	5771473.68	3261632.66	829890.43	150355.00
1999-2000	7196617.67	3188968.85	454384.70	260443.00
2000-2001	8918214.86	1897620.89	471175.54	38372.00
2001-2002	8329608.21	1840509.22	1095830.88	40475.00
2002-2003	7506292.18	1914342.37	913024.30	54070.00

Table A.11: Variances, mean and total variance in stratification groups

Stratification group	Proportion	Variance
1	0.35	4.6
2	0.30	7.0
3	0.50	3.5
4	0.91	2.7
5	0.98	1.0
6	0.31	6.2
7	0.93	2.8
8	0.99	0.5
9	0.01	0.5
10	0.40	3.6
Average		3.2
Total	0.61	72.9

Sources: Own Study

Table A.12: **Multinomial logistic regression results (individual level, N = 525)**

Parameter		**School-Work History**	**Estimate**	Pr > **ChiSq**	**OddsRatioEstimates**		
					Estimate Point	**90% Confidence Limits**	
Intercept		Previously child labor and now schooling	-10.4411	0.9058			
Intercept		Previously idle and now child idle	-15.1101	0.8804			
Intercept		Previously idle and now working	-21.5699	0.9459			
Intercept		Previously schooling and now child labor	-15.1866	0.9386			
Intercept		Previously schooling and now schooling	1.9132	0.2120			
IsNGOAssist	Yes vs No	Previously child labor and now schooling	4.2638	<.0001	*	196.448	
IsNGOAssist	Yes vs No	Previously idle and now child idle	-5.7739	0.9187	<0.001	<0.001	>999.999
IsNGOAssist	Yes vs No	Previously idle and now working	-4.7824	0.983	<0.001	<0.001	>999.999

cont. next page

Parameter		School-Work History	Estimate	Pr > ChiSq	OddsRatioEstimates		
					Estimate Point	90% Confidence Limits	
IsNGOAssist	Yes vs No	Previously schooling and now child labor	-3.0979	0.9838	0.002	<0.001	>999.999
IsNGOAssist	Yes vs. No	Previously schooling and now schooling	2.0027	0.0203	54.892	3.211	938.503
HH_IsAbsDolPov	No	Previously child labor and now schooling	-2.9823	0.9257	0.003	<0.001	>999.999
HH_IsAbsDolPov	No	Previously idle and now child idle	-4.6394	0.9554	<0.001	<0.001	>999.999
HH_IsAbsDolPov	No	Previously idle and now working	-5.6496	0.9769	<0.001	<0.001	>999.999
HH_IsAbsDolPov	No	Previously schooling and now child labor	-3.7035	0.9721	<0.001	<0.001	>999.999
HH_IsAbsDolPov	No	Previously schooling and now schooling	-0.722	0.237	0.236	0.032	1.758
HH_HoH_Sex	Female	Previously child labor and now schooling	-5.536	0.9463	<0.001	<0.001	>999.999

cont. next page

Parameter		**School-Work History**	**Estimate**	Pr > **ChiSq**	**Odds Ratio Estimates**		
					Estimate Point	**90% Confidence Limits**	
HH_HoH_Sex	Female	Previously idle and now child idle	-0.1048	0.8588	0.811	0.117	5.631
HH_HoH_Sex	Female	Previously idle and now working	-4.7278	0.9666	<0.001	<0.001	>999.999
HH_HoH_Sex	Female	Previously schooling and now child labor	-4.8909	0.9406	<0.001	<0.001	>999.999
HH_HoH_Sex	Female	Previously schooling and now schooling	0.1413	0.5946	1.327	0.554	3.177
HH_HoH_Educ	At least primary education	Previously child labor and now schooling	-0.3499	0.5564	0.497	0.07	3.516
HH_HoH_Educ	At least primary education	Previously idle and now child idle	0.4541	0.0537	2.48	1.143	5.379
HH_HoH_Educ	At least primary education	Previously idle and now working	0.2942	0.6433	1.801	0.223	14.56

cont. next page

Parameter		School-Work History	Estimate	Pr > ChiSq	OddsRatioEstimates		
					Estimate Point	90% Confidence Limits	
HH_HoH_Educ	At least primary education	Previously schooling and now child labor	0.0621	0.8957	1.132	0.238	5.381
HH_HoH_Educ	At least primary education	Previously schooling and now schooling	0.1079	0.6036	1.241	0.626	2.458
HH_IncGT14_SC(**)		Previously child labor and now schooling	1.1622	0.3765	3.197	0.368	27.766
HH_IncGT14_SC(**)		Previously idle and now child idle	0.7316	0.2284	2.078	0.765	5.645
HH_IncGT14_SC(**)		Previously idle and now working	1.8814	0.2842	6.563	0.365	118.068
HH_IncGT14_SC(**)		Previously schooling and now child labor	-0.8545	0.3639	0.426	0.09	2.001
HH_IncGT14_SC(**)		Previously schooling and now schooling	1.5224	0.0006	4.583	2.211	9.501

cont. next page

Parameter	**School-Work History**	**Estimate**	Pr > **ChiSq**	**Odds Ratio Estimates**		
				Estimate Point	**90% Confidence Limits**	
HH_N_ChildLE14	Previously child labor and now schooling	-1.2353	0.0855	0.291	0.089	0.948
HH_N_ChildLE14	Previously idle and now child idle	0.8597	0.0119	2.362	1.347	4.145
HH_N_ChildLE14	Previously idle and now working	1.7155	0.1178	5.559	0.915	33.762
HH_N_ChildLE14	Previously schooling and now child labor	-1.2793	0.0293	0.278	0.106	0.731
HH_N_ChildLE14	Previously schooling and now schooling	-1.5845	<.0001	0.205	0.126	0.334
HH_Debts_SC(***)	Previously child labor and now schooling	-0.8678	0.4649	0.42	0.06	2.96
HH_Debts_SC(***)	Previously idle and now child idle	0.1218	0.4956	1.13	0.842	1.516
HH_Debts_SC(***)	Previously idle and now working	-1.1399	0.4656	0.32	0.024	4.179

cont. next page

Parameter	School-Work History	Estimate	Pr > ChiSq	OddsRatioEstimates Estimate Point	90% Confidence Limits	
HH_Debts_SC(***)	Previously schooling and now child labor	-1.8915	0.2116	0.151	0.012	1.821
HH_Debts_SC(***)	Previously schooling and now schooling	0.1447	0.251	1.156	0.939	1.422
HH_HoH_Age_SC(****)	Previously child labor and now schooling	-0.1218	0.7288	0.885	0.497	1.578
HH_HoH_Age_SC(****)	Previously idle and now child idle	-0.0484	0.7479	0.953	0.744	1.221
HH_HoH_Age_SC(****)	Previously idle and now working	0.3833	0.096	1.467	1.004	2.143
HH_HoH_Age_SC(****)	Previously schooling and now child labor	0.164	0.399	1.178	0.856	1.622
HH_HoH_Age_SC(****)	Previously schooling and now schooling	-0.2709	0.0168	0.763	0.633	0.919
HH_N_Child0514School (*****)	Previously child labor and now schooling	3.1271	<.0001	22.808	6.103	85.232

cont. next page

Parameter	**School-Work History**	**Estimate**	Pr > **ChiSq**	**Odds Ratio Estimates**		
				Estimate Point	**90% Confidence Limits**	
HH_N_Child0514School (*****)	Previously idle and now child idle	-1.2101	0.0009	0.298	0.164	0.543
HH_N_Child0514School (*****)	Previously idle and now working	-0.9008	0.2911	0.406	0.1	1.653
HH_N_Child0514School (*****)	Previously schooling and now child labor	2.3709	0.0008	10.707	3.365	34.071
HH_N_Child0514School (*****)	Previously schooling and now schooling	3.0717	<.0001	21.578	12.629	36.868
HH_Size	Previously child labor and now schooling	0.1609	0.6877	1.175	0.608	2.269
HH_Size	Previously idle and now child idle	0.248	0.3329	1.281	0.841	1.953
HH_Size	Previously idle and now working	-0.9748	0.2405	0.377	0.096	1.479

cont. next page

Parameter	School-Work History	Estimate	Pr > ChiSq	OddsRatioEstimates		
				Estimate Point	90% Confidence Limits	
HH_Size	Previously schooling and now child labor	0.1632	0.5535	1.177	0.748	1.852
HH_Size	Previously schooling and now schooling	0.0987	0.6011	1.104	0.809	1.506

Own result

(*) perfect discrimination, see Agresti, A. 1996, page.134 for further discussion

(**) HH_IncGt14_SC is the scaled adult income of the household (in 5,000 Rupies)

(***) HH_Debts_SC is the scaled household's debts (in 5,000 Rupies)

(****) HH_HoH_Age_SC is the scaled head of household's age (in 5 years)

(*****) There is only 1 child in 148 households, so in order to test the robustness of the variable 'HH_N_Child0514School' in the model we preclude the 148 households and run the regression in the same model, the variable 'HH_N_Child0514School' is significant and shows 'spill over effect' of schooling.