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A MICRO LEVEL ANALYSIS
OF VIOLENT CONFLICT

Household Decision-making under Threat of Violence: A Micro Level Study in the Chittagong Hill Tracts of Bangladesh

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Abstract: We analyze rural household livelihood and children's educational investment decisions in a post-conflict setting located in the Chittagong Hill Tracts region of Bangladesh. The study represents a contribution to the microeconomic analysis of conflict. Another innovation of the paper lies in the fact that we employ information about subjective perceptions of violent experiences, which is in turn used to explain household economic decision making. Heightened subjective perceptions of violence lower consumption expenditure, but it can raise land use intensity, and more risky mixed crop cultivation. In some case experiences of displacement and other violence raises the likelihood of households sending children to school. This indicates that a specific post-conflict 'phoenix' factor may be in operation, even without substantial infrastructure reconstruction. Also, the trauma emanating from actual past experiences combined with current high perceptions of risk of violence after an imperfect accord ending a low-intensity conflict may make people bolder and more risk taking in order to enhance their long-term future. We, therefore, also make a contribution to the literature on a non-linear relationship between violence and the temporal patterning of livelihood decision-making.

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1   Introduction

The object of this paper is to analyze rural household livelihood and educational investment decisions for future generations in a post-conflict setting located in the Chittagong Hill Tracts (CHT) region of Bangladesh (see annex 4 for a map). This is a region in the South-Eastern part of the country where a low level insurgency took place between 1976 and 1997, which officially terminated after a peace accord in December, 1997. The armed struggle was between the state's security forces, mainly the Bangladesh army, and the ethnically distinct local population, in an otherwise fairly homogenous nation in terms of language and religion. The insurgency aimed at regional autonomy rather than independence, but the principal local grievance was against officially sponsored land encroachment by outsiders (mainstream Bangladeshis or Bengalis), who posed a threat not only to local livelihoods, but potentially also to a distinct local way of life; see Chakma (2006) and Roy (2000), for example. All of this took place in the land-hungry context of the most densely populated larger country in the world, which is also a low-income developing nation where agriculture continues to be the main source of the population's livelihood. Thus, neo-Malthusian factors may be at work in Bangladesh. Population growth adds to land scarcity, which can be further exacerbated by environmental degradation, and can fuel conflict over greed for ever scarcer land and environmental resources (Homer-Dixon, 1999).

There is now a substantial literature on the causes of large scale internal conflict in the rational choice tradition. These explanations have tended to centre on either the grievance hypothesis (mainly linked to inequalities between distinct groups delineated by ethnicity, religion or some other marker), or the greed motivation (reflecting the desire to control capturable rents); see Murshed (2010, chapter 3) for a review. In reality these competing explanations may be actually complementary, as greed and grievance motivations often follow one another and can be simultaneously present as an armed dispute develops (Murshed, 2010). A great deal of empirical work has also been conducted to test the empirical validity of these allegedly competing theories. The results are inconclusive, mainly due to data paucity on group based inequality (also known as horizontal inequality). But the important point is that many of the quantitative studies on civil war

are cross-country in nature, where the experiences of civil war in different and far-flung countries are lumped together in one single statistical (econometric) exercise. One can, therefore, be sceptical about the results of such regression analyses, as the various populations under scrutiny are not necessarily drawn from a homogenous population. Quite apart from this conceptual objection to cross-country quantitative analyses, there is also a need to conduct more systematic quantitative studies of the drivers and consequences of conflict at a more local (micro) level within nation states, a research area that is still relatively neglected; see Verwimp, Justino and Brück (2009) for a plea for more such studies. Armed conflict may have far reaching consequences for rural livelihood strategies, including investment decisions and cropping patterns. This may contribute to analysis of poverty, as well as development in general, particularly rural development. Lacunae associated with localised conflict become even more acute when it comes to the economic analyses of the short and long term impacts of conflict on households' decision-making. The first innovation of the paper is that it is able to make a contribution in this connection, based on an unique data-set compiled during a socio-economic survey of households resident in this area in 2007 (Barkat et. al, 2009).

The rural farming household is no stranger to risky outlays, as returns to cropping or animal husbandry are subject to a number of risks and uncertainties. The nature of these risks and uncertainties can be altered by armed conflict of a sufficiently long duration, and also depend on the intensity of the conflict. This affects the livelihood and investment decisions of households. Prolonged war can also change patterns of property rights, usufructuary rights under common ownership, as well as social capital governing inter-household interaction. The livelihood framework acknowledges an inherent inseparability between production and consumption decisions for rural households (Bardhan and Udry, 1999, chapter 2) which effects labour allocation between farm and off-farm (including education) activities, as well as cropping (and animal husbandry activities) for own consumption and the market.

Our analysis is conducted in the post-accord era, a decade after a peace treaty which allegedly ended the war. As is well known, treaties and accords across the developing

world rarely coincide with the total cessation of violence, and the fear that conflict will reignite pervades many post-conflict societies. Collier, Hoeffler and Söderbom (2008), in their cross-country study, point out that civil war is likely to resume within a decade in a typical low-income nation. Another important policy issue in post-conflict environments is the resumption of economic activity and growth. As far as economic recovery after the formal cessation of hostilities is concerned, post-conflict growth can be lopsided, favouring infrastructure reconstruction over agriculture or manufacturing due to war time collateral damage to public assets as well as the perceived riskiness of investment in these sectors which take a long time to yield dividends (Addison and Murshed, 2005). On the other hand, other authors emphasize a more general 'Phoenix' factor (Organski and Kugler, 1977; Koubi, 2005). In other words, rapid economic growth (in the aggregate macroeconomic sense) follows intense and prolonged hostilities. There can, however, be differences across various economic sectors. Crucially, perceptions about the security environment may affect investment and livelihood choices. The second innovation of the paper lies in the fact that the survey employed in the paper contains information about perceptions of violent experiences, which in turn impact on household economic decision making. The use of this data, which has subjective (psychological) and objective elements, is in line with contemporary behavioural economics. As will be seen below our results suggest that contrary to conventional wisdom, which points to increased subsistence cultivation following war, heightened perceptions of violence can encourage risk taking, greater crop diversification into cash crops and greater investment in the education of future generations. This has similarities to the findings of Nillesen and Verwimp (2010) in the context of rural Burundi, where conflict can result in the increased production of cash and export crops for the market rather than mere subsistence cultivation.

The research question, at least as far as developing countries are concerned, is whether there is a strong negative association between conflict risk and economic prosperity. Bates (2001) has indicated that this relationship can, however, be non-linear over time. Increased prosperity at first can induce greater violence, especially because of the dislocating effects of rapid growth (Olson, 1963), and because peace accords may

atrophy and decay.[3] But, prolonged growth can only be maintained if conflict declines. Our results make a contribution to this literature on the non-linear relationship between violence and prosperity, because it seems that higher perceptions of violence may encourage more market based activity plus longer term investment in human capital.

The rest of the paper is organised as follows. Section 2 contains a brief sketch of the context of the conflict in Bangladesh and its Chittagong Hill Tracts region, section 3 contains a description of the data and methodology, section 4 presents our statistical (econometric) results, and section 5 is by way of conclusion.

2   The Chittagong Hill Tracts Region of Bangladesh

Bangladesh is in the Ganges delta formed by the confluence of three rivers; Ganges, the Brahmaputra and the Meghna which creates one of the most fertile plains in the world. It is one of the highest densely (1,229/sq.km) populated countries of the world where the amount of per capita arable land is only 0.1 hectare in 2007. It is a low income developing country with about 50% of the population (using the international poverty line of below $1.25 per day) living in poverty (World Bank; 2010). Over last two decades, Bangladesh's economy experienced growth rates of around 5.5% per annum, but still a large part of GDP emanatse from traditional agriculture (World Development Indicators). This makes land the scarcest and competed over resource in Bangladesh. Land grabbing is a common phenomenon in Bangladesh, and various types of economic and political exploitation, as well as outright crime, are associated with land holding (Barkat and Roy, 2008).

Bangladesh is mostly ethnically homogenous, with the vast majority of the population being Bengali speaking and Muslim. There are a few distinct ethnicities who differ in both language and religion. These groups are mainly concentrated in the CHT region. The CHT region occupies about one-tenth (13,189 sq.km) of the total territory of Bangladesh.

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[3] Tadjoeddin and Murshed (2007) find that routine violence in Java first rises with per-capita income and educational achievement, but declines after a certain threshold of education and income is reached.

This region is situated in the southeastern part of the country, and is covered with lush green hills, with a relatively larger proportion of afforested areas. The area is divided into three administrative districts; Bandarban, Khagrachari and Rangamati. From an economic and strategic point of view CHT is important for national policy makers. It is adjacent to the two Indian states Tripura on the north and Mizoram on the east and by Myanmar on the south and east. Insurgency in the Indian north-eastern states and Myanmar raises the military importance of this region (Roy, 2000, Barkat et al. 2009 and Mohsin, 2003).

According to the population census of Bangladesh there are 11 ethnic groups namely Bawm, Chak, Chakma, Khumi, Khyang, Lushai, Marma, Mro, Pangkhua, Tanchangya, and Tripura living in the CHT. Their appearance, languages, and cultural traditions are significantly distinct from the Bengali speaking majority population of Bangladesh. They are mostly of Mongolian Stock and closer to in appearance and culture to their neighbours in north-eastern India, Myanmar and Thailand. Buddhism, Hinduism, and Christianity, but not Islam, are prevalent among these ethnicities. They have their own language in both oral and written form, although many of the scripts are under threat. The indigenous peoples of CHT are often identified as *Jumma* people, derived from the word *jum* (swidden or slash and burn, or shifting cultivation), which served as the cornerstone of their livelihoods. They are officially recognized as 'Hillmen', 'Tribal', or '*Jumiya*' (Swidden cultivator)[4]. The proportion of non-indigenous (Bengali speaking) population in CHT has been increasing over time. According to the 1991 census, indigenous groups constitute 51.4% of the CHT total population of about one million (Adnan 2004, Mohsin 2003 and Roy 2000).

Land is the key factor of production in the CHT economy, to which the indigenous people are deeply rooted. Traditionally, almost all the communities were engaged in subsistence *jum* or swidden cultivation. Besides *jum* cultivation, there exists small scale plough cultivation as well. The indigenous peoples were self-sufficient in terms of food in earlier times. Despite its apparent relative land abundance in the context of

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[4] In this paper the term 'indigenous' is used to indicate the tribal and/or ethnic population of CHT ignoring the debate on the indigenous status in the official documents of Bangladesh. For details, see Ahmed (2010).

Bangladesh, the CHT region is actually land-scarce in terms of availability of land for cultivation (only 23% of the land is arable). There is a sharp decline in per capita arable land during last few decades. On the basis of available data on land and population it is estimated that in 1974 the amount of per capita arable land was about 0.45 hectare which declined to about 0.24 hectare in 1991. Most of the land is either non-inhabitable due to its topography, or is restricted by law (reserve or protected forest areas). The land ownership patterns as well as types of land in CHT also differ from that of plain regions. Customary (common) ownership of land exists here, and at the same time private property rights are also recognised by the State which makes the ownership issue more complex (Roy 2000, Adnan 2004 and Barkat et.al. 2009).

About one-fourth of the total CHT land is occupied by reserve forests, which restricts cultivation and extraction by indigenous people. Indigenous people are permitted to use the rest of the land recognized as Unclassified State Forest (USF) in addition to the 'District Forest' under the discretion of the administration. The CHT region enjoyed an autonomous status until 1860 when the British took it over under their direct administration. The 'Chittagong Hill Tracts Regulation of 1900' declared it to be an 'Exclusive Area'; putting an embargo on 'outsiders' settling or purchasing land in the territory. This 'excluded area' status of CHT was replaced by 'tribal area' in the second constitution of Pakistan in 1962. This amendment in the constitution was aimed at paving the way for an influx of non-indigenous people into the region in large numbers. Consequently the indigenous leadership (*Raja,* Headman, *Karbari*) lost control over the land (Roy, 2000 and Mohsin, 2003).

Due to the construction of an artificial reservoir by damming the river Karnafuli at Kaptai in the 1960s for the purposes of power generation, approximately 1,036 square kilometres was submerged, including the main urban centre of CHT, and 54,000 acres of highly prized cultivable land was lost in the river valleys. The loss of productive land, along with displacement and uprooting of people, increased demographic and economic pressures leading to impoverishment and insecurity, which gave rise to resentment among the indigenous people. Finally, a state sponsored migration programme settled about

400,000 landless Bengali speaking people in the CHT during 1979-1986 manifesting need/greed for the implicit rents from change in land use. It led to dispossession of thousands of acres of lands claimed by indigenous people (Adnan 2004, Barkat et.al. 2009 and Roy 2000).

During the civil war leading to the separation of Bangladesh from Pakistan in 1971, some indigenous leaders were ambivalent towards a separate Bangladeshi state; this sowed the seeds for long lasting mistrust deepening and grievances between the then nationalist politicians and the indigenous peoples. Soon after independence of Bangladesh, a delegation of the CHT people led by M N Larma, member of the Constituent Assembly and a veteran fighter in the Liberation War, submitted a memorandum to the government of Bangladesh demanding constitutional recognition of the indigenous communities living in the CHT and regional autonomy for protection of their distinct ethnic and cultural identity. However, neither the recognition of the communities nor regional autonomy has received constitutional recognition in Bangladesh (Adnan 2004 and Barkat et.al. 2009).

Successive Bangladeshi governments of both a military and democratic complexion adopted mixed strategies of using military force to quell rebellion and protest, while at the same time encouraging, or colluding with, a population transfer programme. In 1976 armed forces were also deployed in CHT in a classic 'Aid to Civil Power' operation, which triggered tensions in the region. A few indigenous political groups (*Parbatya Chattagram Jana Samhiti Samiti* or PCJSS) adopted the policy of armed struggle against the intrusion by the authorities[5]. Under the counter-insurgency strategy, demographic engineering interventions aimed at settling a large number (400,000) of Bengali speaking households in CHT was seen as enhancing the size of population loyal to the state, and these fresh settlements could act as a counterweight to indigenous peoples' demands for rights and regional autonomy. Due to the state sponsored settlement programme, a considerable number of the indigenous population were uprooted from their homesteads, something which intensified the armed struggle. About 54,000 indigenous people crossed

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[5] The conflict in the CHT of Bangladesh is coded as a minor armed conflict, according to PRIO-Uppsala methodology; see http://www.prio.no/CSCW/Datasets/Armed-Conflict/UCDP-PRIO/Armed-Conflicts-Version-X-2009/ (accessed on November 05, 2010)

the border and took refuge in neighbouring Tripura state of India and 50,000 indigenous people became IDPs (internally displaced persons). During the counter insurgency, some 11 massacres are alleged, when a good number of indigenous people were killed. Women were raped to demoralize the indigenous people. According to government statistics about 1,200 people were killed, about 600 people were kidnapped and about 4,000 people were injured by the armed force of the indigenous rebellion (locally known as *Shanti Bahini*; SB) between 1980 and 1991. The indigenous people were under continuous surveillance of security forces (Mohsin, 2003).[6]

In the post-cold war era, and after the restoration of democracy in Bangladesh, pressure for a political solution mounted. This led to an accord between the PCJSS and the Government of Bangladesh on December 02, 1997, which has come to be known as "The Chittagong Hill Tracts Accord 1997". The Accord was incomplete; the 'United Peoples Democratic Front (UPDF)' continues the struggle for full autonomy (Mohsin 2003). Continuing land disputes, the non-restitution of land to indigenous peoples, the non-withdrawal of the Bangladesh army, the poor rehabilitation of refugees and internally displaced persons (IDP) along with opposition to the Peace Accord make the post-conflict situation of CHT fragile. Indigenous people living in this area continue experiencing various types of violence, mistreatment and mistrust from settlers who have not been re-settled in other parts of Bangladesh. These are manifested through various types of low intensity violence like arson, abduction, extortion, harassment of women and children and restricted mobility (Barkat et al. 2009). This research captures the effects of such violence through factoring in the subjective perceptions of potential violence as a factor in livelihood decision-making.

3   Data and Methodology

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[6]Details from 'The Report of Chittagong Hill Tracts Commission', http://www.iwgia.org/graphics/Synkron-Library/Documents/publications/Downloadpublications/Books/Life%20is%20not%20ours%201-108.pdf (accessed on January 11, 2011)

Our information encompasses both quantitative and qualitative data, where the latter complements and substantiates, the results derived from the former type of data.[7]

Data

The "Socio-economic Baseline Survey of Chittagong Hill Tracts" is the source of our quantitative data; see Barkat et. al (2009). This survey was commissioned in 2007 and the survey report was published by CHTDF-UNDP[8] in 2009. The data was collected for the year 2007 from a cross section of households (both transmigrated Bengalis and indigenous) living in CHT. This survey is recognized as the first socio-economic baseline survey of that region with a dominance of quantitative data. The study aimed at generating benchmark information to be subsequently used to track periodic progress attained through interventions by the CHTDF-UNDP. In line with our objectives in this paper, we have used a part of the dataset considering only indigenous households.

The sample design of the survey captured the whole region of CHT and the diversity of indigenous population. The sample comprised 3,238 households, where the number of indigenous households was 1,786. The sampling procedure carefully considered the geographical and ethnic diversity of CHT and its population. Although the main focus of the survey was collecting data on the socio-economic status of CHT population it also collected data on peace-confidence building. The measurable broader categories of variables are demographic, economic, social and cultural, infrastructure facilities, and peace-confidence building.

Salience of perceptions of violence and construction of composite violence index

Data on different types of violence in the form of either household's experience or perceptions under the heading of 'constraints of peace' and 'element of confidence-

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[7] Space constraints preclude a discussion of the qualitative data, but more details can be obtained from the authors.
[8] Chittagong Hill Tracts Development Facility of the United Nations Development Programme.

building' were collected. Data on real life experience of violence were collected for a ten year period (1998-2007) after the Peace Accord; whereas perceptual data on threat of violence was for the year 2007 only. This paper uses the variables which are based on household perception on different types of violence for the year 2007. The reason for choosing the perceptual data on violence is that the survey collected data on violence perceptions and socio-economic or livelihood status for the year 2007, which makes the data set chronologically compatible for regression analysis. This research is aimed at understanding household decision-making as active agents not as victims of actual violence. Therefore it is appropriate to use perception of risk of violence as the variable which households actually take into account in decision-making (Rizal and Yokota, 2006).

A composite index variable of threat perceptions for violence was constructed for this research. The original survey used 31 indicators to capture the present status of threat of violence in CHT perceived by households. The Likert scale method was used in the questionnaire to collect data on the threat of violence. Under the broad heading of 'Obstacles to Peace' data was collected by using a 3 point qualitative value scale, while under broad heading of 'Elements of Confidence-building' a 5 point qualitative value scale was used. Each scale was devised according to the specificity and nature of each variable. The scale contained qualitative value labels (Likert scale) and quantitative (numeric) interpretations for each of the levels. On the scale, the minimum value level (1 or 0) represents lowest/worst status while the maximum value level (3 or 4) indicates highest/best situation on 'Obstacles to Peace' and 'Elements of Confidence-building' respectively. In the present study 13 indicators were selected from 31 indicators used in original survey to construct a composite violence index[9]. To ensure consistency in the value level of the Likert scale used for all the indicators under 'constraints of peace' and 'element of confidence-building', an adjustment has been made by recoding the qualitative value level with new numeric interpretation. The new Likert scale contains

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[9] Indicators considered in preparing the composite violence index are; abduction, extortion, armed conflict, communal threat, restricted movement, insecurity of women and children, trust in other communities, eviction from land, repression of security forces, safety and security feelings, cultural freedom, and customary right.

three point values scale where low=1, Medium=2 and High=3. The new value scale with numeric interpretation was done by re-coding of original value level used in the survey. The methodology of re-coding was devised through rigorous discussion with the team leader involved in the original survey for accuracy and validation (see Annex table 1). The value of composite index for perceived threat of violence is the summation of the numeric values achieved by each household against each indicator. All the indicators are assigned equal weight for simplicity of construction. The formula of this construction of threat of violence index is as follows:

Composite violence index, $X = \sum_{i=1}^{13} x_i$

Where, x_i denotes the value of indicators of violence (i=1,2,3,………….,13)

From the estimation it is found that the lowest value for the composite violence index is 13 while the highest value is 32. Households were grouped into three distinct categories, equally spaced by ranking scores according to the level of value of violence index. The categorization is as follows:

Category 1: Households perceiving low violence, scores 13 to 19 in composite violence index

Category2: Households perceiving medium violence, scores 20 to 26 in composite violence index

Category 3: Households perceiving high violence, scores 27 to 32 in composite violence index

Finally, three dummy variables were created for the three levels of perceived threat of violence in the data set, with the low violence perception dummy serving as the reference point. This categorization of households shows that 55% of indigenous households perceived low levels of violence, 36% households perceived medium level of violence, and 9% households perceived high violence (see annex table 2).

Livelihood Decision-making Variables

Three household decisions: consumption expenditure, investment decisions with regard to children's schooling and production (cropping) decisions are analyzed. The descriptive statistics pertaining to these variables are given annex table 2.

Data on **Consumption Expenditure** were analysed using a separate format for food and non-food expenditure from households. The calculation procedure for both food and non-food consumption expenditure used the imputation methodology to monetize the expenditure where the consumption item was not bought or domestically produced. The average per capita annual cash-equivalent consumption expenditure was Tk. 11,847.

We consider the decision to **Enrol children in school** as an investment (human capital accumulating) decision. Data on total number of children enrolled in both primary and secondary school were analysed at the household level, within the age brackets 6-18.

We take **Type of Crop Produced** as the proxy for production-investment decisions. Data on types of crop produced show that a total number of 35 different types of crops are produced by indigenous households in CHT. At the first stage crops are grouped into food and cash crops. Households are then categorised into one or other or 'mixed'.

Empirical Model

Our quantitative analysis primarily focuses on the relation or association between the perceived threat of violence and livelihood decision-making by indigenous ethnic minority households. Thus our sample from the survey data set is confined to indigenous households in CHT. At the first stage, statistical tools such as bivariate analysis and non-parametric tests were used. Annex table 3 shows the summary of specifications for household livelihood decision-making represented by consumption, investment and production decision. For consumption decisions an OLS model was used. But for investment in children's education and production (cropping) decisions a Logit or Probit models were specified. The latter two cases measure the probability or chance of an event occurring. The standard regression equation is as follows:

$$Y_i = \alpha + \beta_1 \, HSE_{ij} + \beta_2 H_{ij} + \beta_3 \, C_{ij} + \beta_4 S_{ij} + \beta_5 \, V_{ij} + \beta_6 PV_{ij} + \varepsilon_i$$

Where the dependent variable, Yi refers to various livelihood decision-making variables, consisting of consumption expenditure (continuous variable), child enrolment in either primary and secondary school (dummy variable) and type of crop produced (dummy variable) for household i measured at the survey. The explanatory variables are as follows: HSE_{ij} are household-level socio-economic variables, C_{ij} is a set of child characteristics (age and sex), H_{ij} is the household heads' characteristics, S_{ij} denotes school level variable, V_{ij} means variables for perceived threat of violence, PV_{ij} indicates pre-peace accord experience of violence and ε_i is a random error term. One of our dependent variables, child enrolment, was related to some lagged explanatory variables used in interaction terms.

4   Results

This section analyses the determinants of household consumption decisions, followed by two other important livelihood decisions, investment in children's education and cropping (production) decisions, in relation to varying degrees of subjective perceptions of the threat of violence. We believe this to be a major innovation of our study, because we

attempt to gauge the impact of subjective perceptions upon economic decision making with regard to consumption, output (cropping) and investment decisions after an uneasy peace accord that only imperfectly ended the conflict. Within the context we are studying, land dispossession is a key factor, and the continuing fear of intimidation with a view to further land alienation is likely to impact on indigenous households' decision making under uncertainty. To this end, and to sharpen our focus and analysis, we classify individual indigenous household's fears (of violence) into different intensities: high, medium and low.

The conventional wisdom is that subsistence consumption recovers rapidly following the cessation of hostilities, as suggested by Organski and Kugler (1977) and Koubi (2005) who point to a 'Phoenix' factor in terms of rapid growth recovery following conflict. This is, however, a strictly macroeconomic phenomenon. Moving on to output, production in some sectors may, however, be adversely affected, due to damage to infrastructure (Murshed, 2010, chapter 6). Agricultural production is said to be particularly susceptible to these effects, compared to activities in the service sector and construction. This is unlikely to apply to our case, as the conflict in CHT was a low-intensity insurgency, and did not do much damage to the already low amount of infrastructure in this highly afforested region.

With regard to household consumption decisions, we examine the influence of violence on consumption expenditure as a whole and for food and non-food consumption expenditure separately. Our results (OLS estimation) suggest that there is significant negative relationship between perceived violence and consumption expenditure decisions (Table 1).[10] We found that the households perceiving medium level of violence spend 4% less (per capita consumption) expenditure as compared to the households who perceive a low level of violence. Households perceiving high violence spend 10% less on consumption expenditure as compared to those households perceiving low violence.

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[10] Variables other than violence perceptions mainly act as control variables in the case of analyzing consumption expenditure. Endogeneity and/or multicollinearity problems are avoided by excluding income from the explanatory variables, as it is likely to be related to perceptions of violence.

Table 1: Determinants of consumption expenditure: OLS estimation

Explanatory Variables	Dependent Variables		
	Log of Per capita annual consumption expenditure	Log of Per capita annual food consumption expenditure	Log of Per capita annual non-food consumption expenditure
HH size	-0.0562***	-0.0523***	-0.103***
	(0.00442)	(0.00464)	(0.00534)
Age of HH head	-0.00103	-0.00127*	0.00129
	(0.000628)	(0.000654)	(0.000794)
Sex of HH head	0.0279	0.0294	0.0371*
	(0.0170)	(0.0180)	(0.0217)
Primary education of HHH	0.0189	0.0189	0.0150
	(0.0203)	(0.0212)	(0.0259)
Secondary education of HHH	0.0326	0.0343	0.00311
	(0.0208)	(0.0216)	(0.0287)
Above secondary education of HHH	-0.0357	-0.0487	0.120
	(0.136)	(0.143)	(0.130)
Perceived medium violence	**-0.0414****	**-0.0351****	**-0.115****
	(0.0170)	(0.0178)	(0.0218)
Perceived high violence	**-0.103****	**-0.0977****	**-0.156****
	(0.0232)	(0.0243)	(0.0346)
Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.			
* In the regression results here and in other tables 'perceived low violence' is not reported as it is used as the reference point for the dummy variable capturing perceptions of violence.			

This adverse influence is found to be more in terms of both magnitude and statistical significance when only non-food expenditure is considered. Households perceiving medium and high violence spend 11.5% and 15.6% less on non-food consumption compared to those households perceiving low violence. The influence of perceived violence is found significantly higher for non-food consumption expenditure compared to food consumption for the households perceiving medium and high violence. As expected, household size also influences the amount of per capita consumption expenditure

negatively. We interpret the relation between different levels of perceived violence and amount of consumption expenditure considering the household as an active decision maker rather than as passive victims of violence.

From the investment and production points of view the picture is somewhat different. Households perceiving higher levels of violence seem more interested in saving and investing in the production of cash crops, and in developing human capital compared to households who perceive less violence. This may also inhibit their consumption expenditures. This tendency may be even more applicable to relatively affluent households. The higher influence of perceived violence on non-food consumption expenditure decision can be explained by the fact that when households face any type of increasing risk they will first reduce their non-food expenditure to provide savings for future security, followed by food expenditure as food is a basic necessity.

Investment in human capital in CHT is especially important as this may enable people to increase their productivity in agriculture and trading, and to participate in the process of income generation and remunerative employment in new occupations, as well as potentially migrate (UNDP, 1995). In terms of time horizons investment can be shorter term or longer term, with education being one of the longer term investments. Decisions to enrol children in school can be a proxy of investment decisions for the future, and because children are potentially suppliers of household labour it is not free of opportunity cost. Households also need to pay some or all of the educational expenses incurred (Bedi and Marshall, 2002).

Our Probit regression results in table 2 indicate that variation in the likelihood of children's enrolment is not significantly explained by differences in perceived violence as the coefficient is statistically insignificant. The variables on pre-peace accord experience of violence (displacement, land dispossession and experience; participation in or victim of armed conflict) are also found to be insignificant. But introducing interaction terms for variables on pre-peace accord experience of violence and post-conflict perceived violence engenders statistical significance. The statistical significance of the interaction term points to the existence of a more complex mechanism effecting fears of violence on

local child enrolment. In other words, current perceptions of violence do impact on whether households choose to school their children locally, but it is related to other factors such as earlier experiences of violence, emigration and land dispossession.

The interaction between displacement (which means the household left during the conflict and subsequently returned) and current perceived high violence is positive and statistically significant. This suggests that the households who were displaced before the peace accord, and currently perceive high violence, are more likely to send children to school (32.5%) compared to households who also migrated but perceive low violence levels. Similarly, households that experienced armed conflict before the peace accord, and currently perceive high violence are more likely to school children (26%) compared to households who experienced armed conflict and currently perceive low violence.

Table 2: Determinants of child enrolment in school: Regression result

Explanatory Variable	Dependent Variable; Child Enrolment	
	Logit, mfx	**Probit, mfx**
Age of child	0.147***	0.139***
	(0.0140)	(0.0129)
Age square of child	-0.00571***	-0.00535***
	(0.000747)	(0.000705)
Sex of child	0.0167	0.0263
	(0.0358)	(0.0332)
Age of HH head	0.000459	0.000447
	(0.00124)	(0.00119)
Sex of HH head	0.0241	0.0250
	(0.0344)	(0.0331)
Primary education of HHH	0.0475	0.0438
	(0.0403)	(0.0383)
Secondary education of HHH	0.0420	0.0421
	(0.0445)	(0.0425)
Above secondary education of HHH	-0.345***	-0.364***
	(0.0585)	(0.0587)
Government school	0.0769**	0.0746**
	(0.0362)	(0.0347)
NGO school	0.154***	0.146***
	(0.0575)	(0.0547)
Private school	-0.0132	-0.0198

	(0.0926)	(0.0916)
Language of book	0.437*	0.427*
	(0.261)	(0.244)
Medium of instruction	-0.367*	-0.373**
	(0.190)	(0.185)
HH size	0.00582	0.00620
	(0.00886)	(0.00858)
HH asset	2.61e-07	2.49e-07
	(2.75e-07)	(2.57e-07)
Perceived medium violence	-0.0121	-0.0117
	(0.0416)	(0.0400)
Perceived high violence	-0.184**	-0.189**
	(0.0752)	(0.0771)
Migration	-0.0710	-0.0718
	(0.0717)	(0.0705)
Land dispossession	0.148**	0.140**
	(0.0624)	(0.0586)
Past armed conflict	-0.0101	-0.00360
	(0.0677)	(0.0658)
Migration and perceived medium violence	0.0280	0.0385
	(0.119)	(0.112)
Migration and perceived high violence	**0.326****	**0.325****
	(0.140)	(0.139)
Land dispossession and perceived medium violence	0.00373	0.00480
	(0.0916)	(0.0860)
Land dispossession and perceived high violence	**-0.285*****	**-0.293*****
	(0.0681)	(0.0746)
Past armed conflict and perceived medium violence	0.0358	0.0271
	(0.0911)	(0.0872)
Past armed conflict and perceived high violence	**0.267****	**0.258****
	(0.124)	(0.119)
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1		

This mutual reinforcing element in the combined violence variable is not applicable to households who experienced land dispossession before the peace accord. Our estimates suggest that households who experienced land dispossession before the peace accord, along with a high violence perception are less likely to school their children (29%), compared to those who also experienced land dispossession before the peace accord, but perceive low violence. The experience of land dispossession is traumatic, and creates huge economic vulnerabilities, as land is the most productive asset. This may lower the

likelihood of their sending their children to school, possibly due to rejection of Bengali culture.

One anomalous finding relates to the fact that households with more educated heads (above secondary education) are less likely to school their children locally (by 36%). Discussions revealed that more educated households have a tendency to send their children to better quality schools further away (including as boarders), and even in the national capital. There are few educational institutions with free food and residential facilities established with the support of government and donors in CHT to enhance human capital development (Shelley 1992). The primary 'investment' motivation for schooling children is to allow future generations to acquire credentials so that they can escape the conflict and are less dependent on agriculture. This includes increased prospects of gaining formal and public sector jobs for their children.

We classify production decisions, which involve entrepreneurial risk taking, into the amount of land to be cultivated, and types of crops to be produced. Due to lack of data on relevant variables we apply non-parametric (chi-square) tests instead of regression analysis to gauge the impact of perceived violence on involvement in cultivation and type of cultivation across households (Table 3). The majority of indigenous households (61%) engage in cropping own land, while the remainder derive their livelihoods from various occupations other than cropping own land. Estimates show that households perceiving medium and high violence accept more livelihood opportunities outside cropping own land, while only one-third of the total households with low perceptions of violence eschew crop cultivation. About a half of those experiencing medium or high levels of violence persist with cropping their own land.

Table 3: Household involvement in agriculture by levels perceived violence (%)

Perceived violence level	Household involvement (%)	
	Cropping own land	**Other activities**
Low violence	69	31
Medium violence	50	50
High violence	53	47
All Categories	**61**	**39**
* Pearson chi2 Pr = 0.000		

Further investigation into the choice of cultivation techniques among the households with cropping own land revealed that the proportion of *jum* cultivation relative to the use of the plough decreases with perceptions of violence. The former is the more traditional technique, employed by the indigenous peoples of CHT. The variation in use of production techniques in relation with different levels of perceived violence is found statistically significant (Table 4). *Jum* as a type of cultivation technique is used by 28% to 31% of households perceiving medium and high violence, while the figure is 52% for households perceiving low level of violence. On the other hand, plough cultivation is applied by about 73% to 75% households perceiving medium and high level of violence, whereas 67% households with low levels of threats employ plough cultivation as their production technique. The point being that the trauma of violence draws indigenous households away from traditional slash and burn (*jum*) cultivation to the use of the plough. This can also mean that they are forced to relocate in plain lands, and are compelled to economise on both labour and land as *jum* cultivation is more intensive in both factors of production.

Table 4: Household reported technique of cultivation by levels perceived violence

Perceived violence level	Technique of Cultivation (%)		
	Jum	Plough	Both
Low violence	52.3	66.6	19.0
Medium violence	28.4	72.6	1.0
High violence	30.7	75.3	6.0
All Categories	**31.0**	**56.4**	**12.57**
* Pearson chi2 Pr = 0.000			
**Note: The reported proportion of households using *Jum* and plough as technique of cultivation considers the 'both' as additive.			

Regression results for the influence of perceived violence on proportion of cultivated land to total land (land use) indicate that households (cropping own land) perceiving medium levels of violence cultivated 30% more land as a proportion of the total land they possess compared to households perceiving low levels of violence, and the result is statistically significant (Table 5). Apart from perceived violence, growing both food and cash crops statistically significantly raises land use by 43%.

In the CHT the majority of indigenous households who crop their own land (60%) produce mixed crops, with 38% engaged in only food crops. It has to be borne in mind that cash crop cultivation involves more risk of physical and economic loss, and we would expect more subsistence food cultivation following conflict, and the trauma of violence. The proportion of household producing only cash crops is negligible. Regression techniques using logit and probit regression were run where the endogenous variable *mixed crop* is in the form of a dummy variable (0 and 1), and the results are reported in table 6. When we relate these figures to the subjective experience of violence the proportion of households producing mixed crops is 63%, 61% and 58% for those households perceiving high, medium and low levels of violence respectively. It appears that the propensity for mixed cultivation rises slightly with subjective perceptions of violence.

Table 5: Determinants of amount of land cultivated: OLS Estimation

Explanatory Variables	Dependent variable: Log of proportion of amount of land cultivated to total land
HH size	-0.0111
	(0.0264)
Age of HH head	0.000460
	(0.00403)
Gender of HH head	0.101
	(0.112)
Primary education of HHH	-0.153
	(0.131)
Secondary education of HHH	0.0836
	(0.141)
Above secondary education of HHH	0.417
	(0.627)
Cash crop	-1.343***
	(0.420)
Both food and cash crop	0.430***
	(0.116)
Jum Cultivation	0.155
	(0.114)
Both Jum and plough cultivation	0.0536
	(0.242)
Perceived medium violence	**0.306*****
	(0.115)
Perceived high violence	**0.0870**
	(0.176)
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1	

The estimated coefficient (at 1% level) for medium level of perceived violence suggests that this type of households are more likely to produce mixed crops by about 8% in comparison with the households perceiving low level of violence. Similarly, households perceiving high levels of violence are producing more mixed crop by 8%, compared to the households perceiving low levels of violence, this result is statistically significant at a 5% level. The variables, different levels of perceived violence (both medium and high) are found positively related with the mixed crop production with statistical significance across the logit and probit regression models. Our findings are qualitatively similar to that of Nillesen and Verwimp (2010) for post-conflict rural Burundi, where the cultivation of cash crops also increased. In addition to the variable of interest (perceived level of violence) it also found that there are some other explanatory variables; age of household

head,   sex of household head, household head passed secondary education, amount of land cultivated, and plough cultivation which also have significant association with the dependent variable, mixed cropping. We find that greater education and age in the head of household enhances the probability of mixed crop cultivation as a riskier activity than food crop alone.

Our apparently anomalous results, with respect to rising risk taking in cropping patterns following greater subjective feelings of violent experiences, can only be explained by less well known theories about risky behaviour. Conventional wisdom would suggest that individuals become more risk averse after an adverse shock, such as conflict and the fear of violence. This is also the prediction of expected utility theory in conjunction with the concavity property of standard utility functions leading to the properties of diminishing marginal utility of income, as well as absolute risk aversion. The standard precepts of expected utility do not, however, hold in many contexts. In our case, we can argue that both land dispossession and subjective perceptions of violence amount to 'trauma', which has a pecuniary counterpart that may be characterised as one where the concerned individual or household has sustained a financial loss. Markowitz (1952) indicated that starting from a state of loss; individuals are wont to engage in more risk taking to regain their previous valued position, than when their wealth portfolio is exhibiting positive growth (profit) and their expectations are over-fulfilled. Secondly, he also pointed out that what may matter more for decisions to engage in risky projects is the distribution of possible profit or loss it may entail, rather than the absolute (expected) value of risky prospect. In other words, the direction of *change* in the individual's asset position and the possibility of regaining a highly valued asset in monetary or social terms are more salient than its level.

Table 6: Determinant of production of mixed crop: Regression results

Explanatory Variables	Dependent Variable : Mixed Crop	
	Logit, mfx	Probit, mfx
HH size	-0.00637	-0.00700
	(0.00625)	(0.00648)
Age of HH head	0.00177*	0.00179*
	(0.000976)	(0.00100)
Sex of HH head	-0.0467*	-0.0463*
	(0.0267)	(0.0273)
Primary education of HH head	0.0153	0.0137
	(0.0306)	(0.0315)
Secondary education of HH head	0.0733**	0.0737**
	(0.0318)	(0.0332)
Above secondary education of HH head	0.00974	0.00255
	(0.145)	(0.146)
Amount of land cultivated	0.000579***	0.000517***
	(7.83e-05)	(7.07e-05)
Type of cultivation; Plough	0.0607**	0.0642**
	(0.0264)	(0.0270)
Type of cultivation: jum and plough	-0.0334	-0.0323
	(0.0536)	(0.0546)
Perceived medium violence	**0.0735***	**0.0782***
	(0.0263)	(0.0269)
Perceived High violence	**0.0815**	**0.0803**
	(0.0378)	(0.0402)
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1		

Following Kahneman and Tversky (1979) we may utilize prospect theory to explain our empirical findings with regard to cropping patterns, bearing in mind that cash crop cultivation is more risky, as it does not guarantee the household's subsistence and is more subject to market fluctuations. Prospect theory represents a departure from expected utility in that it is a two stage process, and risky ventures are weighted not just by (subjective) probability of the different risky states, but by a more complicated 'decision weighting' process. The first stage of the decision involves, an editing phase where a reference point is chosen to evaluate the likely effect of the actual risky investment framed in terms of specific aspects of the highly valued by the decision maker. As has been indicated, following the trauma of eviction and/or violence, individuals may feel that the key value of assets have diminished and must be replaced as a priority. In the second stage of evaluation, when the household decides on its type of crop investments, it

may take more risks, if the risky project has a high enough decision weight compared to the less risky alternative. Decision weighting is related to the probability of an uncertain project bearing fruition, but it also includes the subjective desirability of the outcome, a property that alters less readily in the mind than the pure probability of success. The point being that taking on more risks is understandable if there is a substantial chance that more risky investments will lead to recuperation of particular erstwhile losses. This may explain why households with a greater perception of violence are more likely to invest in the more risky cash crops, as well as increase land use in agriculture.[11]

5 Conclusions

This research suggests that heightened subjective perceptions of violence may lower consumption expenditure as a risk reducing tactic, while raising land use intensity and risky mixed crop cultivation. In some cases relatively high perceptions of violence raises the likelihood of households schooling their children. But this effect only becomes significant when combined with specific forms of conflict experiences. This indicates that a post-conflict 'phoenix' factor may be in operation at the household level in which some income raising livelihood decisions are made as a consequence of fear of renewed violence. In the short-run, the factor appears to operate through both increased land use and cash crop cultivation and in the long run through increased human capital. Arguably, these decisions can be seen as raising the risk threshold as the quality of land may deteriorate, cash crops may be more vulnerable to pests and disease and price falls, and the chances of getting a significant return from schooling are not only far in the future, but also low in terms of access to formal economy occupations for these indigenous people.

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[11]Following Kahneman and Tversky (1979), let the value (V) of the household's risky prospect be:
$$V(x, y, p, L) = v(y) = \pi(p, L)[v(x) - v(y)]; \cdots or, \pi(p, L)v(x) + [1 - \pi(p, L)]v(y) \cdots \pi_1, \pi_2 > 0.$$
Here $v(x)$ is the value of the risky project; $v(y)$ is the value of the less risky project; p refers to the probability of success of x, π is the decision weight which is a positive function of both the probability of success, and losses (L) previously sustained. It is immediately apparent that an increase in losses due to perceptions of violence will raise the attractiveness of the risky project by weighing the decision weight more heavily in favour of x.

The absence of positive social capital binding indigenous and Bengali communities in the CHT area may explain the persistence of subjective fears of future violence. In India, in the context of sectarian conflict between Hindus and Muslims, Jha (2008) points out that Hindu-Muslim riots are remarkably absent in certain coastal communities who maintain older, historical, economic division of labour based on complementarities along with local institutions that build trust unlike in other areas where there is greater competition and mistrust. He contrasts Surat and Ahmadabad in the Indian state of Gujarat in this connection, where the former avoided riots and violence, while the latter does not. Both communities in CHT, Bengali and indigenous, are competing over the same resource, land, and there is little in terms of bridging social capital to allay the fears of indigenous peoples regarding the future prospect of violence.

It may be possible that there is a reaction to higher fear of violence after an imperfect accord ending a low-intensity conflict aimed at autonomy and not secession. This reaction may make some people bolder and more risk taking in order to enhance their long-term future in the context of likely macro-political continuity, albeit with significant fear of future violence at the household micro-level. Prospect theory may also be useful in understanding this reaction, as people frame their decisions in the light of socio-economic priorities that precede any valuation of the consequences of greater risk-taking. But exploration of these behavioural economics explanations must await further research.

References

Addison, T. and Murshed, S. M. (2005). 'Post-Conflict Reconstruction in Africa: Some Analytical Issues', in P. Collier and A. Fosu (eds), *Post-conflict Reconstruction in Africa*, London: Palgrave: 3-17.

Adnan, S. (2004) *Migration, Land Alienation and Ethnic Conflict- Causes of Poverty in the Chittagong Hill Tracts of Bangladesh.* Dhaka: Research and Advisory Services.

Ahmed, K. (2010) 'Defining Indigenous in Bangladesh: International Law in Domestic Context', *International Journal on minority and Group Rights* 17: 47-73.

Bardhan, P. and Udry, C. (1999) *Development Microeconomics.* New York: Oxford University Press.

Barkat, A., Halim, S., Poddar, A., Badiuzzaman, Md., Osman, A., Shahnewaz Khan, Md. Rahman,M., Majid, M., Mahiyuddin, G., Chakma, S. and Bashir, S. (2009) *Socio-economic Baseline Survey of Chittagong Hill Tract.*' Dhaka: CHTDF-UNDP

Barkat, A. and Roy, P.K. (2008) *Political Economy of land Litigation In Bangladesh A Case of Colossal National Wastage.* Dhaka: ALRD and Nijera Kori.

Bates, R. H. (2001) *Prosperity and Violence*. New York: Norton.

Bedi, A.S. and Marshall, J.H. (2002) 'Primary School Attendance in Honduras', *Journal of Development Economics* 69: 129-153.

Chakma, S. S. (2006) *Ethnic Cleansing in the Chittagong Hill Tracts*, Dhaka, Bangladesh: Ankur Prakashani.

Collier, P., Hoeffler, A, and Soderböm, M (2008). 'Post-Conflict Risks', *Journal of Peace Research* 45(4): 461–478.

Homer-Dixon, T. F. (1999) *Environment, Scarcity, and Violence*, Princeton, NJ: Princeton University Press.

Jha, S (2008) 'Trade, Institutions and religious Tolerance: Evidence from India'. Research Paper Series, Research Paper No. 2004. Stanford Graduate School of Business

Kahneman, D and Tversky, A. (1979) 'Prospect Theory: An Analysis of Decision under Risk', *Econometrica*, 47 (2): 263-292.

Koubi, V. (2005) 'War and Economic Performance', *Journal of Peace Research* 42(1): 67–82.

Markowitz, H. (1952) 'The Utility of Wealth', *Journal of Political Economy*, 60(2): 151-158.

Mohsin, A. (2003) *The Chittagong Hill Tracts of Bangladesh on the Difficult Road to Peace*. London: Lynne Rienner Publishers Inc.

Murshed, S. M. (2010) *Explaining Civil War: A Rational Choice Approach.* Cheltenham: Edward Elgar.

Nillesen, E. and Verwimp, P. (2010) 'A Phoenix in Flames? Portfolio Choice and Violence of Civil War in Rural Burundi', UNU-WIDER Working Paper 2010/44.

Olson, M. (1963) 'Rapid Growth as a Destabilising Force', *Journal of Economic History* 23 (4): 529-552.1

Organski, A. F. K. and Jacek Kugler (1977) 'The Costs of Major Wars: The Phoenix Factor', *American Political Science Review* 71(4): 1347–1366.

Rizal, D. and Yokoto, Y. (2006) *Understanding Development, Conflict and Violence The case of Bhutan, Nepal, North-East India and the Chittagong Hill Tracts of Bangladesh.* New Delhi: Adroit Publishers.

Roy, R.C. (2000) *Land Rights of the Indigenous Peoples of the Chittagong Hill Tracts, Bangladesh.* Copenhagen: IWGIA.

Shelly, M.R. (1992) *The Chittagong Hill Tracts of Bangladesh: The Untold Story.* Dhaka: Centre for Development Research, Bangladesh

Tadjoeddin, M. Z and Murshed, S.M. (2007) 'Socioeconomic Determinants of Everyday Violence in Indonesia: An Empirical Investigation of Javanese Districts 1994–2003', *Journal of Peace Research* 44(6): 689–707.

UNDP (1995) 'Human Development Report'. New York: Oxford University Press

Verwimp, P., Justino, P. and Brück, T. (2009) 'The Analysis of Conflict: A Micro-Level Perspective' *Journal of Peace Research* 46(3): 307–314.

World Bank (2010) 'World Development Report 2010: Development and Climate Change' Washington DC: The World Bank.

World Bank, World Development Indicators, CD-ROM.

Annex Table 1: Recoding of response on violence indicators for construction of Violence Index

Variable name	The original question/format of data collection	Adjustment to get new variable
Current status of constraint of peace		
Abduction	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Extortion	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Armed conflict	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Communal Threat	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Restricted movement	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Insecurity of women	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Insecurity of children	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Trust on other communities	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Eviction from land	No response= 99, Low =1, Medium =2, High =3	No response and Low =1, Medium=2 and High =3
Elements of confidence-building		
Repression of security forces	Friendly and proactive=1, Friendly=2, Moderately friendly = 3, Some how friendly = 4, Not at all friendly = 5	(Friendly and proactive=1, Friendly=2)=Low=1, (Moderately friendly = 3) = 0 and Some how friendly = 4)= Medium=2, and (Not at all friendly = 5)= High=3
Safety and security feelings	Highly secured=1, Secured=2, Moderately secured= 3, Some how secured= 4, Not at all secured = 5	(Highly secured=1, Secured=2)=Low=1, Moderately secured= 3)=0 and (Some how secured= 4)=Medium=2, and (Not at all secured = 5)= High=3
Cultural freedom	Highly secured=1, Secured=2, Moderately secured= 3, Some how secured= 4, Not at all secured = 5	(Highly secured=1, Secured=2)=Low=1, Moderately secured= 3)=0 and (Some how secured= 4)=Medium=2, and (Not at all secured = 5)= High=3
Customary right	Highly secured=1, Secured=2, Moderately secured= 3, Some how secured= 4, Not at all secured = 5	(Highly secured=1, Secured=2)=Low=1, Moderately secured= 3)=0 and (Some how secured= 4)=Medium=2, and (Not at all secured = 5)= High=3
Experience of violence before peace accord		
Migration	Did anybody/somebody from your household migrate out of the Para before signing the peace treaty? Yes = 1 No = 2 If yes, Reasons of migration out: Lack of security =2, Evicted from land =3, Communal conflict =4, Political conflict =5, Government policy/program =10	If YES and due to these reasons then 1 and otherwise 0 Yes = 1 No = 0
Land dispossession	Did you/ your father/ grand father ever dispossessed of any land, which belonged to you as agricultural land/ land under possession /homestead (i.e, whether your land was engulfed by anyone)? Yes = 1, No = 2	Yes = 1 No = 0
Armed conflict	Whether any member of your household experienced armed violence before CHT treaty? No=1, Self=2, other household member=3, Self and household member=4	(Self=2, other household member=3, Self and household member=4) = Yes=1, No=0

31

Annex Table 2: Descriptive Statistics

Variables	Mean Value	Standard Deviation	Number of Observation
Per capita annual consumption expenditure (food and non-food) (in Taka)	11,847	4518	1786
Log of per capita annual consumption expenditure (food)	9.31	0.343	1786
Log of per capita annual consumption expenditure (non-food)	9.24	0.354	1786
Log of per capita annual consumption expenditure (food and non-food)	6.50	0.467	1786
Child enrolment in primary and secondary school	0.41	0.492	1987
Involvement in agriculture	0.61		1786
Type of cultivation			
Plough cultivation	0.57		1075
Jum cultivation	0.31		1075
Both Jum and plough cultivation	0.12		1075
Amount of land cultivated	259.8	353.7	1446
Log of proportion of cultivated land of total land	0.51	1.84	1360
Type of crops produced			
Only food	0.38	0.486	1446
Only cash	0.20	0.137	1446
Mixed (Both food and cash) crop	0.59	0.490	1446
Household size	5.20	2.055	1786
HH asset	50,858	1047	1786
Age of household head	38.8	13.39	1786
Sex of household head	0.61	0.48	1786
HH head never attended school	0.58	0.49	1057
HH head completed primary school	0.23	0.42	1057
HH head completed secondary School	0.17	0.38	1057
HH head completed above secondary School	0.01	0.091	1057
Age of child	7.13	4.75	1987
Age square of child	73.5	83.7	1987
Sex of child (Male=1)	0.64	0.481	1987
Type of School studied			
Government school	0.56	0.49	1122
NGO school	0.30	0.45	1122
Private school	0.10	0.31	1122
Other type of school	0.03	0.16	1122
Language of book (Mother tongue)	0.21	0.41	1633
Medium of instruction (Mother tongue)	0.22	0.41	1633
Low level of perceived violence	0.55	0.497	1786
Medium level of perceived violence	0.38	0.485	1786
High level of perceived violence	0.07	0.254	1786
Experience of violence before peace accord			
Migration	0.13	0.338	1786
Land dispossession	0.20	0.392	1786
Armed conflict	0.19	0.393	1786

Annex Table 3: Summary of variables included in regression model

Variable	Consumption Decision Equation	Investment Decision: Child Enrolment Equation	Production Decision Equation	
			Amount of land cultivated	Type of crops produced
Endogenous variables				
Log of per capita annual consumption expenditure (food and non-food)	LHS			
Child enrolment in primary and secondary school		LHS		
Amount of land cultivated			LHS	
Type of crops produced				LHS
Exogenous variables				
Household size	√	√	√	√
Age of household head	√	√	√	√
Sex of household head	√	√	√	√
HH head never attended school*	√	√	√	√
HH head completed primary school	√	√	√	√
HH head completed secondary School	√	√	√	√
HH head completed above secondary School	√	√	√	√
Age of child		√		
Age square of child		√		
Sex of child		√		
Government school		√		
NGO school		√		
Private school		√		
Other type of school*		√		
Language of book		√		
Medium of instruction		√		
HH asset		√		
Food crop*			√	√
Cash crop			√	√
Both food and cash crop			√	√
Plough cultivation*			√	√
Jum cultivation			√	√
Both Jum and plough cultivation			√	√
Amount of land cultivated				√
Low threat of violence*	√	√	√	√
Medium threat of violence	√	√	√	√
High threat of violence	√	√	√	√
Interaction variables		√		

Notes: LHS indicates that a variable is included as endogenous variable in the left-hand-side of the equation. '√' indicates that a variable is included as exogenous variable. * denotes as reference category

Annex-4

Map: Chittagong Hill Tracts in map of Bangladesh (shaded area)