



# The human capital consequences of civil war: Evidence from Guatemala

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## ABSTRACT

We combine data from the 2002 National Population Census and the distribution of the number of human rights violations and victims across 22 departments to examine how Guatemala's 36-year-long civil war affected human capital accumulation. The year of birth and the department of birth jointly determine an individual's exposure during school age to three different periods of the civil war, namely the initial period (1960–1978), the worst period (1979–1984), and the final period (1985–1996). We find a strong negative impact of the civil war on the education of the two most disadvantaged groups, namely rural Mayan males and females. Among rural Mayan males, those who were school age during the three periods of the civil war in departments where more human rights violations were committed completed 0.27, 0.71, and 1.09 years less of schooling respectively whereas rural Mayan females exposed to the three periods of the war completed 0.12, 0.47, and 1.17 years less of schooling respectively. Given an average of 4.66 and 3.83 years of schooling for males and females, these represent declines of 6, 15, and 23% for males and 3, 12, and 30% for females. Our results are robust to the inclusion of indicators for department of residence, year of birth, and controls for different trends in education and human development in war-affected and peaceful departments of Guatemala and suggest that the country's civil war may have deepened gender, regional, sectoral, and ethnic disparities in schooling.

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## 1. Introduction

The microeconomic impact of war on civilian populations can be substantial and persistent. Not only can people living in war zones suffer injuries and have their property destroyed, they may also be displaced from their homes, lose their means of survival, or be unable to attend school, all of which may result in a permanent decline in their productivity and earnings. Understanding which economic consequences of conflict are more profound or persistent is important for implementing post-conflict reconstruction effectively. Moreover, since war costs tend to be disproportionately borne by the poor and most vulnerable populations, conflict may intensify poverty and inequality (Quinn et al., 2007). Thus, evidence of the negative consequences of war can help identify those populations that reconstruction policy should target. This paper examines how Guatemala's 36-year-long civil war between 1960 and 1996 affected human capital accumulation of individuals exposed to it and which demographic groups were worst affected.

There is a large literature that examines the aggregate effects of armed conflict on investment, income, and growth.<sup>1</sup> One set of studies finds that populations quickly recover back to pre-war trends. Cities that experienced heavy bombing during World War II were indistinguishable from those that were not bombed 20 to 25 years after the war in Japan (Davis and Weinstein, 2002) and in Germany (Brakman et al., 2004). After the Vietnam War, Miguel and Roland (2005) find that physical infrastructure, education, and poverty levels all converged across regions within 25 years.

The cross-country literature also finds rapid recovery of post-war economies (Organski and Kugler, 1977, 1980; Przeworski et al., 2000). Compared to currency crises, banking crises, and sudden shifts in executive power, Cerra and Saxena (2008) find that while civil wars cause the largest short-run fall in output (6% on average), output also rebounds quickly only in the case of civil war, recovering half of the fall within a decade. In countries affected by civil war, economic, social, and political development are also found to improve steadily after a war (Chen et al., 2008). Evidence on the short-run effects of war and violence also exists. Abadie and Gardeazabal (2003) find that terrorist violence in the Basque region of Spain significantly reduced economic growth relative to its neighboring regions. Justino and

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<sup>1</sup> See Blattman and Miguel, (forthcoming) for an extensive survey of the causes and effects of civil war.

Verwimp (2006) find that 20% of the Rwandan population moved into poverty after the genocide. In a study of African countries affected by internal armed conflicts, Stewart et al. (2001) find that primary school enrollments decreased in only three out of eighteen countries, but improved in five during civil conflicts and that on average, girls fared better than boys since boys often serve in the army.

The recent availability of data from war regions has resulted in a growing empirical literature that estimates the microeconomic effects of war on income, poverty, wealth, health, and education, for both combatants and civilians. The long-term health effects of war appear to be significant. Alderman et al. (2004) find that young children who suffered from war-related malnutrition in Zimbabwe are significantly shorter as adults and that this may affect their lifetime labor productivity. Akresh et al. (2007) find a negative relationship between height-for-age z-scores and exposure to the Rwandan civil war, the effect being particularly strong for girls. In a similar paper, Akresh et al. (2009) find that an additional month of war exposure in rural Burundi decreases children's height-for-age z-scores compared to non-exposed children.

There is a growing body of research that estimates the impact of war on schooling and labor market outcomes. Examining the effect of Uganda's civil conflict on combatants, Blattman and Annan (2007) find that male youth who were recruited into armed groups received less schooling, are less likely to have a skilled job, and also earn lower wages. de Walque (2006) finds that individuals with an urban, educated background are more likely to have died during the Cambodian genocide period of 1975–1978 and as a result, males of school age during that period have less education than previous or subsequent cohorts. Akresh and de Walque (2008) find a strong negative impact of the Rwandan genocide on schooling, with children exposed to the civil war experiencing an 18.3% decline in their average years of education. The authors find a stronger negative effect for males and for the non-poor. For Central Asia, Shemyakina (2006) finds that adolescent Tajik girls whose homes were destroyed during the civil war are less likely to obtain secondary education and that this affects their wages. Unlike Stewart et al. (2001), de Walque (2006), and Akresh and de Walque (2008), Shemyakina (2006) finds that the civil war in Tajikistan only decreased school enrollments of 12–16 year old girls living in high conflict intensity areas but had no significant impact on the education of boys or younger children.

In this paper, we examine the impact of Guatemala's 36-year-long civil war (1960–1996) on children's human capital accumulation. Even though the civil war lasted 36 years, the worst period of the war began in 1979 and ended in 1984, during which over 90% of the total human rights violations were committed. According to the Commission for Historical Clarification (CEH) and Recovery of Historical Memory Project (REMHI), roughly 200,000 individuals lost their lives or disappeared, more than 500,000 people or 8.3% of the 1983 population were displaced, and many Mayan villages were completely destroyed as a result of the civil war (Perera and Chauche, 1995; Archdiocese of Guatemala, 1999; Commission for Historical Clarification, 1999)<sup>2</sup>. Of the cases of human rights violations documented by the CEH, 83% of fully identified victims were Mayan and 17% were Ladino.<sup>3</sup> The civil war in Guatemala began as a military rebellion that intensified during the 1970s. The period between 1960 and 1978 was relatively peaceful, until the worst period of the war began in 1979 and lasted until 1984. From 1985 onwards, the violence declined rapidly, until the war ended in 1996. Most human rights violations were committed by the state against the civilian population and left a large number of children

orphaned and abandoned. Families and communities lost property and their means of survival. The increase in military spending diverted necessary investments of public resources away from health and education, resulting in the abandonment of social development.<sup>4</sup> This accelerated the deterioration of health and educational conditions in those areas most severely affected by the confrontation. In addition, the destruction of physical assets, including private and community property, and the loss of infrastructure, such as bridges and electrical towers, also represented considerable losses and amounted to over 6% of the country's 1990 gross domestic product. These material losses frequently involved the total destruction of family capital, especially among Mayan families, and particularly in the west and north-west of Guatemala.

Given the length of the war, the economic consequences are estimated to be severe. Based on its investigation of the economic costs of the armed confrontation and taking only the 10-year period between 1980 and 1989, the CEH estimates that the total direct quantifiable costs were equivalent to zero production in Guatemala for almost 15 months, equal to 121% of the country's 1990 GDP. The majority of the costs resulted from the loss of production potential due to the death, disappearance, or forced displacement of individuals who had to abandon their daily activities or from recruitment into the Patrullas de Autodefensa Civil (PAC), the Army, or the guerrillas. The destruction of physical assets, including private and community property, and the loss of infrastructure also represented considerable losses. These material losses frequently involved the total destruction of family capital, especially among Mayan families, and particularly in the west and north-west of Guatemala.

We use the 2002 National Population Census and the distribution of the number of human rights violations and victims across departments to examine the magnitude of the war's effect on years of schooling and grade completion. Even though previous studies have examined the effect of civil war on schooling, this paper contributes to the literature in three important dimensions. First, Guatemala's civil war is unique in that it lasted 36 years and had three distinct periods with varying levels of war intensity. This allows us to examine the schooling outcomes of three cohorts who may have been differentially affected by the war, as illustrated in Table 1. The first cohort was school age during the initial, relatively peaceful period (1960–1978), the second cohort was school age during the worst period of the war (1979–1984), and the third cohort was school age during the latter part of the war (1985–1996), which again was relatively peaceful. We therefore expect a small impact of the war on the education of the first and third cohorts but a fairly large effect on the schooling of the second cohort. Our empirical strategy enables us to assess the long-term and incremental effects of internal conflict, which is not possible with most civil wars since they last a relatively short period of time.

Second, we estimate the effect of the war on schooling outcomes for eight demographic groups based on gender, urban–rural residence, and ethnicity in order to identify those groups that were most affected by the war. This is particularly relevant since most civil wars target specific ethnic groups and as a result may affect various demographic groups differently. Moreover, since these eight groups generally represent varying levels of wealth, we can examine the effect of the war on more socio-economically privileged groups, namely urban non-Mayans, as well as on socially excluded and poorer groups, namely rural Mayans.<sup>5</sup> Since the majority of human rights violations occurred against the Mayan population in rural areas, we expect that the civil war in Guatemala may have disproportionately affected the schooling of rural Mayan children.

<sup>2</sup> The CEH was sponsored by the United Nations whereas the REMHI was sponsored by the Archdiocese of Guatemala.

<sup>3</sup> According to the Guatemalan population census of 2002, 41% of the total population was self-identified as Mayan and 59% was self-identified as Ladinos. Mayan refers to the native or indigenous population and Ladinos are a socio-ethnic category that, in the Guatemalan case, represents a mix between Spanish and Mayans.

<sup>4</sup> In 1985, public investment in physical capital reached its lowest level in the last 40 years and represented only 2% of the country's GDP.

<sup>5</sup> According to the poverty reduction strategy report (Secretaría Planificación y Programación, 2006), 31% of Mayans and 14% of non-Mayans had an income less than \$1 in 1989.

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