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Abstract

Geocoded conflict information was combined with the 2014 household census data to study the impact of long-lasting internal conflicts at township level on Myanmar's primary and secondary-level school attendance (i.e., the short-term impact) and years of education (i.e., the long-term impact). The impacts of internal conflicts on school attendance in 2014

were consistently negative. Then, we constructed quasi-panel data for primary-level schooling to find, again, consistently negative impacts of internal conflicts. The results are robust, even if incompleteness of census or migration are taken into account. The estimated magnitudes of the impacts are smaller than those of the findings from other countries: a 10% increase in the number of deaths result in a 0.01% decline in enrollment probability. Finally, we confirmed that exposure to conflicts during age 6-10 years has a negative but insignificant impact on years of education. Gender differences in terms of negative impact are almost negligible. By carefully reviewing previous papers and characteristics of Myanmar's conflicts up to 2014 with respect to the mechanism of the negative effect of conflict on education, we argue that the small negative impact found in our analysis is due to the long-lasting and low-intensity nature of the conflicts, as well as the fact that schools and social services are provided by military forces. However, it is important to note that our analysis does not include data of the recent violence in Rakhine state.

Keywords: Civil conflict; Education; Population census; Myanmar

JEL classification: I21, I25, O15

1. Introduction

This study investigates the microeconomic effects of violent conflicts on education in Myanmar, which suffers from one of the longest-standing civil conflicts in the world, affecting more than 12.3 million people or approximately one-quarter of Myanmar's population (The Asia Foundation, 2017). These conflicts could affect people's life courses. This is the first study of this nature, since there has been no quantitative investigation for Myanmar to date due to a lack of reliable microdata.

The empirical analysis of violent conflict has thrived in the last ten years, with a focus on understanding the causes and consequences of conflict at the micro-level (Verwimp et al., 2019). In particular, the literature on the microeconomic effects of violent conflicts on education has been one of the growing subfields (see Blattman and Miguel (2010) and Justino (2012) for a review of early literature). More recently, various education outcomes have been investigated in various contexts: completion of primary and mandatory schooling (Justino et al., 2013; Verwimp and Bavel, 2013; Valente, 2014); primary school attendance (Di Maio and Nandi, 2013; Bertoni et al., 2019), educational attainment (Leon, 2012; Akbulut-Yuksel, 2014; Dabalen and Paul, 2014; Pivovarova and Swee, 2015; Swee, 2015; Singh and Shemyakina, 2016; Bertoni et al., 2019), academic achievement (Brück et al., 2019); and school dropout rates (Rodriguez and Sanchez, 2012). The empirical

evidence indicates that the effects of violent conflict on education are highly heterogeneous depending, among other elements, on the characteristics of the country and of the violent events, on the age and gender of the student, and on the education outcome that is considered (Brück et al., 2019).

Conflicts can affect education negatively through various paths. From previous literature, we identified five main paths: death or displacement of teachers and students (Buckland, 2005); dangers at schools and on the way to schools/school closure (Brück 1997; Evans and Miguel, 2007); military drafting/recruitment of child soldiers (Swee, 2015); a decline in mental well-being (Brück, Maio, and Miaan, 2019); and impoverishment caused by conflicts (Justino, Leone, and Salardi, 2013).

The first mechanism is the most direct and apparent. Teachers and educators are sometimes at a higher risk of being targeted by the armed forces. The report by the Global Coalition to Protect Education from Attack (2014) reveals that at least 23 countries had incidents of violence against teachers and educators since 2009, including the killings of 171 teachers by the militant group Boko Haram in Nigeria. The motives for attacks on educators can be that teachers refuse child soldier recruitment, teach girls (which is against the military's policy), deliver lessons that are not in support of military activities, or engage in advocacy. Student displacement is also not uncommon. UNICEF (2018)

reported that nearly 31 million children across the globe have been forcibly displaced by the end of 2017, including 13 million child refugees and 17 million children who were displaced within their own countries by violence and conflict. When displaced, children are not only directly affected by disruption to his/her study, but also face difficulty to return to school in their new residences (Swee, 2015).

The second mechanism is also widely discussed in literature. In some cases, schools are targeted by militants for kidnappings and intimidation (Evans and Miguel, 2007). Commuting is not free from danger either. Girls often become victims of sexual assault and harassment (Pereznieto, Magee, and Fyles, 2017). Commuting amidst constant artillery and sniper fire is inevitably dangerous, and parents fear for the safety of children (Swee, 2015). School closure also occurs by destruction of the school building itself and of the whole system. For example, in Timor Leste, the school system were completely destroyed by the 1999 violence, and it did not open for about a year (Justino, Leone, and Salardi 2013). Further, a lack of teachers can arise during conflict, which affects school management.

The third mechanism is military drafting and recruitment of child soldiers, which often affects boys' education more severely than that of girls. While military drafting is set at above 18 years of age in many countries by law, the age of the draft can become

younger under conflict, such as was the case in Bosnia in 1992 when males as young as 16 were mobilized for combat duties (Child Soldiers International, 2001a). There was even a report that boys aged 13 to 16 were involved in hostilities in the same war (Child Soldiers International, 2001a). The use of child soldiers is legally and ethically unacceptable; yet, a considerable number of children are recruited or forced to serve as soldiers, even by state armies. Child Soldiers International (2018) shows in their latest report that 46 states recruited soldiers under 18 years of age since 2016, and that five armed groups and seven state forces have been declared as guilty of child recruitment by the UN Secretary General in 2017. As expected, recruitment to armed forces leads to shorter years of schooling, and has even prolonged the negative impacts on students' lives, including their earnings, employment, and health (Annan et al., 2011; Kecmanovic 2012; Swee, 2015).

The fourth mechanism is discussed in the context of harm to older students' psychological well-being when disposed to violence, which creates difficulties in performing well in education. Good mental health is a well-known factor in improved higher academic performance (Roeser, Eccles, and Strobel 1998), and there is a negative relationship between cognitive performance and exposure to violence (Sharkey, 2010). Brück, Maio, and Miaari (2019) considered how direct exposure to conflict-related

violence affected students' academic performance during the Second Intifada of Israel-Palestinian conflicts, and found that students were less likely to pass the exam when exposed to violence. Although measuring psychological well-being is challenging, these authors proclaimed the important role of psychological channels in understanding how conflicts affect educational outcomes, based on their estimation results and some other evidence. Swee (2015) also showed the deterioration of mental well-being of the student cohort that were likely to be drafted and engaged with military operations in the conflict in Bosnia and Herzegovina.

In addition to these direct effects, the final possible path is through loss of livelihoods in conflict-affected areas. The correlation between lack of financial resources and low educational attainment of children has been repeatedly found in previous empirical analyses, and it was also found that people reduce spending on education in response to financial shocks (Thomas et al., 2014). Similar patterns are observed during conflict, namely, that a reduction in household financial resources leads to less educational attainment by children (Dabalen and Paul, 2014). In Timor Leste, for example, conflict-affected boys experienced in the long run a substantially higher loss of educational attainment than girls of the same cohort. The likely cause was the high demand for boys to earn income for compensation of household financial shocks, not only

during conflict, but also after the end of the conflict (Justino, Leone, and Salardi 2013). In some cases, social preference affects girls' education more than that of boys. Shemyakina (2011) showed a large negative impact on older female education but not on male education as a result of the 1992-1998 armed conflict in Tajikistan, which points to parents' preference for sons' education.

In our analysis, we combined geocoded conflict information with the 2014 household census data to study the impact of long-lasting internal conflicts at township level on primary and secondary education enrollment and years of education in Myanmar.[1] Particularly, we started with investigations on whether primary and secondary-level school enrollment of children of the corresponding age range in 2014 were influenced by long-lasting internal conflicts. Then, with some plausible assumptions, we constructed longitudinal data regarding primary school attendance from 2004 to 2014 for the individuals in the primary education age range. We combined this longitudinal data with geocoded conflict information for the previous year to investigate the impact of localized conflicts on primary school attendance. This analysis corresponds to the short-term impacts of internal conflicts. Finally, we investigated whether or not exposure to conflicts during the ages 6-10 (i.e., during primary-level education) has negative impacts

[1] We provide more information about "township" in Section 3.

on the duration of education—that is, an analysis of long-term impacts. Throughout our analysis, the consistent negative effects of conflicts on education were clear. Nonetheless, the magnitude is smaller than what was found by previous studies. We argue that this small magnitude of impact is due to the long-lasting and low-intensity conflicts in Myanmar. In addition, the administrative power of military forces seems to play a key role in providing education and other social services.

Our paper contributes to the existing literature in at least two ways. First, the setting of our study is in the context of long-lasting internal conflicts, which is still understudied and unique in the literature. To the authors' knowledge, the available studies on the impacts of long-lasting conflicts focus on the case of Colombia (e.g., Wharton and Oyelere (2012) and Soler (2016)). Second, studying Myanmar's case provides insights into how the armed forces' administrative function informally plays a role in child education. Exploring the interactions between informality and conflict at the micro level is a very important research agenda (Verwimp et al., 2019). One critical issue is that our study only considers the effect of long-lasting conflict up to 2014, and does not include the recent violence that erupted in Rakhine state. The characteristics of these violent events differ entirely from the focus of this study.

The rest of this paper is organized as follows. Section 2 outlines the background

information of internal conflicts and primary-level education in Myanmar. Section 3 introduces the data used for analyses, while Section 4 describes the empirical analyses. The results are discussed in Section 5, and Section 6 concludes.

2. Conflict and education in Myanmar

2.1. Background

Myanmar is a country in Southeast Asia, bordered by India, Bangladesh, Thailand, Laos, and China. Its total estimated population on census night (which is explained in detail in Section 3), both enumerated and non-enumerated, was 51,486,253. The percentage of individuals aged between 0-14 years, 15-59 years, and 60 years or above in 2014 were 28.6%, 62.5%, and 8.9%, respectively (United Nations Population Fund, 2017). In 2011, the country transformed to democracy from a lengthy military rule. In 2018, about half of the working-age population was still involved in agriculture, and the gross domestic product per capita based on purchasing power parity in constant 2011 U.S. dollars was $5,922 (World Bank, 2019).

Ethnic diversity is a distinctive characteristic of Myanmar. It has as many as 135 different ethnic nationalities within its borders (Oxford Burma Alliance, 2013). The Burmans account for 68% of the population, and tend to live in the lowland and more

economically developed regions of the country. Other ethnic groups, accounting for much smaller proportions of the population, include the Shan (9%), Karen (7%), Rakhine (4%), Chinese (3%), Indian (2%), and Mon (2%). They live mainly in the higher and more remote parts of the country (Haydena and Martin, 2013).

2.2. Internal conflicts

Myanmar's subnational conflicts affect more than one-third of the country's 330 townships. These townships contain more than 12.3 million people, or close to one-quarter of Myanmar's population. Many of the conflicts have persisted for over six decades. The geographic spread of Myanmar's conflicts, which we discuss in detail in the next section, reflects that they are not a localized exception that affect a small corner of the country (unlike the case of subnational conflicts in many other Asian countries). Instead, their form and duration relate closely to Myanmar's troubled history as an independent nation.

Prior to British colonial rule, the region that is now Myanmar experienced repeated conflicts. Kingdoms and chieftains challenged both each other and the rulers of fiefdoms outside the borders, which were drawn by the colonizers in the late 19th century. There was also extensive interaction among different groups and societies, especially the

urban and royal classes. Today, Myanmar's different ethnic groups offer competing versions of this history, typically basing current political aspirations on a mythical time when their own people lived homogenously and at peace among themselves.

Myanmar's ethnic armed organizations typically operate as the military wing of a political organization. The Kachin Independence Army, for example, is the military wing of the Kachin Independence Organization, while the Shan State Army (North) is the military wing of the Shan State Progress Party. These political bodies have not been able to contest government elections. Almost all armed organizations are affiliated with a specific ethnic group, and some appeal to more than one religious affiliation (typically both Buddhist and Christian). Divisions within armed organizations sometimes occur along local ethnic, religious, linguistic, or geographic lines. Over many years of conflict and periods of ceasefire, some groups have disbanded while other, often similar, armed organizations have tended to replace them. This shows how local dynamics evolve while the overall structure of the conflict remained intact. Larger ethnic armed organizations have significant administrative as well as military power. They hold territory that has never been controlled by the central government, and operate their own quasi-states that raise revenues, build roads, train teachers, and administer local justice.

The 2008 Constitution stated that all armed groups should be under the command

of the armed forces of Myanmar (Burma), called Tatmadaw. The government sought to follow this stipulation by transforming all of the Ethnic Armed Organizations (EAOs) operating under ceasefires into border guard forces. Most EAOs refused this demand, and in 2010 the government annulled the ceasefires. The intensity of violence increased. Soon after taking office in 2011, President Thein Sein took swift steps towards a new peace process, alongside other political and economic reforms. Freely contested by-elections in 2012, the release of political prisoners, relaxation of media censorship, and new economic policies secured an end to many sanctions imposed by Western nations, and led to a wave of international development support. New bilateral ceasefires were reached with fourteen EAOs, many of them building on existing agreements. Hope of progress towards peace grew as the government agreed to put political negotiations firmly on the table and talk with EAOs collectively for the first time, including with its active opponents. The government and EAOs began discussions over an inclusive ceasefire agreement designed to pave the way for political dialogue.

After three years of negotiation, the Nationwide Ceasefire Agreement (NCA) was signed in October 2015 by the Tatmadaw and eight EAOs. The hope was that at least half a dozen other armed organizations, who had negotiated the text, would sign as well; however, some were excluded by the government, leading others not to join in solidarity

and in response to ongoing Tatmadaw offensives. Confidence had also been damaged by a government statement that only those groups signing the NCA would be allowed to join the subsequent political dialogue（The Asia Foundation, 2017).

2.3. Education system

The basic education system comprises five years of primary (Kindergarten to Grade 4), four years of lower-secondary, and two years of upper secondary education. According to the Ministry of Education (MOE, 2016), there are 47,363 basic education schools in Myanmar, reaching approximately 9.26 million students in 2015-2016. The majority of these schools are managed by the Department of Basic Education within the Ministry of Education (MOE). In addition, a significant percentage of students access basic education through monastic, private, community, and other types of schools. Primary education is officially compulsory, and students must pass a comprehensive examination on basic subjects to continue to secondary school. Our analysis in the subsequent sections mainly focuses on primary education enrollment, while we also investigate whether children proceeded to secondary-level education only in 2014.

3. Data and method

Two main data sources are used in this study. The first is Version 19.1 of the UCDP Georeferenced Event Dataset (UCDP GED), which is a product of a project within the Uppsala Conflict Data Program (UCDP) of the Department of Peace and Conflict Research, Uppsala University. The purpose of the project is to provide the academic community with the most comprehensive structured event data on organized violence in the post-1989 world, so as to answer the call for geographically and temporally disaggregated data (Stina, 2019). The UCDP GED is an event dataset that disaggregates three types of organized violence (state-based conflict, non-state conflict, and one-sided violence), both spatially and temporally. Each event – defined as an instance of organized violence with at least one fatality – comes with date and geographical location (Sundberg and Melander, 2013). Specifically, each event's data contain latitude and longitude, which allows for identification of the township in which the conflict took place. Townships (330 in total) are the third-level administrative divisions of Myanmar, following state/region (first-level) and district (second-level). Therefore, we used Myanmar's map with township-level administrative boundaries to identify townships in which each of the events of violence between 1989 and 2013 took place.[2] For each event, information on

[2] A map of Myanmar with administrative boundaries can be obtained from the website of The Humanitarian Data Exchange: https://data.humdata.org/search?q=myanmar&page=3 (accessed on September 4, 2019).

the best (most likely) estimate of total fatalities was used as our main explanatory variable.

Figure 1 shows the number of township-level accumulated deaths by internal conflicts between 1989 and 2013. Geographical variation in the death toll is very clear; it is high in Kayin, Kachin, Southern Shan, Taninthary, and so on.

The second data source is a 10% random sample of the 2014 Myanmar Population and Housing Census obtained from the Ministry of Labor, Immigration, and Population of the government of Myanmar. This was Myanmar's third census after its independence; the previous census was conducted in 1983, implying that there was no census for thirty years. The 2014 census was conducted with midnight of March 29, 2014 as reference point. The total enumerated population was 50,279,900, while some populations in three states (Rakhine, Kayin, and Kachin) were not enumerated, mainly for security reasons. It is estimated that 1,206,400 persons were not enumerated, bringing the total estimated population of Myanmar on census night, both enumerated and non-enumerated, to 51,486,253. We can identify a location of an individual at township-level from the 10% census data, which makes it possible to connect individual-level information with conflict/violence data at the administrative level.[3][4]

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[3] Three townships in the census cannot be matched with conflict data because of inconsistent township names between the census and conflict data. Therefore, the effective number of townships for the analyses is 328.

[4] Administrative areas identified as “sub-townships” existed when the census was conducted in March/April 2014. The 83 sub-townships were subsequently absorbed into townships when the

There are two information sources regarding primary and secondary-level education enrollment and years of education in the 2014 census: (1) "Is (Name) currently attending, previously attended, or never attended school?" and (2) "What is the highest education grade/level (Name) completed?" Based on this information, we constructed two variables of interest at the time of the census: (1) whether an individual aged between 6 and 11 was enrolled for primary-level education in 2014; and (2) whether an individual aged between 13 and 16 was enrolled in secondary-level education in 2014, without terminating their study at only primary-level or less.

In addition, based on this information and individuals' ages, we constructed the primary-level education enrollment history for those of ages within the primary-level education period (between 6 and 11 years old) during 2004-2014, while imposing several assumptions. First, we assumed that there is no delay in enrollment to primary education if an individual already graduated from primary-level education at the time of census, because we have no information on when s/he started primary level education. Second, we assumed that there is no disturbing years during the primary-level enrollment period. For instance, if an individual indicated that grade 4 was his/her highest grade, and that

government reorganized the administrative structure of Myanmar in November 2014. We did not use the sample from those sub-townships, because we did not have information on which township each sub-township was absorbed into, and because no digital map is available that includes sub-townships.

s/he was not attending school at the time of the census but still did so before the age of primary school enrollment in 2004, we interpreted that s/he went to a primary school for four consecutive years. In this way, we constructed a quasi-panel dataset for individuals and utilized this primary-level education enrollment history as dependent variable.

Figure 2 shows the primary-level school enrollment rate at national level between 2004 and 2014, which was constructed using the assumptions outlined above. We observe that the national level enrollment rate is around 80%. By dividing the sample into two groups, namely, conflict-affected areas (townships) and no-conflict areas, it is clear that the enrollment rate of the former areas is lower than that of the latter areas.

Lastly, a variable on years of education in 2014 was constructed based on the highest completed education grade/level. We restricted the sample to those aged 22-31 years in 2014, since we are interested in the long-term impacts of exposure to conflicts during ages 6-10 years (i.e., ages at primary level education) on years of education of adults; further, information on conflicts are available after 1989. Table 1 shows the descriptive statistics of the samples for the 2014 cross-sectional analysis (Panel A: primary-level education enrollment; Panel B: enrollment to secondary-level education), the quasi-panel analysis between 2004 and 2014 on primary-level education enrollment (Panel C), and analysis of years of education for those aged 22-31 years in 2014 (Panel

D).

From Panel A, it is clear that the primary-level enrollment rate of children aged 6-11 is about 82%. The average death toll per township between 1989 and 2013 due to conflicts is 32, although there are significant variations. Half of the children are male; further, the education level of household heads is low, with approximately 17% having no education while 26% did not complete primary-level education. A wealth index was constructed from the household's ownership of several items, using principal component analysis. These items include a radio, television, mobile phone, computer, car, bike, and bicycle. From Panel B, we observe that only 69% of children aged between 13 and 16 years can proceed to secondary-level education; females are slightly more likely to go to the secondary-level education than male.

Panel C represents descriptive statistics of the pooled data for the quasi-panel analysis on primary school enrollment between 2004 and 2014. The average death toll per township during the previous year due to conflicts is close to one, although there are great variations. On average, one township experienced less than one conflict, and its duration was one day during the previous year; however, there are significant variations.

Panel D outlines descriptive statistics for the analysis on years of education for those aged 22-31 years in 2014. The average death toll per township for an individual of

age 6-10 years due to conflicts is about six; however, there are significant variations. on average, an individual experienced less than one conflict of six-day duration during the age 6-10 years, but with significant variations.

4. Empirical analysis

4.1.Empirical context

4.1.1. Cross-sectional analysis in 2014

First, we conducted a cross-sectional analysis of the 2014 data to assess the accumulation effect of conflict on education. Long-lasting conflicts may affect education through destruction of infrastructure, including schools or school systems. In addition, it may cause destruction of roads, which can prevent children from commuting to schools. As indirect causes, poor infrastructure such as lack of safe water supply system, electricity supply, and health facilities can affect children's health negatively, thus preventing school attendance. It may also stimulate child labor, because children have to run errands for their family such as getting water and cooking food, and children may have to work in fields or earn some cash. The empirical model is the following:

$$Y_{i,t} = \alpha_0 + \alpha_1 Conflict_{t,1989-2013} + x_i'\alpha_3 + \varepsilon_i$$

where we consider two binary variables for Y_i. The first variable has a value of 1 if an individual *i* in township *t* aged between 6 and 11 years was enrolled for primary-level education in 2014, and 0 otherwise. The second variable has a value of 1 if individual *i* in township *t* aged between 13 and 16 years was enrolled in secondary-level education in 2014 without terminating their study at primary-level or before, and 0 otherwise. $Conflict_{t,1989-2013}$ is our main variable of interest. It is constructed as the natural logarithm of 0.001 plus the sum of deaths by conflicts between 1989 and 2013 in township *t* (i.e., during the past 25 years). x_i is a vector of covariates, including gender and age of individual *i*, the household head's education level, and the household's wealth index; ε_i is an error term. A key identification assumption is that $Conflict_{t,1989-2013}$ and ε_i are not correlated. All estimations are conducted using the 2014 census' sampling weight.

4.1.2. Quasi-panel data analysis between 2004 and 2014

The second analysis is a quasi-panel analysis between 2004 and 2014, for which the strong but plausible assumptions mentioned above were used. This analysis allows for the investigation of how conflict events affect children's education within a short period. Our specification for primary-level education enrollment is described as follows:

$$D_{i,s,t,y} = \beta_0 + \beta_1 Conflict_{i,t,y-1} + \beta_2 Age_{i,t,y} + \tau_t + \delta_y + \mu_{s,y} + \varepsilon_{i,t,y}$$

where $D_{i,s,t,y}$ is a binary variable with a value of 1 if individual *i* in township *t* in state *s* in year *y* is enrolled for primary-level education, and 0 otherwise. $Conflict_{i,t,y-1}$ is the main variable of interest. It is the natural logarithm of 0.001 plus the sum of deaths by conflicts during the previous year in township *t*. $Age_{i,t,y}$ is the age of individual *i* in township *t* in year *y*; τ_t and δ_y are the township and year fixed effects, respectively; and $\mu_{s,y}$ is state (*s*)-year (*y*) specific year trend; $\varepsilon_{i,t,y}$ is an error term. This linear probability model was estimated based on the critical identification assumption that $Conflict_{i,t,y-1}$ and $\varepsilon_{i,t,y}$ are not correlated. Standard errors are clustered at township and year level, and all estimations were done using the 2014 census' sampling weight.

4.1.3. Years of education and experience of conflicts during age 6-10 years for those aged 22-31 years in 2014

Our final analysis investigates the long-term impacts of exposure to conflicts during age 6-10 years (i.e., age at primary level education) on years of education of adults aged 22-31 years in 2014. The empirical model is the following:

$$Edu_{i,t} = \gamma_0 + \gamma_1 Conflict_{i,age6-\quad,t} + w_i'\gamma_3 + \pi_t + \varepsilon_{i,t}$$

where $Edu_{i,t}$ is years of education of individual *i* in township *t*. $Conflict_{i,age6-10,t}$ is the main variable of interest. It is constructed as the natural logarithm of 0.001 plus the sum of deaths by conflicts that occurred when individual *i* in township *t* was of the age 6-10 years. w_i is a vector of covariates that includes age in 2014 and gender; π_t is the township fixed effect. The standard errors are clustered at the township level, and all estimations were conducted using the 2014 census' sampling weight.

4.2.Main results

4.2.1. Results of cross-sectional analysis in 2014

Primary school attendance of children aged 6-11

Table 2 shows the estimation results for primary education attendance of children aged 6-11 years in 2014. Column (1) does not include any covariates other than for the main variable of interest, which is $Conflict_{t,1989-2013}$. The coefficient of the variable is negative and statistically significant at the 1% level, implying that internal conflicts affect primary-level schooling negatively. However, the estimated coefficient is small. A 10% increase in the number of deaths translates to a 0.03% decline in enrollment probability.

Once other control variables were included in column (2), the magnitude of the coefficient of $Conflict_{t,1989-2013}$ decreased, but remained statistically significant at the 1% level: a 10% increase in the number of deaths implies a 0.015% decline in enrollment probability.

To confirm whether or not these results are robust, we conducted two sub-sample estimations. First, as we discussed in Section 3, some populations in three states (Rakhine, Kayin, and Kachin) were not enumerated, mainly for security reasons. These three states contain some conflict-intensive townships. We attempted to estimate the main specification from the sample, excluding these three states, to assess whether we obtained results similar to that of the full sample. The estimated coefficients of $Conflict_{t,1989-2013}$ are -0.0046 (without covariates, column (3)) and -0.0028 (with covariates, column (4)). They are larger than those obtained from full sample estimations, but their magnitude is similarly very small.

Second, we were concerned that migration may threaten our identification strategy. Parents who care about children's education may migrate their households out of conflict-ridden townships to safer ones. In such a case, the results obtained in the main specification (i.e., column (1) and (2)) may overestimate the negative impact of conflicts. If this was the case, estimating the main specification with the non-migrant sample would yield a smaller negative impact. Therefore, we tested this possibility by estimating the

main specification with the sample of individuals who had stayed in their place of birth until the time of the 2014 census. The results in columns (5) and (6) indicate that such a dynamic does not threaten the identification strategy. The estimated coefficients of $Conflict_{t,1989-201}$ in columns (5) and (6) are similar to those in columns (1) and (2).

We conducted a similar analysis using a different dataset: the 2015/16 Demographic and Health Survey (DHS) of Myanmar was used to extract information on primary-level school attendance and covariates (i.e., gender, age, education level of the household head, and quintile categories of wealth of households), these were connected with conflict information. Note that DHS surveys include only approximately 230 townships; the sample size is much smaller than that of the 2014 census. The results are shown in columns (7) and (8). While the magnitude of the coefficients in columns (7) and (8) are more than double those in columns (1) and (2), and statistically significant at the 1% level, they are still very small: a 10% increase in the number of deaths implies a 0.05% decline in enrollment probability (see column (8)).

Secondary school attendance of children aged 13-16

Table 3 presents results for secondary education attendance of children of age 13-16 years in 2014. The structure of Table 3 is the same as Table 2. Compared with the

results in Table 2, the magnitude of the coefficient $Conflict_{t,1989-2013}$ is larger in Table 3. However, the estimated magnitude is small: using the coefficient of $Conflict_{t,1989-2013}$ in column (2), a 10% increase in the number of deaths implies a 0.026% decline in enrollment probability. The qualitative results did not change, even when the sample excluding three states (Rakhine, Kayin, and Kachin) and the non-migrant sample were used. In addition, we used 2015/16 DHS data to conduct a similar analysis. Interestingly, the DHS results using DHS are similar to those using the full sample. Hence, the impact of internal conflicts is negative on secondary-level education enrollment, but its magnitude is negligible.

4.2.2. Results of the quasi-panel data analysis between 2004 and 2014

Column (1) in Table 4 does not include any control variables. The estimated coefficient of $Conflict_{i,t,y-1}$ is -0.008 and statistically significant at the 1% level. However, the estimated magnitude is small: a 10% increase in the number of deaths implies a 0.08% decline in enrollment probability. Controls were continuously added to columns (2) to (5), and the result in column (5) reflects the most preferable specification. The estimated coefficient of $Conflict_{i,t,y-1}$ declined further to -0.0007, with statistical significance at the 5% level. A 10% increase in the number of deaths implies a mere

0.007% decline in enrollment probability. The coefficient of age is negative and statistically significant for columns (2) to (5), probably reflecting the influence of dropout from primary education for a proportion of individuals as they age.

We conducted several robustness checks to confirm the validity of the obtained results. First, we confirmed that the sign, magnitude, and statistical significance of the coefficient of $Conflict_{i,t,y-1}$ in column (6) is similar to those of our main result (column (5)), even when we used the sample excluding three states (Rakhine, Kayin, and Kachin). Second, column (7) shows that the coefficient of $Conflict_{i,t,y-1}$ is -0.0006 and statistically significant at the 10% level. The magnitude of the coefficient of $Conflict_{i,t,y-1}$ is almost identical to the one in column (5). This result implies that migration is not a big threat to our main results. Third, we investigated whether there are gender differences in the impact of conflicts on primary school enrollment. For that purpose, we estimated the main specification for males (column (8)) and females (column (9)) separately. We find that gender differences in the impact of conflicts are negligible.

So far, the main variable of interest has been the sum of deaths by conflicts during the previous year in each township. However, it might be the case that the frequency of conflicts matter, rather than the number of fatalities. Frequent conflict events may disrupt education by preventing children from commuting to schools, even if the

death toll is low. Hence, we constructed a variable equal to the natural logarithm of 0.001 plus the number of conflicts during the previous year in township *t*. We replaced $Conflict_{i,t,y-1}$ with this variable in the main specification, and re-estimated the model. Column (10) of Table 4 reports the estimation results, which are similar to the main results. The magnitude of the coefficient of the number of conflicts is similar to that of $Conflict_{i,t,y-1}$ in column (5), but statistically insignificant. In a similar manner, we constructed a natural logarithm of 0.001 plus the number of days of internal conflicts during the previous year, and included this as an independent variable instead of $Conflict_{i,t,y-1}$. Column (10) of Table 4 reports the estimation results. The magnitude of the coefficient of the number of days of internal conflicts during the previous year is similar to that of $Conflict_{i,t,y-1}$ in column (5), but statistically insignificant.

An unanswered question is whether the impact of conflicts differ depending on ethnicity. It is natural to think that the negative impact may be larger for smaller groups than the Bumar ethnic group, given that the majority of conflicts are between the Bumar ethnic group and lesser ethnic groups. Unfortunately, we cannot test this hypothesis, since information on ethnicity is not included in the publicly available 2014 census data.

4.2.3. Results of years of education and experience of conflicts during age 6-10

years for those aged 22-31years in 2014

The aim is to investigate whether or not exposure to conflicts during ages 6-10 years (i.e., ages at primary education) has negative impacts on the years of education; this corresponds to the analysis of long-term impacts. Table 5 reports the results. The estimated long-term impact is very small or/and not statistically significant. If we estimate the model without township fixed effects, the estimated coefficient of the accumulated number of deaths by internal conflicts during ages 6-10 years is -0.1 in Column (1), and statistically significant at the 1% level. This is very small in magnitude: 1% increase in the accumulated number of deaths decreases the years of education by 0.001 years. If we include township fixed effects in Column (2), the coefficient is not any more statistically significant, although the sign is negative. A similar pattern is observed, even when dividing the sample between males and females (Column (3) - (6)), when using the accumulated number of internal conflicts (Column (7) and (8)) or the accumulated number of days of internal conflicts (Column (9) and (10)) during ages 6-10 years, instead of the accumulated number of deaths by internal conflicts during the ages 6-10 years.[5] We conclude that the long-term impacts of internal conflicts on years of education are

[5] We repeated the same exercises using the sample excluding three states (Rakhine, Kayin, and Kachin), using only the non-migrant sample. The qualitative results are very similar to those using the full sample. The results are available upon request from the authors.

negligible or none.

5. Discussion: characteristics of the conflict to explain the negligible impact

The previous section indicates that we found consistently negative impacts of internal conflicts. However, its magnitude is small compared to previous findings. For example, Lai and Thyne (2007) conducted a cross-country analysis revealing that countries suffer from a 1.6% and 1.9 % decline in primary and secondary education enrollment, respectively, when they experience civil conflicts. Analysis using microdata also shows a larger effect than our results, such as 1 to 0.5 years decline in schooling in Rwanda (Akresh and de Walque 2008), 13.3% decline in primary school attendance in Timor Leste due to direct impact of conflicts (Justino, Leone, and Salardi 2013), and 0.94 years less educational attainment in Cote d'Ivore, calculated as an indirect effect of conflict (Dabalen and Paul 2014). Although their empirical strategies are not identical to this study, it is apparent that the magnitude is notably larger than our findings. In this section, we explore the reasons for these small negative effects found by considering the characteristics of conflicts in relation to the mechanisms discussed in the Introduction, namely: death and displacement of teachers and students; dangers at schools and on the way to schools/ school closure; military draft/recruitment of child soldiers; deterioration

of psychological well-being; and destruction of livelihoods. There are two distinct features to Myanmar's conflicts, namely, long-lasting and less intensive conflicts, and the well-established administrative function of armed forces, EAOs, in conflict-affected areas.

The most significant differences in conflict characteristics between the cases of Myanmar and other countries are the length and intensity of the conflicts. Myanmar's conflicts are stretching over 60 years, while those of other countries are much shorter and more intensive. For instance, conflict in Rwanda is one of the most intensive over a very short duration. It lasted only 100 days; yet, it has left tremendous impact: approximately 800,000 people were massacred, and 2 million people became refugees (Akresh and de Walque 2008). Justino, Leone, and Saladi (2013) focused on the effect of the 1999 violence in Timor Leste, which led to the deaths of 0.2 % of the population, and massive destruction of 80 % of the country's infrastructure, including schools. Dabalen and Paul (2014) studied the Ivorian conflict between 2002 and 2004, which caused more than 3,000 deaths and displaced 700,000 people. Further, about 0.3 % of the population were victimized during this period. Although civilians in Myanmar have been experiencing displacement of 446,000 people due to the ethnic conflict that occurred between 1996 and 2010, as reported by the Thailand Burma Border Consortium (2006), the intensity is lower compared to that of other countries. Therefore, the first mechanism, death and

displacement of teachers and students, may be relevant to Myanmar to a limited extent.

Previous studies indicate a tendency for conflicts of a long duration and comparatively lower intensity to have a smaller negative impact on education. For example, Peru has suffered from political violence for a long time and, between 1980 and 1993, the violence intensified to cause the deaths of about 0.3 % of population (Leon 2012). Although a large number of people were severely affected, Leon (2012) found that the loss of years of educational attainment is 0.31, which reflects a smaller impact than for Myanmar. The Colombian case highlights conflicts of long duration and low intensity that have lasted 40 years. According to Wharton and Oyelere (2012), there is no robust educational gap between those who live in high conflict areas and others, although there is a significantly large gap between the ones directly affected by the conflict and the others.

Soler (2016) investigated the relationship between conflicts and educational achievement at schools by using data of the number of conflict events at each municipality, and individuals' scores at high school exit examinations. While it reveals lower achievement for schools located in conflict-affected municipalities, the gap is not as substantial, as the author expected that it does not exceed more than one (on a scale from 0 to 100). Soler (2016) attributed this to the possibility that high resilience might have been developed throughout the long years of conflict, including safety for learning. The

Colombian case has implications for Myanmar's case. The descriptive statistics in Table 1 indicate that the mean of the accumulated number of deaths from conflicts over a period of 25 years is about 32 (Panel A), although the maximum number is 3842. When we consider this in more detail, the mean number of deaths by internal conflict during the previous year in the township is less than one with the maximum number of 302 (Panel C). The mean number of internal conflicts during the previous year in the township is less than 0.2 (Panel C), with a maximum frequency of 108. These statistics illustrate how low the intensity of conflict is for most townships. It is not surprising that people lead everyday lives without much conflict-related destruction in most townships, including attending school.

Another critical reason for the small impact on education is the role being played by EAOs. In Myanmar, EAOs have been operating for over a century (even since the period of British colonization), and have administrative as well as military power. Further, as the Asian Foundation (2017) pointed out, both government and EAOs are eager to offer public services, including schools, to gain popularity and loyalty from the local population. Hence, townships where EAOs are active and where conflict events are likely to occur, sometimes have more schools than townships without EAOs. For instance, the KIO started to establish schools in 1964, and the KIO-Education Department in the

1970s. By 2013, there were four high schools, 32 middle schools, and 243 primary schools in areas under KIO administration (Kachin state), providing education to over 23,000 students. Adjacent areas have an estimated 310 government schools, providing education to 13,811 students (Jolliffe, 2014). In other cases, such as that of the highly contested area of Karen state, we can observe the collaboration between the EAOs' administrative body and the International NGOs that provide education (Jolliffe, 2014). Therefore, unlike in other countries, schools are often protected, and these contested areas gain more support from both EAOs and government in terms of the number of schools and teachers than in non-conflict affected areas.

The third possible path, military draft/recruitment of child soldiers, is also unlikely to be the case in Myanmar. Much information is not available, but the UNHCR gathered information in 2001 for the period June 1998 to April 2001. According to their information, the estimated number of child soldiers amounted to more than 50,000 in government and opposition armed forces, although the official military draft age is 18 to 35 for males, and 18 to 27 for females (Child Soldiers International, 2001b). Therefore, we cannot deny the existence of this phenomenon. However, there are several possible reasons why we do not see a large impact on education—years of education in particular.

First, according to Child Soldiers International (2001b) anyone who claims that

their age is 18 or over can be a soldier, and orphans and street children are particularly vulnerable to be recruited. Military style education is provided by government military training schools. Hence, being recruited to the military does not necessarily reduce the years of education. Second, EAOs recruited child soldiers. For instance, the Mong Tai Army in Shan state is considered to have had the largest number of child soldiers, with one son required from each family. They guaranteed basic education for children in return for serving as soldiers when needed (Child Soldiers International, 2001b). This situation is very different to other countries where the impact of military draft was observed. For example, the case of Bosnia and Herzegovina shows that the cohort of military-drafted children during the 1992-1995 civil war had significantly lower educational attainment. During this war, children as young as 13 years of age were involved with hostilities, and thousands of young boys were drafted to the military. In contrast, children in Myanmar may have been recruited to the military and being provided education without needing to engage with military operation. It is hence probably not affecting child education in the manner experienced by other countries.

Being exposed to violent events cause psychological suffering. Nevertheless, as we have seen, the intensity of Myanmar's conflict is much less compared to other countries. For instance, the highest number of fatalities in a year of 302 were recorded in

Hapapum township in Kayin in 2011. This is only approximately 0.00072% of the total township population[6]. In addition, when we observe the number of deaths and the number of conflict events from the period 2003 to 2013, the duration for which children are at primary school, 90 % of townships had no casualties and no violent events. Even among those conflict-affected areas, the median number of deaths and the number of conflict events of the previous year are five and one, respectively. Therefore, a very small number of children are likely to be exposed to violence directly, and an impact on education through deterioration of psychological well-being is unlikely in Myanmar.

The last possible mechanism of the negative impact of conflicts on education is through the loss of household livelihoods. However, this mechanism also does not seem to be significant in Myanmar. As we have already discussed, the numbers of deaths and displaced people are much smaller compared to other countries. Death of household working-age members and displacement affect household wealth severely; however, the number of deaths indicate that most people are unaffected in this way. The median accumulated number of deaths in conflict-affected areas between 1989 and 2013 is 22, and only about 5% of conflict-affected areas have more than 500 deaths over those 24 years. When we consider the correlation between the number of fatalities and the average

[6] This was calculated by using population data from the 2014 census. Therefore, the percentage was not precisely calculated.

wealth index score at township level, there is no obvious relationship (the correlation is -0.0185). Additionally, the conflict has been lasting for over 60 years, and many people have lived under conflict conditions for their entire life. People are likely to develop coping strategies or means to sustain their livelihoods through long years of adaptation. Further, conflict-affected areas sometime have even better infrastructure and social services, supported by both government and EAOs (The Asian Foundation, 2017). Indeed, the Asian Foundation (2017) shows a remarkably high performance for some contested townships in the development index, which reflects living conditions and assets, health, and education; this suggests that those well-performing townships receive rich support from EAOs, and sometimes from government as well.[7] Therefore, in the case of Myanmar, the magnitude of the impact on education through loss of financial resources is likely to be negligible.

With consideration of all of the above, we can also speculate why there is no notable gender gap in the impact of conflict on education in Myanmar, a negligible influence of recruitment of child soldiers, and negligible changes in household livelihoods.

[7] The Asia Foundation created a township development index by synthesizing sixteen indicators of standard of living, health, and education, based primarily on 2014 census data. The Township Development Index is the average of three sub-indices: (1). The standard of living sub-index, which combines ten indicators of household living conditions and assets. (2). The health sub-index, which combines infant mortality rates and aging index scores. (3). The education sub-index, which draws on four indicators: literacy rates, school enrolment, and elementary school (ages 6-11 years) and middle-school (ages 12-16 years) attainment rates. (The Asian Foundation, 2017)

6. Conclusion

Our study provided the first evidence of the impact of Myanmar's long-lasting conflict on education. Results are robust and consistently indicate that conflict negatively affects child education. However, the magnitudes of the effects are smaller, yet understandable, considering the low-intensity nature when compared to conflict in other countries. Further, Myanmar's conflict-affected areas are often governed over a long period of time by armed forces that provide social services, including schools. Additionally, in order to gain loyalty from civilians, the government has also been enhancing social service provision in those areas in recent years. In interpreting these results, it must be considered that the more recent incidences of violence in Rakhine state are outside of the scope of this study. These large-scale, high-intensity conflicts may have tremendous impacts through the mechanisms discussed in this paper, which must be studied in future research.

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Disclosure of interest

The authors report no conflict of interest.

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Figure 1: The accumulated death toll of internal conflicts 1989-2013

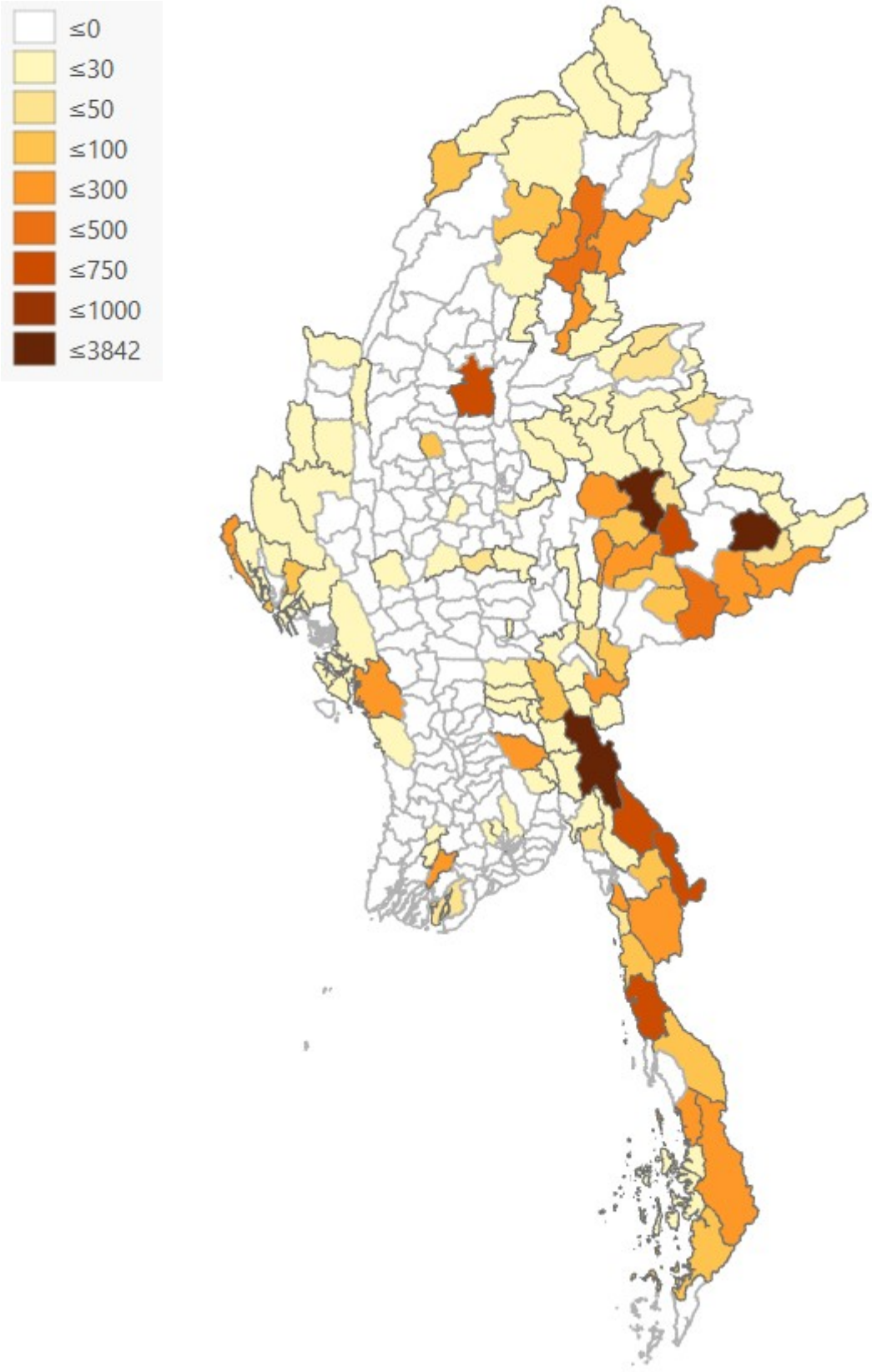

Figure 2: The national primary-level schooling enrollment rate between 2004 and 2014

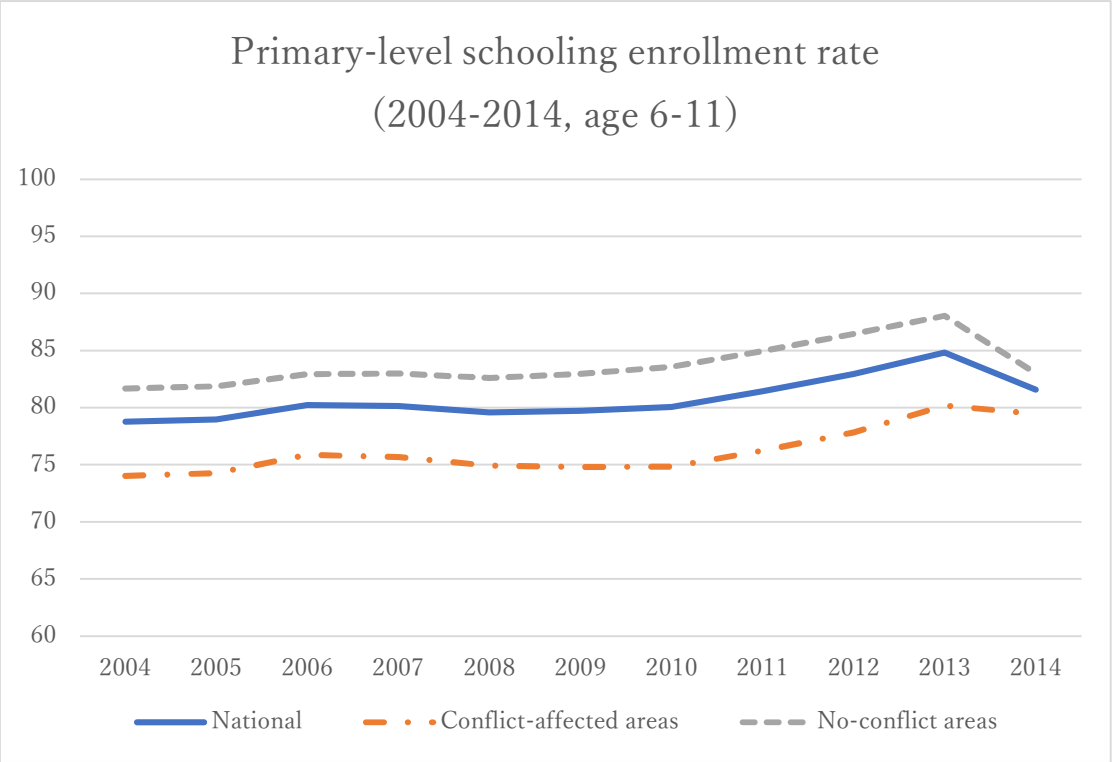

Table 1: Descriptive Statistics

Panel A: Primary level education enrollment of children aged 6-11 years in 2014

Variable	Obs	Mean	Std. Dev.	Min	Max
attend: = 1 if attend, 0 otherwise	532,947	0.822	0.383	0	1
ncumde_2013: accumulated number of deaths by internal conflicts between 1989 and 2013	532,947	32.380	173.842	0	3842
male: =1 if male, 0 otherwise	532,947	0.500	0.500	0	1
age: age in years	532,947	8.480	1.705	6	11
hedu1: head's education- no education	532,947	0.177	0.382	0	1
hedu2: head's education- primary-level not completed	532,947	0.262	0.440	0	1
hedu3: head's education- primary-level completed	532,947	0.243	0.429	0	1
hedu4: head's education- secondary-level not completed	532,947	0.224	0.417	0	1
hedu5: head's education- secondary-level completed	532,947	0.036	0.186	0	1
hedu6: head's education- tertiary education	532,947	0.039	0.194	0	1
hedu7: head's education- others	532,947	0.020	0.138	0	1
pc1: wealth index	532,947	-0.196	1.381	-1.695	5.618

Panel B: Proceeding to secondary level education of children aged 13-16 years in 2014

Variable	Obs	Mean	Std. Dev.	Min	Max
attend: = 1 if attend, 0 otherwise	349,262	0.694	0.461	0	1
ncumde_2013: accumulated number of deaths by internal conflicts between 1989 and 2013	349,262	30.351	158.399	0	3842
male: =1 if male, 0 otherwise	349,262	0.487	0.500	0	1
age: age in years	349,262	14.418	1.115	13	16
hedu1: head's education- no education	349,262	0.171	0.376	0	1
hedu2: head's education- primary-level not completed	349,262	0.244	0.430	0	1
hedu3: head's education- primary-level completed	349,262	0.247	0.432	0	1
hedu4: head's education- secondary-level not completed	349,262	0.235	0.424	0	1
hedu5: head's education- secondary-level completed	349,262	0.038	0.191	0	1
hedu6: head's education- tertiary education	349,262	0.044	0.205	0	1
hedu7: head's education- others	349,262	0.021	0.143	0	1
pc1: wealth index	349,262	0.030	1.452	-1.695	5.618

Panel C: Quasi-panel analysis on primary level education enrollment of children aged 6-11 years between 2004 and 2014

Variable	Obs	Mean	Std. Dev.	Min	Max
attends: = 1 if attend, 0 otherwise	5,653,316	0.81862	0.38533	0	1
ages: age in years	5,653,316	8.44262	1.69371	6	11
dsum_each: the number of deaths by internal conflicts during the previous year in the township	5,653,316	0.90639	9.18899	0	302
dn_each: the number of internal conflicts during the previous year in the township	5,653,316	0.19987	1.57874	0	108
dur_each: the number of days internal conflicts occurred during the previous year in the township	5,653,316	1.29887	18.2626	0	845

Panel D: Years of education and experience of conflicts during age 6-10 years (for those aged 22-31 years in 2014)

years of education	725,716	7.06067	4.32647	0	17
kdea: accumulated number of deaths by internal conflicts during age 6-10	725,716	6.41814	58.5896	0	1395
keve: accumulated number of internal conflicts during age 6-10	725,716	0.68029	4.72554	0	157
kdur: accumulated number of days internal conflicts occurred during age 6-10	725,716	6.56389	80.4008	0	3019
age in 2014	725,716	26.5089	2.86273	22	31
male: =1 if male, 0 otherwise	725,716	0.46169	0.49853	0	1

Notes:

1: Authors' calculations

2: A wealth index is constructed from the household's ownership of several items, using principal component analysis. See the text for detail.

Table 2: The number of deaths in conflicts between 1989 and 2013 and primary education attendance for age 6-11 years in 2014

Dependent variable = 1 if attended primary-level education, 0 otherwise

	Full sample		Sample excluding Rakhine, Kayin, and Kachin		Non-migrant sample		DHS sample	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ldsum2013: log of (0.001+ accumulated number of deaths by internal conflicts between 1989 and 2013)	-0.0030***	-0.0015***	-0.0046***	-0.0028***	-0.0035***	-0.0019***	-0.0066***	-0.0051***
	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0001]	[0.0005]	[0.0005]
male		-0.0032***		-0.0024**		-0.0036***		
		[0.0010]		[0.0011]		[0.0011]		
age		0.0078***		0.0070***		0.0077***		
		[0.0003]		[0.0003]		[0.0003]		
hedu2		0.1212***		0.1250***		0.1235***		
		[0.0018]		[0.0019]		[0.0018]		
hedu3		0.1487***		0.1527***		0.1502***		
		[0.0018]		[0.0019]		[0.0018]		
hedu4		0.1413***		0.1448***		0.1460***		
		[0.0018]		[0.0019]		[0.0019]		
hedu5		0.1380***		0.1390***		0.1446***		
		[0.0030]		[0.0032]		[0.0032]		
hedu6		0.1100***		0.1117***		0.1169***		
		[0.0031]		[0.0033]		[0.0034]		
hedu7		0.1126***		0.1182***		0.1137***		
		[0.0040]		[0.0042]		[0.0041]		
pc1		0.0085***		0.0085***		0.0088***		
		[0.0004]		[0.0004]		[0.0004]		
Constant	0.8112***	0.6430***	0.7999***	0.6366***	0.8152***	0.6466***		
	[0.0007]	[0.0032]	[0.0008]	[0.0034]	[0.0007]	[0.0033]		
Observations	532,817	532,817	474,239	474,239	480,743	480,743	7,007	7,007
R-squared	0.0014	0.0234	0.0027	0.0248	0.0019	0.0260	0.0231	0.0752
Covariates	No	Yes	No	Yes	No	Yes	No	Yes

Notes

1. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1
2. See Table 1 for the abbreviation of variable names, except ldsum2013.
3. Covariates of the estimation results of DHS sample are omitted, but they are available upon request from the authors.

Table 3: The number of deaths in conflicts between 1989 2013 and secondary education attendance for age 13-16 years in 2014

Dependent variable = 1 if attended secondary-level education, 0 otherwise

	Full sample		Sample excluding Rakhine, Kayin, and Kachin		Non-migrant sample		DHS sample	
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ldsum2013: log of (0.001+ accumulated number of deaths by internal conflicts between 1989 and 2013)	-0.0054***	-0.0026***	-0.0075***	-0.0044***	-0.0054***	-0.0029***	-0.0051***	-0.0025*
	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0002]	[0.0014]	[0.0013]
male		-0.0112***		-0.0112***		-0.0146***		
		[0.0014]		[0.0015]		[0.0016]		
age		-0.0087***		-0.0095***		-0.0079***		
		[0.0007]		[0.0007]		[0.0007]		
hedu2		0.1279***		0.1279***		0.1307***		
		[0.0026]		[0.0027]		[0.0027]		
hedu3		0.2393***		0.2391***		0.2422***		
		[0.0025]		[0.0027]		[0.0026]		
hedu4		0.3204***		0.3207***		0.3277***		
		[0.0024]		[0.0026]		[0.0026]		
hedu5		0.3270***		0.3265***		0.3469***		
		[0.0034]		[0.0037]		[0.0035]		
hedu6		0.2475***		0.2448***		0.2931***		
		[0.0036]		[0.0038]		[0.0036]		
hedu7		0.1661***		0.1713***		0.1671***		
		[0.0058]		[0.0060]		[0.0061]		
pc1		0.0688***		0.0691***		0.0792***		
		[0.0005]		[0.0006]		[0.0006]		
Constant	0.6739***	0.6204***	0.6616***	0.6192***	0.6736***	0.6184***		
	[0.0010]	[0.0097]	[0.0012]	[0.0102]	[0.0011]	[0.0104]		
Observations	349,262	349,262	312,044	312,044	297,738	297,738	4,256	4,256
R-squared	0.0031	0.1369	0.0048	0.1377	0.0031	0.1542	0.0031	0.1943
Covariates	No	Yes	No	Yes	No	Yes	No	Yes

Notes

1. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1
2. See Table 1 for the abbreviation of variable names, except ldsum2013.
3. Covariates of the estimation results of DHS sample are not shown, but they are available upon request from the authors.

Table 4: The number of deaths in conflicts during the previous year and primary education attendance between 2004 and 2014

Dependent variable = 1 if attended primary-level education, 0 otherwise

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
			Full sample			Sample excluding Rakhine, Kayin, and Kachin	No-migrant sample	Male sample	Female sample	Full sample	Full sample
ldsum_each: log(0.001+the number of deaths by internal conflicts during the previous year)	-0.0080***	-0.0080***	-0.0084***	-0.0010**	-0.0007**	-0.0008*	-0.0006*	-0.0007**	-0.0006*		
	[0.0023]	[0.0023]	[0.0025]	[0.0004]	[0.0003]	[0.0004]	[0.0003]	[0.0003]	[0.0003]		
ldn_each: log(0.001+the number of internal conflicts during the previous year)										-0.0005	
										[0.0003]	
ldur_each: log(0.001+the number of days of internal conflicts during the previous year)											-0.0005
											[0.0003]
ages		-0.0058***	-0.0063*	-0.0070*	-0.0071*	-0.0070*	-0.0074*	-0.0061	-0.0080**	-0.0071*	-0.0071*
		[0.0003]	[0.0032]	[0.0033]	[0.0033]	[0.0032]	[0.0034]	[0.0037]	[0.0030]	[0.0033]	[0.0033]
Constant	0.7672***	0.8162***	0.8186***	0.8713***	0.8739***	0.8750***	0.8788***	0.8595***	0.8877***	0.8747***	0.8749***
	[0.0173]	[0.0173]	[0.0304]	[0.0287]	[0.0288]	[0.0279]	[0.0293]	[0.0318]	[0.0263]	[0.0282]	[0.0282]
Observations	5,653,316	5,653,316	5,653,316	5,653,316	5,653,316	5,053,208	4,852,733	2,764,750	2,888,566	5,653,316	5,653,316
R-squared	0.0018	0.0025	0.0056	0.1079	0.1097	0.1146	0.1223	0.1085	0.1137	0.1097	0.1097
Township dummies	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-specific year trend	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered standard errors at township level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered standard errors at year level	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1

Table 5: Years of education and experience of conflicts during age 6-10 years (for those aged 22-31 years in 2014)

Dependent variable: Years of education

					Full sample					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES			Male sample	Male sample	Female sample	Female sample				
lkdea: log(0.001+accumulated number of deaths by internal conflicts during age 6-10)	-0.1002***	-0.0049	-0.1115***	-0.0053	-0.0903***	-0.0040				
	[0.0228]	[0.0051]	[0.0219]	[0.0069]	[0.0243]	[0.0047]				
lkeve: log(0.001+accumulated number of internal conflicts during age 6-10)							-0.1144***	-0.0039		
							[0.0281]	[0.0061]		
lkdur: log(0.001+accumulated number of days of internal conflicts during age 6-10)									-0.0954***	-0.0040
									[0.0256]	[0.0048]
age in 2014	-0.1053***	-0.0923***	-0.0898***	-0.0756***	-0.1186***	-0.1067***	-0.1067***	-0.0923***	-0.1053***	-0.0923***
	[0.0041]	[0.0032]	[0.0047]	[0.0033]	[0.0044]	[0.0040]	[0.0041]	[0.0032]	[0.0040]	[0.0032]
male: =1 if male, 0 otherwise	0.0346	0.0512*					0.0344	0.0512*	0.0341	0.0512*
	[0.0295]	[0.0267]					[0.0295]	[0.0267]	[0.0295]	[0.0267]
Constant	9.2452***	9.4539***	8.8035***	9.0486***	9.6565***	9.8509***	9.1817***	9.4593***	9.2708***	9.4588***
	[0.1618]	[0.0849]	[0.1555]	[0.0890]	[0.1803]	[0.1070]	[0.1805]	[0.0850]	[0.1727]	[0.0845]
Observations	725,716	725,716	335,054	335,054	390,662	390,662	725,716	725,716	725,716	725,716
R-squared	0.0092	0.1609	0.0101	0.1657	0.0088	0.1623	0.0089	0.1609	0.0086	0.1609
Township dummies	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Clustered standard errors at township level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1