Political Conflict and Education in sub-Saharan Africa

Nthabiseng Tsoanamatsie*

Manoel Bittencourt[†]

September 1, 2015

Abstract

In this paper we investigate the relationship between education and political conflict in sub-Saharan Africa and the effect that primary school enrollment has on conflict. Many sub-Saharan African countries have experienced political conflict since independence. These countries have also seen a high increase in educational attainment in the last half century. We use a panel dataset covering the period between 1970 and 2012 for 48 sub-Saharan African countries. The empirical strategy includes Pooled OLS as a baseline model, Fixed Effects as well as Fixed Effects with lags and Fixed Effects with Instrumental Variables to account for endogeneity. Our results indicate that indeed education has a pacifying effect on political conflict. Furthermore, we find that education has more of a negative effect on civil conflicts than on interstate conflict. These results are significant as they show that higher numbers of people enrolled in school will not only result in higher human capital accumulation and therefore higher growth and development, but it also leads to decreased conflict.

Key words: Conflict, Education, sub-Saharan Africa JEL Classi.cation:E02, E03, F50, I21, I26, O55

^{*}Corresponding author, PhD candidate, Department of Economics, University of Pretoria, Pretoria 0002, South Africa, phone: +27 (0)12 420 6914, email: nthabi.tsoana@gmail.com

[†]Associate Professor, Department of Economics, University of Pretoria, Pretoria 0002, South Africa, phone: +27 (0)12 4203463, email: manoel.bittencourt@up.ac.za

1 Introduction

In this paper we investigate the empirical relationship between education and political conflict in sub-Saharan Africa. The link between education and politics, including political conflict has long interested scholars – Aristotle, for example, suggested that education has a peace-enhancing effect in societies (Sargent, 1996). Many African countries, including Sub-Saharan African countries have experienced a recurrence of political unrest and conflict over the past number of decades. These countries, according to Friedman et al (2011), have also seen a high increase in educational attainment in the last half century. We therefore investigate what impact this increase in education has, and has had on political conflict in the region. For this purpose, we make use of primary school enrollment as a proxy for education. We go further by investigating what effect education is having on different variants of political conflict.

Given the grave consequence of political conflict, particularly political conflict that is violent in nature, it is imperative that there is a better understanding of these conflicts so that policy makers are placed in a better position to curtail them, leading to an overall improvement in the quality of life. The majority of work on political conflict identifies and identifies and/or investigates variables that have a causal effect on political conflict such as population, poverty and regime type. These variables important as they are either factors that policy makers are already trying to change or improve (such as income levels) of are not easy to change in the short term (e.g. regime types). Education on the other hand presents a unique opportunity as it is a factor that can be manipulated. Besides, studies indicate that education policies have often been motivated by views on their political effects (Thyne, 2006; Friedman et al, 2011).

The pacifying effect of education on conflict is increasingly receiving attention as political conflict continues to plague many developing countries, particularly those of sub-Saharan Africa. Education is indicated to work through several channels to prevent and decrease political conflict. These include (but are not limited to) the reduction of grievances as people see

government's investment as a signal that it cares about people's well-being's (Thyne, 2006). Collier and Hoeffler (2004) argue that by increasing individual's incomes, education makes participating in political conflict less attractive.

Our empirical evidence suggests that there is a causal relationship that runs from education to political conflict, with increased education leading to less political conflict. The results indicate that education has been a robust determinant of the incidence of political conflict in sub-Saharan Africa, with education being associated with lower societal political conflict involvement (in line with Collier and Hoefffler, 2004 and Thyne, 2006). Secondly, the results suggest that education has a pacifying effect on civil political conflicts but not so much on interstate political conflict.

Evidence also indicates that both religious and ethnic fractionalisation play significant roles in the incidence of political conflict in the region and that highly fractionalised societies more susceptible to political conflict (Posner, 2004, Alesina, et al, 2003, Montalvo and Reynal-Querol, 2005, and Arbath, Ashraf and Galor, 2013). however, religious fractionalisation appears to play a more significant role in promoting political conflict in the sub-Saharan region. All in all, our findings indicate the significance of political conflict in the region as well as education's role in reducing it.

2 Review of Related Literature

Political conflict in its many different forms has been a subject of interest for many years. Conflict of this nature has a negative impact on countries' economies as well as their social indicators. Research shows that political conflicts often results in disruption of the flow of economic goods, diversion of resources away from (productive) economic activities as well as social programs, and have an overall negative effect on economic growth. In addition, it is indicated that conflicts (especially those that are violent in nature) result in high mortality rates and disability, both which have negative consequences for economies and societies. Again, these have been shown to cause large involuntary movements of people (e.g. refugees) thus causing disruptions

to economies. Finally, and perhaps also more closely related to our study, political conflicts disrupt important social programs such as education, (Hoeffler and Reynal-Querol, 2003; Collier, Elliott, Hegre, Reynal-Querol and Jambanis, 2003; and Thyne, 2006).

There are a number of variables that are linked to political conflict; some are argued to lead to more political conflict (e.g. high fractionalisation in societies) and some are credited with leading to lower political conflict (e.g. high income levels that result in higher standards of living). In line with this argument, literature has suggested that education plays an important role in political conflict, i.e. education decreases the odds of societies' involvement in political conflict (Friedman et al, 2011; Thyne, 2006; Collier and Hoeffler, 2004, Collier, Hoeffler and Soderbom, 2004). This literature is similar to that dating back to Aristotle and more recently Lipset (1959), arguing for education's role in the political economy of nations. Whether directly through design of the education system itself in countries, or indirectly by advancing awareness of history along with analytical skills as well as a diversity of opinions, education may encourage democratic and civic values (Lochner, 2011). Moreover, in Africa post-independence, authorities expanded education with the aim of promoting integration and national identity (Nyerere, 1973, in Friedman et al, 2011).

Thyne (2006) argues that by investing in education and ensuring that there is a strong system of education; governments are also giving a signal that they care about the welfare of their citizens, hence lessen grievances. It is well documented that education has a positive effect of economic development (e.g. Barro, 2013 and Aghion, Hoxby and Vandenbussche, 2009), and Thyne points out that these higher levels of economic development brought on by education along with the resultant social equality work to reduce political conflict through the reduction of grievances. Furthermore, education produces economic growth that is more equitable than other sources of income, for instance natural resource development, hence leading to less cause for grievance (Thyne, 2006).

A report by the World Bank points out that investment in education is a way through which governments can make long-term and direct in people's lives, thereby reducing grievances. It makes clear that education is a powerful instrument for decreasing depravation and vulnerability in societies; helping to increase earnings potential, expanding labour mobility, promoting health and decreasing fertility, as well as the poor a voice in society and the political system. This argument is a more direct way through which education impacts (i.e. reduces) grievances, than the above argument which requires that it first reduce inequalities, which then leads to reduced grievances. On the flip side, poor and/or unequal investment in education could also signal to people that the government does not care much for them, resulting in grievances that could encourage rebellion (Thyne, 2006).

Another channel through which education decreases the probability of political conflict is by raising opportunity costs of being involved in this form of conflict. Collier and Hoeffler (2004) point out that not only does rebel recruitment cost money as rebel must be paid somehow, becoming a rebel also means that there is foregone income. When this foregone income is low enough (and possibly less than what one receives as a rebel), then rebellion becomes more attractive. However, if potential rebel recruits are educated, then chances are higher that they already earn a higher income than what they would be earning if they were uneducated. This ultimately means that education (through higher earnings and/ or higher potential earnings) increases the opportunity cost of political conflict and therefore decreases it (Collier and Hoeffler, 2004). Similarly, Thyne (2006) corroborates this argument by indicating that with higher levels of education in countries and therefore higher incomes, governments then have a broader tax base that they can draw funds from to fund the military. Through this, not only can governments better defend themselves but the opportunity cost of would-be rebels is increased.

Lastly, literature proposes that education brings about more political and social stability. Sergent (1996) in Thyne (2006) shows that early political theorists such as Aristotle and Montesquieu argued that through education, individuals as well as communities become empowered for effective citizenry and advances a culture of peace. More current literature argues that schools bring people from different backgrounds together, teaching them to work

together peacefully and since the school system combines the objectives and interests of wide ranging groups of people, and it establishes a common underpinning for better citizenship. Lastly, schools teach people interpersonal, social, political, and legal standards that are the foundation of good citizenship, along with the behavior expected of citizens as well as the consequences for those failing to adhere to these (Thyne, 2006). Along these lines, Collier and Hoffler (2004) also indicate that education may lower the risk of conflict through changing attitudes.

3 Data and Methodology

To measure conflict we use three main variables, ACTOTAL, the total summed magnitude of all societal and interstate Major Episodes of Political Violence, CIVCONFL a measure capturind all societal Major Episodes of Political Violance (both civil conflicts and ethnic conflicts) and INTCONFL, a measure of all interstate Major Episodes of Political Violance. These variables come from the 'Major Episodes of Political Violence' database by the Center for Systemic Peace (CSP). "Major episodes of political violence are defined by the systematic and sustained use of lethal violence by organized groups that result in at least 500 directly-related deaths over the course of the episode. Episodes are coded for time span and magnitude..." (Marshall, 2014). An eleven point scale is utilised for the magnitude score of episodes of political violence that ranges from 0 to 10, with 0 denoting no episodes, 1 denoting the lowest magnitude and 10 the highest magnitude of political violence.

We use primary school enrollment as a proxy for education, and the data for this comes from the World Development Indicators' database. Thyne (2006) argues that primary school enrollment rates are a superior proxy for investment in education because primary school enrollment is an outcome variable capturing how government's investment in education is actually reaching those in need of it. Conversely, spending measures may show false responsiveness especially if funds become trapped and wasted through corruption, misallocation of funds and bureaucratic inefficiency. Moreover, international agreement, for instance the UN's Convention on the Right of

the Child (1989), state that every country is expected to have a high level of primary school enrollment, hence highly responsive governments are expected to have a higher level of primary enrollment (for example, due to universal access to primary education).

The causal relationship between education and conflict is plagued by possible reverse-causality and this needs to be taken into account in modeling. The main difficulty in estimating the impact of education on behavior linked to conflict and violence, according to Friedman et al (2011) is the possibility of reverse causality. The study by Lai and Thyne (2007) on the effects of civil war on education finds that indeed (this form of) political conflict has a negative impact on education, which further proves the presence of endogeneity in the conflict-education relationship. It is clear therefore that the major risk to our empirical identification of the impact of education on political conflict stems from the fact that political conflict itself could possibly cause changes in education (e.g. school enrollment), possibly leading to endogeneity bias. We therefore use instrumental variables to correct for the possible endogeneity problem that is associated with this relationship.

We use two instruments for education. The first one is the lag of primary enrollment and the second one is the percentage of GDP that comes from the agricultural sector (AGRIC). The second instrument (AGRIC) follows Becker and Cinnirella's (2010) work on education and fertility; they also make use of a similar instrument for education due to the endogeneity issue between their main variables of interest, i.e. education and fertility. Also, Galor et al (2009) show that when economic activity is dominated by agricultural activity, human-capital accumulation is suppressed as (large) landowners have no incentive to promote public schooling as the majority of the workforce in the agricultural sector does not require much education, (Galor 2005, Becker and Cinnirella 2010). In the same light, when the majority of a country's workforce is engaged in agricultural activities and the other economic sectors are small relative to the agricultural sector, then that country is expected to low levels of education.

In addition to the variables central to this study, we use several control variables as a means of avoiding the "omitted variable bias" that can result

in endogeneity (which means the model would be misspecified), and our choice for these follow the underlying theory. The control variables include two measures of fractionalisation (i) ETHFRAG for ethic fractionalisation and (ii) RELFRAG for religious fractionalisation. The other control variable are (iii) DEMOC for democracy, CPI for commodity price index, and GDP for GDP growth.

Our measure of ethnic fractionalisation, ETHFRAG, comes from Posner's (2004) work on "measuring ethnic fractionalisation in Africa". Montalvo and Reynal-Querol (2005) show that generally, any fractionalisation index can be calculated as follows:

$$FRAC = 1 - \sum_{i=1}^{N} \tau_i^2 = \sum_{i=1}^{N} \tau_i (1 - \tau_i)$$

where N is the number of groups and τ_i is the proportion of people belonging to ethnic group i. The simple interpretation for the index of ethnic fractionalisation is that on randomly selecting two individuals, FRAC is the probability them belonging to the same ethnic group. For fractionalisation, particularly ethnic fractionalisation, a number of studies have critisised this measure for its inability to fully capture ethnic fractionalisations's role in conflict (Montalvo and Reynal-Querol, 2005; Posner, 2004). For example, Posner (2005) argues that the above measure of fractionalisation suffers from a number of basic calculation inaccuracies including several that result from the "grouping problem". As mensioned before, this study makes use of Posner's (2005) measure of ethnic fractionalisation which is based on an accounting of politically relevant ethnic groups.

It is expected that more ethnic fractionalisation leads to more political conflict as argued so by Posner (2004), Alesina, Devleeschauwer, Easterly, Kurlat and Wacziarg (2003), Montalvo and Reynal-Querol (2005) as well as Arbath, Ashraf and Galor (2013) among others. For example, Easterly and Levine (1997) found that ethnic diversity had a significant effect on economic growth in a cross-section of countries. A similar argument follows for more religiously fragmented countries (Alesina, et al, 2003) and our measure for religious frantionalisation comes from Alesina et al (2003).

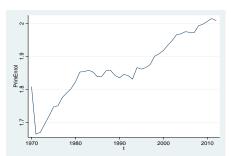
Our democracy variable comes from the Polity IV Project and its score ranges for 0 to 10, with 10 indicating a high level of democracy. Democracy's effect on political conflict is ambiguous in literature. For example, Collier and Rohner (2008) argue that although advancing democracy is currently used as a peace promoting strategy (with the underlying principle being that democratic accountability decreases rebellion incentives) they also indicate that technical government repression possibilities are constrained under democracy - making rebellion easier, hence they conclude that the effect of democracy on political conflict is indeed ambiguous. However they do propose that increasing democracy works better to curb political violence in higher income countries.

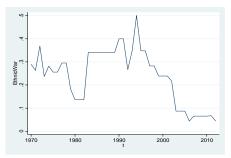
Studies have indicated that there is a link between commodity prices and incidents of political conflict (e.g. Bazzi and Blattman, 2014; Carter and Bates, 2011). Bazzi and Blattman (2014) find that there is a link between commodity prices, and that rising prices lead to shorter and less intense wars in countries. Our commodity price index data comes from Grilli and Yang (1988). Lastly, according to numerous studies such as that by and Collier and Hoeffler (2004), there is a significant causal relationship between national income and conflict, with high income leading to lower incidences of political conflicts. The data on GDP growth comes from the World Bank Development Indicators.

Just to give a visual picture of our main variables and how they are correlated, Figure One depicts two variables, ethnic war and primary school enrolment from 1970 to 2012. The two variables, one of political conflict and the other of education give a general picture of the main variables of interest. Primary school enrollment exhibits a general upward trend while ethnic seems to decreasing over time. Hence Figure One gives a general an idea of how political conflict and education are moving together over time and the two variables appear to be moving in opposite directions.

Table One presents the correlation matrix of some of the main variables under investigation. ACTOTAL (i.e. the total summed magnitudes of all societal and international major episodes of political violence (MEPV)) is used in this case as a proxy for political conflict. Our main variables of in-

Figure 1: Conflict and Education in sub-Saharan Africa, 1970-2012





terest, political conflict as well as main education variable - primary school enrolment have (the expected) negative correlation with each other, which suggests that more education in the form of higher school enrolment has a pacifying effect on conflict. Additionally, ethnic fractionalisation (ETH-FRAG) is presenting a positive correlation with conflict indicating (as literature has predicted) that more fractionalised societies could be more prone to political conflict. The commodity price index (CPI) on the other hand present a negative correlation with conflict, suggesting that increased commodity prices lead to less political conflict. GDP growth on the other hand presents a negative correlation with conflict signifying that increased income results in less political conflict. Democracy in this case is negatively correlated with conflict which suggests that conflict could be promoting peace in sub-Saharan Africa.

4 Empirical Strategy

The empirical strategy for econometric modeling is based on panel data analysis. For such a case such as this one where there is a large enough T (time-series component) that it makes it possible to estimate a separate regression for each cross-section (country), then it only makes sense to consider heterogeneity across these units, and this heterogeneity can be tested for (Fuertes & Smith, 2008). Since this heterogeneity may have its roots

	ACTOTAL	PrimEnrol	ETHFRAG	DEMOC	СРІ	GDP
ACTOTAL	1.0000					
PrimEnrol	-0.1280* 0.0000	1.000				
ETHFRAG	0.1996*	-0.0072	1.000			
	0.0000	0.7834				
СРІ	-0.0463 0.0460	-0.2188* 0.0000	-0.0405 0.0887	1.000		
DEMOC	-0.3547* 0.0000	0.1301* 0.0000	-0.0239 0.3270	0.0793* 0.0007	1.0000	
GDP	-0.1069* 0.000	0.1095* 0.000	-0.0645* 0.0086	0.0042 0.8596	0.1933* 0.0000	1.0000

in individual-specific characteristics which do not change over time (such as institutions and the presence of lack of natural resources), one would surely expect heterogeneity across the sub-Saharan African. For this reason we make use of Fixed Effects estimators.

Furthermore, Phillips and Moon (1999) argue that in panels such as this one, spurious regression is not likely to be a problem because of the averaging that takes place in panel estimators, reducing the potential noise coming from such regressions, hence we do not have to worry about possible non-stationarity of the variables

The first stage of regression involves using the pooled OLS (Ordinary Least Squares) estimator as a benchmark model. This is estimator looks like this:

$$CONFL_{it} = \alpha_i + \beta EDU_{it} + \gamma CONTROL_{it} + v_{it}$$

Where β is a coefficient of our main parameter of interest, education (primary school enrollment). The null hypothesis is that β is equal to zero, i.e., education does not have a significant causal effect on political conflict. Conflict (CONFL) here stands for the different political conflict variables we are investigating and they include CIVCONFL (the total summed magnitudes

of all societal political conflictsm CIVCONFL = Civil Wars + Civil Violence + Ethnic War + Ethnic Violence); INTCONFL (the total summed magnitudes of all international political conflicts), INTCONFL = International Wars + International Violence; and ACTOTAL (comprising all societal and interstate political conflicts). CONT is a vector of all the control variables used and they are described in the data section.

Looking at the literature on the causal link between education and political conflict, it easy to see that reverse causality is possible, i.e., as much as we expect education to affect political conflict, the very same conflict is also highly likely to have an impact on education. For example, Lai and Thyne (2007) find that civil war has a detrimental effect on education as it negatively impacts education enrollment as well as spending on education. The OLS estimates will be subject to endogenelty bias and therefore will not necessarily represent the causal effect we are investigating.

To deal with the economic and statistical endogeneity (due to education not being entirely exogenous in determining conflict), we first make use of the lag of primary school enrollment in our Fixed Effects model. We then also use the Fixed Effects with instrumental variables (FE-IV) estimator. This is a good estimator (according to Arellano, 2003) because it provides efficient and asymptotically consistent estimates as $T \to \infty$. As mentioned previously, we make use of the percentage of GDP that originates from the agricultural sector (AGRIC) as an instrument for education to identify the effect of education on political conflict. The instrumental variable method utilised will thus make it credible to affirm the causal link between education and political conflict, i.e., it will help us to assert that the relationship is not simply just a correlation.

The exclusion restriction for our instrument is that agricultural activity is not directly related to political conflict in sub-Saharan Africa. A great part of the regions work force is involved in agriculture and unlike those special cases where there were disputes over land such as in Zimbabwe's case (for which the cause was more related to ethnicity than agriculture itself); involvement in the agricultural sector has not been directly linked to political conflict.

5 Results and Discussion

To investigate the existence of the causal relationship between running from education to fertility, first we present the results for the total summed magnitude of all societal and interstate political conflict (ACTOTAL) in Table two. The dependent variable is ACTOTAL and the main independent variable is primary school enrollment (PrimEnrol). The first column gives the results for the Pooled OLS models (POLS) with robust standard errors and they show that education had the expected negative effect on total political conflict. These are followed by results from the Fixed Effects estimation with robust standard errors and they too suggest that education has a negative impact on political conflict. Both the POLS and FE estimates serve as good baseline models but the results are most likely to be biased due to the presence of endogeneity in the relationship between education and political conflict. To correct for endogeneity, first we have Fixed Effects with lags (FE - Lags) (also using robust standard errors) where we use the lag of primary school enrollment as an instrument for education (primary school enrollment). The results indicate that education has a negative causal effect on total political conflict. The -0.836 estimate shows that for one percentage point increase in primary school enrollment, there will be a 0.84 reduction in the magnitude of societal political conflict. Another model that use of to correct for endogeneity is the Fixed Effects with Instrumental Variables (FE-IV) with the proportion of the working population that is engaged in agricultural activities (AGRIC) as the instrument for education. The results from these model corroborate those from POLS, FE and FE with lags (and they are statistically significant), suggesting that education does indeed have negative causal impact on total political conflict in sub-Saharan Africa.

We introduce control variables in the subsequent rows, and making up the first controls are ethnic fractionalisation and religious fractionalisation. Both measures of fractionalisation are associated with higher levels of political conflict, indicating that more fragtionalised societies are more vulnerable to political conflict (Posner, 2004, Alesina, et al, 2003, Montalvo and Reynal-Querol, 2005, and Arbath, Ashraf and Galor, 2013). For instance, all

the religious fractionalisation (RELFRAG) estimates (i.e. for all the four different models) are positive and statistically significant indicating that religious fractionalisation leads to more political conflict. For example, the FE with lags estimate for RELFRAG in the third column suggests that an increase of the religious fractionalisation measure by one percent causes the magnitude of political conflict to go up by 0.03. Another variable that appears to have a significant impact of total political conflict is the commodity price index, which is also suggesting that commodity prices have a negative effect on political conflict.

ACTOTAL	POLS	FE	FE - Lag	FE-IV
PrimEnrol	-0.538***	-0.955**	-0.836**	-10.98***
	(0.169)	(0.394)	(0.369)	(3.714)
ETHFRAC	1.390***	0.875	1.076	5.720*
	(0.149)	(0.851)	(0.894)	(3.018)
RELFRAC	0.0235**	0.0322***	0.0266***	0.0986***
	(0.0113)	(0.00695)	(0.00656)	(0.0302)
DEMOC	-0.0115***	-0.00602	-0.00566	0.00419
	(0.00382)	(0.00539)	(0.00491)	(0.00544)
CPI	-0.395*	-0.458	-0.430	-3.424***
	(0.213)	(0.400)	(0.387)	(1.211)
GDP	0.00693	-0.0266	-0.0391	0.0590
	(0.0467)	(0.0557)	(0.0526)	(0.0717)
First-Stage (AGRIC)				-0.092
				(-3.75)
R-squared	0.095	0.025	0.023	0.044
1st-stage F statistic				51.46
1st-stage F stat (p-value)				0.000

*** p<0.01, ** p<0.05, * p<0.1 (T-ratios in parenthesis)

N=48, T=43. ACTOTAL is the total summed magnitude of all societal and interstate Major Episodes of Political Violence. PrimEnrol is gross primary school enrollment, ETHFRAC is ethnic fractionalisation, RELFRAC is religious fractionalisation, DEMOC is democracy, CPI is commodity price index GDP is GDP Growth.

We report the next set of results in Table Three and they are on the impact of education on civil conflict. Similar to the previous results, Table Three reports on POLS, FE, FE with lags as well as on FE-IV estimates. All four estimates indicate that education (PrimEnrol) has a negative effect on civil political conflict. For instance, the FE with lags model shows that a one percentage point increase in primary school enrollment leads to a reduction in the magnitude of civil poloitical conflict by 0.78. Similar to total political conflict, religious fractionalisation also appears to strongly influence civil

political conflict; a one percent increase in the measure of RELFRAG (Fe with lags), civil political conflict increases by 0.012.

CIVCONFL	POLS	FE	FE - Lag	FE-IV
PrimEnrol	-0.480***	-0.920**	-0.780**	-10.39***
	(0.162)	(0.388)	(0.361)	(3.528)
ETHFRAC	1.338***	0.999	1.207	5.931**
	(0.146)	(0.899)	(0.952)	(2.867)
RELFRAC	0.00625	0.0157**	0.0115*	0.0761***
	(0.00667)	(0.00712)	(0.00675)	(0.0287)
DEMOC	-0.0118***	-0.00675	-0.00639	0.00285
	(0.00383)	(0.00502)	(0.00455)	(0.00516)
CPI	-0.202	-0.286	-0.255	-3.071***
	(0.189)	(0.397)	(0.388)	(1.150)
GDP	-0.00158	-0.0298	-0.0407	0.0488
	(0.0458)	(0.0555)	(0.0527)	(0.0681)
First-Stage (AGRIC)				-0.092
				(-3.75)
R-squared	0.092	0.024	0.022	0.044
1st-stage F statistic				51.46
1st-stage F stat (p-value)				

*** p<0.01, ** p<0.05, * p<0.1 (T-ratios in parenthesis)

N=48, T=43. CIVVIOL is the total summed magnitude of all societal Major Episodes of Political Violence (i.e. civil conflicts). PrimEnrol is gross primary school enrollment, ETHFRAC is ethnic fractionalisation, RELFRAC is religious fractionalisation, DEMOC is democracy, CPI is commodity price index GDP is GDP Growth.

Lastly we report results on the effect of education on interstate political conflict in Table Four. The POLS and FE results show a negative relationship between education and interstate political conflict but the results are not statistically significant. These are followed by the FE with lags and FE-IV models, and they too although indicating a negative causation running from education to interstate political conflict, the results are not statistically significant. This then leads us to the conclusion that education does not have much of a negative effect on interstate political conflict. Religious fractionalisation on the other hand appears to be a strong predictor of interstate political conflict. All the RELFRAG estimates from the models used are statistically significant and the show that higher religious fractionalisation has a positive effect on this form of political conflict. For example, the FE with lags estimate of 0.0151 indicates that a one percent increase in the RELFRAG measure leads to an increase of 0.02 in the magnitude of

interstate political conflict.

INTCONFL	POLS	FE	FE - Lag	FE-IV
PrimEnrol	-0.0585	-0.0351	-0.0554	-0.590
	(0.0448)	(0.0582)	(0.0510)	(0.741)
ETHFRAC	0.0520**	-0.124	-0.131	-0.211
	(0.0223)	(0.129)	(0.143)	(0.602)
RELFRAC	0.0173***	0.0166***	0.0151***	0.0225***
	(0.00651)	(0.00110)	(0.00102)	(0.00603)
DEMOC	0.000231	0.000730	0.000728	0.00133
	(0.000197)	(0.000651)	(0.000616)	(0.00108)
CPI	-0.193**	-0.172	-0.175	-0.352
	(0.0815)	(0.127)	(0.128)	(0.242)
GDP	0.00851	0.00316	0.00164	0.0103
	(0.00558)	(0.00749)	(0.00656)	(0.0143)
First-Stage (AGRIC)				-0.092
,				(-3.75)
R-squared	0.080	0.030	0.026	0.030
1st-stage F statistic				51.46
1st-stage F stat (p-value	0.000			

*** p<0.01, ** p<0.05, * p<0.1 (T-ratios in parenthesis)

N=48, T=43. INTVIOL is the total summed magnitude of all interstate Major Episodes of Political Violence. PrimEnrol is gross primary school enrollment, ETHFRAC is ethnic fractionalisation, RELFRAC is religious fractionalisation, DEMOC is democracy, CPI is commodity price index GDP is GDP Growth.

Conclusion

Understanding the factors that influence political conflict is important for sub-Saharan Africa as the region has been experiencing a recurrence of this form of conflict for the past decades. It is for this reason that we investigate education's causal effect on political conflict. We do this by using a dataset covering the period between 1970 and 2012 and 48 sub-Saharan African countries. Our results, based on panel data analysis and using Fixed Effects (FE), Fixed Effects with lags (Fe – lags) and Fixed Effects with Instrumental Variables (FE-IV) (and POLS as a baseline model) suggest that education has a pacifying effect on political conflict. We further break down political conflict into civil and interstate conflict and we find that education a=has more of a negative effect of civil than on interstate political conflict. Therefore, education demonstrates to be a robust determinant of reduced political conflict, stressing the importance of not only its direct role in promoting economic success, capacity to improve lives by decreasing

political conflict.

6 References

Acemoglu, D., Johnson, S., and Robinson, J.A. 2005. Institutions as a Fundamental Cause of Long-Run Growth. In: Handbook of Economic Growth, ed. by Philippe Aghion and Stephen Durlauf, Elsevier, Amsterdam.

Aghion, P., Boustan, L., Hoxby, C. and Vandenbussche, J. 2009. The Causal Impact of Education on Growth: Evidence from U.S.

Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., Wacziarg, R. 2003. Fractionalization. Journal of Economic Growth, 8, 155-194, 2003.

Arbath, C. E., Ashraf, Q. and Galor, O. The Nature of Conflict.

Arellano, M. 2003. Panel data econometrics. Oxford University Press: Advanced texts in Econometrics.

Bazzi, S and Blattman, C. 2014. Economic Shocks and Conflict: Evidence from Commodity Prices. American Economic Journal: Macroeconomics, Volume 6, Number 4, October 2014, pp. 1-38(38).

Barakat, B. and Urdal, H. 2009. Breaking the Waves? Does Education Mediate the Relationship Between Youth Bulges and Political Violance? Policy Research Working Paper 5114, The World Bank, Washington DC.

Barro, R. J. 2013. Education and Economic Growth. Annals OF Economics and Finance 14-2(A), 277-304 (2013)

Becker, S. O. and Cinnirella, F. 2010. The Trade-off between Fertility and Education: Evidence from before the Demographic Transition. Journal of Economic Growth (2010) 15: 177-204.

Burke, P. J. and Leigh, A. 2010. Do Output Contractions Trigger Democratic Change? Econometrica 79 (3): 923-947.

Collier, P. and Rohner, D 2008. Democracy, Development and Conflict. Journal of the European Economic Association, 6(2-3): 531-540.

Collier, P. and Hoeffler, A. 2004. Greed and Grievance in Civil War. Oxford Economic Papers 56 (2004), 563-595.

Collier, P., Hoeffler, A. and Soderbom, M. 2004. On the Duration of Civil War. Journal of Peace Research, Vol. 41, No. 3, 2004, pp. 253-273.

Easterly, W. and Levine, R. 1997. Africa's Growth Tragedy: Policies and Ethnic Divisions. The Quarterly Journal of Economics, Vol. 112, No. 4 (Nov., 1997), pp. 1203-1250.

Friedman, W., Kremer, M., Miguel, E. and Thornton, R. 2011. Education as Liberation? NBER Working Paper Series, Working Paper 16939.

Fuertes, Ana-Maria & Smith, Ron P. 2008. Panel Time Series. Cemmap Course May 2008

Galor, O. 2005. From Stagnation to Growth: Unified growth Theory. Handbook of Economic Growth, Vol. A1, pp. 171-23.

Galor, O. and Moav, O. 2006. Das Human-Kapital: A Theory of the Demise of the Class Structure. Review of Economic Studies (2006) 73, 85-117.

Galor, O., Moav, O. and Vollrath, D. 2009. Inequality in Land Ownership, the Emergence of Human Capital Promoting Institutions, and the Great Divergence. Review of Economic Studies, 76(1), 143-179.

Humphreys, M. 2005. Natural Resources, Conflict, and Conflict Resolution: Uncovering the Mechanisms. Journal of Conflict Resolution 49 (August 2005): 508-537

Lai, B and Thyne, C. 2007. The Effect of Civil War on Education, 1980-1997. Journal of Peace Research, Vol. 44, No. 3, 2007, pp. 277-292.

Marshall, G. M. Major Episodes of Political Violence (MEPV) and Conflict Regions, 1946-2013. Center for Systemic Peace, www.systemicpeace.org Montalvo, J. G. Reynal-Querol, M. 2005. The American Economic Review, Vol. 95, No. 3, pp. 796-816.

Phillips, P. and Moon, H. R. Moon .1999. Linear Regression Limit Theory for Nonstationary Panel Data. Econometrica 67(5):1057-1112.

Posner, D. 2004. Measuring Ethnic Fractionalisation in Africa. American Journal of Political Science, Vol. 48, No. 4, October 2004, pp. 849-863.

Rodrik, D. 1999. Where Did All the Growth Go? External Shocks, Social Conflict and Growth Collapses. Journal of Economic Growth, 4: 385-412 (December 1999).

Sargent, L. T. 2006. Contemporary Political Ideologies: A Comparative Analysis, 10th Ed. Belmont, CA: Wadsworth.

Thyne, C. 2006. ABC's, 123's, and the Golden Rule: The Pacifying Effect of Education on Civil War, 1980-1999. International Studies Quarterly (2006) 50, 733-754.

Weinstein, J. 2005. Resources and the Information Problem in Rebel Recruitment. Journal of Conflict Research 49 (August 2005): 598-624.

World Bank. 2015. 2015 World Development Indicators Online Edition. http://data.worldbank.org/ [accessed February 2015]