DEMOGRAPHIC RESEARCH

Migrant-based youth bulges and social conflict in urban sub-Saharan Africa

Ashira Menashe-Oren

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Ashira Menashe-Oren[1]

Abstract

BACKGROUND
Sub-Saharan Africa has experienced relatively high population growth, which raises concerns about the potential contribution of large young cohorts, termed 'youth bulges', to unrest. Youth bulges, under the right circumstances, can expand productivity and boost economic growth, but they have also been found to enable civil war, corruption, and democracy collapse, especially where resources are scarce.

OBJECTIVE
This paper considers youth bulges characterised by high proportions of rural–urban migrants and examines their effects on the likelihood of social conflict in urban sub-Saharan Africa between 1990 and 2013.

METHODS
United Nations data on urban and rural populations by age and sex is combined with the Social Conflict Analysis Database to create a cross-section time series dataset. Negative binomial models are used to examine the relationship between youth bulges and conflict using country level fixed effects.

RESULTS
The study finds that a migrant-based youth bulge does not increase the likelihood of urban social conflict in sub-Saharan Africa. Additionally, female youth bulges, often neglected when studying conflict, are found to increase the likelihood of conflict.

CONCLUSIONS
The overall disassociation between young rural–urban migrants and social conflict is encouraging. All the same, women were found to play a role in conflict, and women should therefore be considered in future studies.

CONTRIBUTION
This article characterises the composition of youth bulges – an important factor that has previously been ignored – by examining whether youth bulges composed largely of

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[1] Université catholique de Louvain (UCL), Belgium and Hebrew University of Jerusalem, Israel.
Email: ashira.menashe@mail.huji.ac.il.

rural–urban migrants are more likely to increase the likelihood of conflict in urban sub-Saharan Africa.

1. Introduction

A number of studies associate youth bulges, a high proportion of young adults in the population, with innovation and economic growth on the one hand (Bloom, Canning, and Sevilla 2003; Derrien, Kecskés, and Nguyen 2018; Lee and Mason 2006; Moller 1968) or with conflict and instability on the other hand (Cincotta, Engelman, and Anastasion 2003; Goldstone 2002; Mesquida and Wiener 1999; Staveteig 2005; Urdal 2004, 2008). A demographic dividend is expected when there are fewer dependents (children and elderly) than working age adults, thus allowing for a boost in productivity. Considering that youth account for a large proportion of the working population in sub-Saharan Africa (SSA), small changes in their productivity can be relatively valuable (Stecklov and Menashe Oren 2019). Additionally, because of their creativity and risk tolerance, young populations are instrumental in the generation of innovation within the labour force (Derrien, Kecskés, and Nguyen 2018). However, a demographic dividend requires the right conditions including access to schooling, improved health care policies, and labour market flexibility (Bloom, Canning, and Sevilla 2003). Without these conditions, a youth bulge may essentially have negative effects. Insufficient or maldistribution of resources such as education and employment may cause dissatisfaction and frustration amongst youth and ultimately spark violent conflict (Hvistendahl 2011). Although not assumed to be a direct cause of conflict, large cohorts interact with these conditions and contribute to an increased risk of conflict.

Youth bulge effects on urban intra-state conflict has led to mixed results. On the one hand, male youth bulges were not found to be associated with social disorder in cities in Asia and SSA (Urdal and Hoelscher 2009), and increasing urban population pressure was not found to lead to a higher risk of social disorder (Buhaug and Urdal 2013). On the other hand, riots are more likely where youth bulges coincide with greater levels of urban inequality (Urdal 2008). In light of the conflicting evidence of the effects ascribed to youth bulges, I argue that youth bulges need to be examined according to their demographic composition.

1.1. The role of population in intra-state conflict

The causes of intra-state conflict range from poverty and institutionally weak countries to ethnic identification and fractionalisation (Bhavnani and Miodownik 2008; Collier and Hoeffler 2004; Esteban, Mayoral, and Ray 2012; Fearon and Laitin 2003, 2011). Conflicts are also affected by geography, location, and resource scarcity (Buhaug and Gates 2002; Buhaug and Rød 2006; Cincotta, Engelman, and Anastasion 2003; Fearon and Laitin 2003). Population is an overarching factor that interacts and overlaps with these causes of conflict (Goldstone 2002).

Population size and growth are important contextual considerations. Larger populations within a country increase the chances of civil war (Fearon and Laitin 2003; Hegre and Sambanis 2006). Additionally, neo-Malthusian evidence suggests that in the rural sector population growth increases demand for resources, which can lead to environmental degradation, scarcity, poverty, and inequalities (Buhaug and Urdal 2013; Gleditsch and Urdal 2002; Kahl 2002; Merrick 2002; Urdal 2008). And in the urban sector, population growth increases demand for education, employment, health care, and other services available in cities.

Population age composition is also important to consider. A particular population phenomenon, the youth bulge, has been found to affect the likelihood of civil conflict (Cincotta, Engelman, and Anastasion 2003; Goldstone 2002; Mesquida and Wiener 1999; Staveteig 2005; Urdal and Hoelscher 2009; Urdal 2008; Yair and Miodownik 2014) as well as of corruption and of democracy collapse (Farzanegan and Witthuhn 2016; Weber 2013). The youth bulge is seen as a factor enabling violent conflict because youth are relatively easily mobilised, with fewer responsibilities to families and careers (frequently not yet married and not fully integrated into the job market). They are also not yet committed to a specific way of life, so they can readily influence social and political affairs (Moller 1968).

Two methods are most commonly used to operationalize the youth bulge. One is the proportion of youth in a population, often measured as the number of 15- to 24-year-olds of the total adult population. The other is as a relative cohort. According to Easterlin's relative cohort size hypothesis, when a relatively large cohort comes of age, economic frustrations emerge due to strains on the education system, unemployment, and reduced wages. With high unemployment and lack of opportunities, especially in the formal work sector, the alternative costs to engaging in political and violent action are low (Collier and Hoeffler 2004; Macunovich 2000). Turning to violence and civil conflict can be considered a legitimate way to address perceived economic, political, and social inequalities when there is little to lose. Additionally, youth may be alienated and marginalised (Sommers 2010), politically excluded, or may have unmet expectations. Deprived youth may aspire for a better life and thus be motivated to take action (Pinard 2011).

Notably, when referring to a youth bulge, it is most often a male youth bulge (Mesquida and Wiener 1999; Weber 2013). From a behavioural ecological perspective, men are more susceptible to violence as they strive for mate acquisition, and have a greater taste for risk (Mesquida and Wiener 1999; Wilson and Daly 1985). This is also evident by the accident hump in male mortality profiles by age where male youth have higher mortality rates (Goldstein 2011; Hannerz 2001; Heligman and Pollard 1980).

Although men have been linked to conflict, female youth bulges may also potentially be associated with social conflict. Women in SSA have higher unemployment rates (Floro and Schaefer 1998; House, Ikiara, and McCormick 1993) and poorer working conditions – such as instability and lower income (Appleton, Hoddinott, and Krishnan 1999; Becker, Hamer, and Morrison 1994). They also tend to work more in the informal sector where there is greater insecurity and limited profit. Their economic position could thus lead them to social conflict. Additionally, women may challenge the traditional positions they hold in the division of labour in society. Indeed, there has been feminization of world politics over the past hundred years (Fukuyama 1998).

1.2 Migration and urban youth bulges in sub-Saharan Africa

Youth bulges are often an urban phenomenon in developing countries – an artefact of both faster demographic transitions and urbanisation (Montgomery et al. 2003). Urbanisation is the result of both mortality and fertility decline (the demographic transition) as well as migration (Dyson 2011; Keyfitz 1980; Preston 1979; Rogers and Williamson 1982). Mortality declines first in the urban sector, occurring primarily amongst children, which results in a young and fast growing urban sector. When mortality declines in the rural sector, the young rural population also grows and the pool of potential rural–urban migrants therefore expands. The age selectivity of rural–urban migration, which occurs disproportionately amongst the young (Montgomery et al. 2003), reinforces an urban youth bulge. Urbanisation has slowed down in SSA since the 1980s in part because the urban economy declined (Amis 1989; Bocquier 2004; Chen, Valente, and Zlotnik 1998; Potts 2009). All the same, rural–urban migration has persisted in SSA, despite high urban unemployment (Todaro 1997). The increasing informal sector in SSA absorbs surplus labour and provides alternative employment options for migrants (Calvès and Schoumaker 2004; Oteng-Ababio et al. 2018; Potts 2008; Todaro 1997). In fact, notwithstanding the slowdown in urbanisation, lower net in-migration rates in SSA are not necessarily due to less mobility but rather higher rates of urban-to-rural and circular migration (Beauchemin and Bocquier 2004; Beauchemin 2011; Potts 1995, 2009).

Rural–urban migrants in SSA are predominantly young (Beauchemin 2011; Caldwell 1969; Ginsburg et al. 2016; Menashe-Oren and Stecklov 2018), and the reasons behind young migration flows in SSA are complex. Though mostly driven by economic reasons, young people may also migrate for education (where secondary schooling is more available in the urban sector), to break away from agriculture, to help relatives with domestic tasks, or for marriage (Beegle and Poulin 2013; Bezu and Holden 2014; Isiugo-Abanihe 1985; Mberu 2006; Watts 1984; Yaqub 2009). Young migrants are often sent by households seeking to diversify their risks (Dustmann and Okatenko 2014; Lucas 1985; Mckenzie and Rapoport 2007). Indeed, rural households often strategically rely on remittances from migrants to the urban sector (Awumbila et al. 2016; Pietrelli and Scaramozzino 2019; Schrieder and Knerr 2000; Stark and Taylor 1991).

The selectivity and characteristics of migrants in SSA – as young, seeking employment, and relied upon by sending households – suggest that within an urban youth bulge they may behave differently. Thus, the proportion of young migrants in the urban population may be fundamental to understanding the effect of an urban youth bulge on social conflict. Young migrants may have fewer opportunities in the formal sector of the economy. Turning to the informal sector, they may be more likely to experience economic marginalisation and relative deprivation (Cook 2015; Gizewski and Homer-Dixon 1995). Young migrants may not be able to live up to the expectations of their sending families, unable to provide for themselves, let alone send remittances.

Furthermore, since migrants typically belong to different ethnic groups, they may shift the ethnic composition of urban populations, which in turn promotes conflict (Fearon and Laitin 2011; Goldstone 2002; Thachil 2017). The socio-cultural heterogeneity of urban areas can be a source of instability and violence when several ethnic or religious groups are in close social contact and have grievances against each other (Cincotta, Engelman, and Anastasion 2003; Esteban, Mayoral, and Ray 2012; Fearon and Laitin 2011; Higashijima and Houle 2017).

Considering these migrant features, I argue that a higher proportion of young rural–urban migrants (a migrant-based youth bulge) could increase the likelihood of social conflict (such as demonstrations, riots, and strikes) in urban settings in SSA.[2] I also test whether a migrant-based youth bulge – both male and female – increases the likelihood of social conflict on different issues (related to human rights, elections and democracy, economy, jobs and assets, and ethnic or religious discrimination). I hypothesise that:

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[2] Since young migration to the rural sector is less common, I do not examine a migrant-based youth bulge in the rural sector.

1. A migrant-based youth bulge, particularly a male youth bulge, increases the likelihood of conflict, while a nonmigrant youth bulge increases the likelihood of urban conflict to a lesser extent.
2. a) A migrant-based youth bulge increases the likelihood of urban conflict related to economic issues, since migrants are more likely to have difficulties finding employment in the formal sector, be economically marginalised, and be pressured to aid their families.
   b) Also, a migrant-based youth bulge increases the likelihood of conflict related to ethnic-religious issues since they are typically from different ethnic groups.

2. Data and methodology

The Social Conflict Analysis Database (SCAD) contains data on social conflict in 42 SSA countries for every year from 1990 to 2013, covering 7,200 instances of protests, riots, strikes, and government-related violence (Salehyan et al. 2012). The data is georeferenced and indicates whether the conflict was in a rural or urban location. The dataset is based on systematic aggregation of press reports. Press reports allow for the examination of multiple types of collective events and are often the only source of data for comparative research in data-deficient settings such as SSA. They have been found to be an appropriate means of analysing low intensity conflicts common in SSA (Bocquier and Maupeu 2006). Politically noteworthy conflict events are identified through keyword searches of newswires (in electronic archives). These events are mostly large scale, drawing many participants, including significant acts of violence and threatening political stability. Importantly, the SCAD does not include cases of conflict coded as civil war in the UCDP/PRIO Armed Conflict Database, which covers violent conflict between two parties where at least one is the government of the state, resulting in at least 25 deaths (Gleditsch et al. 2002; Themner and Wallensteen 2014). These armed conflict events are clearly distinct from the social conflicts of demonstrations and strikes identified in the SCAD data.

On average according to the SCAD data, there are four social conflict events every year per SSA country. However, the number of conflict cases per year increases over time, indicative of superior data collection in more recent years, causing some bias towards the present. In addition, because the data is based on news, it suffers from underreporting bias (Drakos and Gofas 2006; Hug and Wisler 1998; Hug 2003). The cases of conflict need to be considered newsworthy for them to be reported on and subsequently included in the dataset. Violence, number of participants, and breaches of public order are related to the newsworthy value of events and can induce bias

(Barranco and Wisler 1999). Although the analysis here cannot overcome this bias, it does consider conflict by key issue behind the conflict,[3] and the bias is assumed to be stable over time. However, it is likely that underreporting bias differs across countries since globally some countries may be considered more important or newsworthy. Country-fixed effects used in the models (described below) mitigate these differences.

Furthermore, the geographical distance from the conflict events, or the source of the news, from where the journalists or agencies are based can determine whether the events are actually reported on. This can particularly be a problem when 'Western' journalists are relied on in the SSA setting, as they are less likely to report on conflict events in extreme rural areas. As such, the SCAD dataset, based on news reported by the Associated Press and Agence France Presse, may also be biased to include more urban rather than rural events.[4] The SCAD data includes more urban conflict events than rural (about three more urban events in each SSA country), suggesting that there is some bias according to location. All the same, in focusing only on the urban sector, where events are more likely covered, results are not expected to be affected by this bias. Overall, despite the potential bias that arises from using press reports, they remain a useful data source (Earl et al. 2004).

The conflict data is merged with population data to see how urban youth bulges may affect conflict occurrence, creating a cross-section time series dataset. The United Nations Department of Economic and Social Affairs' (UN-DESA) Population Division data on urban and rural populations by age and sex – URPAS (United Nations 2014b) – is used from 1980 to 2015 to calculate youth bulges for both sexes for every five years and for each country. The URPAS data provides best estimates of rural and urban populations by age and sex, building on census data, population registers, and demographic interpolation (United Nations 2014a). The data also allows for estimating migration using the census survival ratio method (CSRM) to obtain a measure of the proportion of migrants among the urban youth bulge.

The CSRM provides an approach to estimate net migration flows between rural and urban areas (Hamilton and Henderson 1944; Preston 1979) that has been validated by the United Nations in analysing the components of urban growth (United Nations 2001). This method is especially useful, considering little data of such migration in SSA is available (de Brauw, Mueller, and Lee 2014). To the best of my knowledge, other estimates of age- and sex-specific rural–urban migration for all SSA countries are non-existent. The resulting migration patterns are consistent with migration age profiles

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[3] The number of participants in conflict would also be a useful indicator of selection bias, but for over half of the conflict cases this is unknown. Analysis also examined the target of the conflicts (whether governmental or not) as well as whether the conflict was deadly or not, but results were statistically insignificant.

[4] These news wires were chosen as the best possible sources in terms of comprehensiveness, coverage, and reliability, but cannot be considered flawless.

based on other data sources (Beauchemin and Bocquier 2004; Beauchemin 2011; Caldwell 1969).

The standard CSRM approach estimates survivorship for each age group between two censuses exactly 10 years apart for the population as a whole. These total cohort survival ratios are the backbone upon which the migration estimates are based. The survivorship levels are adjusted for the urban population.[5] The urban cohort survival ratios are then used to predict the expected number of people in each urban age group at the time of the second census. The difference in the expected number of urban people and the actual number measured in the second census provides an estimate of net rural–urban migration. I use an adjusted CSRM with the URPAS data, estimating migration every five years, based on rural cohort survival ratios. This approach is preferable and may be more robust in the SSA setting, where urbanisation levels are low (Menashe-Oren and Stecklov 2018). Important limitations to the CSRM, valid for this adjusted approach too, have been discussed elsewhere, particularly regarding potential bias from international migration and reclassification (Menashe-Oren and Stecklov 2018; Moultrie et al. 2013; Preston 1979). It is important to note that the net migration estimates are a combination of both rural–urban migration as well as reclassification, where formerly rural areas are redefined as urban once they pass a threshold of 'urbanness.'

The CSRM produces net rural–urban migration estimates for every five-year interval between 1990 and 2015 for all 42 SSA countries with conflict data.[6] The migration estimates are the annual *net* number of rural–urban migrants – where a positive number indicates there were greater rural–urban flows than urban–rural. These migrants are relatively new in urban areas, having moved on average two and a half years ago. Thus, the estimated proportion of migrants in urban populations relates to recent migrants. The proportion would be even higher if migrants who moved earlier were also considered. A migrant-based youth bulge is measured as the ratio of youth migrants aged 15 to 24 to older working-aged adults aged 25 to 59 in the urban sector.[7] I use the proportion of youth of the adult population (rather than total population) since this operationalization of a youth bulge does not underestimate youth bulges in populations with large under 15-year-old populations as in SSA (Urdal 2004). The migrant youth bulges are five-year measures since the net migration estimates are for every five years. Using annual migration estimates that are constant over a five-year

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[5] Urban survival is assumed to be 25% higher than rural. See Menashe-Oren and Stecklov (2018) for discussion on this mortality assumption.

[6] It is assumed that these estimates are constant over the five years.

[7] The youth bulge has been measured in various ways – covering ages 15–24 or ages 15–29, as a percentage of the total adult population or of the total population. I tested for sensitivity and ran the main models with a bulge defined by ages 15–29. The analysis, not shown here, did not produce especially different results.

period is a limitation, but considering the poor data availability on rural–urban migration in SSA, these are valuable migration estimates.

Negative binomial regression models are utilised to predict the contribution of rural–urban migration as part of the urban youth bulge (a migrant-based youth bulge) to cases of conflict. This model was chosen because of the skewed distribution of conflict events (many years without any conflict). A generic version of the model is:

$$\mathrm{L}(y_{i,t}) = \alpha + x_{i,t-5}\beta_1 + z_{i,t}\beta_2 + c_i + \varepsilon_{i,t},$$

where $\mathrm{L}(y)$ is the outcome of interest – the likelihood of urban social conflict. The t signifies temporal effects and the i country-level analysis. $x\beta_1$ is a vector of the key explanatory variables; depending on the model it represents the urban youth bulge, the proportion of rural–urban migrants aged 15 to 24 to adults aged 25 to 59 in urban areas, and the nonmigrant urban youth bulge. The youth bulges are expressed as percentages in the models to facilitate easier interpretation. $z\beta_2$ is a vector of the control variables, c indicates the time-invariant fixed effects on countries, and ε represents the residuals. The models are run in Stata 15 using negative binomial regression considering that the variance in the number of conflicts exceeds the mean. Country fixed effects (FE) models are used to account for between-country sources of heterogeneity and to control for time invariant variables such as topography. Since the data is country-year panel data, it allows declaring the dependent conflict variable as a one-year lead variable (in other words, all the independent variables are lagged by one year). This accounts for temporal dependence between observations within countries, commonly done when examining youth bulge effects (Farzanegan and Witthuhn 2016; Urdal and Hoelscher 2009). A test of sensitivity to this lagged effect is found in the appendix (Table A-2), where the main models (in Table 3) are run without any temporal changes.

The models are run for all social conflict cases in urban settings using the three different measures of the youth bulge (urban, migrant based, and nonmigrant based). Further models are run focusing on the effect of the migrant-based youth bulge on conflict according to the main issue at the source of the conflict. The main issue is coded in the SCAD into eleven categories, according to the first issue mentioned as a source of the tension/disorder. I group these categories and focus on three – (1) human rights, elections, and democracy; (2) economy, jobs, and assets; and (3) ethnic or religious discrimination. The other categories are either unknown issues or related to issues such as terrorism, environmental degradation, foreign affairs, and education. I do not use these categories due to the small numbers of conflicts on these issues or if issues at source of conflict are unidentified. However, these conflicts are included in the main model, which does not take into account the main issue behind conflicts.

The models control for country level development, political regime type, unemployment, educational attainment, whether there was a civil war that year, urban population size (logged), percent of population in urban settings, and the urban youth sex ratio.[8] No multi-collinearity was found between covariates, and results were not sensitive to the model specifications. Table 1 presents descriptive statistics of the dependent variable, the number of conflicts, of the youth bulge measures and of the covariates.

Economic development is included in models since it can predict conflict: a poor country is constrained in meeting the demands of its citizens, while a wealthy country can easily distribute resources and dampen any dissatisfaction (Fearon and Laitin 2003). Infant mortality proves an important indicator for development (Sen 1998), capturing diverse aspects of development including living standards, access to health care, educational attainment, and gender inequalities.[9] Infant mortality rates (IMR) at the national level for each year are taken from World Bank development indicators (World Bank 2018). Infant mortality is measured as the number of deaths to 1,000 live births, ranging from 13 to 157 in SSA (Table 1).

The effect of regime type is argued as a measure of governance – established democracies or harsh autocracies are both less likely to experience conflict than unstable regimes (Hegre et al. 2001). A democracy-autocracy score from the Polity IV Project of the Centre for Systemic Peace provides a convenient measure of general regime effects (Centre for Systemic Peace 2015). This score has been recomposed to exclude reference to political violence and war and is used to avoid collinearity (Vreeland 2008). The score ranges from –10 (strongly autocratic) to +10 (strongly democratic). For the African countries included in the analysis, the polity score ranges from –5 to 7, and the mean is 1.43 (Table 1), though this differs by year, averaging –2.2 in 1990 and 2.4 in 2013. A squared term of the score is included in the analysis since conflict is most likely in semi-democracies and the relationship is U-shaped (Hegre et al. 2001). An interaction term between polity and youth bulge is also employed to test whether the youth bulge effect differs according to autocratic or democratic regimes.

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[8] Socio-cultural heterogeneity, or fractionalization, is considered an important correlate of conflict (Esteban, Mayoral, and Ray 2012). Additionally, migrants are often of dominant ethnic groups and threaten other ethnic groups at their destination, causing conflict (Fearon and Laitin 2011). Thus, the extent of social diversity within a country is important. However, available measures of socio-cultural heterogeneity are at the country level and stable over the examined time period (Alesina et al. 2003), and they do not indicate whether and to what extent the different groups engage in politics, which would be a better way to account for their effects (Posner 2004). Thus, fractionalisation here is not included in models, but its effects are absorbed in the country fixed effects.

[9] Models not shown here used Gross domestic product (GDP) per capita in $US as an alternative to infant mortality, and results were consistent.

Table 1:   **Descriptive statistics of variables used in models**

	Mean	Std. Dev.	Min	Max
Urban conflicts	4.32	8.78	0	155
Conflicts on human rights, elections, and democracy	1.29	2.54	0	21
Conflicts on ethnicity and religion	0.31	1.65	0	30
Conflicts on economy, jobs, and assets	0.77	1.57	0	17
Female urban youth bulge	70.24	12.35	29.37	98.85
Male urban youth bulge	65.86	11.13	28.91	92.89
Female migrant-based youth bulge	7.27	7.13	−5.85	23.25
Male migrant-based youth bulge	10.11	8.14	−8.11	28.83
Female nonmigrant youth bulge	63.69	12.36	29.98	89.92
Male nonmigrant youth bulge	56.91	13.60	23.01	89.43
Logged urban population (in thousands)	7839.13	1137.17	5407.17	11148.23
Proportion urban	0.35	0.15	0.07	0.86
Urban youth sex ratio	101.54	7.32	80.00	120.24
Infant mortality rate	76.83	28.71	13.10	157.10
Autocracy-democracy score	1.43	3.82	−5	7
Civil war	0.18	0.38	0	1
Unemployment	8.39	6.15	0.90	32.40
Female proportion with upper secondary education	0.09	0.10	0.00	0.52
Male proportion with upper secondary education	0.13	0.11	0.01	0.59

A dummy variable indicating whether there was civil war in a specific country and year is also included in the models. This data was taken from the UCDP/PRIO Armed Conflict Database, which records armed conflicts concerning the government with a minimum of 25 deaths per year (Gleditsch et al. 2002; Themner and Wallensteen 2014). These cases of conflict are evidently different to the social conflict data used here. However, it is likely that during periods of such severe conflict the likelihood of less intense cases of social conflict, which don't necessarily involve armed forces or result in deaths, may be greater. Therefore, an indicator of civil war is included in the models to control for such periods. On average, in 18% of country-years there was a civil war.[10]

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[10] Additional models tested the effect of a migrant-based youth bulge when country-years during which there was civil war were excluded. This reduces the sample size, and the results are overall consistent. In models with interaction terms, the male and female migrant-based youth bulges coefficients are found to be statistically significantly negative.

Education is included in the models because it can serve as a means of reducing the risk of conflict (Barakat and Urdal 2009). Education is measured as the proportion of the population with upper secondary education, estimated for every five years by sex among 20–39-year-olds (Lutz, Butz, and Samir 2017; Wittgenstein Centre for Demography and Global Human Capital 2018). An interaction term between education and youth bulge is tested. On the one hand, the opportunity cost of lower educated youth may be low, while on the other hand, large proportions of educated youth who do not have further opportunities in the job market may turn to conflict.

Unemployment is often cited as a strong case for people to engage in violence – from gang participation to civil wars – because of low opportunity costs of violence (Collier and Hoeffler 2004; Cramer 2011; Goldstone 2002; Hvistendahl 2011). Unemployment is measured here as the percent of the male labour force unemployed each year (World Bank 2018) and averages 8.4% across SSA (Table 1). Since it is likely that with low unemployment the youth bulge effect may be weaker, an interaction term is also tested.

Population size can account for conflict when the larger the population the greater likelihood of fractionalisation and the more recruits are available. The proportion of the population that is urban, like urban growth, can affect violent conflict (Cincotta, Engelman, and Anastasion 2003; Gizewski and Homer-Dixon 1995; Goldstone 2002; Wirth 1938). A sex ratio with higher proportions of men can affect marriage markets and can increase undesirable behaviours, and it is considered a risk factor for conflict (den Boer and Hudson 2004; Cincotta 2004; Dyson 2012; Hesketh and Xing 2006). A youth sex ratio is measured as the proportion of 15–24-year-old males to 15–24-year-old females in the urban sector. Some countries in the analysis have low proportions of men in these age groups in the urban sector, with sex ratios of 80, as in Lesotho and Ethiopia, while others have very high sex ratios as in Nigeria and Cameroon (Table 1). The measures of population size, proportion urban, and sex ratios are five-year measures, based on the URPAS data.

3. Results

3.1 Descriptive analysis

Initially, it is worth considering the dependent variable, social conflict, and the main independent variables, the migrant-based youth bulge and the nonmigrant urban youth bulge. For 72% of the 42 countries and 23 years, there was at least one case of social conflict on any issue in SSA in a given year, ranging from a low of 45% in 1990 to a high of 90% in 2000. The mean number of urban conflicts per year across all countries

is 4.3 (compared to 1.97 rural conflicts), with the highest number of incidents in Nigeria, South Africa, Somalia, and Zimbabwe (see Figure 1). The mean ranges from 1.8 on average in 1990 to 3.8 in 2010 and peaks at 10.8 in 2012. The increase in the number of conflicts in 2011 and 2012 is particularly affected by higher incidence of conflict in Nigeria in these two years, and to a much lesser extent in Kenya, Somalia, and South Africa. There may also be an increase due to better reporting with time. In Congo, Côte d'Ivoire, Niger, Nigeria, South Africa, and Zimbabwe there is a record of social conflict for every year between 1990 and 2013.

Figure 1: **Mean number of social conflicts in sub-Saharan African countries between 1990 and 2013 (SCAD)**
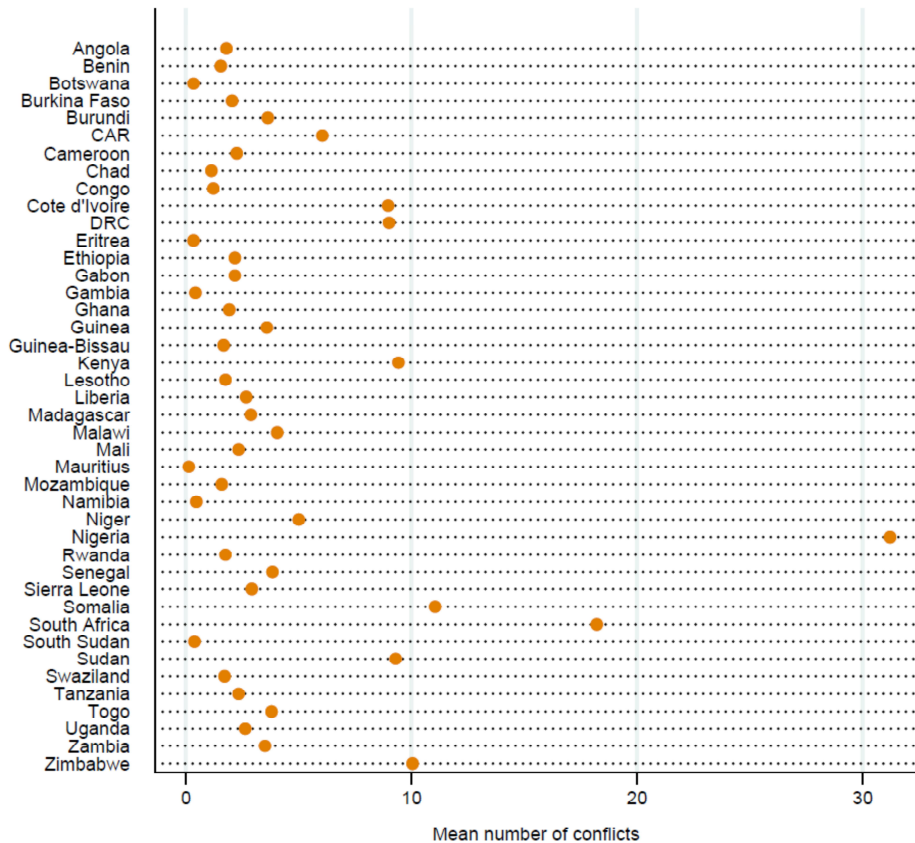
Analysis of the conflict is further investigated according to the main issue at the source of the conflict. Nearly a third of conflicts in the data are related to human rights, elections, and democracy; 17% of conflicts deal with economic-job-asset related issues; and 8.7% relate to ethnic-religious issues. The main issues at the heart of the remaining conflicts are either unknown or marginal.[11] The probability of economy-job-asset-related conflicts is highest (0.35), closely followed by conflict related to human rights and democracy (with a probability of 0.34), while the probability for ethnic-religious related conflicts is lowest (0.13).

The conflicts by issue are manifested differently, through demonstrations, riots, strikes (spontaneous or organised), and pro-, anti-, extra-, or intra-governmental violence (grouped here as "other"). Table 2 maps the conflicts by issue and type of conflict. Urban conflicts regarding human rights, elections, and democracy are dealt with mostly through demonstrations (63%). Conflicts on economic issues are largely expressed through strikes (36%) and demonstrations (34%). Demonstrations are in general a preferred method of social conflict, composing 45% of all social conflict in SSA. As a means of advocacy or protest based on social networks and organisation, demonstrations may be preferred to riots and strikes, as they are largely more peaceful (McPhail and Wohlstein 1983).

Table 2: **Main issue behind urban conflict and type of conflict in sub-Saharan Africa (SCAD, 1990–2013)**

|	All issues	Human rights/ elections/ democracy	Economy/ jobs/ assets	Ethnic/ religious
Demonstration	1,988	820	249	79
	45.12%	63%	33.65%	20.73%
Riot	862	264	121	126
	19.56%	20%	16.35%	33.07%
Strike	420	66	267	2
	9.53%	5%	36.08%	0.52%
Other	1,136	155	103	174
	25.78%	12%	13.92%	45.67%
Total	4,406	1305	740	381
	100%	100%	100%	100%

Note: Number of conflicts and percent of conflicts by type of conflict.

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[11] The data also includes the second and third most important issues of conflict, but this was not included in the analysis since less than 20% of conflicts included secondary issues, and even fewer a third issue.

Turning to the key explanatory variables on population composition, the urban population has proportionately more youth (aged 15–24) than the rural population – 22% compared to 19%. The urban population is distributed by age as seen on the left of the population pyramid in Figure 2: On average in 2015, almost 27% of the urban population is under age ten and merely 3.6% over age sixty. Fifty-eight percent of the urban population is of working ages (15–59). In contrast, on the right side of the pyramid in Figure 2 is the age distribution of rural–urban migrants in SSA between 2010 and 2015.[12] The migrant population is less evenly distributed between age groups and has high proportions of 10–19-year-olds – 44.4%.

Figure 2: **Mean male urban and migrant population composition for countries in sub-Saharan Africa for 2015 (URPAS)**
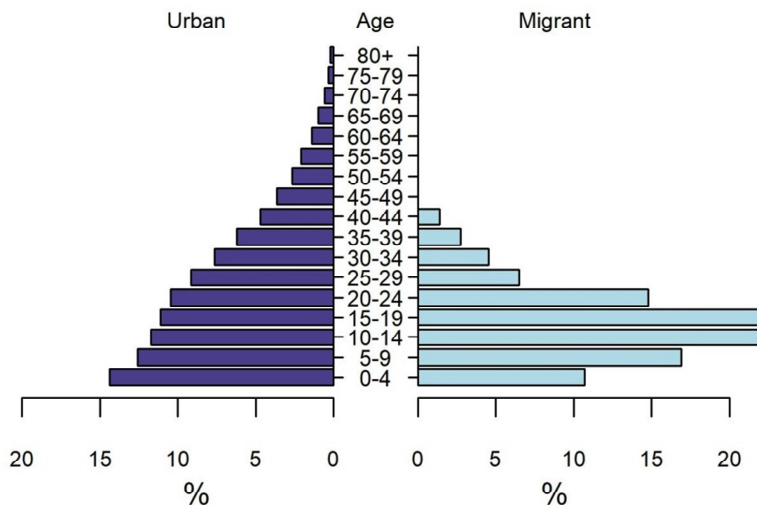
On average in SSA the proportion of (net) migrants in the urban population peaks for age groups 10–14 among women (at 14% of the urban population) and 15–19 among men (at 15% of the urban population), as seen in Figure 3. Figure 4 considers the proportion of migrants among the ages used to define a youth bulge. Male migrants comprise 10.1% of the 15–24-year-old urban population in 2015, and female migrants

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[12] Note that there are no migrants aged 45 and up in this figure since these are proportions of *net* migrants in the population, and for these older age groups net migration is negative.

comprise 7.3% of 15–24-year-old urbanites. Over time there has been a decline in the proportion of young migrants of urban population by roughly 4% since 1990. All the same, migrants are clearly an important feature of the urban youth bulge.

Figure 3:   Mean proportion of (net) migrants of urban population by age for sub-Saharan Africa 2015 (URPAS)
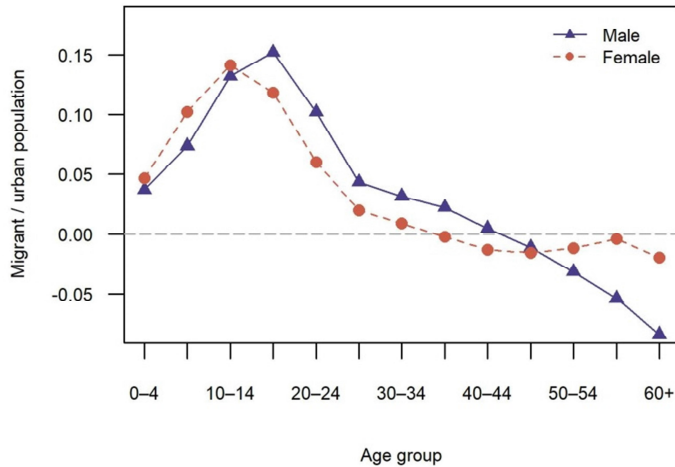
Figure 4:   Mean proportion of (net) migrants of urban population for ages 15–24 in sub-Saharan Africa over time (URPAS)
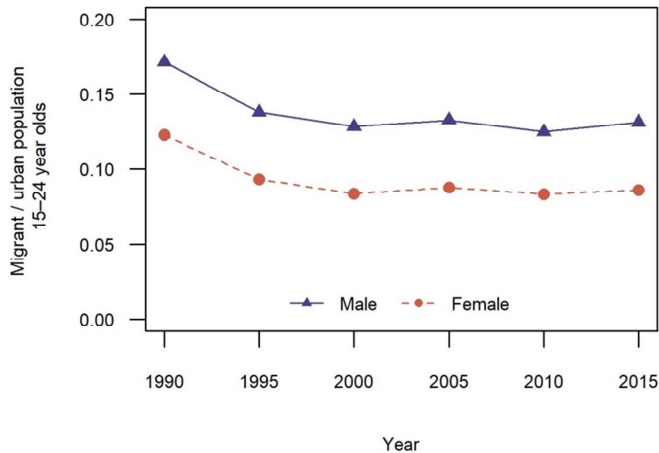
The mean male urban youth bulge is 66% (see Table 1), that is, there are one-third more 25–59-year-olds than 15–24-year-olds over all time periods and countries. The mean female urban youth bulge is higher, 70%. The mean male migrant-based youth bulge is 10%, ranging from –8% to 29%, and the mean male nonmigrant youth bulge is 57%, ranging from 23% to 89%. The mean female migrant-based youth bulge is 7%, ranging from –6% to 23%, and the mean female nonmigrant bulge in the urban sector is 64% (Table 1). Negative urban youth bulges are an indicator of higher urban–rural migration. These cases of negative youth bulges occur in 9 of the 42 countries, in countries that are mostly war-torn like the Democratic Republic of Congo, or small islands such as Mauritius. However, these cases are not negative throughout the whole period.[13] Between 1990 and 2013 the migrant and nonmigrant urban youth bulges have seen declines, reflecting fertility decline in the urban population.

3.2 Multivariate analysis

Table 3 presents a key set of models examining the youth bulge effect on social conflict in SSA. Effects are considered statistically significant based broadly on p-values in the models. However, this interpretation of significance does not necessarily mean that the effects unquestionably exist or not – especially considering the small sample and large number of covariates (Bijak 2019; Wasserstein, Schirm, and Lazar 2019). Therefore, I additionally refer to the standard errors since they also refer to the precision of the estimates, that is, how well the sample mean captures the population mean.

An urban youth bulge (not separated into migrants and nonmigrants) increases the odds of conflict within each country. A 1% increase in the female urban youth bulge statistically significantly increases the likelihood of conflict by 2% within countries. Based on Model 2, the mean predicted likelihood of conflict when the female urban youth bulge is between 30 and 39, is –0.57, and this increases to 0.63 when the male urban youth bulge is between 80 and 89 when all other covariates are held at their means. In Models 1 and 2, where the male and female urban youth bulges are the key independent variables respectively, the control variables of urban population size, infant mortality rate, polity score squared, unemployment, and civil war are statistically significant within each country. As in the urban sector, it is possible for there to be a youth bulge effect on rural conflict too, though rural conflict is less common (or less documented). Rural youth bulges are found to lower the likelihood of conflict (statistically significantly with a male youth bulge) – see Appendix Table A-1.

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[13] These cases of negative migrant bulges, which indicate higher urban–rural migration than rural–urban migration among 15–24-year-olds, are included in the analysis, as indicators of the lack of a migrant-based youth bulge.

Table 3:   The likelihood of urban conflict in 42 sub-Saharan African countries

	1. Urban male	2. Urban female	3. Male migrant	4. Male migrant [Random Effects]	5. Female migrant	6. Male migrant [Inter action]	7. Female migrant [Inter action]	8. Male nonmigrant	9. Female nonmigrant
Youth bulge	1.006	1.024**	0.995	0.995	1.002	1.002	1.009	0.999	1.014*
	(0.009)	(0.008)	(0.009)	(0.008)	(0.009)	(0.010)	(0.010)	(0.006)	(0.007)
Logged urban population	1.000*	1.000**	1.000*	1.000**	1.000*	1.000*	1.000*	1.000*	1.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Proportion urban	0.701	1.359	0.562	0.443	0.801	0.479	0.800	0.706	0.665
	(0.518)	(1.071)	(0.462)	(0.284)	(0.660)	(0.392)	(0.667)	(0.539)	(0.497)
Urban youth sex ratio	1.023^	1.022^	1.025*	1.017	1.024*	1.025*	1.024*	1.025*	1.020^
	(0.012)	(0.012)	(0.012)	(0.010)	(0.012)	(0.012)	(0.013)	(0.012)	(0.012)
IMR	0.993**	0.992**	0.993**	0.996^	0.993**	0.993**	0.993**	0.993**	0.992**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Autocracy-Democracy Score	1.032	1.031	1.033	1.041*	1.036	1.029	1.024	1.034	1.029
	(0.022)	(0.022)	(0.022)	(0.021)	(0.022)	(0.029)	(0.025)	(0.022)	(0.022)
Autocracy-Democracy Score^2	0.985*	0.987*	0.985*	0.983**	0.984*	0.986*	0.985*	0.985*	0.987*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Unemployment	1.046**	1.059**	1.044**	1.033*	1.044**	1.047*	1.058**	1.043**	1.056**
	(0.016)	(0.017)	(0.016)	(0.013)	(0.016)	(0.020)	(0.018)	(0.016)	(0.017)
Education	1.788	0.817	1.949	2.169	1.170	5.059	0.782	1.823	1.141
	(1.152)	(0.546)	(1.266)	(1.279)	(0.790)	(5.864)	(0.795)	(1.182)	(0.758)

Table 3:   **(Continued)**

	1. Urban male	2. Urban female	3. Male migrant	4. Male migrant [Random Effects]	5. Female migrant	6. Male migrant [Interaction]	7. Female migrant [Interaction]	8. Male nonmigrant	9. Female nonmigrant
Civil war	1.382**	1.405**	1.384**	1.367**	1.389**	1.363**	1.392**	1.381**	1.409**
	(0.143)	(0.146)	(0.143)	(0.133)	(0.145)	(0.141)	(0.145)	(0.143)	(0.146)
Youth bulge* education						0.929	1.048		
						(0.073)	(0.105)		
Youth bulge* score						1.000	1.001		
						(0.002)	(0.002)		
Youth bulge* unemployment						1.000	0.999		
						(0.001)	(0.001)		
Constant	0.036**	0.006**	0.052**	0.031**	0.044**	0.053*	0.040**	0.050**	0.023**
	(0.043)	(0.008)	(0.058)	(0.031)	(0.051)	(0.060)	(0.047)	(0.057)	(0.028)
ln_r				2.695**					
				(0.723)					
ln_s				4.777**					
				(1.465)					
N	763	763	763	764	763	763	763	763	763

Notes: Incident rate ratios (Standard errors). Two-tailed test: ** $p < 0.01$; * $p < 0.05$; ^ $p < 0.1$.

When separated into migrant and nonmigrant youth bulges in the urban sector (Models 3–9), results indicate overall that while controlling for confounders both male and female migrant and nonmigrant youth bulges do not increase the likelihood of conflict within countries in SSA. In Model 3, the male migrant-based youth bulge is statistically insignificant with a p-value greater than 0.1, and the standard error suggesting that the likelihood of a male migrant youth bulge be either above or below one. In using a country fixed effects model, the combined effects of all time-invariant predictors that differ across countries is absorbed, reducing omitted variable bias. However, because of the potential of the fixed effects eliminating variation in conflict across countries, Model 4 replicates Model 3 using random effects. In this model, too, the male migrant-based youth bulge is statistically insignificant, though the standard error is slightly smaller, and the coefficients of other covariates are largely unchanged. Since it is likely that the youth bulge effect on likelihood of conflict varies by education, unemployment, and political system, Models 3 and 5 are re-run including interaction terms. In these models (Models 6 and 7), the interaction terms are statistically insignificant. The effect of unemployment remains statistically significant, increasing the likelihood of conflict.

Although statistically insignificant, the coefficient of the female migrant-based youth bulge suggests a slight increase in the likelihood of conflict (Model 5), compared to a slight decrease in a male migrant-based youth bulge – though in both models the standard errors are the same and include a likelihood of no effect (one).[14] The female nonmigrant youth bulge, in Model 9, is found to be statistically significant, increasing the probability of conflict by 1.4%. When the female nonmigrant youth bulge increases from 60 to 70, it increases the likelihood of social conflict by 0.14. The male nonmigrant youth bulge in Model 8 is found to be statistically insignificant.

In the models in Table 3 the effects of the independent variables are lagged by one year. In order to test for sensitivity, and considering there may be more immediate effects, the models were run without any lagged effect. Results, in Appendix Table A-2, indicate similar findings. Only the female urban youth bulge is found to statistically significantly increase the likelihood of conflict. Other covariate effects are also equivalent when not lagged, except for the linear effect of political regime, which becomes statistically significant, suggesting a more immediate effect of regime type on conflict likelihood.

Although the relationship between migrant-based youth bulges and conflict are weak and statistically insignificant, exploring urban conflict by issue may be beneficial,

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[14] Sensitivity to specification of Models 3 and 5 by excluding the other population related covariates from the models were found to have consistent results. However, the effect of a female migrant-based youth bulge becomes marginally significant ($p > 0.1$). The population covariates are lowly correlated and capture different aspects of the population.

as the bulge may be particularly related to certain types of conflict. In Figure 5 the probability of urban conflict is examined according to the main issue behind the conflict based on the migrant-based youth bulge models (Models 3 and 5 in Table 3). Results indicate that both male and female migrant-based youth bulges are statistically significant in determining the likelihood of social conflict related to human rights, elections, and democracy. The likelihood of conflict on these issues is lowered by 3% for every 1% increase in the bulge. The coefficient for migrant-based youth bulge is marginally significant (p-value < 0.1, though confidence intervals are relatively wide) when ethnicity or religiosity are the main issue behind the conflict.[15]

Figure 5: **The likelihood of urban conflict in 42 sub-Saharan African countries, by main issue of conflict**
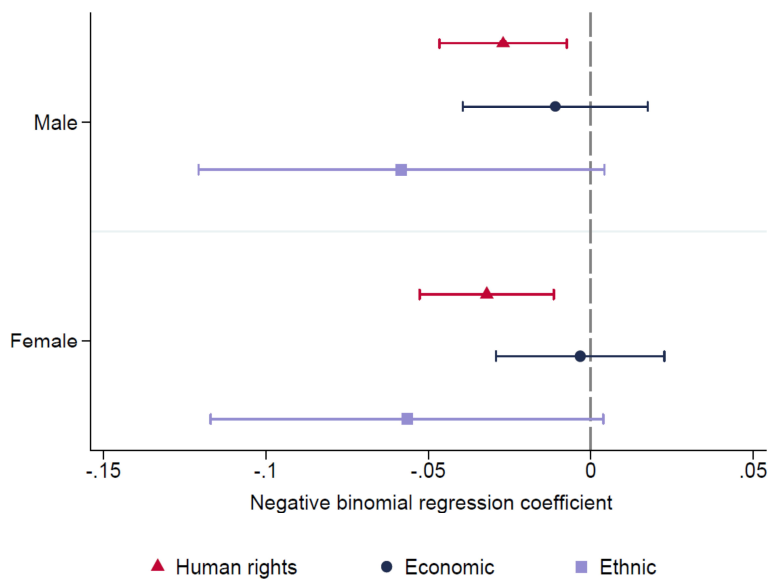
4. Discussion

Classic sociologists regularly describe urban life as fundamentally different to life in rural areas. Amongst them Wirth (1938) clearly defined urban life, suggesting that three key features of the urban population may lead to conflict – population size, density, and

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[15] The wide confidence interval for ethnic-religious conflicts reflects in part the smaller sample (N = 357).

heterogeneity. These features are associated with specialisation, utilitarian interpersonal relationships, increased competition, and social stratification, which can all promote unrest and violence. Rural–urban migrants play a substantial role in increasing population size, density, and heterogeneity. They are an important component of urbanisation to contend with when considering urban conflict. Yet, although results have shown that recent migrants are a particularly large proportion of youth in the urban sector, multivariate analysis suggests that overall in SSA a migrant-based youth bulge is not a contributing factor to urban social conflict.

Based on the models, my first hypothesis cannot be confirmed – migrant-based youth bulges were not found to increase the likelihood of conflict. This does not change when using random effects, including interaction terms, or not changing temporal order. The direction of impact is neither clearly positive nor negative, and this effect is very small. Though in opposite directions, the difference between the effects of the male youth bulge as opposed to the female youth bulge is negligible. The female urban youth bulge does statistically significantly increase the likelihood of conflict by 2%, but when disaggregated according to migration status, this relationship shifts. A nonmigrant youth bulge has a larger and statistically significant effect on social conflict while a migrant-based youth bulge has little effect. This suggests that examining the composition of youth bulges can be important.

My second hypothesis was also not supported by the models, and migrants were not found to increase the likelihood of conflicts related to economic issues. In light of the urbanisation of poverty, migrants may experience material deprivation and inequalities generating insecurity (Fox and Beall 2012), yet the costs of engaging in violence may not outweigh individual costs (Kahl 2002). Migrants may also not be active in the formal job sector and therefore not participate in strikes (the preferred means of expressing economic-related grievances). This is particularly true in SSA, where the informal sector provides substantial employment for migrants, especially women, and serves as a basis for opportunity and innovation (Awumbila 2015; Calvès and Schoumaker 2004; Oteng-Ababio et al. 2018; Potts 2008; Todaro 1997).

Additionally, migrants do not statistically significantly increase the likelihood of ethnic-religious conflicts. Although migrants may contribute to heterogeneity of the urban population, the ethnic heterogeneity of a population in itself does not necessarily lead to conflict. It is the identification with the group, strengthened by between-group inequalities – a combination of political, economic, and cultural inequalities – that increases the number of conflicts (Higashijima and Houle 2017; Stewart 2010). Indeed, when migrants face urban inequalities, their ethnic divisions are muted (Thachil 2017). Thus, although the migrant-based youth bulge may be composed of different ethnic or religious identities, the young migrants do not experience grievances enough to turn to social conflict. The lack of relationship between migrant-based youth bulges and social

conflict indicates that, despite the considerable contribution of migrants to the youth population in the urban sector, migrants are not a threat to urban stability in SSA. The economic decline from the 1980s onwards in SSA has made the urban economy less appealing for migrants and has slowed down urbanisation (Bocquier 2004; de Brauw, Mueller, and Lee 2014; Potts 1995, 2009). Other options for income have been employed within the rural sector rather than being sought after in the urban sector (Bryceson 1996, 2002). All the same, one key means of rural households in diversifying their livelihoods is sending a household member to the urban sector (Oteng-Ababio et al. 2018). Despite the lower attraction the urban sector may have, cities provide the opportunity to distribute risks, and especially to maintain income that is not likely to be affected by climate shocks, as in agriculture (Pietrelli and Scaramozzino 2019). Rural–urban migrants in SSA are relied upon to remit monies (Lucas 1985; Schrieder and Knerr 2000) and therefore cannot afford to engage in conflict, which may jeopardise their income and place in the urban setting. Additionally, migrants often rely on social networks, which provide diverse support needed, aiding economic survival and curbing grievances (Awumbila, Teye, and Yaro 2017).

Although overall there is little support for the hypotheses, female youth bulges were found to statistically significantly increase the likelihood of urban conflict. An urban female youth bulge (not disaggregated by migrant status) increases the likelihood of social conflict. A female migrant-based youth bulge increases the likelihood of conflict on human rights issues. And, a female nonmigrant youth bulge increases the likelihood of urban conflict. This is surprising, considering that research to date focuses on male youth bulges. Thus the role of young women warrants future investigation. In concentrating on men who are regarded as the more violent sex, the role of women has been neglected.

Women dominate the urban informal sector in SSA (Awumbila 2015). However, low-skilled jobs in the urban sector such as domestic work or catering are characterised by poor working conditions, low pay, and insecurity (Calvès and Schoumaker 2004), and women may challenge their exploitation and turn to social conflict. Indeed, men have stronger agency to negotiate better work conditions, allowing them to improve their conditions without turning to conflict. There are increasing trends of women migrating independently of men in SSA – not only to join their husbands – but often seeking employment in the informal sector (Adepoju 2008; Awumbila 2015; Zlotnik 2003). Migrant women generally have higher levels of education than migrant men (Ginsburg et al. 2016; Reed, Andrzejewski, and White 2010). They also tend to remit a higher percentage of their income to relatives in the rural sector, more regularly and for longer periods of time than male migrants (Abdul-Korah 2011; Lopez-Ekra et al. 2011). Thus these migrating women challenge traditional roles of women and become agents of change (Abdul-Korah 2011). Nonmigrant women may feel particularly vulnerable,

threatened by these migrating women who compete for jobs with them, and they may become unsatisfied and engage in conflict. This may be especially acute as urban women increasingly take on breadwinning roles (Akanle, Adesina, and Nwaobiala 2018).

That said, the relationship found between a female youth bulge and social conflict could be spurious. Although social conflict is less common in the rural sector, civil wars are often fought outside of urban centres – and such conflict may drive people, women and children in particular, to seek refuge in cities. Hence, reverse causation cannot fully be ruled out. But, since the migration estimates are based on five-year intervals, it is reasonable to posit that the migration captured is more permanent migration rather than conflict-driven migration, which is likely to be more temporary when conflict is of low intensity.

Some limitations were encountered in this study. First, while CSRM is a useful method for measuring internal migration in SSA considering the lack of other comprehensive sources of data, the migration estimates are still biased by international migration and reclassification. Furthermore, the estimates are net migration flows. Ideally urban in-migration would better capture the size of the migrant population in cities. It is also important to recognise that these migration estimates only capture recent migration flows. Including in the analysis migrants who have been in the urban sector for longer may change this effect. Second, although migration may be related to relative deprivation and economic marginalisation, these factors lack disaggregated rural/urban quantitative data to include in analysis. Third, the conflict data is based on news wires, which are selective and biased towards the present. Finally, the conflict data is limited to social conflict; it is important to expand the scope of future research to include urban homicide rates and organised crime on the one hand and civil war on the other.

5. Conclusion

The aim of this article is to disaggregate the urban youth bulge by distinguishing between natural growth and migration, considering previous mixed findings on the effect of an urban youth bulge on conflict (Buhaug and Urdal 2013; Urdal and Hoelscher 2009; Urdal 2008). I tested whether an increase in the relative proportion of young rural–urban migrants increases the likelihood of social conflict in SSA, where urbanisation has been disconnected from economic growth. In general, the models used failed to support the hypotheses. Although migrants do increase the size, density, and heterogeneity of the urban population and face relative deprivation and marginalisation (Cincotta, Engelman, and Anastasion 2003; Cook 2015; Fearon and Laitin 2011;

Gizewski and Homer-Dixon 1995), other factors may also be at play, compounding the relationship between a migrant-based youth bulge and conflict.

One factor is that economic growth is sustained by urbanisation (Black and Henderson 2011; Eaton and Eckstein 1997), so rural–urban migration may positively reflect economic growth in cities. Substantial flows of young migrants to the urban sector suggest better opportunities in education and the job market. Better economic prospects pull migrants to the city and allow them to integrate into the fabric of urban society relatively smoothly. A second factor, corresponding to migration reflecting economic growth, is that urban areas provide better opportunities for youth. Despite increasing prevalence of urban poverty and slums in SSA, urban populations are still better off than their rural counterparts (Awumbila, Owusu, and Teye 2014; Oucho 2014). The urban setting provides more economic opportunities, better education, and better child health outcomes (Fink, Günther, and Hill 2014; Sahn and Stifel 2003). For youth, cities also provide anonymity, a resource for delaying adulthood expectations, and reinvention (Sommers 2010). Young rural–urban migrants can relatively improve their position. They are also aided by social networks (Awumbila, Teye, and Yaro 2017). Importantly, they can help their families who remain in the rural sector through remittances and contribute to their community of origin (Oteng-Ababio et al. 2018). Hence, any grievances they may have are negligible to what has been gained by moving to the city. This has also been suggested by Buhaug and Urdal (2013), who found that population growth in cities may even lower urban disorder.

This study represents a first exploration of the impact of youth migration on urban conflict in SSA. The relationship uncovered is encouraging and suggests that governments in SSA should not fear high rates of young rural–urban migration. Even with constrained resources, and rising poverty in cities in SSA, migrants will tend to work harder rather than turn to conflict (Brockerhoff and Brennan 1998). These migrants may instead boost economic growth in the urban sector through a demographic dividend – an aspect that requires further investigation. Moreover, the study indicates that more attention should be given to the role of women in conflict. Indeed, there is increasing press evidence of women taking roles as political leaders and shaping protests in Africa (Dahir 2019; Salih 2019; Vio 2019). Women have been, and can be, powerful agents.

6. Acknowledgements

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Appendix

Table A-1:   The likelihood of rural conflict in 40 sub-Saharan African countries

	1. Rural male	2. Rural female
Youth bulge	0.969**	0.995
	(0.011)	(0.015)
Logged rural population	1.000*	1.000**
	(0.000)	(0.000)
Proportion urban	0.603	2.461
	(0.775)	(3.222)
Rural youth sex ratio	1.018	1.008
	(0.025)	(0.023)
IMR	0.988**	0.990**
	(0.003)	(0.003)
Autocracy-Democracy Score	1.103**	1.106**
	(0.034)	(0.034)
Autocracy-Democracy Score^2	0.974**	0.975**
	(0.009)	(0.009)
Unemployment	0.990	0.978
	(0.023)	(0.022)
Education	5.673	0.663
	(6.666)	(0.708)
Civil War	1.433**	1.452**
	(0.190)	(0.196)
Constant	0.464	0.060
	(1.266)	(0.157)
N	699	699

Notes: Incident rate ratios (Standard errors).
Two-tailed test: ** $p < 0.01$; *$p < 0.05$; ^$p < 0.1$

Table A-2:   The likelihood of urban conflict in 42 sub-Saharan African countries with non-lagged youth bulges

	1. Urban male	2. Urban female	3. Male migrant	4. Male migrant [Random Effects]	5. Female migrant	6. Male migrant [Interaction]	7. Female migrant [Interaction]	8. Male nonmigrant	9. Female nonmigrant
Youth bulge	1.006	1.018*	0.999	0.998	1.008	1.005	1.013	0.997	1.006
	(0.008)	(0.007)	(0.009)	(0.008)	(0.009)	(0.010)	(0.010)	(0.006)	(0.007)
Logged urban population	1.000	1.000^	1.000	1.000**	1.000	1.000	1.000	1.000	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Proportion urban	1.107	1.937	1.043	0.660	1.638	0.922	1.685	1.185	1.162
	(0.834)	(1.559)	(0.884)	(0.426)	(1.403)	(0.783)	(1.471)	(0.920)	(0.895)
Urban youth sex ratio	1.020^	1.019	1.022^	1.016	1.021^	1.022^	1.022^	1.023*	1.019
	(0.012)	(0.012)	(0.012)	(0.010)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
IMR	0.994*	0.994**	0.994*	0.997	0.995*	0.995*	0.995*	0.995*	0.994**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Autocracy-Democracy Score	1.059**	1.058*	1.060**	1.061**	1.067**	1.055^	1.058*	1.062**	1.060**
	(0.023)	(0.023)	(0.023)	(0.022)	(0.024)	(0.029)	(0.026)	(0.023)	(0.024)
Autocracy-Democracy Score^2	0.981**	0.983**	0.981**	0.981**	0.979*	0.982**	0.980**	0.980**	0.981**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Unemployment	1.044**	1.053**	1.041**	1.029*	1.041**	1.051*	1.058**	1.040*	1.048**
	(0.016)	(0.017)	(0.016)	(0.014)	(0.016)	(0.020)	(0.018)	(0.016)	(0.017)
Education	1.342	0.684	1.390	1.700	0.786	1.808	0.353	1.325	0.829
	(0.840)	(0.440)	(0.883)	(0.987)	(0.512)	(1.994)	(0.335)	(0.836)	(0.533)

Table A-2: (Continued)

	1. Urban male	2. Urban female	3. Male migrant	4. Male migrant [Random Effects]	5. Female migrant	6. Male migrant [Interaction]	7. Female migrant [Interaction]	8. Male nonmigrant	9. Female nonmigrant
Civil war	1.336**	1.349**	1.337**	1.349**	1.338**	1.322**	1.340**	1.337**	1.347**
	(0.133)	(0.134)	(0.133)	(0.125)	(0.133)	(0.133)	(0.135)	(0.133)	(0.134)
Youth bulge*education						0.981	1.107		
						(0.074)	(0.104)		
Youth Bulge*Score						1.000	1.001		
						(0.002)	(0.001)		
Youth bulge*unemployment						0.999	0.998^		
						(0.001)	(0.001)		
Constant	0.073*	0.023**	0.095*	0.045**	0.078*	0.090*	0.065*	0.098*	0.074*
	(0.088)	(0.029)	(0.109)	(0.045)	(0.091)	(0.107)	(0.078)	(0.113)	(0.087)
ln_r					2.666**				
				(0.701)					
ln_s					4.187**				
				(1.258)					
N	801	801	801	801	801	801	801	801	801

Notes: Incident rate ratios (Standard errors).
Two-tailed test: ** p < 0.01; * p < 0.05; ^ p < 0.1.