

# Urban Concentration and Civil War

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## Abstract

The movement of populations from the countryside to cities is one of the most important transformations in modern history, with far-reaching political, economic, and social consequences. These changes represent particular challenges for regimes with a tenuous grasp on power. Urban concentration facilitates anti-regime mobilization, yet cities have typically proven inhospitable for the organization of large-scale insurgency. We develop a theory connecting urban geography to the onset of high intensity civil war. Moving beyond existing works that connect population size, growth, or youth bulges to conflict, we hypothesize that urban concentration—how populations are distributed across cities—affects the probability of experiencing civil wars. We argue that highly concentrated states, with populations clustered in one or few cities, are more likely to experience widespread political violence than those with populations distributed among many urban centers. Cross-national regressions and a case study of the Ethiopian conflict provide support for our theory.

**Word count:** 9,899

## Introduction

The relocation of populations from the countryside to the city is widely considered one of the most important transformations in modern history, exerting a powerful influence on social, economic and political life. Some of the key works on the development of the modern state have emphasized the critical role played by cities and city dwellers. Charles Tilly (1992, 48) argued that the accumulation and concentration of capital, means of coercion in cities, and the networks of trade, production, and power that result played a key role in early processes of state formation. Since the days of merchant and proto-industrial cities, rural-urban relations affected the availability of soldiers, opportunities for taxation, elite strategies, and battles over the expansion of state power more generally. As Tilly later put it, rapid urbanization and capital-intensive industrialization dramatically affected the repertoire of contentious politics in Europe (Tilly 2003). Michael Mann's account of the rise of nation-states also puts cities front and center: urbanization complicated earlier forms of political control that were achieved through segmental patronage for landed elites, and required more universal forms of social control (Mann 1993, 409). Similarly, Barrington Moore (1966) saw a strong connection between the absence or presence of urban classes and the fate of modernizing projects, revolutions, and reactionary movements. James C. Scott (1998), in his seminal book on the modern state and related forms of political and social control, devoted substantial attention to the mapping, design, and redesign of modern cities as conscious projects to increase the state's ability to control these dangerous urbanites.

A common theme in these works is the potential threat urban centers and their residents pose to the established political order. As the world's population becomes increasingly urban, concerns have mounted that such changes will bring instability and violence, and that the resulting conflicts will also be predominantly urban (§2-3 *The U.S.*

*Army/Marine Corps Counterinsurgency Field Manual* 2007; Kilcullen 2013). This view, we argue, is somewhat misguided. We contend that the relationship between cities and conflict is complicated by the challenges of mounting effective insurgencies in major cities. On the one hand, pronounced clustering in cities *does* pose an acute threat to regime stability (e.g. Zipf 1949; Wallace 2013): collective action is relatively easier where distances are shorter and where information can be reliably communicated at low cost, as they are in cities. Anti-regime elements can also raise and distribute capital more efficiently in cities,<sup>1</sup> and benefit from plentiful recruits to help convert themselves into robust, formidable armed structures. As such, it may be costly for the regime to monitor the activities of large population centers. If armed groups can organize themselves, avoid detection, and carry out attacks in urban centers, those attacks will attract more attention from the populace and will help signal rebel strength, further galvanizing recruits. Urban mobilization also has the added advantage of preventing the government from responding with countermeasures that would inadvertently target co-partisans (Raleigh and Hegre 2009; Zhukov 2012, 147). Empirically, since 1970 capital cities in countries ranging from Algeria, Iraq, Iran, Lebanon, Somalia, and Turkey have experienced armed conflict (Staniland forthcoming, 1624).

Despite the fact that urban centers appear to provide favorable conditions for some forms of anti-regime activity—especially protests—they have typically proven inhospitable for the organization of sustained rebellion (Kalyvas 2007). Diversity within cities makes mobilization along identity-based cleavages difficult; states need only project power over a relatively limited geographic area in urban environments when compared to the hinterlands; and lack of space for training in cities makes it difficult for insurgents to practice the military skills needed to challenge stronger incumbent foes (e.g. Galula

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<sup>1</sup>The easier movement of capital in cities is what leads Tilly (1992, 51) to claim that "[c]ities shape the destinies of states..."

1964). Indeed, the central government in weak states may only retain complete control of the capital, while peripheries provide the opportunity for local political entrepreneurs and affiliated strongmen to provide protection to disaffected populations that have long been ignored by the center.<sup>2</sup> Deeply aware of the risks of urban unrest and outright rebellion, regimes tend to rely on public policies that benefit urban cores while pushing the costs of those policies onto rural populations (Bates 1981; Wallace 2013). Examples of rebellions in the periphery abound, and include the "tribal areas" in Afghanistan, which have sheltered the Taliban, the Venezuela-Colombian border, home to both the Revolutionary Armed Forces of Colombia (FARC) and the National Liberation Army (ELN), as well as the Karen state in Myanmar, home to the longest ongoing insurgency in the world. Broader empirical trends demonstrate that irregular wars typically begin and are fought in the rural hinterlands, not in cities (e.g. Kalyvas 2007).

What, then, is the relationship between cities and the potential for armed rebellion against the status quo? Moving beyond existing works that connect the pace of urbanization (Huntington 1968; Goldstone 2002), population size (Fearon and Laitin 2003), population growth (Buhaug and Urdal 2013), or youth bulges (Urdal 2006) to conflict onset, we hypothesize about how *urban concentration* — the distribution of populations across a country's various urban centers — is likely to affect the probability of the onset of particularly high intensity civil wars. We argue that states with populations concentrated in only one or few cities are more likely to experience conflicts with higher civilian body counts than those whose populations are distributed among many large population centers. Populations highly concentrated in one or few cities lead to strains in these urban center(s), as well as increased tension between urban and rural areas, and greater opportunity to mobilize citizens in rural areas. These factors facilitate insurgency for-

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<sup>2</sup>Galula (1964, 27) notes that a "high ratio of rural to urban population gives an advantage to the insurgent."

mation, training, and ongoing recruitment, all of which make civil war both more likely and more deadly. At the same time, high urban concentration strains the delivery of services to the periphery and in overcrowded cities, exacerbating underlying grievances, and forces states to turn to indiscriminate violence in peripheral areas. In short, both the connectivity produced by the agglomeration of people and the rurality that such urban concentration entails make high-intensity civil wars more likely.

Recent research on civil war processes increasingly relies on micro-level theorizing and empirical data from a few cases. While this micro-level scholarship offers fine-grained analyses, offering insight into causal mechanisms, it often raises questions of generalizability. Our theory aims to contextualize some of these micro-level findings and to evaluate structural-level factors that influence intrastate conflict. To do so, we rely on data aggregated at the country-year level to establish a relationship between urban concentration and high intensity civil war onset, defined as civil wars that result in total casualties of at least 1,000 people in a given country-year.<sup>3</sup> We pair this panel data approach with a short case study from Ethiopia that allows us to evaluate the causal mechanisms proposed in the theory. The results of this multi-method research design support our hypothesis.

We make a number of theoretical and empirical contributions to the literature on state breakdown, political order, and civil war. First, we provide a number of theoretical mechanisms through which changes in the spatial distribution of human populations undermine political order. Second, we move beyond existing works in this tradition by introducing a new conceptual apparatus for understanding urban concentration. Finally, we develop a new measure for this concept and show that it has a profound and robust effect upon the likelihood of civil war onset. Taken together, these contributions provide

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<sup>3</sup>In robustness tests reported in the Appendix, we show that higher levels of concentration correlate with higher levels of casualties using a continuous measure of battle-related deaths.

both scholarly insights into the determinants of political disorder while also offering policymakers lessons for how to avoid urban concentration's negative effects.

The next section presents in more detail our theory linking urban concentration to the onset of high-intensity civil wars, the third section presents our measure of urban concentration used in the cross-national regressions—a Herfindahl-Hirschman index—while the fourth provides the quantitative results. Our findings demonstrate a positive relationship between urban concentration and high-intensity civil war onset. These results are robust to the addition of a battery of control variables, multiple estimators, and additional robustness tests. The fifth section presents a case study of the Ethiopian civil war that illustrates core features of our theoretical story. The final section considers avenues for future research and concludes.

## **Urban Concentration and Civil War**

A large literature on counterinsurgency has debated how the distribution of populations across space affects counterinsurgent operations and whether they are likely to succeed. Classical literature on counterinsurgency holds that more scattered and rural populations benefit insurgencies (Galula 1964). This appears to be borne out empirically: population dispersion, mountainous terrain, and population size have been shown to be positively associated with civil war onset (Collier 2000; Fearon and Laitin 2003). On the other hand, Carlos Marighella, the influential Brazilian Marxist writer, advocated for the use of urban centers as prime locations for staging an uprising because of the difficulty of rooting out insurgents and the potential tactical advantages of the urban landscape (Marighella 1969). More recent writings from counterinsurgency experts hold that urban insurgencies are increasingly likely to bedevil governments given changing demographic, economic, and climatological patterns (Kilcullen 2013). Empirically, Raleigh and Hegre (2009) find that the incidence of conflict is more likely in urban centers, while

Urdal (2006) shows that because cities are associated with youth unemployment and social frustration, youth bulges are a strong predictor of the onset of conflict and violence.<sup>4</sup>

The theory presented here seeks to marry these two lines of argumentation, while our empirical approach uses a novel and improved measure of the core concept. We present four interrelated causal processes through which urban concentration precipitates high intensity civil wars.<sup>5</sup> Third, urban concentration may lead to government inattention in the periphery and the provision of inadequate services in the city center, exacerbating existing grievances and facilitating insurgent recruitment. Second, a population highly concentrated in one or a few cities facilitates the formation of insurgencies. Third, greater urban concentration facilitates recruitment from both the urban core and the rural periphery and creates space for rebels to organize, propagandize, and train, creating many more effective and lethal combatants. Fourth, governments lacking control in rural areas and smaller cities—and therefore lacking information on both insurgent movements and which civilians are collaborating with insurgents—will respond to mobilization in the periphery with heavy-handed, indiscriminate violence, in turn decreasing the marginal cost to peasants of joining the insurgency (Kalyvas 2006; Kalyvas and Kocher 2007). We therefore expect that in highly urban-concentrated countries, insurgencies will be both easier to get off the ground and will be more likely produce high-intensity conflicts.<sup>6</sup>

First, the geographic distribution of populations both affects and reflects a state's

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<sup>4</sup>This is most pronounced in autocratic countries. See Urdal (2006).

<sup>5</sup>Although we present four causal pathways, not all occur sequentially: they can (and often do) operate simultaneously. Nor do we suggest that each is necessary for the outcome.

<sup>6</sup>Although outside the scope of this paper, this configuration of urban geography is also likely to contribute to *longer* civil wars (e.g. Balch-Lindsay and Enterline 2000; Fearon 2004).

inability to project power over space. High urban concentration contributes to the intensity of civil wars in two ways: contributing to underlying grievances of the population prior to conflict—priming civilians for rebellion—and exacerbating conditions that result in bloodier conflicts once rebellion has occurred. Good governance and social service provision make conflict less likely (Taydas and Peksen 2012), but high degrees of urban concentration are usually associated with an absence of the state in the peripheries (Henderson 2002) and with inadequate service delivery in city centers. Excessive growth associated with urban concentration has been hypothesized to lead to the congestion of public services and infrastructure, and to foster corruption, contributing to underlying inequality and political grievances (e.g. Gaviria and Stein 2000; Campante and Do 2014; Castells-Quintana 2015). The unmet needs of both urban and rural populations exacerbate underlying popular tensions and grievances, fueling rebel recruitment (Kilcullen 2013). For example, Gema'a Islamiyya targeted pious men in underdeveloped and underserved areas on the outskirts of an overpopulated Cairo (Malthaner 2011), while in Sierra Leone, rebels in the periphery had few chances for education, leading many to join the Revolutionary United Forces (RUF) in order to attend their "bush schools" (e.g. Peters 2004).

As problematic as governance and social service delivery may be before a civil war begins, as these conflicts progress and violence pervades rural areas, civilians are likely to migrate to major cities for protection, exacerbating these dynamics. During the Israeli invasion and occupation of Lebanon, for example, Shi'as fled from the south and east of Lebanon to Beirut (Russell 1985). The city's overcrowding strained the Lebanese government's resources, providing fertile ground for Hezbollah to provide social services such as clean water, electricity, schooling, and health care to potentially sympathetic citizens, attracting recruits for the group's cause. Even today, as Syrian and Lebanese pour into Beirut, trash collection and traffic have become problematic, leading to civil unrest and



at times, outbreaks of violence. Ultimately, urban concentration can strain and produce suboptimal allocation of government resources, rendering the state incapable of providing services in the periphery and unable to adequately service the densely concentrated city.

Second, high urban concentration facilitates the genesis of insurgencies. During the incipient stages of organizing an insurgency, like-minded individuals are more likely to meet and interact in major urban centers than they would if they were highly dispersed across many small cities or the countryside. Because urban concentration strains governance and service delivery in urban areas, exacerbating underlying social, economic and political grievances, radical urbanites may be primed for rebellion. For example, universities that are often located in major cities have long been hotbeds for political activism: *Sendero Luminoso* in Peru, the *Movimento Popular de Libertação de Angola* (MPLA) in Angola, and the All Burma Students' Democratic Union (ABS DU) in Burma all have their roots in university radicalism. In the late 1950s through the 1970s, guerrilla movements in Cuba and Guatemala also developed among student activists, who sought support of peasants as the movements grew (Wickham-Crowley 1990). Even in those insurgencies typically thought of as "peasant-based," such as the long campaign waged by the FARC in Colombia, armed groups relied on universities for recruiting: the abundance of ideologically committed, politically active young people provided ideal conditions for recruitment (Rosenau and Herrera 2014). Networks of friends joining an insurgency is a common pattern across conflicts, and occurs among dense urban social networks just as it does in the countryside (Peterson 2001).

Third, urban concentration affects the recruitment and readiness of insurgents. Not only does poor governance in cities arising from urban concentration primes intensifies grievances and primes citizens for rebellion, but violence in urban centers draws media attention to the cause and helps signal insurgent strength (Zhukov 2012), which can in-

spire recruitment. In countries where a large proportion of residents are concentrated in one or a few cities, disproportionate attention, symbolic value, and economic production are placed on the main urban center, making for an especially attractive target for insurgents. For example, a single insurgent attack on urban mass transit infrastructure may not only generate widespread publicity for the rebel's cause, but may also result in a high number of casualties and longer-term economic hardship. The publicity arising from and the grievances spurred by urban warfare could together improve the ability of rebels to recruit new members from the urban core.

Moreover, in contrast to densely-populated cities arising from high urban concentration, rural peripheries and smaller cities and suburbs are ideal spaces for insurgents to accumulate strength (Weidmann 2015). Drawing on pre-existing social and political organizations in these areas allows rebels to harness discontent with ignored local demands or government repression of political movements. In such rural areas, insurgents can taken advantage of less densely populated geographical spaces necessary to establish bases, train recruits, and mobilize the peasantry (Galula 1964; Tse-Tung 1937; Guevara 2002). From these peripheral bases, insurgencies organize and strategize with comparatively fewer concerns about targeted, disruptive state repression; initiate propaganda, indoctrination, and education campaigns; and seek covert external support from foreign countries (Fearon 2004; Lischer 2005; Salehyan 2007; McColl 1969). If militants *do* have allies abroad, rural areas and small cities—particularly in border regions—make it easier for foreign states to deliver logistical support and materiel. Insurgents are therefore better able to match incumbent military strength, prolonging the duration and intensity of conflicts (Kalyvas and Balcells 2010). Furthermore, attacks against isolated army posts and surprise ambushes against government troops far from urban centers are easier to inflict than tightly coordinated assaults on major cities or pitched battles (Kalyvas 2007; Buhaug and Lujala 2009). High urban concentration can therefore contribute to

insurgent-specific factors that increase the probability of experiencing higher intensity conflicts, specifically rebel military strength (through recruitment and training) and effectiveness (through high-impact attacks).

Fourth, Buhaug (2010) finds evidence that a state's military capacity decreases across the geographic space of the territory.<sup>7</sup> As a result of this lack of military strength and inability to gather information, the government will be forced to rely increasingly on indiscriminate violence (Kalyvas 2006), translating into more conflict fatalities. In the western state of Darfur in Sudan against the Sudan Liberation Movement/Army (SLM/A) and the Justice and Equality Movement (JEM) (De Waal 2007), Senegal against the MFDC (*Senegal: A Climate of Terror in Casamance* 1998), and Suriname against the Jungle Commando (MacDonald 1988), governments relied on indiscriminate violence against civilian populations, which only further mobilized support for the rebel cause and caused already violent conflicts to escalate.

While we conduct a longer case study of Ethiopia below, a summary of the *Frente Farabundo Martí de Liberación Nacional* (FMLN) in El Salvador reflects the dynamics of our theory. The FMLN's leaders and initial members were recruited in city centers. Prior to the onset of the civil war, FMLN cadres moved to the countryside and into the mountains to train and avoid government detection and suppression. When the FMLN launched their broader armed campaign, rebel combatants moved from the rural countryside to population centers on the periphery, slowly advancing and encircling San Salvador, the capital (Lungo and Schmidt 1996, 56). Throughout the duration of the civil war, some Salvadorans fled to Honduras, while many left the countryside and moved to the city to escape the fighting, primarily to San Salvador (Pecený and Stanley 2010, 72-76). At the same time, the FMLN dispatched operatives to universities and city centers with the express purpose of recruiting new members (Bracamonte and Spencer 1995, 125), and

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<sup>7</sup>This is consistent with the account of state formation in Herbst (2000).

then sent these new recruits to the FMLN-controlled territory in rural areas (Bracamonte and Spencer 1995, 70). As the FMLN conquered more territory, it began establishing governance structures such as schools and clinics within the regions it controlled, further facilitating recruitment within the hinterlands (Commission 1992, 87). By the mid-1980s, the FMLN had begun targeting the infrastructure and symbols of the Salvadoran government's power in El Salvador's few cities in order to sabotage the economy, destroy the population's sense of security and order, and exacerbate grievances. These activities justified increased government repression: because the state had limited abilities to conduct effective counterinsurgency in the countryside, it increasingly relied on death squads ("*escuadrónes de la muerte*") that deployed indiscriminate violence in the countryside to curtail rebel activity (Wood 2000, 67-69). In 1989, the FMLN launched its final assault on San Salvador, attacking the capital city and eventually forcing the government into peace negotiations that led to the FMLN's legalization as a political party (Toft 2009, 70-95).

To summarize, our key hypothesis, which we will test against cross-national data and a case study of Ethiopia, is that countries with high levels of urban concentration are more likely to experience civil wars than those that have lower levels of urban concentration, and that those civil wars should be of particularly high intensity. We present four causal processes through which urban concentration should cause high intensity civil war. High levels of urban concentration not only affect the organizational and military capacity of rebel groups, but condition states' ability to consolidate control and narrow the options available to hamstrung counterinsurgents. These combined effects result in conditions propitious for high-intensity civil wars.

# Empirics

## Data

To test the connection between urban geography and civil war, we begin with the UCDP/PRIO Armed Conflict dataset. Because we believe urban concentration affects both the onset and intensity of conflict, our dependent variable is UCDP/PRIO's coding of the onset of a high-intensity conflict. In all models presented below the dependent variable takes a value of 1 if there is a new high-intensity conflict that kills at least 1,000 people in a given country-year, and 0 otherwise.

For our key independent variable, *Urban Concentration*, we draw on data from the UN World Urbanization Prospects for population figures in major cities<sup>8</sup>, from 1950 through 2010. Operationalizing urban concentration is complex, as there is no consensus, even among geographers, on how to conceptualize and measure it. Some measure urban concentration as the share of a country's total population living in the largest city, or even in the capital city, while others rely on the share of the urban population (Wallace 2013). Still others measure population dispersion as a Gini coefficient of the population as it is distributed over arbitrarily-sized polygons across the country (e.g. Collier and Hoeffler 2004). Measuring a related concept, *urbanization*, is more straightforward, but not entirely uncontroversial. There is some disagreement, for example, regarding what counts as "urban" areas, with some census takers such as the United States Census Bureau adopting strict quantitative cut-offs, with others such as the United Nations and the World Bank relying on self-reported classifications. The differences between these two are sometimes significant, but tend not to be dramatic, and not as problematic as alternative measures of urban *concentration*.

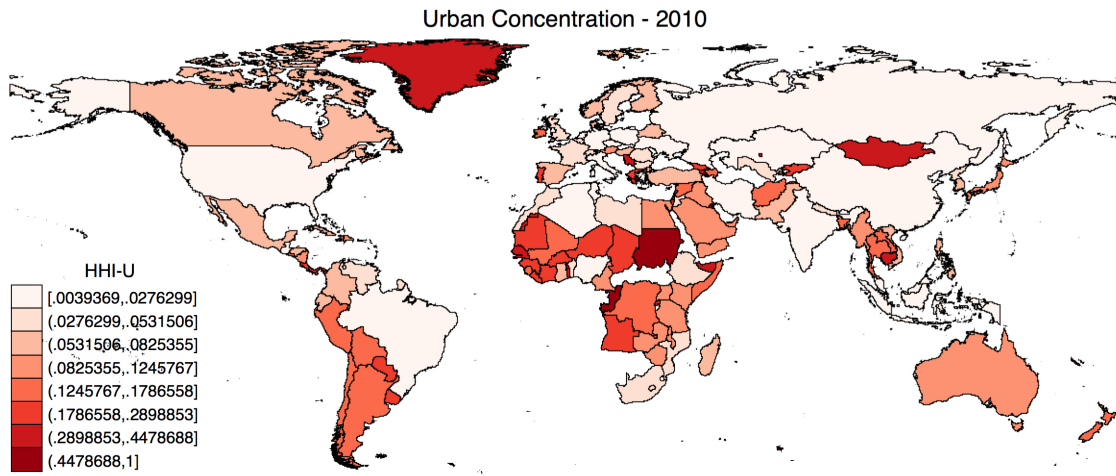
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<sup>8</sup>Defined as cities with more than 750,000 inhabitants. For countries that have no cities that meet that threshold we count the largest city.

A focus on the largest city alone can obscure the degree to which the population is concentrated or dispersed beyond that one city. Using such a measure, a country (A) with only one major city that accounts for 40% of its urban population while the rest is dispersed in various small cities would look exactly like a country (B) with five major cities that account for nearly 100% of the urban population yet in which the largest city has the same 40% of the urban population with the other 60% dispersed throughout the other four in equal shares of 15%. Following the discussion in the preceding sections, however, we would expect these two countries would confront substantially different incentives for both insurgent mobilization and government repression, therefore changing the probability of experiencing civil war.

To address this conceptual distinction, we use a Herfindahl-Hirschman Index of urban concentration (henceforth HHI-U). The HHI-U consists of the sum of the squared shares of a country's urban population living in each major city. This produces an index ranging from 0 (less concentrated) to 1 (more concentrated) that places greater weight on skewed distributions. An HHI-U of 1 represents total concentration in one city (e.g. the case of city-states like Singapore and, formerly, Hong Kong) to flat distributions that approach 0. The US today, for example, has a HHI-U of 0.016, which is significantly higher than Germany's very low 0.004, but still much lower than Sudan's 0.66 or Singapore's 1. Returning to our hypothetical countries mentioned above, A and B, they would rate 0.16 and 0.25, respectively. While this might not seem like much of a difference, they are approximately one standard deviation apart in our real world data. The map below shows the geographic distribution of the *Urban Concentration* variable in 2010.

Because of how it is calculated, the HHI-U is fairly right-skewed. We correct for this right-skewing by taking the natural log of the variable. Furthermore, because the UN population data used to calculate the HHI-U is reported in five-year increments only, we lag this measure of urban concentration by five years to ensure that the level of urban



concentration precedes the onset of conflict.

## Controls

In addition to our key independent variable, *Urban Concentration*, we include several additional controls for variables that potentially correlate with conflict onset and urban concentration. Specifically, we control for: rate of urbanization, population size, ethnic discrimination, youth population, territory size, mountainous terrain, per capita GDP, and regime type. In this section we explain not only how these variables are operationalized, but also the theoretical reasoning behind their inclusion.

First, we distinguish between the effects of *urban concentration* and *Urbanization* (i.e. the percentage of population living in areas designated as urban), and include the latter as a control. The distinction is important because we expect urban concentration, i.e. the distribution of urbanites across one or many cities, to generate a higher probability of civil conflict. However, urbanization—the percentage of people living in urban, as opposed to rural, areas—is highly and positively correlated with overall economic and social development and state capacity, and thus likely to be negatively correlated with civil war onset. The relationship between urbanization and urban concentration is

not direct. While urban concentration tends to be higher in highly rural countries, this correlation is not very strong. Countries can be highly urbanized and dispersed (US, Germany), mostly rural and highly concentrated (Rwanda, Uganda), both highly urbanized and highly concentrated (South Korea, Uruguay) or mostly rural and dispersed (India).

Our regressions also include several population-specific variables. First, we control for *Population* (logged), as larger populations are thought to allow rebels to better hide from superior regime forces, and more populous countries tend to be less concentrated. Second, we include the variable *Discrimination* which captures the size of the largest discriminated minority as a percent of other ethnic groups in the country (from Buhaug, Cederman and Gleditsch (2013)), which may help account for inter-group grievances that could cause intense civil conflict. It is important to account for this because urban concentration and other forms of geographic inequality—and the policies that cause them—may stem from particular geographic distributions of ethnic or political groups within a country and inequalities between them. Third, we add a variable for *Youth*, measured as the percentage of a country's population aged 0 to 24: this variable has been shown to affect society's mobilizational capacity and potential for violence, especially in urban settings Urdal (2006).<sup>9</sup> We expect that youth bulges would be particularly dangerous in highly concentrated countries.

In addition to a state's specific demographic and social factors, a state's geographic features could be a critical confounder. As such, we control for a country's *Area* (in thousands of square kilometers), as larger-sized territories are both harder for governments to project power over and urban concentration tends to be less acute in larger countries.

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<sup>9</sup>While Urdal (2006) focuses on share of population aged 15 to 24, we expand the age group to include younger children, many of whom are used in combat and support functions in armed conflict around the world. We find that narrowing the age group underestimates the effect of youth bulges on civil war onset.



We also include a measure for *Rough Terrain* (logged, from Fearon and Laitin (2003)), which relates to rebel opportunity for rebellion and may affect urban concentration by creating physical obstacles to intercity communication or limiting urban sprawl.

We also include measures of economic and political factors that may be related to the onset of bloody civil wars and have been hypothesized to correlate with urban concentration. We add *GDP per capita* (logged) to account for the country's level of economic development and state capacity.<sup>10</sup> Greater levels of development have been shown to correlate negatively with both conflict and urban concentration. Regime type also affects the likelihood of conflict and potentially correlates with urban concentration. In particular, democratic regimes are less likely to experience civil conflict and tend to have lower levels of urban concentration.<sup>11</sup> We include the *XPOLITY* measure of regime type (Vreeland 2008), which we update through 2010.<sup>12</sup> We include *XPOLITY* because components of the Polity IV scores include features of political unrest and political violence; to use Polity IV to predict civil unrest would bias our estimates. *XPOLITY* corrects for this. In robustness tests reported below in the appendix we also include alternative measures, such as the dichotomous measure of democracy from Cheibub, Gandhi and Vreeland (2010), as well as their six-way typology of regime types. In the appendix we also include measures of the availability of oil, gems and drugs, from Lujala (2010); oil rents per capita and an indicator for whether oil accounts for over one third of a country's exports, from Colgan (2015); and, to capture states' military capabilities, military expen-

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<sup>10</sup>Data for per capita GDP contains significant missingness, however, leading to a sizeable reduction in the number of observations.

<sup>11</sup>Though see (Gaviria and Stein 2000).

<sup>12</sup>The data from Vreeland (2008) runs through 2004. We follow the same procedure using the component indicators (Constraint on Chief Executive, Competitiveness of Executive Recruitment, Openness of Executive Recruitment), in the latest release of Polity IV.

ditures and personnel (per capita, logged), and indicators for the production of iron and steel and energy consumption (logged), both from the Correlates of War (Singer, Bremer and Stuckey 1972).<sup>13</sup>

Because of the binary construction of our dependent variable, we use a logistic regression estimator. To account for temporal dependence in the data, we include in most models a control for years since the last conflict, and the squared and cubic terms for this variable (Carter and Signorino 2010). Because we are using time-series cross-sectional (TSCS) data, it is possible that the significance of the relationship is overstated, since observations from the same country in different years are treated as independent. We correct for this by clustering standard errors by country. All time-varying controls are lagged by one year.

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<sup>13</sup>We don't include these latter factors in our main models for a few reasons. First, we doubt there exists a direct correlation between military capabilities and urban concentration. Second, designed for the study of interstate conflict, the COW dataset counts only forces intended for fighting *foreign* actors, thus excluding internal security forces. Counting only those forces would be misleading: while national militaries are often used for internal repression and combating domestic threats, and governments capable of raising large militaries may also be able to maintain large internal security forces, some militaries are either legally prohibited from or unwilling to perform these functions, and actual levels of military mobilization can be negatively related to the size of internal security forces if recruitment is diverted from the latter to the former. Moreover, military personnel and expenditure and the probability of civil war onset are both positively correlated with the incidence of interstate conflict.

## Results

Model 1 in Table 1 presents the bivariate relationship between urban concentration and the onset of conflict, demonstrating that the likelihood of the onset of conflict increases with urban concentration. We also report results using decade and region fixed effects.<sup>14</sup> Model 2 in Table 1 reports results including clustered standard errors and a variety of controls. The coefficient on urban concentration remains largely unaffected. As expected, youth population, total population, size of discriminated group, and territory size have positive and significant coefficients. Rate of urbanization and mountainous terrain have the expected negative signs but are not statistically significant.<sup>15</sup>

To facilitate the interpretation of the substantive effect of urban concentration, Figure 1 shows the predicted probability of onset from Model 2 at varying levels of urban concentration (logged). This is overlaid with a histogram of *Urban Concentration*, to illustrate the distribution of the data with respect to the index. It shows that although the probability of civil war outbreak in any given year is always small, the probability of onset is almost 85% higher for states in the 75th percentile of *Urban Concentration*,<sup>16</sup> compared to states in the 25th percentile.<sup>17</sup>

To ensure that our results are not simply an artifact of our construction of the *Urban Concentration* variable or the lag structure of the model, in Models 3 and 4 of Table 1 we report the results obtained by using alternative specifications of the key independent

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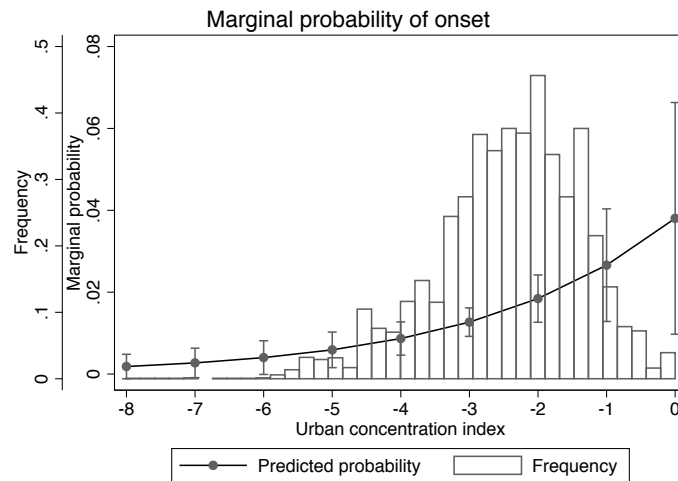
<sup>14</sup>This estimates separate intercepts for each region or decade and thus eliminates bias produced by unobserved or unmeasured characteristics across these different groups. The fixed-effect model, however, disregards cross-group variation and estimates only the effects of variation over time within each group.

<sup>15</sup>These coefficients can be found in the full table reported in the Appendix.

<sup>16</sup>About 0.022, or 2.2% when *Urban Concentration* is approximately -1.5.

<sup>17</sup>About 1.2% when *Urban Concentration* is approximately -3.

Figure 1: Predicted Probability of Civil War Onset Given Urban Concentration



variable: not logged (Model 3) and not lagged (Model 4). The coefficient in model 3 can't be easily compared to the coefficients for the logged variable because the natural variable is bounded between 0 and 1, while the logged variable ranges from -8 to 0. Yet both logged and non-logged measures generate very similar predicted probabilities.<sup>18</sup>

Finally, to test whether our results were an artifact of our choice of how to cluster standard errors or the inclusion of fixed effects, in models 5 through 7 we present results using the same controls as Model 2 but with alternate standard error clustering and fixed effects specifications. Model 5 uses normal (not clustered) standard errors, and models 6 and 7 include fixed effects for decade and region,<sup>19</sup> respectively. The coefficient for *Urban Concentration* is robust to these changes in model specification.

To ensure the robustness of our results we conduct a number of additional tests, all of which can be found in the Appendix. Most importantly, we rule out sensitivity to our modeling of time dependence, to influential observations, and to any individual

<sup>18</sup>See appendix for a comparison of predicted probabilities.

<sup>19</sup>Africa, Americas, Asia, Europe, and Oceania.

Table 1: Logit Models of Civil War Onset

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Urban concentration (logged, 5yr lag)	0.20* (0.10)	0.39** (0.16)			0.39** (0.18)	0.34** (0.16)	0.44*** (0.16)
Urban concentration (logged, no lag)				0.48*** (0.16)			
Urban concentration (not logged)			1.83** (0.80)				
Constant	-3.62*** (0.25)	-15.00*** (3.94)	-15.16*** (3.97)	-16.18*** (4.07)	-15.00*** (3.42)	-13.43*** (3.36)	-32.12*** (3.96)
Peace years (cubic polynomials)	No	Yes	Yes	Yes	Yes	Yes	Yes
Clustered SEs	No	Yes	Yes	Yes	No	Yes	Yes
Decade FEs	No	No	No	No	No	Yes	No
Region FEs	No	No	No	No	No	No	Yes
Obs.	6208	4958	4958	5134	4958	4958	4958
$\chi^2$ statistic	3.844	95.142	98.948	84.929	81.115	98.119	299.564
Pseudo-R-squared	.004	.104	.103	.105	.104	.122	.122

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Models 2-7 include the following controls: Urbanization, Discrimination, Population, Percent Youth, Area, Rough Terrain, GDP Per Capita, XPolity.

countries. Our findings are robust to each of these tests.

Figure 2: Separation Plot, Model 2



To examine model fit, the separation plot in Figure 2 (Greenhill, Ward and Sacks 2011) matches high-probability predictions from our base model in Table 1, Model 2 to actual occurrences of the event of interest, and low-probability predictions to non-occurrences of the event of interest. Dark and light panels correspond to actual instances of events and non-events, respectively, and are ordered with corresponding  $\hat{p}$  values increasing from left to right (thin line in graph). Models that fit well have a high concentration of dark panels on the right side of the graph. Our base model has very good fit: most events are clustered at the right-hand side.

In the theory section, we hypothesized that urban concentration makes high-intensity civil conflict more likely through distinct but related processes. The mechanisms can be

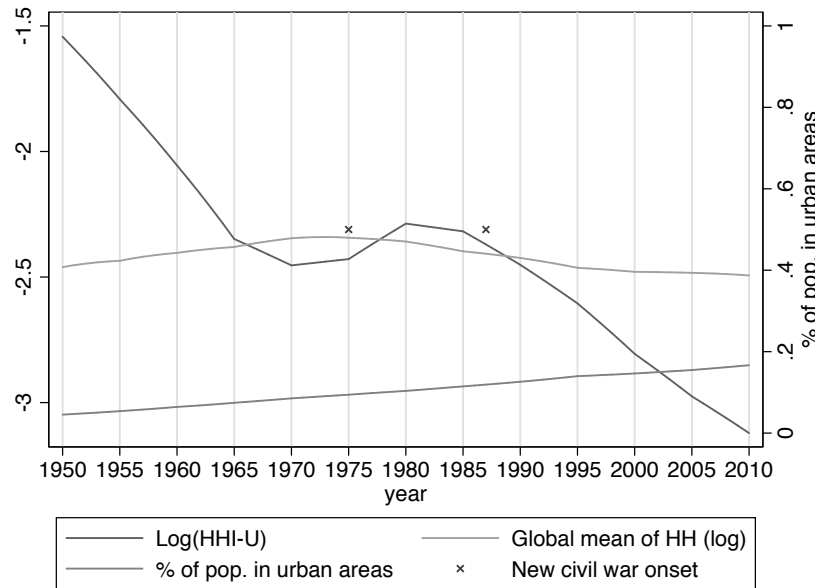
summarized as rebel group formation and organization in city centers; recruitment and military readiness; strain on urban resources; and state-perpetrated indiscriminate violence. Our statistical results provide general support for the connection between urban concentration and civil war onset, but cannot definitively evaluate whether the posited processes are doing the causal work. To provide further support for the mechanisms, the next section presents a case study of the nearly two decade-long conflict between the Ethiopian People's Revolutionary Party (EPRP) and the Dergue in the context of the Ethiopian Civil War.<sup>20</sup> The outbreak of civil war in 1974 is not an easy test for our theory: Ethiopia's urban concentration at that point was high but not extreme, and had actually declined over the previous two and a half decades, approximating the global median (see Figure 3). Though the global median is itself fairly high, this makes Ethiopia a typical case in terms of our key independent variable. While the EPRP is not an easy test, the results from that case study provide support for our theory.

It is important to note that our hypothesis is a probabilistic one, and we do not claim that urban concentration is either necessary or sufficient to produce civil wars, and we find no evidence for identifiable thresholds above which high intensity civil war becomes inevitable. We therefore refrain from making strong counterfactual statements. Urban concentration not being necessary, civil war may have broken out in Ethiopia in the absence of concentration, although the narrative in the next section suggests that it would have been less likely and probably less intense. There are, indeed, other factors present in Ethiopia in the mid-1970s that are usually indicated to explain the outbreak of conflict, such as the general weakness of the Ethiopian state. Urban concentration not being sufficient, other such factors are surely required to explain Ethiopia's propensity for conflict and the precise timing of its occurrence—in particular why onset didn't occur

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<sup>20</sup>Dergue means "committee" in Amharic, and is short for Coordinating Committee of the Armed Forces, Police, and Territorial Army.

Figure 3: Urban Concentration in Ethiopia



earlier when concentration was even higher. We also acknowledge that a given outcome can be reached through multiple causal pathways, a principle known as equifinality (e.g. George and Bennett 2005, 157). In other words, a wide array of variables may push states closer to experiencing high intensity civil conflict. We identify one such variable (urban concentration) and elucidate several plausible causal pathways linking these structural factors to high-intensity intrastate conflict.

While no single case can confirm or falsify the correlation put forth in the theory section, it is useful to think about what kind of evidence would contradict the causal mechanisms we identify. A case in which a state had high levels of urban concentration but few or none of our proposed mechanisms were visible in the onset of civil war would severely weaken our theory. On the other hand, if a state with low urban concentration experienced high-intensity conflict through all of the mechanisms we present, this would be problematic for our theory, possibly suggesting that the causal mechanisms we iden-

tify operate independently of urban concentration.<sup>21</sup>

The purpose of the Ethiopian case is to look for evidence of the observable implications of causal processes through process-tracing (George and Bennett 2005). Just as a detective seeks out clues, and rules out suspects to provide a convincing account of how a crime was committed and by whom, only by carefully examining a sequence of events are we able to have reasonable confidence that our proposed mechanisms reliably link causes to outcomes (Bennett 2008). If we find evidence that the EPRP sought to mobilize recruits in the city due to their radicalism and then move out to the hinterlands, that disaffection with government social programs in the cities led to mobilization on behalf of the insurgency, and that the government's inability to use selective violence led to indiscriminate violence in the hinterlands, we should have increased confidence that urban concentration helped prompt civil war in Ethiopia through the mechanisms we identify. These mechanisms may occur sequentially or simultaneously.

## **Urban Geography and the Ethiopian Conflict**

### **Historical Background and Conflict Timeline**

Before the Ethiopian Civil War began, Ethiopia had been plagued by turbulent unrest following almost five decades of territorial expansion and central state consolidation. Most Ethiopian territory was conquered in the early 1900s, and throughout the newly controlled territory, "new institutions developed and the pre-eminence of the centre was secured" (Markakis and Ayele 1978, 35). To staff this growing bureaucracy, Emperor Haile Selassie I invested in educational reforms, which allowed students from the peripheries to train and become educated at the University at Addis Ababa in the capital.

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<sup>21</sup>Such findings could also suggest a problem with how we measured urban concentration. This, however, would be less damaging to the theory itself.



The expanding bureaucracy, coupled with increased investment in manufacturing attracted many from the countryside, and the population of Addis Ababa ballooned. By 1976, the eve of revolution, the urban population was increasing at a rate of 6.6% a year, compared to population growth of 2.5% outside urban areas (Legurn and Lee 1977, 65).

Many of these new urbanites were students who heralded from poorer, rural families and emigrated from the peripheries into the new city environments. As a result of the influx of students, "[s]tudent life deteriorated markedly during the decade of expansion: inferior and inadequate housing, appalling food, a decaying social environment, as well as a shrinking job market" (Tareke 2009, 26) characterized the environment. Given poor post-graduation prospects and dilapidated living conditions, students grew increasingly radicalized. Their close proximity to one another facilitated mutual militarization and provided organizational benefits. Ultimately, these poorer students from the peripheries would become the radical nucleus of the militant student movement that formed the core of the Ethiopian People's Revolutionary Party (Tadesse 1998a, 37).

The student agitation in the center began to lay the foundations for a long-term rural-based struggle in the periphery as student radicalization began to trickle down from urban-based university students to rural secondary students. In 1964, as part of a new educational initiative to increase the number of teachers in rural areas, the Ethiopian state required university students to spend a year teaching in the countryside, due to the lack of adequately trained teachers in rural Ethiopia. The university students, "[w]ere shaken by the primordial nature of life in the Ethiopian countryside, where conditions had changed little since biblical times. Student teachers were further embittered by the realization that the imperial officialdom could make no meaningful change in the life of the peasantry. They shared these feelings with their pupils, the ablest of whom were already facing disillusionment with their aspirations for higher education" (Tadesse 1998a, 45-46).

The radicalized, organized and militant urban university and secondary students formed the core of the Marxist Ethiopian People's Revolutionary Party, which was officially established in 1969 (Tadesse 1998*a*, 74).<sup>22</sup> The EPRP leadership decided to begin a rural campaign and targeted rural Ethiopia for revolution first. The EPRP determined that "[r]evolutionary action would take the form of an armed struggle to be launched and waged primarily in the countryside." The revolution would mirror Mao's strategy of people's war "based in the rural areas mainly on the peasant masses. . . because the military and economic base of the enemy are located in the cities and he is weaker in the rural areas" (Tadesse 1998*a*, 88). To prepare for the oncoming revolution against Ethiopia's Emperor Haile Selassie, the EPRP focused on radicalizing and educating peasants in rural peripheries (Tadesse 1998*a*, 86).

The EPRP's calculus changed quickly, however, with the Dergue's toppling of Emperor Selassie in 1974. The Dergue was a Marxist cadre of soldiers headed by Mengistu Haile Mariam, and the Marxist EPRP believed it could work with the Dergue politically to implement democratic reforms. As a result, the EPRP made the decision to emphasize its urban activities—demonstrations, strikes and political agitation—over a rural-based insurgent struggle. The guerrilla army was not abandoned, but launching a full-scale civil war was postponed (Tadesse 1998*a*, 133-134).

When it became increasingly clear the Dergue would not implement the democratic reforms the EPRP sought, the EPRP turned to more violent actions. Eventually, in late 1975, the EPRP abandoned its purely political and primarily non-violent struggle, and decided to launch a simultaneous urban and rural campaign. The EPRP created the Urban Defense Wing (UDW), which would carry out urban warfare campaigns (Tadesse 1998*b*, 151), characterized by "infiltration and assassination" (Halliday and Molyneux

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<sup>22</sup>The EPRP was first called the Ethiopian People's Liberation Organization but changed its name to the Ethiopian People's Revolutionary Party.

1981, 122). The EPRP's urban military activities became increasingly important for drawing attention to the EPRP's cause. As a result of the EPRP's UDW, as well as "the density of the population" in some Addis Ababa neighborhoods, the EPRP was able to carve out a space of urban sanctuary, and the Dergue had difficulty using systematic oppression against them in the capital (Tadesse 1998*b*; Markakis and Ayele 1978, 286,162).

The conflict had attenuated the Dergue's grasp on power and its ability to provide critical public goods to the Ethiopian population: "the economic condition in the urban areas remained grim...[u]nemployment, high cost of living, scarcity of basic commodities and low income were pestering the urban dweller," in addition to a shortfall of grain and an increase in overall food prices (Tadesse 1998*b*, 12). The conditions in the urban center would only worsen: the Dergue "laid siege" to Addis Ababa to root out the EPRP, imposing costs on the broader population (Markakis and Ayele 1978, 166).

While the EPRP agitated in the urban centers, its rural army accumulated strength. The Ethiopian People's Revolutionary Army (EPRA), the rural armed wing of the EPRP, trained with the Eritrean People's Liberation Front (EPLF) in Eritrea, which at that time was a rural periphery within the Ethiopian state. The EPRA then moved to the hinterlands of the Tigray region to establish a base of control and branched out to the peripheral Wello, Begemidir, Sidamo, Harer and Shoa provinces (Tadesse 1998*b*, 87-89). The EPRP's bases of rural control served multiple purposes: they offered centers of recruitment and zones safe from government repression. To recruit and mobilize the peasant population, the EPRP provided literacy classes as well as medical treatment to peasants living in the area they controlled (Tadesse 1998*b*, 367-369). The rural bases, "[b]esides their strategic significance...were also designed to create relatively safe areas where EPRP members and sympathizers from the cities of the central and southern parts of Ethiopia would retreat in case of major calamities" (Tadesse 1998*b*, 183). The EPRP in the rural peripheries and the EPRP in the urban centers thus worked in tandem, agitating and recruiting from the center while

the rural army gained territory, and training recruits and cultivating peasant support.

The EPRP's pursuit of a simultaneous urban and rural struggle provoked indiscriminate violence by the Dergue regime. In the rural town of Jimma where the EPRP had incited an uprising in 1976, the Dergue responded by massacring hundreds of civilians (Tadesse 1998*b*, 3-4). The massacre was but a glimpse of what was to come: from 1977 until 1978, the Dergue unleashed waves of indiscriminate violence aimed at annihilating the EPRP. This campaign, called the Red Terror, resulted in the deaths of thousands of EPRP members and up to half a million Ethiopians (BBCNews 1999).

As a result of the Red Terror, the EPRP was forced to conclude its urban struggle and focus on its rural campaign (Tadesse 1998*b*; Tronvoll, Schaefer and Aneme 2009, 329,31). To expand the state's capacity and reach in the rural peripheries where the EPRP held sway, the Dergue then began a policy of forced "villagization." This was aimed at transferring huge swaths of the rural population from Ethiopia's southern half into villages in a short amount of time, and had the primary effect of "enforcing physical control over the rural population" (Henze 1987, 12, 15). The villagization campaign "afforded the military regime the tools to control not only dissent, but also production and recruitment for military training," (Tadesse 1998*b*, 476) and became a major aspect of the Dergue's rural counterinsurgency strategy.

The villagization campaign continued from the late 1970s until the mid-1980s, but by the early 1980s, the EPRP had largely been destroyed by both the Dergue as well as rival rebel organizations (Henze 2007, 256, 280). The few that remained continued their struggle throughout the 1980s and into 1991, when the rival TPLF destroyed both the Dergue and the EPRP. While mortality estimates related to the conflict vary, 10,000 civilians died in the late 1970s alone, during the Red Terror. In total, 609,000 Ethiopians died in wars between 1974 and 1990, more than 500,000 of whom were civilians (Sivard 1991), making Ethiopia a particularly high-intensity conflict.

## Evaluation of Proposed Mechanisms in Ethiopian Conflict

The decades long struggle of the EPRP reflects well the dynamics presented in our theory. The median-level of urban concentration in Ethiopia prior to conflict onset makes the EPRP a tough case. Yet the dynamics of the EPRP case support our theoretical expectations, so we can be increasingly confident in the strength of our theoretical framework (e.g. George and Bennett 2005). We review each of these mechanisms below and find convincing evidence that urban concentration prompted the onset of high-intensity civil war in Ethiopia through the hypothesized processes.

*Urban Concentration Strains Governances.* We argued that urban concentration could strain resources in the urban center and could cause a state absence in the peripheries, further exacerbating popular grievances underlying rebellion. In the early 1960s, the influx of students from the periphery to Addis Ababa caused a major strain on urban resources, and student life declined. In turn, students became radicalized and sought violent, militaristic avenues of political and social change. Moreover, just as the EPRP launched its armed struggle two years after the Dergue gained power, urban population growth was increasing at a rate of almost three times as much annually as population growth in other parts of the country. Yet economic and social conditions in the city were at an all-time low. The EPRP harnessed these grievances and attracted the support of many urbanites, youths in particular. Because of higher levels of urban concentration, poor urban living conditions further exacerbated underlying grievances within the urban population. These grievances in the urban centers facilitated recruitment and increased the overall lethality of the group and in turn increased the likelihood that Ethiopia would experience high-intensity conflict. At the same time, because of urban concentration, the state failed to penetrate rural peripheries, resulting in a highly underdeveloped peasantry. Students in the peripheral areas felt as if they had few, if any, chances of success

and betterment, leaving them with almost no other option but to rebel and creating a population primed for mobilization.

*Formation and Organization in the City Center.* The leaders of the EPRP were primarily students from poorer, rural families who met in Addis Ababa while studying at the university. Without population movements from the periphery to the city center, which caused higher levels of urban concentration and helped students organize, the EPRP likely would never have emerged. The Ethiopian case therefore demonstrates that urban concentration facilitated the formation and organization of student movements that developed into robust insurgencies that subsequently led to higher intensity conflict.

*Recruitment and Rebel Strength.* Throughout the course of the struggle, the EPRP recruited primarily urban youth and unemployed laborers. The actions of the Urban Defense Wing of the EPRP also inspired youths to take up arms. Many of the urban recruits who "fantasized" about the rural struggle were sent for further training in the hinterlands. Thus higher levels of urban concentration provided the conditions for active recruitment by the EPRP, consistent with our hypothesis. These city recruits moved to rural centers for more training. Higher levels of recruitment and a larger rebel army rendered the Ethiopian insurgency more likely to get off the ground and to become more lethal.

While the urban centers proved fertile ground for recruitment, the EPRP used the hinterlands to train for violent military struggle. The EPRP first trained with the EPLF in what was then Ethiopia's territorial periphery, Eritrea. After training, the EPRP moved throughout the remote spaces of Ethiopia to establish military bases, mobilize the peasantry, and create safe places of retreat. At the same time, the EPRP sought to recruit peasants to the struggle, and used literacy and education campaigns, as well as medical services, to entice peasants to join the movement. Ultimately, the rurality that resulted from higher levels of urban concentration—an impoverished countryside with little state

penetration—allowed the EPRP to gain territorial control, train new members, and recruit from the peasantry. Together, these behaviors increased the EPRP's lethality, as well as the conflict's intensity.

*Indiscriminate Violence.* Finally, we hypothesized that urban concentration complicates a state's ability to project power to the peripheries. As a result, the state lacks critical information about who combatants are, and responds with widespread, indiscriminate violence. The Dergue's response to the EPRP precisely reflects this mechanism: lacking both the knowledge about EPRP combatants as well as the ability to project power to the peripheries, and even to some urban enclaves, the Dergue massacred and tortured hundreds of thousands of Ethiopians through its Red Terror campaign. Indiscriminate violence, which increased the intensity of Ethiopia's civil war, is consistent with our theory.

## Conclusion

This paper has argued that urban geography is a fundamental determinant of political order and, in particular, has an important effect on high-intensity civil war onset. More specifically, we argue and demonstrate that urban concentration—that is, the concentration of a country's population in one or few urban centers, implying weak control of the hinterlands—is positively associated with the onset of high-intensity civil wars. The cross-national results are robust to a variety of model specifications and estimators, as well as the inclusion of a battery of confounders. Future research could examine the precise mechanisms connecting urban geography to patterns of armed group recruitment (as opposed to the use of violence), and could use geolocated conflict data to assess whether political violence predominantly occurs in or around urban centers or in the hinterlands.

One implication of our theory and empirical results is that the rural-urban divide

for insurgencies is just as important as early counterinsurgents thought, but that this is driven principally by urban concentration, not urbanization. Additionally, although politically salient, this rural-urban dichotomy isn't clear cut *analytically*, as some insurgencies simultaneously operate in urban centers and the hinterlands, while capitalizing on the resources of both. This dynamic has consequences for the prediction of future instances of high-intensity civil war. While some argue that with increasing urbanization we are likely to see more urban insurgencies (Kilcullen 2013), our results suggest that the effect of urbanization is conditional upon the distribution of those urban populations across urban centers. If populations are contained within one or a small number of cities we may see more civil wars, but these are unlikely to be played out exclusively or chiefly as urban conflicts. Urban centers will likely continue to serve as recruitment grounds for ideologically-committed young people, locales for the mobilization of capital, and sites for urban riots, but the dynamics of contestation and state repression that help to generate and sustain insurgency are likely to favor the hinterlands, not major cities. Successful insurgencies may eventually make their way back into the cities and fight the government for their control, but only once they have gathered enough strength. Territorial gains by the Islamic State of Iraq and Syria in 2014 and 2015, for example, appear to fit this pattern.

Our argument and findings also have consequences for state-led economic development policies and the deployment of the state's military assets across space. Governments would do well to intentionally help shape patterns of urban geography. While attempts to favor urban elites at the cost of the rural poor may unwittingly incentivize movement to the cities (Bates 1981; Wallace 2013), investing in multiple urban centers—as opposed to just the capital city, as is often done—could both placate urban elites with the capacity to overthrow the regime, deter insurgents from organizing for rebellion, and extend the geographical reach of the state. This is a useful corrective to many policy



recommendations to undertake *rural* development projects that might increase the opportunity costs of rebellion in the countryside, but leave resources open for capture by armed groups.

Mao Tse-Tung (1937) wrote that it is not to the government's advantage "to wage war over a vast area...she cannot disperse her strength and fight in a number of places, and her greatest fears are these eruptions in her rear and disruption of her lines of communication." Where incumbent governments are unable to extend their reach beyond a few key cities, reflecting an inability to develop multiple loci of power and administration across space, the threat of civil war looms. Given current demographic and geographic trends, increasing urbanization appears likely. What remains unknown is how those urban populations within a state will be distributed across space. Governments with great degrees of urban concentration and limited administrative and military outposts in their territory will be unlikely to credibly deter rebellion and prevent the escalation of violent conflict.

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# Appendix

## 0.1 Robustness tests

First, in Table 2, Model 1, we exclude peace years to ensure our findings are not driven by the inclusion of years of peace between the onset of high intensity civil conflicts. Second, to guard against the possibility that our results are largely determined by one or a few outliers, we re-estimate our models by dropping individual cases and then dropping influential observations. For Table 2, Model 2 we simply used the Stata command jackknife, which drops an individual observation, reruns the model, replaces the dropped observations, excludes the following observation, then re-runs the model again. Once all observations have been omitted, new coefficients and estimates are calculated. For Model 3 we calculated the Pregibon's beta for all observations and dropped all potentially high-leverage cases.<sup>23</sup> Our findings are robust to each of these tests.

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<sup>23</sup>Pregibon's beta is equivalent to Cook's distance in linear regressions. We followed established convention and classified as high-leverage observations those with Pregibon's beta greater than 1.

Table 2: Additional Robustness Tests, Excluding Peace Years, Outliers, Influential Observations

	Model 8	Model 9	Model 10
Urban concentration (logged)	.485*** (.171)	.394** (.177)	.387** (.172)
Urbanization (%)	.356 (1.071)	.299 (1.152)	-.610 (1.008)
X-Polity	.021 (.028)	.015 (.033)	.003 (.033)
Population (logged)	.442*** (.166)	.407*** (.132)	.520*** (.133)
Population Aged 0-24 (%)	.081*** (.030)	.083*** (.026)	.086*** (.026)
Per capita GDP (logged)	-.126 (.195)	-.053 (.231)	.216 (.230)
Discrimination (R-score)	1.525*** (.501)	1.378** (.535)	1.525*** (.555)
Mountainous terrain (% , logged)	.188* (.097)	.165* (.097)	.137 (.135)
Territory size(1000 km <sup>2</sup> )	.0002* (.0001)	.0002** (.00008)	.00004 (.00005)
Peace years (cubic polynomials)	No	Yes	Yes
Jack-knife	No	Yes	No
Dropping Influential Observations	No	No	Yes
Obs.	4958	4958	4631
$\chi^2$ statistic	64.507		268.693
Pseudo-R-squared	.099	.104	.53

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 3: Additional Robustness Tests, Different Measures of Regime Type

	Model 11	Model 12
Urban concentration (logged)	.351** (.161)	.312* (.162)
Urbanization (%)	.321 (.995)	.529 (.977)
Democracy (Dichotomous)	-.318 (.328)	
Parliamentary		.315 (.825)
Semi-parliamentary		-.109 (.579)
Presidential		.291 (.504)
Civilian Dictatorship		.483 (.465)
Military Dictatorship		-.737 (.823)
Royal Dictatorship		Excluded
Population (logged)	.400*** (.148)	.372** (.154)
Population Aged 0-24 (%)	.064** (.031)	.065* (.033)
Per capita GDP (logged)	-.015 (.178)	-.045 (.181)
Discrimination (R-score)	1.382*** (.446)	1.538*** (.431)
Mountainous terrain (% , logged)	.165* (.092)	.215** (.091)
Territory size(1000 km <sup>2</sup> )	.0001* (.00008)	.0001 (.00009)
Peace years (cubic polynomials)	Yes	Yes
Obs.	5036	5036
$\chi^2$ statistic	86.205	99.827
Pseudo-R-squared	.098	.102

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 4: Additional Robustness Tests, Natural Resources

	Model 13	Model 14
Urban concentration (logged)	.303* (.158)	.417** (.198)
Urbanization (%)	.271 (1.359)	.684 (1.227)
X-polity	.026 (.028)	.042 (.031)
Population (logged)	.395** (.183)	.414** (.174)
Population Aged 0-24 (%)	.080*** (.031)	.084** (.033)
Per capita GDP (logged)	-.104 (.208)	-.262 (.285)
Discrimination (R-score)	1.538*** (.531)	1.189** (.551)
Mountainous terrain (% , logged)	.157 (.106)	.170 (.114)
Territory size (1000 km2)	.0002* (.0001)	.0002 (.0001)
Drugs	-.123 (.353)	
Gems	-.271 (.286)	
Oil production	.128 (.412)	
Oil rents per capita		-.0003 (.0003)
Oil >1/3 of exports		.787* (.449)
Peace years (cubic polynomials)	Yes	Yes
Obs.	4728	4258
$\chi^2$ statistic	91.807	102.419
Pseudo-R-squared	.1	.109

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Table 5: Additional Robustness Tests, Military Capabilities

	model15	model16
Urban concentration (logged)	.403** (.182)	.368** (.175)
Urbanization(%)	-1.250 (1.205)	-1.051 (1.301)
X-Polity	.044 (.032)	.055* (.033)
Population (logged)	.344* (.178)	.444** (.195)
Population Aged 0-24 (%)	.095*** (.027)	.092*** (.028)
Per capita GDP (logged)	-.291 (.206)	-.252 (.205)
Discrimination (R-score)	.801* (.459)	1.002* (.513)
Mountainous terrain (% , logged)	.259*** (.098)	.233** (.098)
Territory size (1000 km2)	.0002 (.0001)	.0002 (.0001)
Mil. Personnel (p/capita, logged)	-8.878 (17.188)	-15.125 (17.907)
Mil. Expenditure (p/capita, logged)	.530*** (.148)	.568*** (.162)
Energy consumption (logged)		.014 (.101)
Iron & Steel Prod. (logged)		-.048** (.023)
Peace years (cubic polynomials)	Yes	Yes
Obs.	4836	4803
$\chi^2$ statistic	130.085	132.938
Pseudo-R-Squared	.134	.138

Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Figure 4: Comparing Predicted Probabilities of Logged and Non-Logged Measure of Urban Concentration

