The Increasing Incidence of Civil Wars in sub-Saharan Africa: Assessing the Role of Democratization and Age Structure

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Abstract

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by Sarah Staveteig

During the 1990s, sub-Saharan Africa experienced an increased incidence and prevalence of civil war. Three prior studies (Collier and Hoeffler 2002; Elbadawi and Sambanis 2000; Goldstone, Gurr, Harff et al. 2000) found that worsening economic conditions, dependence on primary commodity exports, and failed political institutions helped account for Africa's uniquely high incidence of civil wars. This paper extends these prior studies by focusing on the role of governance and youthful age structure in civil war onset. A logistic regression model of youthful age structure, governance, population size, and economic conditions is applied to data on the worldwide incidence of civil wars from 1960 to 2000. In concert with prior studies, I find that economic conditions and level of development are important factors in conflict onset. But given that economic conditions in Africa stagnated rather than worsened during the 1990s, it does not appear to be the case that the increase in civil wars in sub-Saharan Africa can be explained by economic factors. Instead, I find that incomplete democratization and increasingly youthful age structures were two important factors in the increased incidence and prevalence of civil wars in sub-Saharan Africa. Both factors are significant in the worldwide regression model, and both factors uniquely increased within sub-Saharan Africa during the 1990s. My finding is consistent with literature suggesting that large incoming cohorts of young adults who cannot be sufficiently accommodated by the labor market and educational system experience increased dissatisfaction and alienation which in turn increase the likelihood of civil unrest. It also confirms other scholars' findings that countries are more likely to experience civil war as the government is transitioning from autocracy to democracy. These findings lend important insight into the increase of civil wars in sub-Saharan Africa during the 1990s. The model, however, cannot fully account for the increased incidence in civil wars during the 1990s within sub-Saharan Africa. Additional research is therefore needed to uncover whether this is a post-cold war effect or whether it is due to changes in other explanatory factors.

I. The Increased Incidence of Civil wars in sub-Saharan Africa

During the 1990s, the number of countries in sub-Saharan Africa that experienced a major civil war nearly doubled, from eight to fourteen.[2] These fourteen nations comprised nearly one-third of all nations in Sub-Saharan Africa. Seven additional sub-Saharan African nations experienced at least one minor civil war. Meanwhile, for the rest of the world, the percent of countries that experienced a major civil war declined.[3] Infamous African civil wars during the decade include the Rwandan genocide, South Africa's anti-apartheid struggle, and the brutal war in Sierra Leone. Yet for each of these well-known cases, there were several other less well-publicized cases. For example the civil war in the Democratic Republic of the Congo was estimated to have had 3.3 million victims, more than any war since World War II,[4] yet received comparably little media attention.

Figure 1 charts the incidence of new civil wars in sub-Saharan Africa and the rest of the world from 1960 to 2002. (Details on the definition of civil war are given in the methods section). Overall, the risk of a new civil war[5] erupting in any country worldwide during this 40-year period was slightly less than 3%. As the graph shows, the incidence of civil wars in sub-Saharan Africa compared to the rest of the world was fairly comparable during the 1970s and 1980s. However, in the 1990s, the risk of civil war onset in sub-Saharan Africa drastically increased while it decreased for the rest of the world. In Sub-Saharan Africa in 1990s, the probability of a new civil war onset in any given year was 7% (compared to 2% for the rest of the world).

[Figure 1: Incidence of New Civil Wars in Sub-Saharan Africa and Rest of World, 1960-2000]

Figure 2 shows a breakdown of conflict onsets by decade and continent. It illustrates that not only did the worldwide incidence of civil war increase during the 1990s, but the number of new onsets doubled in sub-Saharan Africa compared to the prior decade. During the 1990s, over half of all new onsets of civil war were in sub-Saharan Africa.

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[2] Based on Strand, Håvard, Lars Wilhelmsen, and Nils Petter Gleditsch. 2003. "Armed Conflict Dataset, Version 2.1." [Computer File] Oslo: International Peace Research Institute. According to these data, fourteen of forty-four countries in sub-Saharan Africa, or 31.81%, experienced a major internal armed conflict during the 1990s. The fourteen countries were: Angola, Burundi, Chad, Congo-Brazzaville, the Democratic Republic of the Congo (former Zaire), Guinea-Bissau, Liberia, Mozambique, Nigeria, Rwanda, Senegal, Sierra Leone, Somalia, and South Africa.

[3] In the 1980s, there were 25 major civil wars in 97 countries (=25.8%). In the 1990s, there were 27 major civil wars in 117 countries (=23.1%). For a list of countries covered, see Appendix A.

[4] Phezo Dizolele, Mvemba. 2003. "Kabila needs real help now." in *The International Herald Tribune*. Washington DC, 11/12.

[5] Here I refer to any civil war, whether major or minor.

[Figure 2: Civil War Onsets among Continents by Decade, 1960 – 2000]

Could the higher incidence of civil wars in sub-Saharan Africa be due to a propensity toward shorter wars? Perhaps the high rate of onsets in sub-Saharan Africa is masking the fact that other countries spend an equal number of years in war. Indeed, the data show that the average duration of civil war was slightly higher in the rest of the world than it was in sub-Saharan Africa (2.6 years versus 1.9 years). As Figure 3 shows, the prevalence of civil war—the percent of countries that were involved in a civil war at any given time—in sub-Saharan Africa was generally lower than for the rest of the world until 1990. During the 1990s, however, the prevalence of civil war was greater in Africa than it was in the rest of the world: on average more than one-fifth of sub-Saharan African countries experienced a civil war during any given year during that decade.

[Figure 3: Prevalence of New and Ongoing Civil Wars in Sub-Saharan Africa and Rest of World, 1960 to 2000]

What explains the increased incidence of new civil wars in sub-Saharan Africa? This paper examines common underlying factors that predispose countries to civil war. War may seem senseless, but it is certainly not random. War is at one end of a range of conflictual behavior. It generally requires a "spark," a proximate inciting factor, in order to ignite. Yet not all sparks cause war. The radical politics of hate exist to some extent in nearly all societies, but only rarely do they succeed. In sub-Saharan Africa, the popular media has pointed to ethnic tensions as a cause of war. Even if this were true—and most research suggests it is merely a way in which populations are mobilized, rather than a fundamental cause (cf. Elbadawi and Sambanis 2000; Fearon and Laitin 2003; Leonard and Straus 2003)—ethnic divisions remain relatively constant over time. Surely there must be other reasons why ethnic conflict breaks out at certain times and not at others.

Does the increase in civil wars in sub-Saharan Africa reflect a different pattern of causation than elsewhere in the world, or can it instead be explained by uniquely African changes in trends that predispose countries to civil wars? Three studies have specifically examined the causal structure of civil wars in sub-Saharan Africa versus the rest of the world (Collier and Hoeffler 2002; Elbadawi and Sambanis 2000; Goldstone et al. 2000). All three studies have concluded that the pattern of causation is *not* substantively different in sub-Saharan Africa than it is elsewhere in the world. As Collier and Hoeffler put it, "there is no mysterious 'Africa effect'" (2002: 13). Instead, these studies have pointed to changes in explanatory factors as reasons for Africa's higher propensity toward civil war.

Elbadawi and Sambanis (2000) point to continuing failed political institutions, low levels of education, and reliance on primary commodity exports to explain the high rate of civil wars in sub-Saharan Africa compared to the rest of the world. Goldstone et al. (2000) provide a more complete analysis of African characteristics that promote and prevent conflict. They find that countries with low trade openness, countries that practice ethnic discrimination, governments that are partial (and to some extent full) democracies, countries with new leaders, and countries with unbalanced patterns of development are at particular risk of conflict in Africa. Both sets of authors assert that the causal structure of civil wars in Africa is quite similar to that in the rest of the world. Yet neither set of authors looks specifically at sub-Saharan Africa's increased propensity toward civil war during the 1990s. Although their work helps us understand Africa's differential risk of conflict, they do not explain its increased incidence in the 1990s.

Collier and Hoeffler do look at the increase in civil wars in sub-Saharan Africa during the 1990s. They find that Africa's declining economic performance and its continued dependence on primary resource exports are the two major reasons for the increase in civil wars in sub-Saharan Africa. Yet this answer to the question of why civil wars increased in sub-Saharan Africa is ultimately unsatisfying. Figure 4 shows real GDP per capita in sub-Saharan Africa and the rest of the world. As it illustrates, Sub-Saharan Africa was indeed diverging from the rest of the world in terms of real GDP per capita during the 1990s. Yet this was primarily due to growth in the rest of the world and stagnancy in sub-Saharan Africa, *not* to decreases in real GDP per capita within sub-Saharan Africa.

[Figure 4: Real GDP per Capita, Sub-Saharan Africa vs. Rest of World, 1960-2000]

The trends in GDP growth are quite parallel in sub-Saharan Africa and the rest of the world, as shown in Figure 5. Sub-Saharan Africa consistently has lower GDP growth than the rest of the world, but its GDP growth is not uniquely decreasing relative to the rest of the world in the 1990s. My data show that mean and median GDP growth in sub-Saharan Africa actually improved slightly from the 1980s to the 1990s.[6] Based on GDP per capita and GDP growth, we would therefore expect that the risk of conflict in Africa would have stayed the same throughout the period rather than increased. Economic performance may explain why the rest of the world is experiencing a *decreasing* incidence of conflict. Yet it cannot explain Africa's increased incidence of civil war.

[6] Median GDP growth in sub-Saharan Africa grew slightly from -0.40% in the 1980s to 0.15% in the 1990s. Mean GDP growth stayed approximately constant during the two decades, at -0.19% and -0.12% respectively.

[Figure 5: GDP Growth, Sub-Saharan Africa vs. Rest of World, 1960-2000]

It is important to note that there were a large number of missing values for GDP per capita, even in the most comprehensive historical databases. As will be discussed in section IV, the distribution of missing values for GDP was non-random—less developed countries and countries with ongoing civil wars were much more likely to have missing values of GDP per capita. A commonly-used proxy for the level of development with fewer missing cases is the infant mortality rate. In order to see whether the large number of missing cases potentially skewed the representation of the level of development in sub-Saharan Africa and the rest of the world, Figure 6 shows infant mortality rate during the 1960-2000 period. Here, the parallel pattern between sub-Saharan Africa and the rest of the world is quite clear. Both areas of the world experienced a nearly parallel decline in infant mortality during the 40-year period. This figure thus adds evidence to the need to consider other causal factors in explaining the increased incidence of conflict in sub-Saharan Africa during the 1990s.

[Figure 6: Infant Mortality Rate, Sub-Saharan Africa vs. Rest of World, 1960-2000]

As I considered the major trends in sub-Saharan Africa during the 1990s, two in particular seemed potentially important to Africa's increased incidence of conflict. First, Africa shifted toward more youthful age structures during that decade. Young men tend to be more predisposed to conflict and the availability of fighters is an important factor in the formation of rebel movements (Collier and Hoeffler 2000; Fearon and Laitin 2003; Urdal 2002). Moreover, as I argue in the next section, the sheer availability of young men may not matter as much to the onset of violence as the demographic friction created by a large young cohort flooding the labor market, which will be discussed further in the next section. I measure the young adult population as a fraction of the working age adult population (rather than as a fraction of the total population, as Collier and Hoeffler did). Figure 5 shows the ratio of young adults (aged 15 to 24) to prime working aged adults (aged 25 to 59) in sub-Saharan Africa and the rest of the world. The ratio in sub-Saharan Africa continued to increase slightly during the 1990s due to high fertility levels during the 1960s and 1970s (high fertility levels make each cohort larger than the prior one) and reduced infant mortality rates during the same period. It is not immediately clear whether deaths due to AIDS in Sub-Saharan Africa made this ratio larger or smaller during the 1990s, as deaths are greatest among those in their twenties and thirties (UNAIDS 2004: 42) and hence may have affected both the numerator and the denominator.

[Figure 7: Relative Cohort Size, Sub-Saharan Africa vs. Rest of World, 1960-2000]

The second factor which is important in conflict and changed in Africa during the 1990s is the shift toward democratization. By 1998, only 4 countries in sub-Saharan Africa had *not* held some sort of competitive political contest during the 1990s (Bratton and Van de Walle 1997: 21-22). Figure 6 shows the percent of countries in sub-Saharan Africa and the rest of the world that were "unconsolidated democracies" according to the definition used by Mainwaring et al. (2001)[7]. The percent of countries that were unconsolidated democracies in sub-Saharan Africa increased dramatically during the 1990s.

[Figure 8: Percent of Countries that are Unconsolidated Democracies, Sub-Saharan Africa and Rest of World, 1960-2000]

This paper seeks to understand whether democratization and youthful age structure were important in the onset of conflicts in sub-Saharan Africa during the 1990s. It does so in two parts. First I explore the theory behind why youthful age structure and level of democratization are important. Then I develop a logistic regression model of the probability of civil war onset in the world from 1960 to 2000. Using a variety of data on income, regime type, youth, population size, and conflict I test whether youth and the level of democratization are important and whether there is any unique "sub-Saharan Africa" effect.

It is important to note up front that this paper is neither an attempt to "blame" young men nor an attempt to suggest that democratization is bad. In addition to young men, violence is also perpetrated by older men, women, and unforgettably child soldiers in many recent African civil wars. Moreover, the transition to democracy was often marked by violent revolutions, as it was in France and the United States (Moore 1966). A democracy that remains unconsolidated may be more prone to conflict, but is hopefully also more prone to full democratization and all the benefits thereof. This paper only attempts to understand how youthful dissatisfaction and regime transition combined with deleterious economic opportunities and overwhelming frustration can make violence an appealing option for young men who have few other opportunities.

In the next section, I discuss reasons why youthful age structure may be an important factor in conflict onset and why other measures of youth have been done poorly. The third section reviews the literature on regime change, democratization, and civil war. Then the fourth section discusses my methods and results. I conclude that although democratization and youthful age structure were by

[7] These authors used the Polity dataset's regime score, which subtracts a country's autocracy score (0 to 10) from its democracy score (0 to 10) to produce an index from -10 (most autocratic) to +10 (most democratic). Mainwaring et al. define an unconsolidated democracy as a country with a regime score between -4 and +3.

no means the *only* factors in civil war onset, changes in both in sub-Saharan Africa during the 1990s increased the risk of conflict during that decade. Yet there still remains an as-yet unexplained increased risk of conflict in the 1990s.

II. Youthful Age Structure

Young men are most commonly the perpetrators—and the victims—of armed conflict worldwide. Whether for biological reasons such as evolution and hormones, gender-specific socialization, or the institutional demands of armies and militias, the relationship between young men and violence appears to have held throughout history.[8] But are populations with higher concentrations of young men really more war-prone? Scholars have occasionally proposed a link between youthful populations and war. Herbert Moller, for example, suggested that wars in pre-modern and present-day Europe, including the rise of the Nazi party in Germany, corresponded with surges in the proportion of young men (1968). Yale historian Paul Kennedy argued that revolutions occur more often in countries with large populations of "energetic, frustrated, young men" (1968). Other authors have hypothesized a connection between youthful populations and the outbreak of violence on theoretical or quantitative grounds (Cincotta, Engelman and Anastasion 2003; Goldstone 1991; Goldstone 2001; Hammel and Smith 2002; Mesquida and Wiener 1999; Urdal 2002).

Yet a recent flurry of econometric literature on civil wars has found few links between youth and the onset of civil war. Collier & Hoefflers' landmark work on greed and grievance in civil war (2000; 2001; 2002), along with work by Fearon and Laitin (2003) has found the opportunity costs of insurgency are of key importance, while age structure mattered little in the onset of civil war. The opportunity costs of insurgency were measured by factors such as dependence on primary commodity exports and a rough terrain which lends itself to conflict. The State Failure Task Force, a group of scholars originally commissioned by Vice President Al Gore, found a link between youth bulges and state failure but does not mention the finding in the text of their report (Goldstone et al. 2000).

Nearly all empirical researchers of youth and conflict—including the most prominent and influential—have measured youth either as the ratio of men aged 15-24 to the entire male population (Collier and Hoeffler 2001; Fearon and Laitin 2003) or as the ratio of young people to adults (Choucri 1974; Cincotta, Engelman and Anastasion 2003; Goldstone 2002; Goldstone et al.

[8] Certainly women, older adults, and sadly even children are also involved in war, but in every case I am familiar with, young men comprise the majority of combatants.

2000; Mesquida and Wiener 1999; O'Brien 2002; Urdal 2002). Although in some latter cases the authors chose a specific age range instead of the general group of "all adults," not much attention was given to the measurement of age structure. The only exception was Urdal (2002), who examined the measurement of youth, but he also settled on a ratio of youth to all adults.

This paper introduces a measurement of youthful age structure: *relative cohort size*. Relative cohort size, a concept pioneered by Richard Easterlin (1968; 1978; 1987) refers to the relative size of two birth cohorts. I operationalize relative cohort size as the ratio of the population aged 15 to 24 over the population aged 25 to 59.[9]

In a related paper (Staveteig 2004) I argue that Easterlin's relative cohort size hypothesis may provide the missing link between youthful populations and the economic and psychological frustrations that enable political instability and ultimately civil war. As a large relative cohort comes of age, the frustration and tension produced by lack of success in the job market and on the marriage market may—in the presence of other factors—render armed conflict a more appealing option. Below I briefly summarize three major theoretical linkages between relative cohort size and civil war: age- and sex-specific factors relative male income, and relative deprivation.

A. Age- and Sex-Specific Factors

For a host of physical and/or social reasons, young men seem to be particularly prone to violence, most likely because of hormones and socialization. Young men are less likely to have economic dependents than prime-age adults, and thus may feel more inclined to take risks. Furthermore, testosterone levels, which are high in young men, have been shown to be correlated with aggression (Dabbs Jr., Carr, Frady et al. 1995). And as gender theorists have argued for decades, men in most cultures are socially conditioned to express their frustrations through violence.

Young men in "traditional" societies are expected to fill the role of breadwinner in order to start a family—and in a strictly religious setting, even in order to become sexually active. Teenagers and young adults who are unable to become breadwinners because of a tight labor market may therefore experience sexual frustration, particularly in a strictly religious family (Hammel and Smith 2002). Sexual frustration can add to the propensity toward aggression.

Youth also face lower opportunity costs to participating in an armed rebellion because they lack economic dependents and have few desirable alternatives to pursue. Choucri's case study documented that in conflicts in Cyprus, Palestine, Algeria, and Laos, a youthful age structure

[9] Reasons for this definition of relative cohort size are explored in-depth in an unpublished manuscript (Staveteig 2004), available upon request.

increased the size of the potentially mobilizable population (relative to others), which in turn appeared to influence the intensity of the conflicts (1974: 191). Youthful hormones combined with social expectations and gender-role training may combine to make young men—particularly young men whose income expectations remain unfulfilled—a volatile force.

B. Relative Male Income

Relative male income refers to the standard of living a man's income can buy relative to his father's standard of living. Easterlin (1968; 1978; 1987) hypothesized that relative male income is inversely related to relative cohort size. His work focused specifically on the labor market impact of the baby boom cohort in the United States. Because the baby boomers were a much larger birth cohort than their parents' cohort, later baby boomers experienced a much tighter entry-level job market than early or pre-boomers. In this way, one's birth and fortune were interlinked: members of smaller cohorts generally had an easier time finding jobs and education, whilst equally well-qualified members of larger cohorts struggled to achieve the same standard of living.

Not every society may respond the same way to low relative male income, but large birth cohorts in any country must be accommodated by the schooling system and eventually by the labor market. In African countries where the standard of living has stagnated over the last twenty years, this is immensely difficult. Positive population growth, which continues even now, means that the size of each successive birth cohort is larger than the previous one. The government will be required to increase expenditures on "congestible" services, such as roads, schools, and hospitals to accommodate each new cohort. In the absence of economic growth, when the large birth cohort reaches adulthood, they will require more jobs than were vacated by previous cohorts.[10]

Without enough jobs and facing more intense labor market competition, the young adult cohort will experience a lower standard of living compared to their parents (Easterlin, Schaeffer and Macunovich 1993; Macunovich 1996; 2002) and may simply remain idle and unemployed. A study by Korenman and Neumark (1997) of economically-advanced countries from the 1970s to the 1990s attempted to isolate the effects of youth cohort size on unemployment. The authors found that large youth cohorts face increased unemployment, with elasticities as high as 0.6—meaning that

[10] In a recent National Academy of Sciences report on terrorism, Hammel and Smith (2002) suggest that countries with a youthful age structure might be more prone to terrorism. They propose that the difference between cohort sizes is a "demographically-induced unemployment rate" that delays adulthood for many youths in traditional cultures, causing idleness, sexual frustration, and economic insecurity. However, they did not attempt to test this hypothesis.

unemployment is highly responsive to changes in cohort size. Further, Bloom et al. (1987) found that the entry of relatively large cohorts into the labor market resulted in a decline of cohort earnings relative to older, smaller cohorts. Both studies were done in advanced economies, not in developing countries, but I would argue that less-developed economies would probably be even more affected by relative cohort size as their economies are extremely fragile. Moreover, the relative cohort sizes we are presently seeing in sub-Saharan Africa (as shown in figure 6) are much higher than were ever seen during the U.S. baby boom. In sub-Saharan Africa, relative cohort size averaged 65% in 2000, meaning that a ten-year age bracket of youth (aged 15 to 24) were nearly two-thirds the size of a thirty-five year age bracket of adults (age 25 to 59). In contrast, relative cohort size peaked in the United States at 45% in 1977, as the baby boomers born from 1953 to 1962 reached ages 15 to 24.

C. Relative Deprivation / Rising Expectations

In addition to providing an ample supply of potential recruits, large relative cohort sizes can increase the propensity toward armed insurgency through the sociological frame of relative deprivation. The notion of "relative deprivation" suggests that when there is a significant gap between expected and achieved welfare, frustration and aggression result (Kelley and Galle 1984). Often rising expectations that are unmet provide a catalyst for revolution. Davies articulated this thesis 35 years ago:

> Revolution is most likely to take place when a prolonged period of rising expectations and rising gratifications is followed by a short period of sharp reversal, during which the gap between expectations and gratifications quickly widens and becomes intolerable. The frustration that develops, when it is intense and widespread in the society, seeks outlets in violent action (Davies 1969)

In other words, young men who develop certain expectations for what life as an adult will be based on the experiences of previous cohorts and then find these opportunities non-existent are excellent potential recruits to a rebellion movement. This may be particularly true for young people in developing countries, who have been raised in an era where the discourse of modernization is ubiquitous and—because of television, movies, and exposure to visitors from the "first world"—who are acutely aware of the potential material comforts which they are missing.

The drain on resources caused by large birth cohorts is indicative of the fact that large birth cohorts, such as the baby boom in the United States, are a source of friction in the social structure throughout their lifespan. The alienation and disillusionment experienced by members of large birth cohorts as teenagers (e.g. the baby boomers participation in mass protests and social unrest during

the late 1960s) represent years of cumulative frustration and alienation associated with large birth cohorts. As young children, large birth cohorts can overwhelm the capacity of schools and congestible government services to deal with them. A recent psychological study showed that members of larger cohorts have less civic knowledge than members of smaller cohorts even in a well-developed country (Hart, Atkins, Markey et al. 2004). This finding is important because it indicates that throughout their childhood, larger cohorts may experience less socialization than smaller cohorts. In a less-developed country, this is even more likely to be the case. A lack of socialization could imply higher rates of psychological detachment, which in turn could make a cohort more prone to violence or mass action.

The new cohort literally steps on the heels of the immediately prior cohort, and both may be in heated competition for jobs and tertiary educational opportunities. Declining economic opportunities and an expanding urban population (what Goldstone et. al call "unbalanced development") can also provide a source of tension and conflict, particularly when combined with a large relative cohort. Youth migrating to urban areas in the hopes of finding employment may be dissatisfied with available opportunities and have few other options to consider. Although limited options in and of themselves do not generally drive an *individual* to take arms, they may increase one's susceptibility to radical ideology. Once inside of a *group* of people facing similar frustrations, the collective urge to rebel may become much more violent.

Choucri (1974) was one of the first and most important researchers of age structure and political violence. Although she did not employ a measure of relative cohort size,[11] her careful case study method lent much insight into the causes of wars. She studied 45 wars that occurred all over the world between 1945 and 1969, including almost half of the 93 wars in Africa, Asia, and Latin America. These were not strictly "civil wars," rather they often involved some degree of outside intervention or outside aggression. Choucri found that age structure was either a "background factor," a "minor irritant," or a "major irritant" in 10 of 45 cases of conflict, meaning that conflict still would have likely happened in the absence of youthful age structure, but that somehow large cohorts exacerbated the intensity and/or duration of war. Unfortunately her study suffered from selection on the dependent variable, but her careful use of the case study method still informed on the relative cohort phenomenon:

> The higher the proportion of youthful population and the greater the unemployment, the greater are the possibilities of dissatisfactions, instabilities, and violence… this

[11] Choucri measured the ratio of men aged 20 to 40 to the entire population.

> proposition finds considerable support among cases of local conflict in developing areas. For many social and psychological reasons, young populations can generally be more easily disposed to radical politics and guerrilla warfare, although clearly age is not the only determining factor. …. Often the problem of inducting a large number of young people into the work force is pronounced; the failure to successfully do so may then lead to radical youth movements. (Choucri 1974: 184)

Choucri cites the Arab-Israeli conflict, the Palestinian conflict, the Algerian revolution, and the war between Guyana and Venezuela as conflicts exacerbated by the inability of young people to integrate into the economy. She also found that the drain on resources caused by a large birth cohort intensified the internal instabilities in the Dominican Republic-Haitian conflict, and in Venezuela.

It is important to note that a large birth cohort does not necessarily imply mass unemployment and a propensity toward violence. If the government and social structure are able to accommodate the influx of youth, the large cohort may even be a boon to the economy. A surplus of youth can actually enhance economic growth, if the youth can be absorbed into new jobs. Some economists, for example, have shown that the East Asian economic "miracle" resulted in part from large birth cohorts entering the workforce (Bloom, Canning and Malaney 1999; Bloom and Williamson 1997). Thus knowing the relative cohort size alone is likely not enough; we also need to get a sense of the level of development, quality of governance, and other factors in order to discern whether an increase in relative cohort size will contribute positively to economic growth or negatively to political instability.

D. Microfoundations of Rebellion

Grievance alone is not enough to cause civil war: maligned groups must also be able to form a coherent collective identity with which to challenge state authority, and they must also find opportunities for collective action (Diehl and Gleditsch 2001). As Gates (2002) maintains, how rebel movements begin and are maintained is a key consideration in understanding how civil war begins. Walter suggests that enlistment is only likely to be attractive "when two conditions hold. The first is a situation of individual hardship or severe dissatisfaction with one's current situation. The second is the absence of any nonviolent means for change" (2004).

Youthful alienation can be a powerful motivation to join a rebel movement. Rebel groups can provide a "gang" type of social system. Being part of an armed group can actually provide *more* safety than not, in addition to psychological security, gratification, and a sense of camaraderie (Keen 2000), particularly when the government is unable to provide these services. As Moller articulated:

> The purpose and direction that young people find in movements of rebellion helps many to overcome the insecurity and hopelessness of a futile existence. The feeling of being able to cope with hardship and danger, the enjoyment of comradeship, and the acceptance of their peers is basic to a sense of identity in the young. Even belonging to an anti-social and destructive movement can have a salutary effect on the personality formation of a boy or girl, especially in times of social dislocation. (1968: 259)

Once a country is engaged in warfare, life becomes less predictable and the traditional economy often provides even fewer opportunities for success. Thus as conflict goes on, it may become more and more tempting for additional young men to join the ranks of rebel (and government) armies.

III. Democratization

Regime transition—more specifically, democratization—has been found to be an important factor contributing to civil wars. Regime type and civil-war are observed to have an upside-down U-shaped relationship: governments that are well-entrenched autocracies or well-entrenched democracies are less prone to civil war, while countries in-between are more vulnerable to conflict (Auvinen 1997; Hegre, Ellingsen, Gates et al. 2001; Henderson and Singer 2000; Jakobsen 1996; Lacina 2004; Muller and Weede 1990; Ward and Gleditsch 1998).

Robust and entrenched democracies, it seems, are able to prevent conflict by allowing political grievances to be more readily resolved (Hegre et al. 2001). Extremely autocratic governments, on the other hand, are able to squelch rebellion before it becomes too powerful. Semi-democracies—what I will refer to in this paper as *unconsolidated democracies*—are more vulnerable to conflict. It is not immediately clear what it is about unconsolidated democracies that makes them more vulnerable to conflict (Lacina 2004). If the transition to democratic governance seems too slow, conflict may result from a combination of residual dissatisfaction with the old regime and the inability of the transitory regime to meet rising expectations.

Tocqueville famously argued that the most authoritarian regimes do not necessarily entail the greatest risk of political conflict. The revolution did not occur in Germany where the peasants were most forcefully oppressed, but in France, where peasants had more civil liberties than elsewhere, at a time when political freedoms were increasing (1994 [1856]). As the French state developed and centralized, citizens were increasingly frustrated by the legacy of privileges given to nobility even after their role as protectors had become obsolete. In modern times, revolt against the state is also most likely to occur when states find themselves unable to maintain legitimacy, both because they

are not democratic enough *and* because they are not authoritarian enough. A lively democracy, such as Tocqueville's United States (2000 [1840]), or a repressive totalitarian regime such as Mussolini's Italy are at less risk of revolt because both have more legitimacy than a regime that is somewhere in-between. As generally newer governments, unconsolidated democracies are generally more vulnerable to challenges, as most power rests in the executive.

Democratization has been a contested term in the Africanist political science literature (Gibson 2002). Some scholars reject the notion that Africa has been democratizing, and instead push to use the term "political change" for the events taking place in Africa over the past decade. It is also true that holding elections does not in and of itself cause democratization. But that is precisely the point. Unconsolidated democracies are in the uncomfortable zone between entrenched autocracy and entrenched democracy. It is also true that the term "democratization" reflects a neocolonialist assumption that governance is best reflected by a binary scale which puts Western democracy at the top and de-legitimizes other potentially good forms of governance. But in this day and age West European democracy is still regarded as the pinnacle of political freedom and civil liberties.

Given that this paper employs the most widely-used measure of regime type (discussed further in the next section), which is a scaled score ranging from most highly autocratic to most highly democratic, it follows that as African countries move away from autocracy on the scale they are moving toward democracy. Further, the push toward multiparty elections in Africa during the 1990s represents an attempt to democratize, whether or not democratization actually takes place behind the scenes. Hence I refer to democratization as the process by which regimes move to (and past) being unconsolidated democracies. Unconsolidated democracies retain some features of democratic governance, such as elections, but have not yet consolidated bureaucratic power within the various branches of government and instead give most authority to the executive.

IV. Methods & Results

A. Methods

I employed a logistic model to predict the probability of a civil war onset during a given country-year. The onset of civil war is a binary variable taking on the value of 1 if a civil war began in the country during that year and a 0 otherwise. For the purposes of this paper, I define a civil war as an *internal armed conflict* according to the Armed Conflict Dataset from the International Peace

Research Institute in Oslo [herein PRIO] (Gleditsch, Wallensteen, Eriksson et al. 2002; Strand, Wilhelmsen and Gleditsch 2003). Accordingly a civil war has four major characteristics:

- It is a contested incompatibility between two parties that concerns government and/or territory;
- One party in the conflict is the government of a state, and the other party is an internal opposition group (or a set of internal opposition groups);
- The use of armed force between the government and the opposition group(s) results in at least 25 battle-related casualties;
- It occurs within the boundaries of a single nation-state.

Several datasets of civil wars currently exist (most famously Singer and Small's "Correlates of War" database), each with various definitions of what constitutes a civil war. The PRIO Armed Conflict database is employed for two major reasons. The first is that it provides the most up-to-date information about civil wars of any known dataset. The second reason is that PRIO has a low threshold for the number of casualties required to count as a civil war (25 versus 1,000 in some other datasets), which enables me to examine a wider range of conflicts.[12]

The Armed Conflict Dataset distinguishes internal armed conflicts from *internationalized* internal armed conflicts, which involve the intervention of outside governments. For example, the intervention of other nations into the Rwandan genocide of 1994 means that it did not count as an internal armed conflict, but rather an *internationalized* internal armed conflict. However, it would be difficult to claim that the Rwandan genocide was not a civil war. Therefore I allow both internal and internationalized internal armed conflict to count as civil war. For purposes of coding, a country-year was only assigned a 0 or a 1 if the country was *not* involved in a conflict during the previous year; else it was excluded from the regression entirely.[13] I also test a dependent variable based on whether or not the country is currently in war, which has no such missing cases.

Some studies, such as the one done by the State Failure Task Force (Goldstone et al. 2000) distinguish between ethnic conflict and other types of conflict. Given that the evidence from Collier & Hoeffler and Fearon & Laitin suggests that ethnic wars are often motivated by other underlying factors, I do *not* distinguish ethnic wars from other wars. Nor do I distinguish colonial wars of

[12] Several reviewers have commented that the threshold of 25 seems quite low; unfortunately there is no measure available with an intermediary range of casualties (more than 25 but less than 1,000).

[13] The reason being that it if a conflict starts up immediately after one has ended then it is difficult to tell whether or not the new conflict is simply a continuation of the old conflict. If it is a continuation, then the independent variables cannot be considered exogenous (particularly infant mortality rate, political regime, and economic growth) to the new conflict onset. I do experiment with the addition of a variable for previous conflict in the last 5 years and with a variable for current conflict (rather than conflict onset), both of which are detailed in the results.

independence from non-colonial wars. Wars may be caused by varying proximate factors, but I am interested in investigating the background factors that help set the stage for war.[14] The PRIO dataset does not attempt to distinguish ethnic wars from border disputes or other types of civil warfare—wars which may have different proximate causes but similar underlying causes.

Given that I am emphasizing the role of young men joining rebellion movements due to frustration and opportunity, however, it would have been ideal to look only at social-movement based insurgencies (i.e. bottom-up rather than top-down). Such a distinction was not available in the PRIO dataset. In the future I may look at other datasets which could better distinguish social movement-based conflicts from other types of conflict (and would perhaps include a wider range of actions beyond conflict, such as peaceful protests).

B. Variables Modeled

Appendix A lists of the countries and periods of time used in the dataset of conflict onset. Appendix B lists all the country-years of internal armed conflict as defined by the data from 1960 to 2000.

Dependent Variable

Civil War Onset– a dichotomous variable taking the value of 1 if a single nation-state experienced the onset of a new internal armed conflict during the given country-year, and a 0 otherwise (Strand, Wilhelmsen and Gleditsch 2003). See Appendix C for a list of conflict onsets used in the data. In order to count as a civil war, one party in the conflict must have been the government of the state, the other party must have been an internal opposition group (or set of groups), and the use of armed force resulted in at least 25 battle-related deaths. If the period begins in a year where the country is already at war, it is counted as missing.

Appendix C lists all the country-years that were classified as containing a conflict onset (i.e. all the observations where my dependent variable, conflict onset, is coded as a 1.) Appendix Table D shows which country-years were not counted as conflict onsets due to a conflict in the previous year.

Current Civil War– I also tested my regressions using a dependent variable taking the value of 1 if a nation-state experienced an internal armed conflict during the given country-year, and a 0 otherwise. (See Appendix B for a list of country-years in conflict).

[14] For the same reason, I do not include a variable for post-communist states, as Urdal (2002) does. Several armed conflicts broke out in the former Soviet Union and the former Yugoslavia during its dissolution, but I see no reason to change my results by artificially excluding these cases from my analysis. If I were to do so, I would feel compelled to review *all* types of wars and decide whether or not to include them or exclude them.

Independent Variables

Building on previous research on civil war and state failure, I was able to determine a limited set of independent variables that I would need to control for in my model. Although I tested many variables, I have selected only the most important to be presented here.[15] In accordance with much of the literature on civil war, I find that development (either IMR or GDP per capita), political regime, previous conflict, and logged population size are essential independent variables. There were a large number of missing cases for GDP per capita, however. Missing cases were not randomly distributed throughout the data (namely countries that were severely underdeveloped, undergoing political transition, or experiencing a long and bloody civil war were much more likely to have missing values of GDP per capita). Therefore I primarily used the infant mortality rate as a proxy for development. However I also tested GDP per capita to check the robustness of my results.

Below I describe the independent variables used in my final set of models presented here.

Infant Mortality Rate – The number of deaths to live-born infants prior to their 1st birthday per every 1,000 live births. Taken from the United Nations World Population Prospects database (2003) for the year prior to the year of interest.

GDP per capita (real) – from the Penn World Tables (Heston, Summers and Aten 2004) based on the constant price chain index, averaged during the 5 years immediately prior to the country-year. If missing years of data occurred between non-missing years of data, then GDP per capita was linearly interpolated from the non-missing values. However, most occurrences of missing GDP per capita did not have nearby GDP data from which to interpolate, and thus were left as missing.

GDP growth – from the Penn World Tables based on the constant price chain index, averaged during the 5 years immediately prior to the country-year.

Population (Logged) – Natural log of the average total population in the country, averaged during the 5 years immediately prior to the country-year (United Nations 2003).

Previous Conflict – A dichotomous variable taking the value of 1 if there was a civil war onset in the previous ten years prior to the period of interest. I experimented with measures of the number of prior wars throughout the country's history, but this was highly correlated with time. I also tried using separate measures of previous conflict in the last 1-5 and 6-10 years, but this single combined measure proved superior (in that it was stronger and more consistent).

[15] Also considered but not used are secondary school enrollment, literacy, urbanization, and GDP per capita. Urbanization, secondary school enrollment, literacy, and GDP per capita are highly correlated with the infant mortality rate and thus should not be used in the same model together. Of these metrics, the infant mortality rate was chosen because it had the fewest number of missing cases.

Unconsolidated Democracy – the Polity IV dataset (Marshall, Jaggers and Gurr 2004) provides a commonly-used regime score which is measured as the democracy score minus the autocracy score resulting in a scaled regime score between -10 and +10. (Taken from the year *prior* to the year in question). -10 represents the most strongly autocratic and +10 is the most strongly democratic. Following the lead of Mainwaring et al. (2001), this is a dichotomous variable taking the value of 1 if a country is an unconsolidated democracy (has a regime score between -3 and +4) and 0 otherwise. I favor this measure over regime squared as regime "strength" is a nebulous concept.[16] Results were remarkably similar to and in some cases stronger than results obtained using regime squared.[17]

Relative Cohort Size[18]- the ratio of the population aged 15 to 24 over the population aged 25 to 59 in the five years prior to the period of interest (United Nations 2003). High relative cohort sizes are indicative of a surge in the population of young adults relative to older cohorts.[19]

Young Men as a Percent of the Population- this was the measure of youth originally used by Collier & Hoeffler (2000) in their research on civil war and since dropped. It measures men aged 15 to 29 as a percent of the total male population. Urdal has since shown this measure to perform poorly in regressions, as the amount of children obfuscates the size of the young adult population (2002). I use it here to compare to the relative cohort size measure.

These measures are used in logistic regression models to test whether they are good predictors for the risk of conflict onset (or conflict at all) in a given country year. Results are detailed in the next section.

C. Results

1. Descriptive Statistics

Descriptive statistics for the dependent and independent variables listed above are given in Table 1. Not surprisingly, sub-Saharan Africa experienced more conflict and was less developed than the rest of world throughout the 40-year period.

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[16] Peter Evans encouraged me to find a measure for unconsolidated democracies that would better capture the risk of civil war. I have tested all of my regressions on unconsolidated democracy and on regime strength. Although I do not report the results of regime strength here, the variable performs in very similar and sometimes slightly superior ways than the unconsolidated democracy dummy.

[17] Some authors (Elbadawi and Sambanis 2000; Goldstone et al. 2000; Hegre et al. 2001; Urdal 2002) square the Polity IV regime score to produce a proxy for regime strength/intensity. They have indicated that the squared term is a better predictor of conflict than the regime score itself. The squared score ranges from 0 to 100. I have used this in my own regressions and found the results to be quite similar to those for unconsolidated democracy.

[18] Reasons for this particular definition of relative cohort size are explored in-depth in my unpublished paper on the subject (Staveteig 2004) which will be shared upon request.

[19] Some authors use the term "youth bulge" to describe large populations of youth relative to the total population, but this is a misnomer. From the perspective of a population age pyramid, a "bulge" must be larger than the cohort above it *and* the cohort below it. I am only comparing two cohorts; hence I do not employ the term "youth bulge."

[Table 1: Descriptive Statistics, Sub-Saharan Africa, Rest of World, and Entire World 1960 - 2000]

2. Regression Models

Equation 1 gives the baseline logistic regression model.[20]

$$\log\left[\frac{\Theta(x)}{1-\Theta(x)}\right] = a + b_1 x_1 + b_2 x_2 + b_3 x_3 \qquad (1)$$

Where:

$\log\left[\frac{\Theta(x)}{1-\Theta(x)}\right]$ = log odds of Conflict Onset in a given country-year

a = Constant

x_1 = Ln(Population) of country

x_2 = Unconsolidated Democracy Dummy Variable

x_3 = Infant Mortality Rate

Results for the baseline model with the natural log of population size, unconsolidated democracy, and infant mortality rate are given in Table 2, equation B1. These results illustrate that population size, level of democratization, and infant mortality rate are measurable and statistically significant factors in predicting the onset of a new conflict. Using means for population size and infant mortality for sub-Saharan Africa from Table 1, the model predicts that the average sub-Saharan African country that is an unconsolidated democracy has double the likelihood[21] of conflict compared to one that isn't (8.16% versus 4.02% in any given country-year).[22] Model B2 uses GDP per capita instead of infant mortality rate and model B3 uses infant mortality rate combined with average GDP growth over the last five years. All coefficients in all regressions are measurable, operate in the expected direction, and are statistically significant at the .01 level.

How can we determine which model fits best? Ordinarily we could look at the -2 Log likelihood, which measures the likelihood of the data given a set of parameters (lower is better).

[20] The structure of the regression model is similar for all models shown in this paper and will not be repeated. The x's and ß$_n$'s will change, but all other aspects of the models will remain the same.

[21] I have not yet adjusted my logistic regression results for rare events data using techniques developed by King and Zeng (2001a; 2001b; 2001c) but plan to do so in the next version of this paper.

[22] Probabilities calculated using the standard formula that $p=1/(1+e^{-a-ß1x1-ß2x2-ß3x3})$

However, this metric is correlated with sample size, thus making it difficult to compare across models with different n's. As alternative indicators, I have included the percent of concordant cases (for which B3 fits best, but not by much) and Goodman-Kruskal's Gamma [herein Gamma], which is a measurement of association ranging from -1 to +1. It is calculated from the concordant and discordant pairs. It tells us how much more likely we are to correctly predict conflict onset compared to simply guessing when two country-years are chosen at random from the population (Goodman and Kruskal 1954: 749). Gamma also indicates that model B3 fits best, but it only increases the likelihood of a correct prediction by 0.1% compared to B1.

One other factor that should be considered when choosing among these three models is the sample size. As B3 indicates, using GDP growth instead of the infant mortality rate reduces the number of cases available from 4,430 to 3,504. This would not be such a big problem except for the fact that in these 926 cases there were 30 conflict onsets. In rare events data such as these, having as many onsets as possible is critical to producing reliable and unbiased results (King and Zeng 2001a; 2001b; 2001c). Hence I lean toward choosing model B1 as a baseline model.

[Table 2: Baseline Logistic Regression Model Results]

The next step is to include a lagged dependent variable to measure whether there were any previous conflict onsets in the last 10 years. I opted to present baseline models without this variable as sometimes it can produce biased OLS coefficients (Maeshiro 1999). Estimating the model with and without the lagged dependent variables allows us to ensure that our results are not being driven by the lagged dependent variable. Table 3 shows a dummy variable measuring previous conflict onsets in the last 10 years added to the baseline models shown in Table 2 (models now labeled P1 through P3). The "previous" variable is highly measurable and statistically significant at the .01 level in all three regressions. The results in table 3 also confirm the choice of B1 as the baseline model, as P1 performs slightly better than P3. Adding the previous onset variable increases the percent of concordant cases in model P1 from 68.2% to 70.3%. Gamma also increased by 3.8 percentage points.

[Table 3: Baseline Regression models with Lagged Dependent Variable]

Now that we have settled on a baseline model (B1 with or without previous conflicts), we can add youth to see whether it improves our explanation of conflict onset or not. Table 4 shows regression results using measures of youth combined with the baseline model (B1). Model Y1 includes young men as a percent of the population, which is the measure of youth that Collier &

Hoeffler used (2000). Their measure does not improve the fit of the baseline model and is not significant. As Urdal (2002) discusses, this may be an important reason why Collier & Hoeffler (2000, 2001, and 2002) found youth to be unimportant in conflict onset.

Models Y2 and Y3 include relative cohort size. In model Y3 there is also a variable for previous conflict. In both Y2 and Y3 we can see that relative cohort size has measurable and statistically significant effects on the risk of conflict in a given country-year. In model Y3, the addition of relative cohort size increased the percent of concordant cases by 1.7 percentage points, from 68.2 to 69.9. In model Y3, the combined effect of previous conflict and relative cohort size brings the percent of concordant pairs to 72.0%.

It is instructive to examine how much the risk of conflict changes depending on our variables of interest. In model Y3, a country with "average" characteristics has a 2.2% chance of conflict onset in any given country-year. If the country is an unconsolidated democracy, the risk increases by half, to a 3.4% chance that conflict will erupt. If the country is not an unconsolidated democracy, the risk of conflict drops to 2.0% (the drop is lower because the average country is unlikely to be an unconsolidated democracy).

Increasing relative cohort size by one standard deviation more than doubles the risk of conflict, to 4.5%. Similarly, reducing relative cohort size by one standard deviation drops the risk of conflict by more than half, to 1.0%. The model estimates that it would take a 12.7 percentage-point decrease in relative cohort size to offset the increased risk of conflict faced by an average unconsolidated democracy.

[Table 4: Baseline Regression model with Youth Measures]

One way to examine whether the causal structure of conflicts in sub-Saharan Africa, the 1990s, or both was unique even after adjusting for other explanatory factors is to include dummy variables in the baseline regression model. Table 5 shows such an application. The first model, R1, uses a dummy variable for sub-Saharan African status. Its coefficient is neither significant nor measurable. Model R2, which adds a dummy variable for the 1990s, finds a measurable and statistically significant (at the .05 level) trend in the 1990s that is not accounted for by the other explanatory variables. Model R3 includes both dummy variables and an interaction term. It finds that none of the added dummy variables are statistically significant or measurable. In a separate regression (not shown here) I exclude the post-communist states from being considered during the 1990s, to see if this will change the effect of the 1990s. It reduces the effect of the decadal dummy but does not cause it to become insignificant. I also run a regression on sub-Saharan African

countries alone with a 1990s dummy, and find that the effect of the 1990s in sub-Saharan Africa is strong and measurable. Thus it seems that there is a unique increase in conflict during the 1990s, not related to Africa, which cannot be explained by the other factors in the model.

[Table 5: Youth Regression Model with Dummies for Sub-Saharan Africa and the 1990s]

What is it about the 1990s that makes countries more prone to violence? One obvious factor is the fall of the Soviet Union and the ending of the Cold War, which sparked internal armed conflicts in the former Soviet states and had lasting impacts on the rest of the world. It is likely that the ending of the Cold War has had repercussions on African conflict. African countries received massive amounts of aid from the superpowers during the Cold War, usually in exchange to forswear the opposing superpower. The ending of the Cold War meant significant withdrawals of aid to many sub-Saharan African nations.

Other possible trends responsible for increased conflict in the 1990s that are not part of the above regression model include the impact of structural adjustment programs on social welfare, economic factors that are not picked up here (due to missing values of GDP per capita), changes in the ease of capturing enclave resources such as oil and diamonds, resources which seem to be associated with African civil wars, or the destabilizing impact of HIV/AIDS.

I ran all of the above regressions on a different dependent variable—whether or not the country was in an internal armed conflict during the given year. The results are not shown here, as this is a more controversial method (since changes in independent variables are likely influenced by past years of conflict). Without exception, the regression models fit better when the dependent variable is currently being in conflict. This is not surprising, given the potential reverse causation induced by these models. All of the factors that were measurable and statistically significant in the models presented above (and even some that weren't) were also measurable and significant in the new models.

V. Conclusion

Sub-Saharan Africa alone experienced more than half of the civil war onsets in the world during the 1990s, compared to two-fifths of its onsets during the 1980s. Collier & Hoeffler (2002) argued that the rise in civil wars in sub-Saharan Africa during the 1990s was due to worsening economic opportunities.

I have shown that while the prevalence and incidence of conflicts uniquely increased in sub-Saharan Africa during the 1990s (Figures 1 – 3), that GDP per capita in sub-Saharan Africa

stagnated rather than grew with the rest of the world (Figure 4). GDP growth also increased and decreased pretty much in parallel with the rest of the world during the 1990s (Figure 5). Hence while GDP per capita may help explain the *decreased* incidence of civil wars elsewhere in the world, it does not make sense that it could help to explain the increased incidence of civil wars within sub-Saharan Africa.

Infant mortality rate, which like GDP is a proxy for the level of development (used instead of GDP because it has fewer missing cases), did not stagnate nor increase in sub-Saharan Africa during the 1990s (Figure 6). Instead, it decreased in tandem with the rest of the world.

This paper has extended the analysis of Collier and Hoeffler (2002), Elbadawi and Sambanis (2000) and Goldstone et al. (2001), all of whom looked at factors that help explain the uniquely high incidence of civil war in sub-Saharan Africa. I have given special attention to two variables: youth and democratization, to see if they can help to explain Africa's unique increased incidence of conflict during the 1990s. The regression model considered whether a country is an unconsolidated democracy and what its relative cohort size is (size of youth population age 15-24 divided by adult population aged 25-59), while controlling for infant mortality, population size, and previous conflicts. I found that being an unconsolidated democracy and having a large relative cohort size measurably increased the risk of civil war onset in a country.

This paper has argued that relative cohort size is a better way to look at the youth population (compared to taking youth as a percent of adults or as a percent of the total population) because relative cohort size gives us insight into the demographic friction generated by a large entering cohort of youth. Not only do these youth have a difficult time as young adults if the labor market cannot handle them, but as members of a large cohort they also likely experienced less socialization and more alienation than children in smaller cohorts. Thus rebel group formation is more likely because not only is there a greater supply of youth, but there is a greater supply of frustrated and alienated youth. Relative deprivation caused by large relative cohort sizes can be a powerful inducement to join a rebellion if the opportunity and means exist.

Recall that the relative cohort size measure peaked in the United States at 45% in 1977 (as the baby boomers became young adults), but the average country in sub-Saharan Africa in the year 2000 experienced a relative cohort size of 65%, an age effect nearly one-and-a-half times as big as the baby boom. In other words, for every 10 persons in the average African country aged 25 to 59 during the 1990s, there were more than 6 youth aged 15 to 24. Large relative cohort sizes in Africa result from lingering levels of high fertility and reduced rates of infant mortality, which helped

ensure that many more infants would survive to live a healthy lifespan. It is unclear whether deaths due to AIDS in sub-Saharan Africa affect the numerator (ages 15-24) more or less than the denominator (ages 25-59).

This paper used logistic regressions with civil war onset as a dependent variable to test the strength of various explanatory factors. In accordance with other scholars, I find that countries transitioning from autocracy to democracy are much more prone to civil war, having nearly double the probability of conflict onset if in sub-Saharan Africa. It seems that when countries are very repressive (autocratic), they are good at silencing opposition. When countries are very democratic, grievances have a better chance of being addressed before they erupt into conflict.

My proxy for the level of development, the infant mortality rate, also had the expected relationship to civil war. Population size positively affected civil war, as did previous conflict. Including the relative cohort size measure in these regressions strengthened the explanation of conflict onset, and showed that relative cohort size was a measurable and statistically significant factor in conflict onset. Meanwhile, youth as a percent of adults, Collier & Hoeffler's measure, did not have a measurable nor significant impact on conflict onset.

Although it would have been ideal to examine only social-movement based conflicts as they relate best to my relative cohort size hypothesis, this was not possible and instead the data included both top-down and bottom-up civil wars. In the future I can hopefully winnow out top-down conflicts so as to study relative cohort size more closely. Such a change would likely only improve my results.

Even after taking account of the explanatory variables described above, there was still a unique 1990s effect even within sub-Saharan Africa that cannot be explained by the data. I have hypothesized that this could be a post-Cold War effect of aid withdrawal, an effect of structural adjustment, HIV/AIDS, or part of my missing GDP data. There may of course be other possibilities, and it is an interesting topic for additional research.

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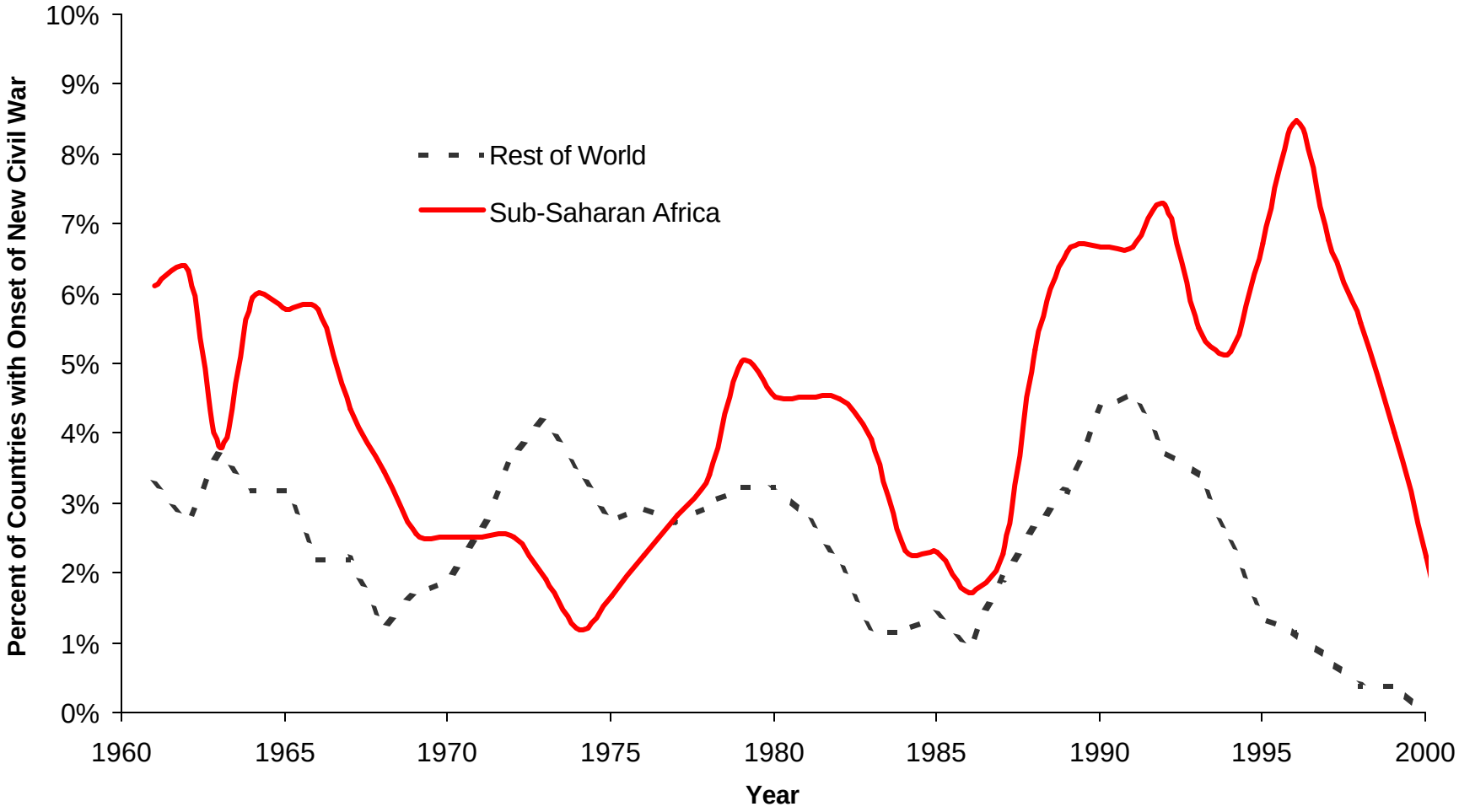
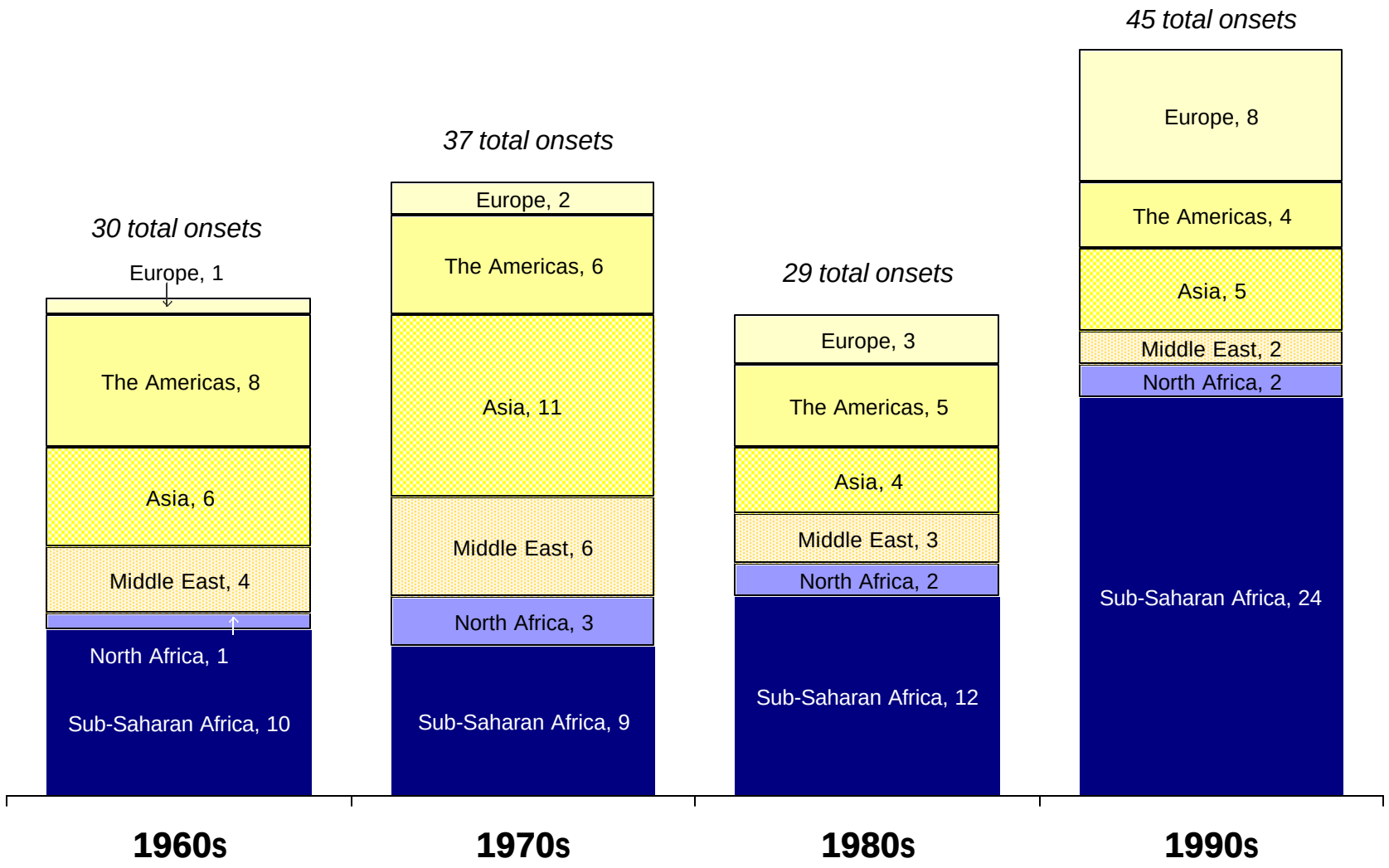
Figure 1: Incidence of New Civil Wars in Sub-Saharan Africa and Rest of World, 1960-2000 (5-year Moving Average)



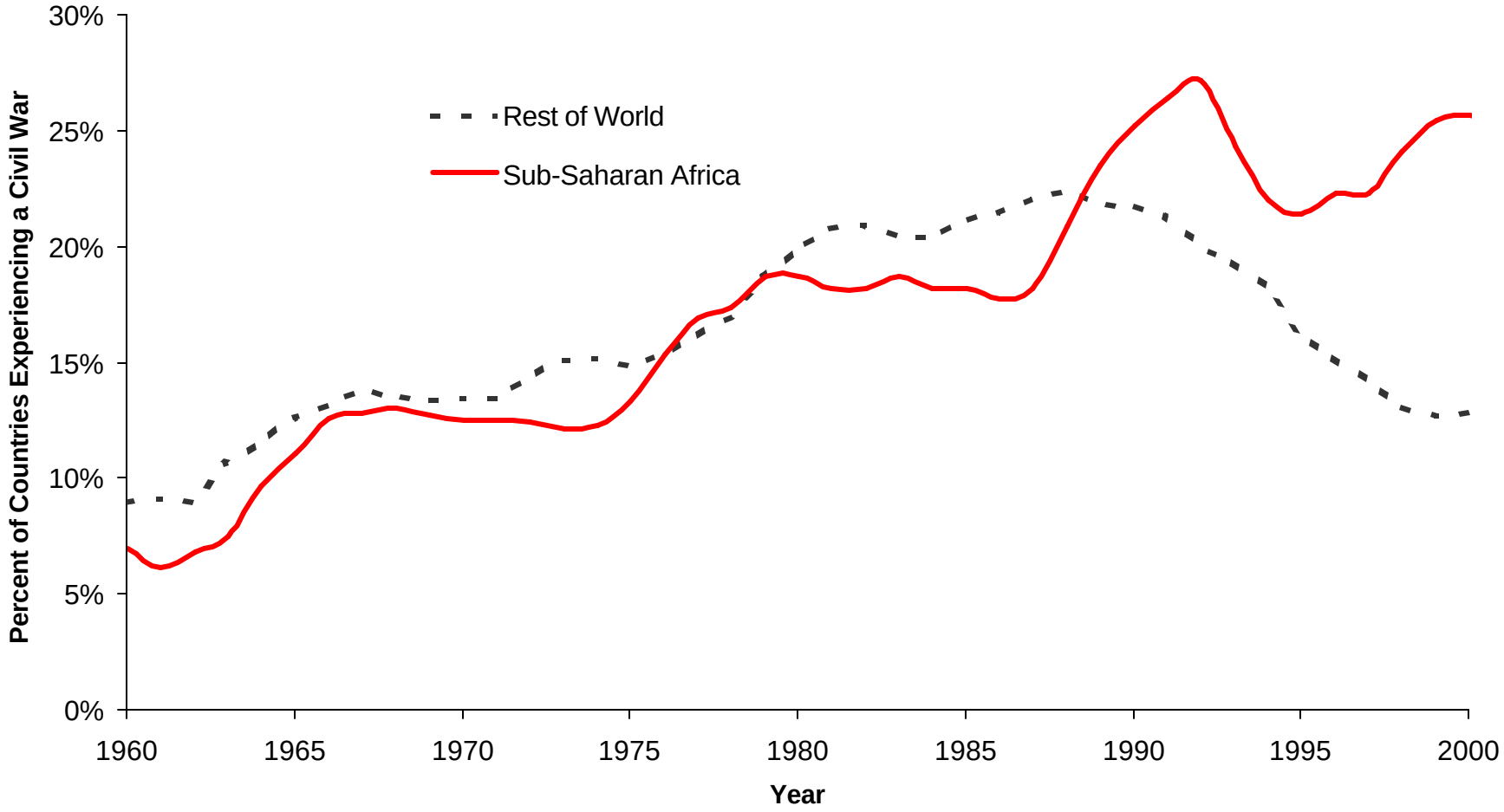
Source: Strand, Håvard, Lars Wilhelmsen, and Nils Petter Gleditsch. 2003. "Armed Conflict Dataset, Version 2.1." [Computer File] Oslo: International Peace Research Institute.

Figure 2: Civil War Onsets among Continents by Decade, 1960 - 2000



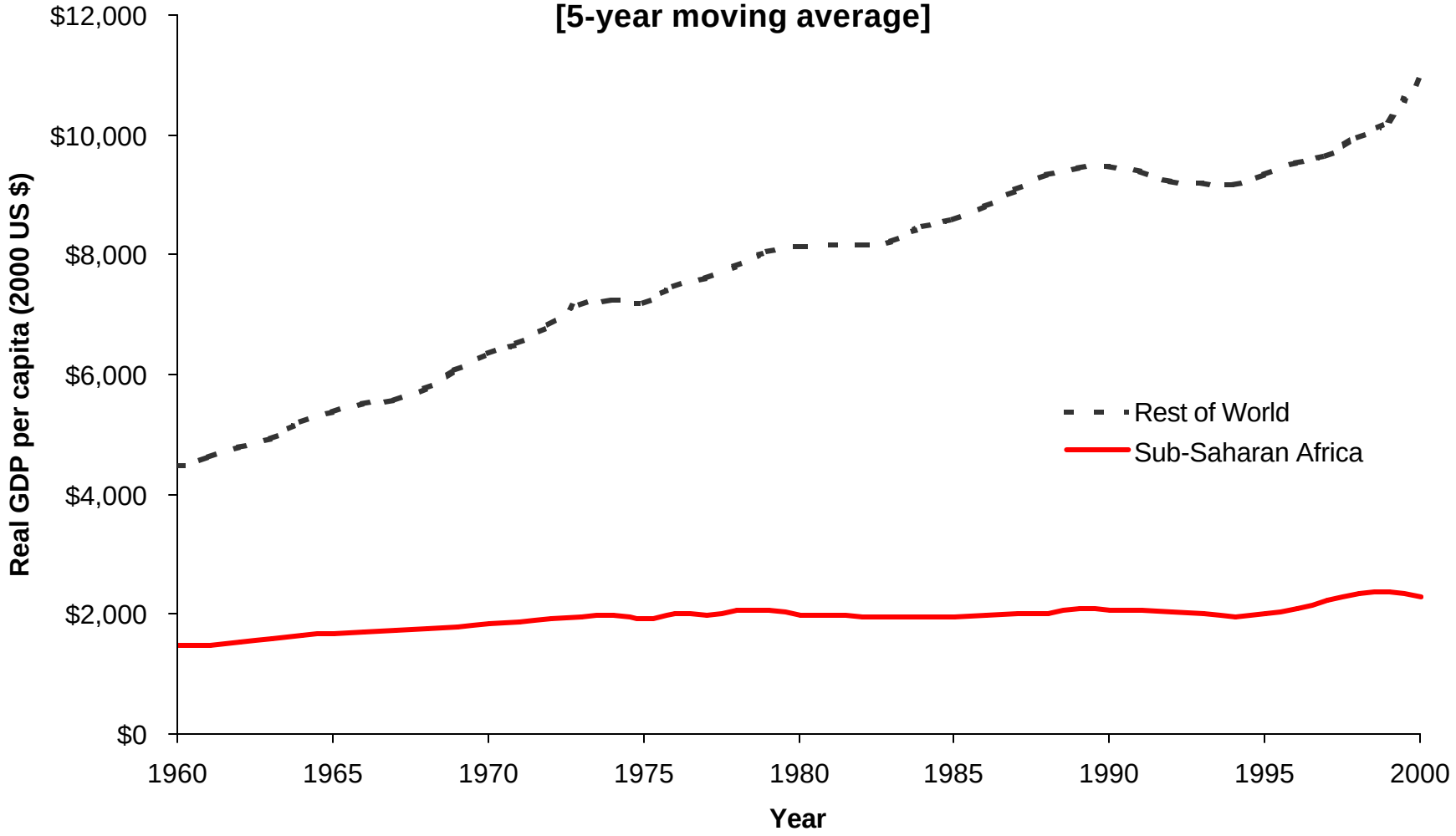
Source: Strand, Håvard, Lars Wilhelmsen, and Nils Petter Gleditsch. 2003. "Armed Conflict Dataset, Version 2.1." [Computer File] Oslo: International Peace Research Institute.

Figure 3: Prevalence of New and Ongoing Civil Wars in Sub-Saharan Africa and Rest of World, 1960 to 2000 [5-year moving average]



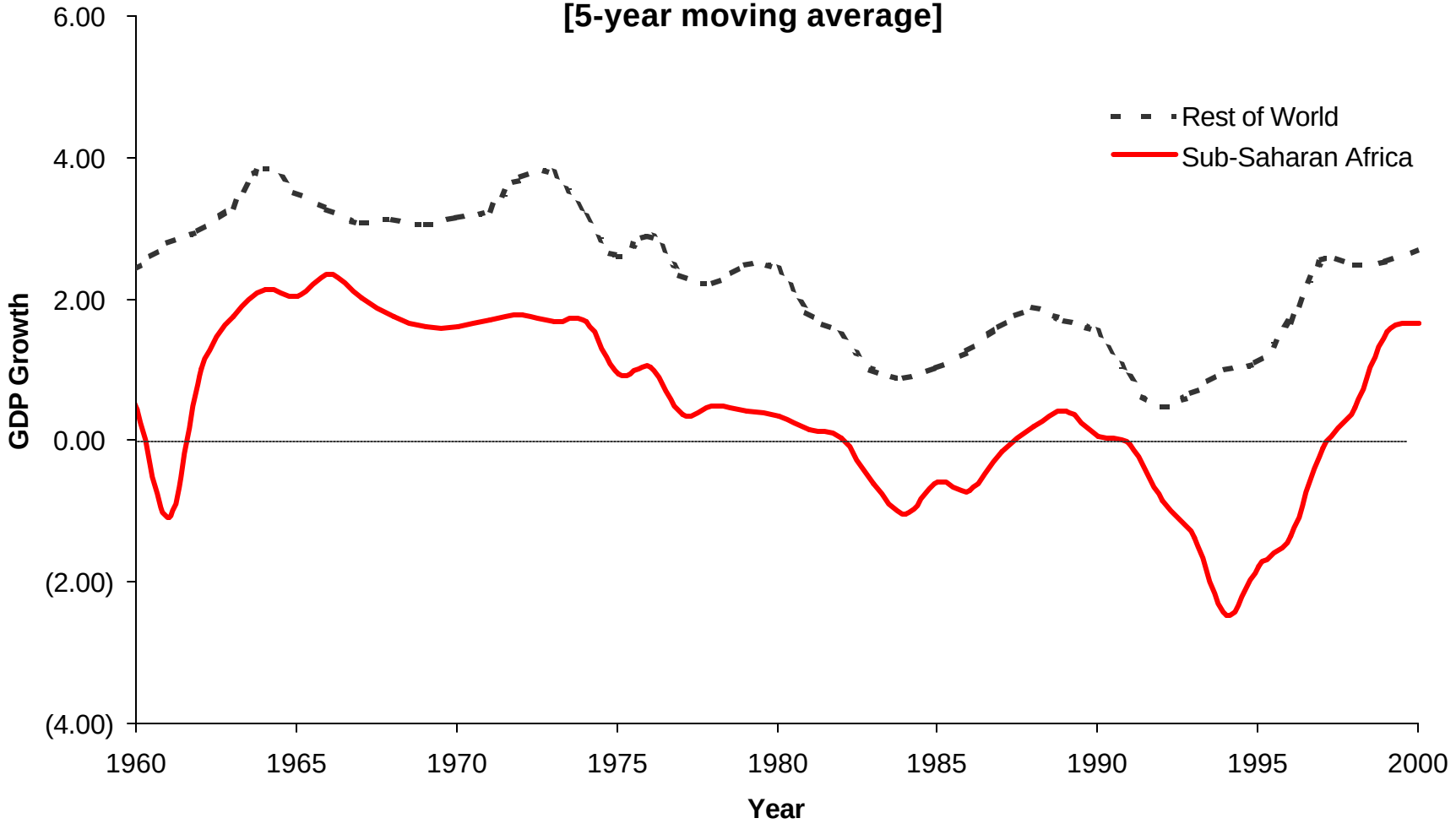
Source: Strand, Håvard, Lars Wilhelmsen, and Nils Petter Gleditsch. 2003. "Armed Conflict Dataset, Version 2.1." [Computer File] Oslo: International Peace Research Institute.

Figure 4: Real GDP per capita, Sub-Saharan Africa vs. Rest of World, 1960-2000
[5-year moving average]



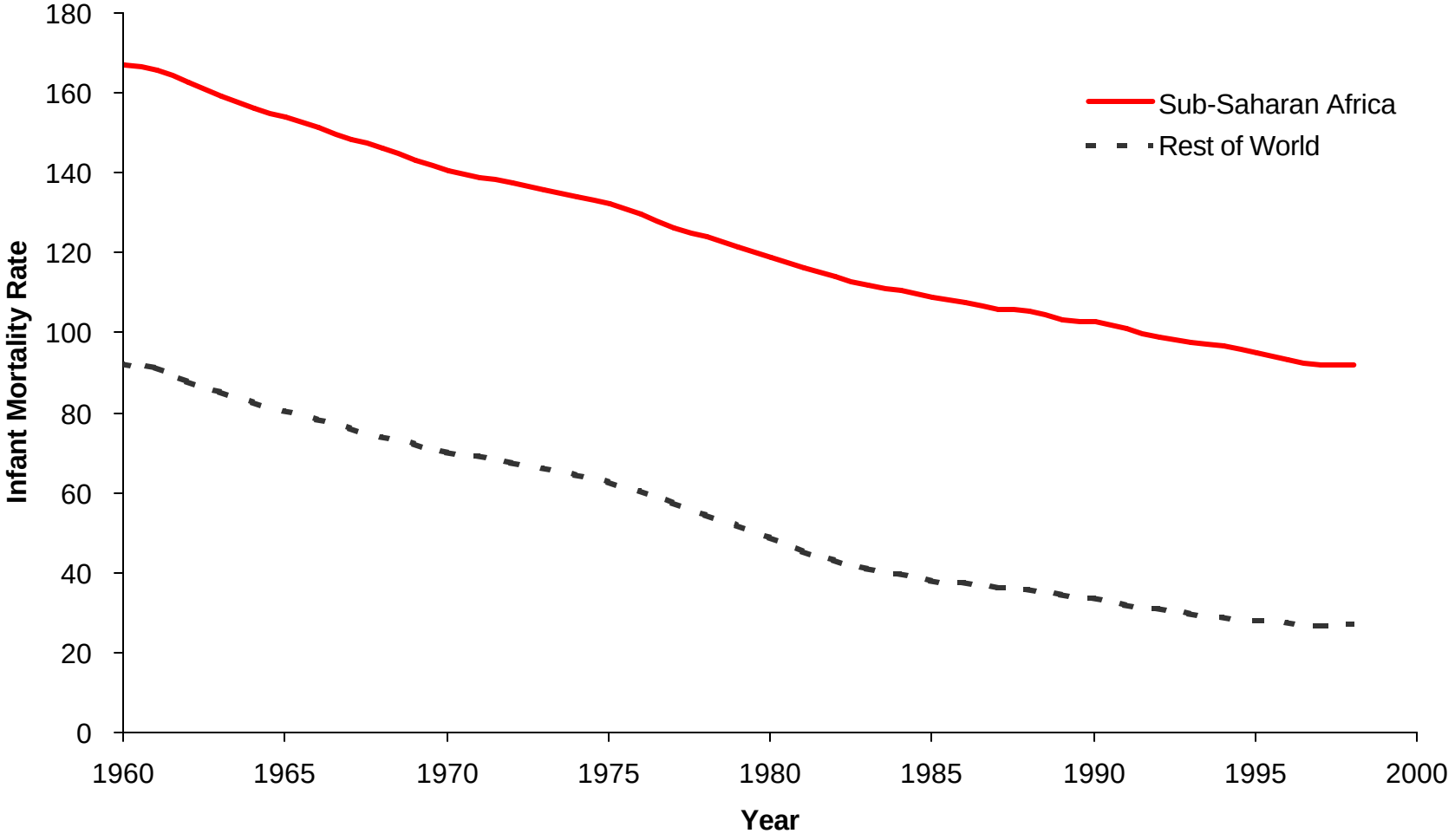
Source: Heston, Alan, Robert Summers, and Bettina Aten. 2004. "Penn World Table Version 6.1 [Data File]." Center for International Comparisons at the University of Pennsylvania. http://pwt.econ.upenn.edu

Figure 5: Average GDP Growth, Sub-Saharan Africa vs. Rest of World, 1960-2000
[5-year moving average]



Source: Heston, Alan, Robert Summers, and Bettina Aten. 2004. "Penn World Table Version 6.1 [Data File]." Center for International Comparisons at the University of Pennsylvania. http://pwt.econ.upenn.edu

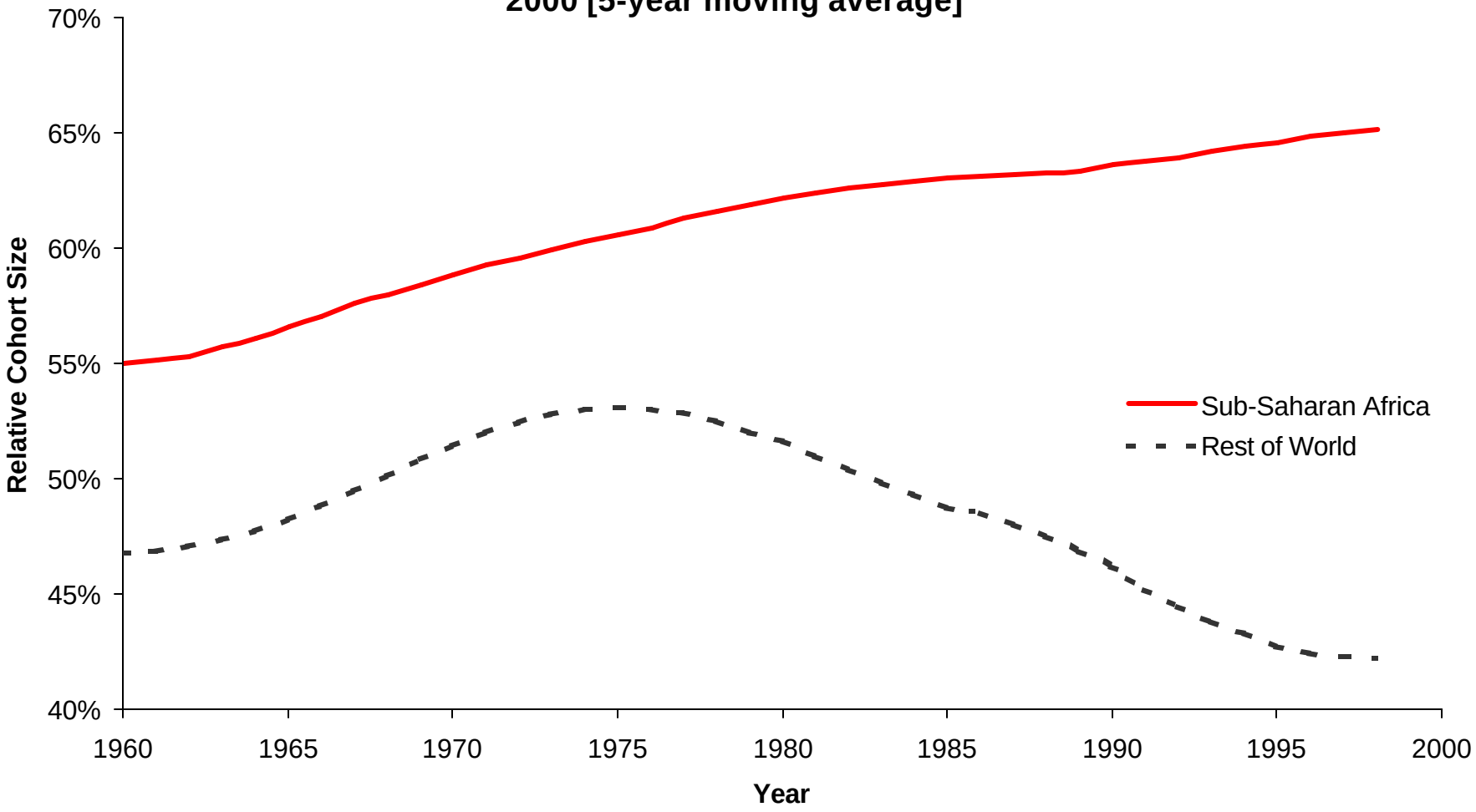
Figure 6: Infant Mortality Rate[1], Sub-Saharan Africa vs. Rest of World, 1960-2000 [5-year moving average]



1. The Infant Mortality Rate is the number of deaths to live-born infants prior to their 1st birthday per every 1,000 live births.

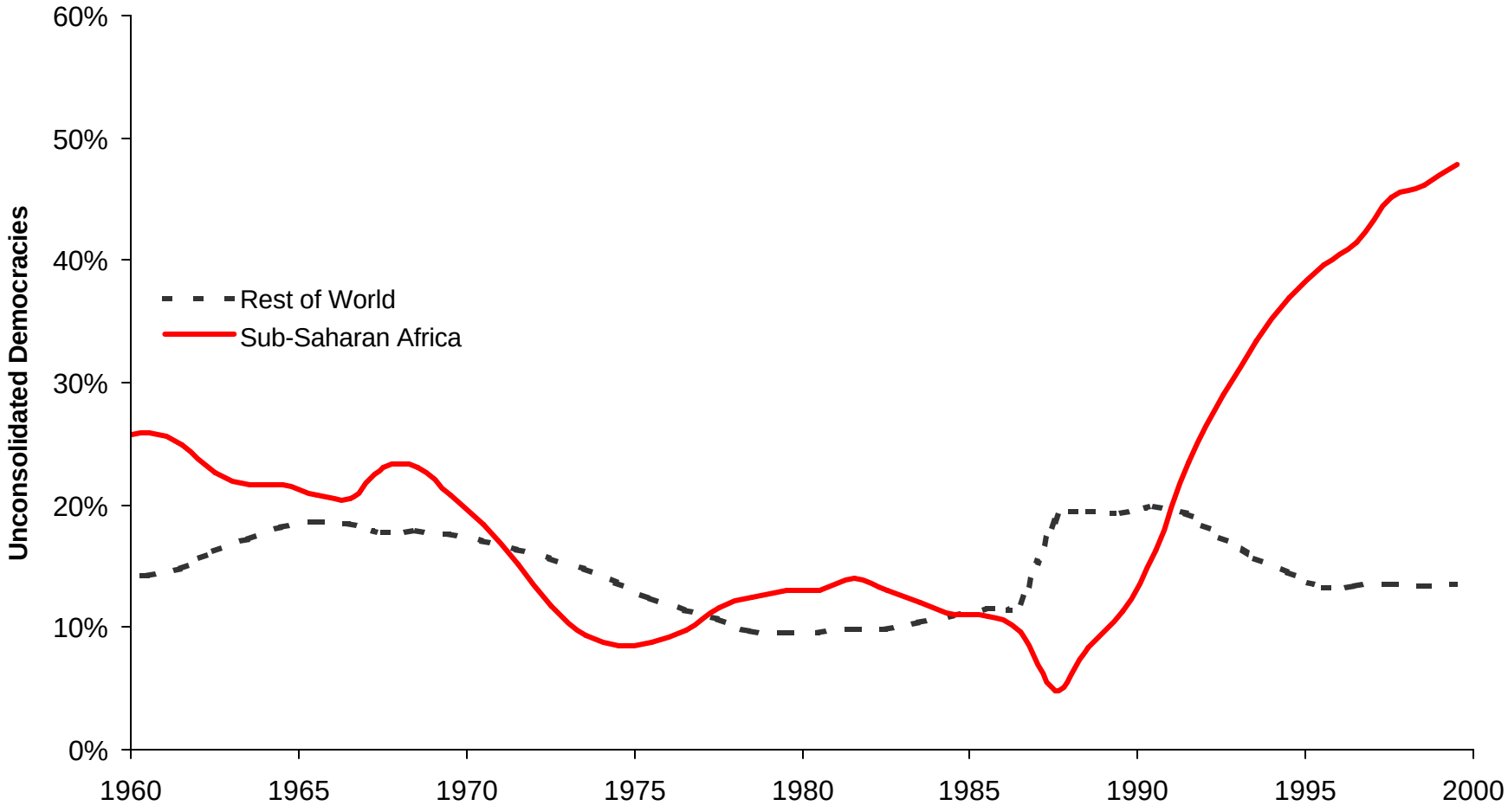
Source: United Nations. 2003. "World Population Prospects: The 2002 Revision [CD-ROM]." New York: United Nations.

Figure 7: Relative Cohort Size[1], sub-Saharan Africa vs Rest of World, 1960 - 2000 [5-year moving average]



1. For the purpose of this paper, relative cohort size is defined as the size of the 15-24 year old population as a percent of the size of the 25-59 year old population.
Source: United Nations. 2003. "World Population Prospects: The 2002 Revision [CD-ROM]." New York: United Nations.

Figure 8: Percent of Countries that are Unconsolidated Democracies, Sub-Saharan Africa and Rest of World, 1960-2000 [5-year moving average]



Source: Marshall, Monty, Keith Jaggers, and Ted Robert Gurr. 2004. "Polity IV Dataset." [Computer File] College Park, MD.

Table 1: Descriptive Statistics, Sub-Saharan Africa, Rest of World, and Entire World 1960 - 2000

	Sub-Saharan Africa			Rest of World			World		
Dependent Variables	Mean[1]	Std Dev	N	Mean	Std Dev	N	Mean	Std Dev	N
Conflict Onset	**4.42%**	0.2056	1,245	**2.66%**	0.1609	3,195	**3.15%**	0.1748	4,440
Country at War	**7.82%**	0.2686	1,381	**6.42%**	0.2451	3,458	**6.82%**	0.2521	4,839
Independent Variables	Mean	Std Dev	N	Mean	Std Dev	N	Mean	Std Dev	N
GDP Growth (past 5 years)	**0.40%**	0.0385	1,246	**2.20%**	0.0327	2,530	**1.61%**	0.0357	3,776
GDP per capita	**$ 1,828.06**	1842.16	1,259	**$ 7,840.33**	6371.55	2,546	**$ 5,850.99**	6023.94	3,805
Infant Mortality Rate (per 1,000 live births)	**122.40**	38.09	1,381	**54.27**	47.29	3,458	**73.72**	54.39	4,839
Unconsolidated Democracy	**15.73%**	0.3643	1,341	**13.67%**	0.3436	3,431	**14.25%**	0.3496	4,772
Polity Score [-10, 10]	**-3.97**	5.33	1,341	**0.40**	7.79	3,431	**-0.83**	7.45	4,772
Polity Squared [0, 100]	**44.14**	24.87	1,341	**60.83**	33.53	3,431	**56.14**	32.23	4,772
Population Size	**8,290**	13,120	1,381	**38,145**	123,263	3,458	**29,625**	105,298	4,839
Relative Cohort Size (15-24 year olds / 25-59 year olds)	**61.09%**	0.0712	1,381	**48.32%**	0.1351	3,458	**51.96%**	0.1335	4,839
Young men (age 15-29) as a Percent of all Men	**26.24%**	0.0126	1,381	**25.89%**	0.0277	3,458	**25.99%**	0.0244	4,839

1. Note that these are the mean of all nation-states, not weighted by population.

Sources: Conflict data from Strand, Wilhelmsen and Gleditsch (2003). GDP data from Heston, Summers and Aten (2004). Regime data from Goldstone, Gurr and Harff (2000). Population data from United Nations (2003).

Table 2: Baseline Logistic Regression Model Results

	B1: Baseline using infant mortality rate (IMR)			B2: Baseline using GDP per capita			B3: Baseline using IMR and GDP growth		
	O.R. Point Estimate	95 % Wald Confidence Limits		O.R. Point Estimate	95 % Wald Confidence Limits		O.R. Point Estimate	95 % Wald Confidence Limits	
ln(Population Size)	1.293 ***	1.153	1.450	1.218 ***	1.079	1.375	1.323 ***	1.161	1.509
Unconsolidated Democracy dummy $_{t-1}$	2.119 ***	1.421	3.162	1.895 ***	1.228	2.923	2.090 ***	1.346	3.245
Infant Mortality Rate (per 1,000 live births)	1.011 ***	1.007	1.014				1.009 ***	1.006	1.013
ln(GDP per capita$_{t-1}$)				0.571 ***	0.469	0.696			
GDP Growth							0.927 ***	0.881	0.974
Number of observations		4,430			3,519			3,504	
% Cases Concordant		68.2			68.0			68.4	
Goodman-Kruskal Gamma [1]		0.403			0.397			0.404	
-2 Log Likelihood		1178.862			940.761			923.782	

1. A measure of association ranging from -1 to +1. It tells us how much more likely we are to correctly predict conflict onset (compared to simply guessing) when country-years are chosen at random from the population (Goodman and Kruskal, 1954).

Source: Author's calculations. See text for sources and descriptions of variables used.

NOTE: A constant was included in all regressions. *Significant at the 10% level ** Significant at the 5% level. *** Significant at the 1% level.

Table 3: Baseline Regression models with Lagged Dependent Variable

	P1: Baseline IMR with Previous Conflict			P2: Baseline GDP per capita with Previous Conflict			P3: Baseline IMR and GDP Growth with Previous Conflict		
	O.R. Point Estimate	95 % Wald Confidence Limits		O.R. Point Estimate	95 % Wald Confidence Limits		O.R. Point Estimate	95 % Wald Confidence Limits	
ln(Population Size)	1.222 ***	1.078	1.385	1.130 *	0.989	1.292	1.235 ***	1.072	1.423
Unconsolidated Democracy dummy $_{t-1}$	1.864 ***	1.186	2.929	1.934 ***	1.214	3.080	2.158 ***	1.350	3.450
Infant Mortality Rate (per 1,000 live births)	1.012 ***	1.008	1.015				1.009 ***	1.005	1.014
ln(GDP per capita$_{t-1}$)				0.579 ***	0.467	0.717			
GDP Growth							0.902 ***	0.845	0.962
Previous Conflict in 10 years (dummy)	1.994 ***	1.316	3.020	1.946 ***	1.236	3.065	1.908 ***	1.208	3.015
Number of observations		3,814			3,017			3,012	
% Cases Concordant		70.3			68.1			70.0	
Goodman-Kruskal Gamma [1]		0.441			0.397			0.432	
-2 Log Likelihood		997.497			811.903			797.948	

1. See Table 2.

NOTE: A constant was included in all regressions. *Significant at the 10% level ** Significant at the 5% level. *** Significant at the 1% level.

Source: Author's calculations. See text for sources and descriptions of variables used.

Table 4: Baseline Regression model with Youth Measures

	Y1: Model B1 plus Young Men (aged 15-24) as a Percent of Adult Men			Y2: Baseline Model B1 plus Relative Cohort Size (ages 15-24 / ages 25-59)			Y3: Baseline Model B1 plus Relative Cohort Size and Previous Conflict		
	O.R. Point Estimate	95 % Wald Confidence Limits		O.R. Point Estimate	95 % Wald Confidence Limits		O.R. Point Estimate	95 % Wald Confidence Limits	
ln(Population Size)	1.293 ***	1.154	1.449	1.333 ***	1.186	1.499	1.275 ***	1.120	1.452
Unconsolidated Democracy dummy $_{t-1}$	2.092 ***	1.401	3.123	1.919 ***	1.283	2.871	1.682 **	1.068	2.649
Infant Mortality Rate (per 1,000 live births)	1.011 ***	1.007	1.014	1.008 ***	1.004	1.011	1.009 ***	1.005	1.013
Young Men (age 15-24) as a percent of adult men	1.047	0.963	1.137						
Relative Cohort Size (ages 15-24 / ages 25-59)				1.035 ***	1.017	1.053	1.037 ***	1.017	1.057
Previous Conflict in 10 years (dummy)							1.822 ***	1.202	2.764
Number of observations		4,430			4,430			3,814	
% Cases Concordant		68.2			69.9			72.0	
Goodman-Kruskal Gamma [1]		0.401			0.430			0.469	
-2 Log Likelihood		1177.715			1163.638			983.633	

1. See Table 2.

NOTE: A constant was included in all regressions. *Significant at the 10% level ** Significant at the 5% level. *** Significant at the 1% level.

Source: Author's calculations. See text for sources and descriptions of variables used.

Table 5: Youth Regression Model with Dummies for Sub-Saharan Africa and the 1990s

	R1: Model Y1 plus sub-Saharan Africa Dummy			R2: Model Y1 plus Decade=1990 Dummy			R3: Model Y1 plus Sub-Saharan Africa Dummy, 1990 Dummy, and interaction term		
	O.R. Point Estimate	95 % Wald Confidence Limits		O.R. Point Estimate	95 % Wald Confidence Limits		O.R. Point Estimate	95 % Wald Confidence Limits	
ln(Population Size)	1.277 ***	1.119	1.456	1.274 ***	1.119	1.451	1.262 ***	1.107	1.438
Unconsolidated Democracy dummy $_{t-1}$	1.686 **	1.069	2.658	1.623 **	1.028	2.562	1.572 *	0.994	2.488
Infant Mortality Rate (per 1,000 live births)	1.009 ***	1.005	1.013	1.011 ***	1.006	1.015	1.011 ***	1.006	1.015
Relative Cohort Size (ages 15-24 / ages 25-59)	1.036 ***	1.016	1.057	1.032 ***	1.012	1.052	1.031 ***	1.011	1.053
Previous Conflict in 10 years (dummy)	1.822 ***	1.201	2.763	1.809 ***	1.192	2.746	1.806 ***	1.188	2.744
Sub-Saharan Africa Dummy	1.030	0.672	1.579				0.714	0.415	1.227
Decade = 1990 Dummy				1.701 **	1.109	2.608	1.310	0.703	2.440
Sub-Saharan Africa & Decade=1990							1.891	0.804	4.446
Number of observations		3,814			3,814			3,814	
% Cases Concordant		72.0			72.6			72.9	
Goodman-Kruskal Gamma [1]		0.468			0.482			0.488	
-2 Log Likelihood		983.614			977.922			975.411	

1. See Table 2.

NOTE: A constant was included in all regressions. *Significant at the 10% level ** Significant at the 5% level. *** Significant at the 1% level.

Source: Author's calculations. See text for sources and descriptions of variables used.

Appendix A: Observed Countries and Periods

Country Name	Begin Year		Number of Valid Observations*
	The Americas		
Argentina	1960	2000	38
Bolivia	1960	2000	40
Brazil	1960	2000	40
Canada	1960	2000	40
Chile	1960	2000	40
Colombia	1960	2000	12
Costa Rica	1960	2000	40
Cuba	1960	2000	40
Dominican Republic	1960	2000	40
Ecuador	1960	2000	40
El Salvador	1960	2000	30
Guatemala	1960	2000	15
Guyana	1966	2000	34
Haiti	1960	2000	40
Honduras	1960	2000	40
Jamaica	1962	2000	38
Mexico	1960	2000	40
Nicaragua	1960	2000	33
Panama	1960	2000	40
Paraguay	1960	2000	40
Peru	1960	2000	24
Trinidad and Tobago	1962	2000	38
United States of America	1960	2000	40
Uruguay	1960	2000	40
Venezuela	1960	2000	40
	Asia		
Afghanistan	1960	2000	21
Australia	1960	2000	40
Bangladesh	1972	2000	11
Bhutan	1960	2000	40
Burma	1960	2000	14
Cambodia	1960	2000	18
China	1960	2000	40
Democratic People's Rep. of Korea	1960	2000	40
Fiji	1970	2000	30
India	1960	2000	23
Indonesia	1960	2000	25
Japan	1960	2000	40
Kazakhstan	1991	2000	9
Kyrgyzstan	1991	2000	9
Lao People's Democratic Republic	1960	2000	30
Malaysia	1960	2000	35
Mongolia	1960	2000	40
Nepal	1960	2000	36
New Zealand	1960	2000	40

Appendix A, cont'd: Observed Countries and Periods

Asia, cont'd			
Pakistan	1960	2000	37
Papua New Guinea	1975	2000	20
Philippines	1960	2000	20
Republic of Korea	1960	2000	40
Singapore	1965	2000	35
Sri Lanka	1960	2000	29
Tajikistan	1991	2000	7
Thailand	1960	2000	32
Turkmenistan	1991	2000	9
Uzbekistan	1991	2000	9
Viet Nam	1960	2000	21
Europe			
Albania	1960	2000	40
Armenia	1991	2000	9
Austria	1960	2000	40
Azerbaijan	1991	2000	9
Belarus	1991	2000	9
Belgium	1960	2000	40
Bosnia and Herzegovina	1992	2000	7
Bulgaria	1960	2000	40
Croatia	1991	2000	9
Cyprus	1960	2000	40
Czech Republic	1993	2000	7
Czechloslovakia	1960	1993	33
Denmark	1960	2000	40
Estonia	1991	2000	9
Finland	1960	2000	40
France	1960	2000	39
Georgia	1991	2000	9
German Democratic Repub	1960	1991	31
German Federal Republic	1960	1991	31
Germany	1991	2000	9
Greece	1960	2000	40
Hungary	1960	2000	40
Ireland	1960	2000	40
Italy	1960	2000	40
Latvia	1991	2000	9
Lithuania	1991	2000	9
Netherlands	1960	2000	40
Norway	1960	2000	40
Poland	1960	2000	40
Portugal	1960	2000	40
Republic of Moldova	1991	2000	9
Romania	1960	2000	40
Russian Federation	1960	2000	37
Slovakia	1993	2000	7
Slovenia	1991	2000	9

Appendix A, cont'd: Observed Countries and Periods

Europe, cont'd			
Spain	1960	2000	38
Sweden	1960	2000	40
Switzerland	1960	2000	40
TFYR Macedonia	1991	2000	9
Ukraine	1991	2000	9
United Kingdom	1960	2000	18
Yugoslavia	1960	2000	38
Middle East & North Africa			
Algeria	1962	2000	31
Bahrain	1971	2000	29
Egypt	1960	2000	31
Iran	1960	2000	31
Iraq	1960	2000	22
Israel	1960	2000	1
Jordan	1960	2000	40
Kuwait	1963	2000	37
Lebanon	1960	2000	30
Libyan Arab Jamahiriya	1960	2000	39
Morocco	1960	2000	28
Oman	1960	2000	37
Qatar	1971	2000	29
Saudi Arabia	1960	2000	40
Sudan	1960	2000	18
Syrian Arab Republic	1960	2000	38
Tunisia	1960	2000	40
Turkey	1960	2000	28
United Arab Emirates	1971	2000	29
Yemen	1990	2000	10
Yemen Arab Republic	1960	1990	23
Yemen People's Rep	1967	1990	22
Sub-Saharan Africa			
Angola	1975	2000	7
Benin	1960	2000	40
Botswana	1966	2000	34
Burkina Faso	1960	2000	40
Burundi	1962	2000	34
Cameroon	1960	2000	40
Central African Republi	1960	2000	40
Chad	1960	2000	12
Comoros	1975	2000	25
Congo (Republic)	1960	2000	37
Cote d'Ivoire	1960	2000	40
Dem. Republic of the Congo	1960	2000	36
Djibouti	1977	2000	20
Equatorial Guinea	1968	2000	32
Eritrea	1993	2000	7
Ethiopia	1960	2000	16

Appendix A, cont'd: Observed Countries and Periods

Sub-Saharan Africa, cont'd

Gabon	1960	2000	40
Gambia	1965	2000	35
Ghana	1960	2000	40
Guinea	1960	2000	40
Guinea-Bissau	1974	2000	25
Kenya	1963	2000	37
Lesotho	1966	2000	34
Liberia	1960	2000	38
Madagascar	1960	2000	40
Malawi	1964	2000	36
Mali	1960	2000	40
Mauritania	1960	2000	40
Mauritius	1968	2000	32
Mozambique	1975	2000	10
Namibia	1990	2000	10
Niger	1960	2000	38
Nigeria	1960	2000	37
Rwanda	1962	2000	35
Senegal	1960	2000	37
Sierra Leone	1961	2000	32
Somalia	1960	2000	28
South Africa	1960	2000	19
Swaziland	1968	2000	32
Togo	1960	2000	40
Uganda	1962	2000	27
United Rep. of Tanzania	1961	2000	39
Zambia	1964	2000	36
Zimbabwe	1970	2000	24

*Note: An observation is considered valid only if the country was not in war during the prior year.

Source: PRIO Armed Conflict Dataset version 2.1

Appendix B: Years of Internal Armed Conflict, 1960 - 2000

Country Name	Start	End*	Country Name	Start	End
Afghanistan	1978	2000	Ghana	1966	1967
Algeria	1991	2000	Ghana	1981	1982
Angola	1975	2000	Ghana	1983	1984
Argentina	1963	1964	Guatemala	1965	1996
Argentina	1973	1978	Guinea	1970	1971
Azerbaijan	1992	1996	Guinea-Bissau	1998	2000
Bangladesh	1974	1993	Haiti	1991	1992
Bolivia	1967	1968	India	1961	1973
Bosnia and Herzegovina	1992	1996	India	1978	2000
Burkina Faso	1987	1988	Indonesia	1960	1962
Burma	1960	2000	Indonesia	1965	1966
Burundi	1965	1966	Indonesia	1975	1993
Burundi	1990	1993	Indonesia	1997	2000
Burundi	1995	2000	Iran	1966	1969
Cambodia	1967	1999	Iran	1974	1975
Cameroon	1984	1985	Iran	1979	1989
Chad	1965	1995	Iran	1990	1994
Chad	1997	2000	Iraq	1961	1997
Colombia	1965	2000	Israel	1960	2000
Comoros	1989	1990	Kenya	1982	1983
Comoros	1997	1998	Lao People's Democratic Repul	1960	1962
Congo (Republic)	1993	1995	Lao People's Democratic Repul	1963	1974
Congo (Republic)	1997	2000	Lao People's Democratic Repul	1989	1991
Croatia	1992	1994	Lebanon	1975	1991
Croatia	1995	1996	Lesotho	1998	1999
Cuba	1961	1962	Liberia	1980	1981
Cyprus	1974	1975	Liberia	1989	1997
Democratic Republic of the Cor	1960	1963	Libyan Arab Jamahiriya	1987	1988
Democratic Republic of the Cor	1964	1966	Madagascar	1971	1972
Democratic Republic of the Cor	1967	1968	Malaysia	1960	1961
Democratic Republic of the Cor	1977	1979	Malaysia	1963	1967
Democratic Republic of the Cor	1996	2000	Malaysia	1974	1976
Djibouti	1991	1995	Malaysia	1981	1982
Dominican Republic	1965	1966	Mali	1990	1991
Egypt	1967	1968	Mali	1994	1995
Egypt	1969	1971	Mexico	1994	1995
Egypt	1992	1999	Morocco	1971	1972
El Salvador	1972	1973	Morocco	1975	1990
El Salvador	1979	1992	Mozambique	1976	1993
Equatorial Guinea	1979	1980	Nepal	1960	1963
Ethiopia	1960	1961	Nepal	1997	2000
Ethiopia	1962	1992	Nicaragua	1978	1980
Ethiopia	1996	2000	Nicaragua	1981	1993
France	1961	1963	Niger	1994	1995
Gabon	1964	1965	Niger	1996	1998
Gambia	1981	1982	Nigeria	1966	1971
Georgia	1991	1994	Oman	1972	1976

Appendix B, cont'd: Years of Internal Armed Conflict, 1960 - 2000

Country Name	Start	End*	Country Name	Start	End
Pakistan	1971	1972	Sudan	1976	1977
Pakistan	1974	1978	Sudan	1983	2000
Pakistan	1995	1997	Syrian Arab Republic	1966	1967
Panama	1989	1990	Syrian Arab Republic	1979	1983
Papua New Guinea	1989	1991	Tajikistan	1992	1997
Papua New Guinea	1992	1997	Tajikistan	1998	1999
Paraguay	1989	1990	Thailand	1974	1983
Peru	1965	1967	Togo	1986	1987
Peru	1966	1967	Togo	1991	1992
Peru	1980	2000	Trinidad and Tobago	1990	1991
Philippines	1970	2000	Tunisia	1980	1981
Republic of Moldova	1992	1993	Turkey	1984	2000
Romania	1989	1990	Uganda	1971	1973
Russian Federation	1990	1992	Uganda	1977	1980
Russian Federation	1993	1997	Uganda	1981	1992
Russian Federation	1999	2000	Uganda	1994	2000
Rwanda	1990	1995	United Kingdom	1971	1994
Rwanda	1998	2000	United Kingdom	1998	1999
Saudi Arabia	1979	1980	Uruguay	1972	1973
Senegal	1990	1991	Venezuela	1962	1963
Senegal	1992	1994	Venezuela	1992	1993
Senegal	1995	1996	Viet Nam	1965	1976
Senegal	1997	2000	Viet Nam	1979	1982
Sierra Leone	1991	2000	Viet Nam	1983	1985
Somalia	1978	1979	Viet Nam	1986	1989
Somalia	1981	1997	Yemen Arab Republic	1962	1971
South Africa	1966	1994	Yemen Arab Republic	1980	1983
Spain	1980	1982	Yemen People's Republic	1972	1973
Spain	1987	1988	Yemen People's Republic	1986	1987
Spain	1991	1993	Yugoslavia	1991	1992
Sri Lanka	1971	1972	Yugoslavia	1998	2000
Sri Lanka	1983	2000	Zimbabwe	1972	1980
Sudan	1963	1973			

*Note: ending in 2000 simply means that was last year observed, but conflict may have continued past that year

Source: PRIO Armed Conflict Dataset version 2.1

Appendix C: Years of Civil War[1] Onset Used in Study[2]

Country Name	Year of Onset	Country Name	Year of Onset
Afghanistan	1978	Haiti	1991
Algeria	1991	India	1961
Argentina	1963	India	1978
Argentina	1973	Indonesia	1965
Azerbaijan	1992	Indonesia	1975
Bangladesh	1974	Indonesia	1997
Bolivia	1967	Iran	1966
Burkina Faso	1987	Iran	1979
Burundi	1965	Iran	1990
Burundi	1990	Iraq	1961
Burundi	1995	Iraq	1973
Cambodia	1967	Kenya	1982
Cambodia	1978	Lao People's Democratic Republic	1963
Cameroon	1984	Lao People's Democratic Republic	1989
Chad	1965	Lebanon	1975
Chad	1997	Lesotho	1998
Chile	1973	Liberia	1980
Colombia	1965	Liberia	1989
Comoros	1989	Madagascar	1971
Comoros	1997	Malaysia	1963
Congo	1997	Malaysia	1974
Croatia	1992	Malaysia	1981
Croatia	1995	Mali	1990
Cuba	1961	Mali	1994
Cyprus	1974	Mexico	1994
Democratic Republic of the Congo	1964	Morocco	1971
Democratic Republic of the Congo	1967	Morocco	1975
Democratic Republic of the Congo	1977	Mozambique	1976
Democratic Republic of the Congo	1996	Nepal	1960
Djibouti	1991	Nepal	1997
Dominican Republic	1965	Nicaragua	1978
Egypt	1992	Nicaragua	1981
El Salvador	1972	Niger	1990
El Salvador	1979	Niger	1994
Equatorial Guinea	1979	Niger	1996
Ethiopia	1960	Nigeria	1966
Ethiopia	1962	Oman	1972
Ethiopia	1996	Pakistan	1971
France	1961	Pakistan	1974
Gabon	1964	Pakistan	1995
Gambia	1981	Panama	1989
Ghana	1966	Papua New Guinea	1989
Ghana	1981	Papua New Guinea	1992
Ghana	1983	Paraguay	1989
Guatemala	1965	Peru	1965
Guinea	1970	Peru	1980
Guinea-Bissau	1998	Philippines	1970

Appendix C, cont'd: Years of Civil War Onset Used in Study

Country Name	Year of Onset	Country Name	Year of Onset
Republic of Moldova	1992	Syrian Arab Republic	1966
Romania	1989	Syrian Arab Republic	1979
Russian Federation	1990	Tajikistan	1992
Russian Federation	1993	Thailand	1974
Rwanda	1990	Togo	1986
Rwanda	1998	Togo	1991
Saudi Arabia	1979	Trinidad and Tobago	1990
Senegal	1990	Tunisia	1980
Senegal	1992	Turkey	1984
Senegal	1995	Uganda	1971
Senegal	1997	Uganda	1977
Sierra Leone	1991	Uganda	1981
Somalia	1978	Uganda	1994
Somalia	1981	United Kingdom	1971
South Africa	1966	Uruguay	1972
Spain	1980	Venezuela	1962
Spain	1987	Venezuela	1992
Spain	1991	Yemen	1994
Sri Lanka	1971	Yemen Arab Republic	1962
Sri Lanka	1983	Yemen Arab Republic	1980
Sudan	1963	Yemen People's Republic	1986
Sudan	1976	Yugoslavia	1991
Sudan	1983	Zimbabwe	1972

1. For the purpose of this study, a civil war has four major characteristics: (1) it is a contested incompatability that concerns government and/or territory, (2) one party in the conflict is the government of a state, and the other party is an internal opposition group or groups, (3) The use of armed force between the government and the opposition group(s) results in at least 25 battle-related casualties; (4) the conflict occurs within the boundaries of a single nation state.
2. A civil war onset is only counted if the country was *not* in war during the prior year.

Source: PRIO Armed Conflict Dataset version 2.1

Appendix D: Conflict Onsets Not Used (Due to an Ongoing War)

Country Name	Year of Onset	Country Name	Year of Onset
Afghanistan	1979	Colombia	1992
Afghanistan	1989	Colombia	1994
Algeria	1993	Colombia	1998
Angola	1975	Congo (Republic)	1998
Angola	1990	Croatia	1993
Angola	1991	Dem. Republic of the Congo	1960
Angola	1994	Dem. Republic of the Congo	1978
Angola	1995	Dem. Republic of the Congo	1997
Angola	1996	Dem. Republic of the Congo	1998
Angola	1998	El Salvador	1981
Argentina	1975	El Salvador	1991
Argentina	1976	Ethiopia	1968
Azerbaijan	1993	Ethiopia	1974
Azerbaijan	1994	Ethiopia	1975
Azerbaijan	1995	Ethiopia	1976
Bangladesh	1987	Ethiopia	1977
Bosnia and Herzegovina	1992	Ethiopia	1979
Bosnia and Herzegovina	1993	Ethiopia	1989
Bosnia and Herzegovina	1994	Ethiopia	1998
Burma	1960	Georgia	1991
Burma	1961	Georgia	1992
Burma	1964	Georgia	1993
Burma	1968	Guatemala	1968
Burma	1976	Guatemala	1969
Burma	1979	Guatemala	1988
Burma	1990	Guatemala	1992
Burma	1991	Guatemala	1993
Burma	1992	India	1966
Burma	1993	India	1967
Burma	1994	India	1982
Burma	1995	India	1983
Burma	1996	India	1987
Burma	1997	India	1988
Burundi	1997	India	1989
Burundi	1998	India	1990
Cambodia	1968	India	1991
Cambodia	1970	India	1992
Cambodia	1974	India	1993
Cambodia	1979	India	1994
Cambodia	1989	India	1995
Cambodia	1990	India	1996
Chad	1989	India	1997
Chad	1990	Indonesia	1976
Chad	1991	Indonesia	1979
Colombia	1980	Indonesia	1989
Colombia	1989	Indonesia	1990
Colombia	1991	Indonesia	1991

Indonesia	1992
Iran	1981
Iran	1982
Iran	1983
Iran	1986
Iran	1991
Iran	1993
Iraq	1963
Iraq	1964
Iraq	1965
Iraq	1967
Iraq	1969
Iraq	1970
Iraq	1974
Iraq	1976
Iraq	1982
Iraq	1987
Iraq	1988
Iraq	1989
Iraq	1991
Iraq	1992
Israel	1965
Lao People's Dem. Repub.	1960
Lao People's Dem. Repub.	1969
Lao People's Dem. Repub.	1970
Lebanon	1976
Lebanon	1977
Lebanon	1980
Lebanon	1983
Lebanon	1989
Liberia	1990
Liberia	1991
Liberia	1992
Liberia	1993
Liberia	1996
Morocco	1980
Morocco	1981
Mozambique	1981
Nicaragua	1983
Nicaragua	1989
Niger	1997
Nigeria	1967
Pakistan	1975
Peru	1981
Peru	1986
Peru	1988
Peru	1993
Philippines	1972
Philippines	1978
Philippines	1979
Philippines	1981
Philippines	1982
Philippines	1987
Philippines	1989
Philippines	1993
Philippines	1994
Russian Federation	1994
Russian Federation	1995
Rwanda	1991
Rwanda	1993
Sierra Leone	1994
Somalia	1987
Somalia	1989
Somalia	1993
South Africa	1979
South Africa	1980
South Africa	1981
South Africa	1984
South Africa	1986
South Africa	1989
Sri Lanka	1985
Sri Lanka	1989
Sri Lanka	1990
Sri Lanka	1994
Sri Lanka	1995
Sudan	1970
Sudan	1993
Sudan	1995
Syrian Arab Republic	1982
Tajikistan	1993
Tajikistan	1994
Tajikistan	1995
Turkey	1987
Turkey	1991
Turkey	1992
Uganda	1972
Uganda	1978
Uganda	1979
Uganda	1989
Uganda	1990
Uganda	1991
Uganda	1996
United Kingdom	1978
Yemen Arab Republic	1965
Yemen Arab Republic	1966
Yemen Arab Republic	1968
Zimbabwe	1976