Large refugee populations, resource scarcity and conflict*

HEIDRUN BOHNET
Department of Political Science and International Relations
University of Geneva
heidrun.bohnet@unige.ch

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Abstract

Densely populated regions increase the risk of conflict. While this statement is widely accepted among conflict researchers, it has not yet been applied to areas with large numbers of refugees. There has been no statistical analysis so far that has looked at the link between geographically concentrated refugee settlements and the onset of conflict, despite daily news reports on security instances due to overcrowding and resource scarcity in refugee camps such as Dadaab in Kenya. Using a new geo-referenced event dataset and geographic data on the location of refugee settlements and their size in terms of population numbers in Africa in the years from 1999 to 2010, I demonstrate that refugee settlements which are highly concentrated increase the risk of conflict, particularly in areas that are exposed to resource scarcity. Livelihood opportunities are in these cases lower. In addition, opportunities for interaction and mobilization are then facilitated among refugees and between refugees and the host community because of spatial proximity between them. These findings indicate that refugee settlement policies are crucial for refugee protection and the overall security for neighboring regions.

Introduction

As recent research has demonstrated that refugees[1] can spread conflict (Lischer 2005, Salehyan and Gleditsch 2006, Salehyan 2007 and 2008, Rüegger and Bohnet 2011, Rüegger 2012a and 2012b), refugees are no longer solely regarded as passive victims but also as security threats (Mogire 2011). Refugees are actors with a political opinion and can play a significant role in the conflict dynamic (Salehyan and Gleditsch 2006). The Rwandan refugee crisis in the 1990s, where militants openly recruited and trained refugee fighters (Lischer 2005, p. 1), has clearly shown that refugees can be involved in conflicts, implicate security risks, and thus contribute directly or indirectly to conflict diffusion. Similar examples can be found in Chad and Uganda. Furthermore, in places such as Macedonia, West Timor, and Guinea large refugee influxes have "underscored the challenges associated with maintaining the civilian and humanitarian character of refugee camps and settlements – especially when armed elements of fighting forces moved along" them (Opaye 2005, p. 3).

However, most refugee influxes do not lead to conflict (Lischer 2001, Salehyan and Gleditsch 2009, p. 339). Lischer (2001) indicates that only 15 percent of the refugee flows between 1987 and 1998 were engaged in violence. Nevertheless, it is important to investigate these 15 percent because large refugee influxes have continued in the past and will in the future. This is currently the case in Ethiopia, which receives very large inflows from its neighboring countries, as well as in Lebanon and Turkey, which receive thousands of refugees from Syria daily. According to Opaye (2005): "Failure to effectively address such circumstances can have important implications for regional stability and safety and security of civilians in and around those environments" (p. 3). Moreover, the mechanisms that link refugees and conflict are not yet clearly identified. The question still stands why some refugee influxes lead to conflict and others do not. While Ethiopia receives thousands of refugees daily, it remains peaceful in contrast to other countries such as Chad or Uganda. How do these countries differ? Why do some countries face refugee-related conflicts while others do not? I argue that the geographical distribution of refugees within a country determines whether conflict occurs or not because refugees are spread out differently in each country and, therefore, their effects also might differ.

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[1] A refugee is a person who "owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country" (Article 1, The 1951 Convention Relating to the Status of Refugees).

With geographical distribution, I mean here two things. First, the total number of refugees per settlement and per administrative region (first-order division), and second, the total number of refugee settlements within an administrative unit. I use "administrative unit", "division", "zone", and "region" interchangeably, but always refer to the first-order divisions of one country. Thus, I focus on the spatial distances between individual refugees and between different refugee settlements. When these distances are very short, meaning that a large number of refugees live closely together in one administrative region or that many different refugee settlements are geographically very close, I speak of concentrated refugee settlements. Because distances between individuals and settlements define their interaction level and concentrated settlements facilitate interaction, I argue that concentrated refugee settlements increase the risk of conflict.

That densely populated regions increase the risk of conflict is widely accepted among conflict researchers (see, for example: Hegre and Raleigh 2006, and Weidmann 2009), however, it has not yet been applied to areas with large numbers of refugees. There has been no large N study so far that has looked at the link between geographically concentrated refugee settlements and the onset of conflict, despite daily news reports on security threats due to overcrowding and resource scarcity in refugee camps. Moreover, the focus so far has been mainly on refugee camps although most refugees today live in cities and towns. Thus, I will look at all types of settlements, both camps and urban living spaces. In addition, not only individual refugee settlements are taken into account, but also the distances between the settlements. The focus, hence, lies on settlement patterns of refugees, which has been a much neglected field in the refugee literature so far. I want to fill this gap.

Using the new UCDP Georeferenced Event Dataset (UCDP GED), as well as a first-ever created dataset with refugee population numbers and geographic information on the location of refugee settlements in Africa in the years from 1999 to 2010, I demonstrate that countries with highly concentrated refugee settlements are more likely to experience conflict than those with dispersed ones. Concentrated refugee settlements facilitate opportunities for interaction and mobilization as well as increase pressures on resources. Consequently, I show that refugee settlement policies put in place by host governments and other stakeholders who decide where to place refugees can be crucial factors for refugee protection and the overall security in the host country. Wrong location considerations, could lead to new conflict locations.

The paper starts by giving an overview of the current state of the refugee-conflict nexus research. It then presents the underlying theoretical framework on group settlement. In a third step, new data on the geographical location of refugee settlements is presented which is followed by an analysis and discussion of how refugee settlement concentration influences the likelihood of conflict. The paper ends with a discussion of future steps and concludes with policy implications that come with these findings.

Current state of research
The link between refugees and conflict

While the most recent research (Lischer 2005, Salehyan and Gleditsch 2006, Salehyan 2007 and 2008, Rüegger and Bohnet 2011, Mogire 2011, Rüegger 2012a and 2012b) recognizes the link between refugees and conflict, there has been little statistical analysis on the mechanism behind this link. Salehyan and Gleditsch (2006), the first authors who have taken a quantitative approach towards the issue of refugees and conflict, found that one reason for conflict could be the large number of refugees in a country. Their results demonstrate that the greater the number of refugees from a neighboring country, the more likely this country is to experience civil conflict or war (Salehyan and Gleditsch 2006, p. 348). However, several cases have demonstrated that large refugee numbers alone cannot explain conflict outbreak. The arrival or presence of refugees alone does not necessarily lead directly to the onset of conflict. Although, for example, Tanzania received a large influx of Rwandan refugees in 1994, it stayed quite peaceful as opposed to its neighboring country Congo (Whitaker 2003, p. 1). Numbers seem to be an indicator, but they cannot explain conflict outbreak alone. Other factors or mechanisms have to be considered.

I argue that the geographical distribution of refugees, which is created through their settlement pattern, is one of the underlying factors that explain why refugee-related conflict occurs in some cases and why in others it does not. Because refugees are not settled in the same manner in each country, their effects might also differ. As Salehyan and Gleditsch (2006, p. 349) point out: "Refugees are not distributed equally across a country" and, thus, their effects might vary from region to region. In heavily populated areas, their effects might be more severe than in more dispersed regions. Therefore, I postulate that a disaggregated approach towards refugees has to be taken and their settlement patterns have to be considered to be able to identify the mechanism of refugee-related conflict.

Settlement pattern research

Settlement pattern research is still a rather new field. Until recently, conflict research has been dominated by national-level studies. However, as Hegre and Raleigh (2006) indicate: "The reliance on national-level studies presents an ecological inference problem as the nature of populations and population density in particular is assumed to be homogenous across a state. By disaggregating [...] the measure of population density across a state, the ecological inference issue is alleviated as we directly test the propensity of any population group to experience a conflict" (p. 1-2). Just as populations are not homogenously spread out in a country, refugees are not spread out evenly within a country; thus, their settlement patterns have to be taken into account.

Group settlement patterns and their effects on conflict outbreak have gained some attention in the literature after the creation of Gurr's Minorities at Risk Dataset (MAR)[2] (Weidmann 2009b). However, the first who actually linked settlement patterns and conflict is Toft (2003), although Lichbach (1995) also highlighted the difficulties for collective action that insurgents face when they are dispersed across a country. Toft (2003) underlines the importance of a group's geographical distribution in a country to predict the likelihood of conflict outbreak, contrasting concentrated groups versus dispersed ones. She finds that group concentration is linked to the onset of conflict. Toft (2003) writes that the concentration of an ethnic group in a region is "practically a necessary condition for violence and that the dispersion and urbanization of ethnic groups are sufficient conditions for non rebellion" (Toft 2003, p. 12). Many others have argued in the same direction (see for example: Cederman *et al.* (2009) and Weidman (2007)). Cederman and Gleditsch (2009) also state that "the ability of non-state actors to mobilize effectively may derive from the concentration of settlement patterns" (p. 493). Particularly Weidmann (2006/2007 and 2009) has underlined the importance of spatial proximity and demonstrated that the effect of group concentration on conflict is driven by the strategic advantages of this geographical closeness. As Cederman and Gleditsch (2009) clearly express: "Without assuming a deterministic impact [...] the actors' locations matters for patterns of political violence" (p. 493).

However, although there is a general agreement in the conflict literature that group concentrations and, thus, settlement patterns matter because they define interaction opportunities for group members, so far they have left out the impact of refugee settlements

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[2] The MAR project was founded by Ted Robert Gurr in 1986, see: http://www.cidcm.umd.edu/mar/about.asp.

on conflict outbreak. But refugees may also influence group concentration levels through their numbers and thereby heighten the risk of conflict in a country. Consequently, it is central to analyse how refugees are spread out within a country and in administrative units.

Refugees and settlement patterns

Although the literature on refugee flows is extensive, refugee settlement patterns are rarely mentioned. As Zetter (2003) points out, the "research on refugee shelter and settlement issues has been a neglected field and is poorly documented, lacks coherence and is widely diffused" (p. 31). This is surprising considering the fact that "refugee camps and settlements are the focal point of most refugee assistance" (Zetter 2003, p. 31). Moreover, settlement patterns largely define people's ability to meet their basic needs (Chalinder 1998, p. 11). As Chalinder (1998) also writes: "For displaced persons, the location in which they are allowed to live will form the basis of their survival strategy and dictate, to a large extent, their ability to integrate with the local population and economy" (p. 11).

Most studies that do mention refugee settlement patterns are mainly toolkits or good practice reports of practitioners (see for example: Chalinder 1998; NRC/CMP 2008; or UNHCR: Handbook for Emergencies 2000, Sphere Project 2004, Corsellis and Vitale 2005), which recommend a certain strategy for refugee settlement patterns to avoid conflict and achieve effective protection. The camp management toolkit (NRC/ The Camp Management Project (CMP) 2008, p. 198), for example, writes that, in general, a camp should not exceed 20,000 people, but it is known that in practice this is often not the case, as in the Dadaab camp in Kenya with 400,000 refugees, currently the largest in the world. This toolkit, as well as others, warns about the risks that can be caused by the overcrowding of camps, creating thus concentrated settlements.

In his study "Shelter Provision and Settlement: Policies for Refugees", Zetter (2003) provides an overview of studies on refugee settlement patterns. Most of these, however, were case studies and have taken security issues only partially into account. The focus until now has largely been on the environmental effects of refugee settlements (see for example: Jacobsen 1997) and not on their impact on conflict outbreak.

Crisp (1999, p. 19) is one of the few researchers who indicates that the location and concentration level of refugee camps can be a major source of insecurity. He points out that in cases where states have failed to settle refugees at a reasonable distance from the border of their country of origin, the refugees' safety has been jeopardized and "the negative impact of

the refugee presence on local, national and regional security has undoubtedly been exacerbated" (Crisp 2006, p. 9). He also lists problems with camp size and their composition. Looking at the Kakuma and Dadaab refugee camps in Kenya, he asserts that evidence indicates that the insecurity there derives from "the fact [that] a number of different refugee communities have been placed together in two very large camps" (Crisp 1999, p. 29). Although this case study gives interesting results, it is not yet known how generalizable they are.

Lischer (2005) and Muggah (2006) also indicate that the location and size of refugee populations can influence conflict, particularly refugee militarization. Lischer speaks of "dangerous sanctuaries" and confirms "larger refugee populations are more often involved in political violence (of all types) than small populations" (Lischer 2005, p. 35).

Since these studies, dating from the 1990s and early 2000s, not much new literature has been put forward (with the exception of, for example, Bariagaber (2006) and Loescher *et al.* (eds.) (2008)). This is surprising because refugee settlement patterns have changed dramatically over the years. Most of today's refugees no longer live in camps, but in cities and towns. This has many implications for security. In urban areas, refugees might be more scattered, and control and protection of them is consequently more difficult. They are often more vulnerable to harassment, detention, and forced eviction (Human Rights Watch 2002, p. 2). UNHCR has therefore put forward a new policy (2009) on refugee protection in urban areas (UNHCR, 2009), but this has not yet been evaluated. Large N studies, in general, are not to be found. Lischer (2005, p. 26) criticizes the fact that no generalizable findings on the significance of refugee settlements exist, with the exception of some individual case studies.

Weidmann, Kuhn and Nikolic (2007) investigate the mechanisms of how refugees are linked to conflict and focused on refugee settlements. However, they only analyse one type of settlement – camps – and do not look at other types, such as urban settlements. Moreover, they only look at the location of these camps and do not include their size and concentration levels, which are essential for assessing the likelihood of conflict. Like other studies, the focus also rests on the individual settlement, but does not consider the wider picture, i.e. the distances between refugee settlements.

Johnson (2011) is the only one who takes demographic characteristics such as refugee population size at the settlement level into account, but he does not provide the geographical location of refugee settlements and focuses only on the individual settlement and thus cannot

account for clustering effects of refugee settlements. Moreover, his analysis is limited to attacks on refugee camps and does not include other types of violence.

In sum, the current state of research on refugee settlement patterns is still very rudimentary. Although several case studies exist that mention problems of refugee concentration for security (ex. Crisp 1999, Kaiser 2000), no large N study has yet been done that investigates the different elements of refugee settlement patterns, such as the number of refugees and numbers of settlements per administrative unit, to make findings more generalizable. Problems of data shortages in this area could possibly explain this fact. Moreover, until now the focus has been mainly on camps and does not include other types of refugee settlements. Furthermore, country level analysis has been the norm until now, except for very few on the settlement level (Weidmann, Kuhn and Nikolic, 2007, Johnson 2011).

It is therefore the aim of this paper to fill the gap in the literature by providing a statistical evaluation of refugee settlement patterns and a quantitative analysis of the effects of refugee settlement patterns on conflict outbreak by examining the concentration level of refugees and refugee settlements within an administrative region. The analysis will include all types of settlements (urban and rural), reflecting the new development that more and more refugees are settling in urban areas rather than camps. However, I will not make the classical distinction between urban and camp settlements, but instead between concentrated and dispersed settlements, which can be both urban and rural. Moreover, the unit of analysis will be the administrative zone grid to allow a disaggregated approach and at the same time to account for clustering effects of refugee settlements. Before presenting the theoretical framework for my analysis, it is important to understand how refugees arrive at their new location. For example, refugees in Kenya are placed in two very large camps, while in Uganda they are settled in many small camps.

The location and distribution of refugees

No common procedure is in place that regulates where refugees should settle and how they should be distributed when they arrive in their host country. Consequently, the location and distribution of refugees is not the same in each country. The decision of where to place refugees depends on a variety of international factors, such as the availability of funds, and national factors, which include the availability of water, food, and other social services and the ethnic and cultural compatibility between the host and refugee populations (Bariagaber 2006, p. 95). In addition to these factors, environmental concerns often affect the structure of

settlements (Jacobsen 1996). Finally, various stakeholders, from the refugees themselves to the host government, are involved in the decision process who may have divergent interests.

Foremost, the decision of where to place refugees lies with the host governments because they have the primary responsibility to protect and provide safety. Host governments are bound by international humanitarian law to the principle of non-refoulement[3], meaning that they are obliged to host refugees and are not allowed to send them away. This includes finding a "secure place" for them. Still, site selection for refugees is not simply determined by choosing the place or land that is most suitable for them, because access to land must first be obtained and may have to be negotiated at different levels. The problem is that several "different groups may have concurrent rights to land that is required for the siting of refugee settlements" (Corsellis and Vitale 2005, p. 21). Moreover, host governments and local populations are often reluctant to provide land to refugees because they fear conflicts, particularly between refugees and hosts. Therefore, governments often give land to refugees that no one else wants or that is located away from their local population. As Chalinder (2008) indicates: "Typically, sites for refugees are allocated by host governments in areas which are uninhabited, environmentally fragile and offer little potential for the development of activities or initiatives which work towards refugees self sufficiency. It may indeed even be for these reasons that these sites are on offer" (Chalinder 1998, p. 11).

If host governments are unwilling or incapable of providing safety, UNHCR has an international mandate to act. However, their influence is limited because they still need permission from the host governments as to what land they can use and whether refugees will be allowed to move freely around the country. Moreover, they are dependent on international donors and their interests.

Furthermore, refugees themselves might not be willing to settle where they are supposed to. Because they possibly fear attacks by rebel groups or the dependence on and competition over resources in camps, they might settle on their own in urban areas, near ethnic kin or family members. They might even choose to stay near the border because it is closer to their home.

Regardless of divergent interests, all stakeholders' main concern is the safety of refugees. Nevertheless, it has to be acknowledged that sometimes host governments deliberately place refugee camps near rebel groups or allow rebels access to camps in an

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[3] "The principle of non-refoulement prescribes that no refugee should be forced to return to any country where she or he is likely to face persecution" (D'Orsi 2008, p. 1059). See also Article 33 of the 1951 Convention Relating to the Status of Refugees.

attempt to provoke further conflict. This happened, for example, in the Democratic Republic of the Congo (see Stedman and Tanner 2003, p. 95) and in Honduras where the government purposely placed Nicaraguan refugees near the border in order to arm them against the Sandinistas (Hartigan 1992). Stedman and Tanner (2003) also write about refugee manipulation.

Security might also be neglected because of financial constraints or unawareness of security risks. As NRC/CMP (2008) indicate: "Some officials may […] not be aware of or concerned with site selection criteria which can determine structural suitability, [and] safety consideration" (p. 192). Also, Chalinder (1998) writes that donors and international organizations supported larger and less sustainable camps in Tanzania for Burundian refugees because they were easier to manage and supply: "Limitations of funding and commitment made it virtually impossible to break up the refugee population into smaller communities and to transport them to suitably dispersed sites in order to prevent them organising militarily environmental degradation and conflict" (p. 107). Lischer (2005, p. 26) also indicates that the decision of where to place refugees is not just a logistical difficulty, but also a political one. Zetter (2003) goes as far as arguing that "shelter and settlement policies are a powerful indicator of both the humanitarian will of the international community to address a basic right of refugees – their status in a host country – and also the abilities of host countries and assistance agencies to implement realistic and acceptable refugee policies" (p. 9). However, the possible effects of these decisions must be acknowledged because "poor site selection [can] threaten the security of the displaced population and their hosts" and damage relations between the two populations (Corsellis and Vitale 2005, p. 349). Therefore, I want to look more closely at how refugee settlement patterns can lead to conflict. In the following, I present the main theoretical arguments in this area.

Theoretical framework
Refugee settlement theory

No explicit theory on refugee settlement patterns currently exists. Moreover, the link between refugee settlement patterns and conflict has not been analysed yet. However, literature on group settlement and conflict, as well as social movement theory, provides some insights into how settlement patterns might influence conflict onset. Particularly Weidmann (2007, 2009), following Toft (2003), lays the groundwork for understanding how and when group concentration can drive conflict. Thus, to understand the effects of refugee settlement

patterns, I draw on theoretical arguments found in the conflict and group settlement literature, as well as in social movement theory.

Opportunity and motivation as conflict drivers

Two competing mechanisms in the conflict literature prevail that try to explain why conflict breaks out: motivational factors (such as grievances) and opportunity factors (such as the opportunity to mobilize) (Weidmann 2009, p. 2). While earlier work has focused on the first perspective, more recent studies (Fearon and Laitin 2003, Collier and Hoeffler 2004) highlight opportunity structures as the primary causes of conflict outbreak (Weidmann 2009, p. 527). However, a newer strand of literature (Cederman, Weidmann and Gleditsch 2011) stresses that the grievance argument is not to be dismissed, underlining the importance of horizontal inequalities between groups. Settlement patterns can influence both aspects. Because settlement patterns define the geographical distribution of a population, they also define its size and concentration level and, as Dertwinkel (2008) indicates, "both opportunities and grievances increase with population size, so this result is compatible with both the opportunity and grievance accounts" (p. 7). In the following, I will outline more closely how settlement patterns can define opportunity structures and create motivational factors for engaging in violence.

Concentrated refugee settlements
Refugee numbers per settlement and administrative unit

As outlined above, refugees are often placed by the host government in locations that are "uninhabited, environmentally fragile and [which] offer little potential for the development of activities" (Chalinder 2008, p. 11). Furthermore, in many cases not enough land is provided and refugees live in very cramped conditions. Consequently, there is a lack of livelihood opportunities at most of these refugee locations. The resources are scarce and employment is hard to find. Chalinder (1998) underlines: "Settlement location will also determine the sort of access the displaced persons may have to economic activity" (p. 43). Basic needs and resources are also a major issue. In Congo in 1996, for example, 190,000 refugees in one camp required 1.6 million liters of water which needed to be trucked in each day. In addition, refugees have to search for 1,000 tons of firewood daily (USCRI 1997, p. 2). This problem of resource scarcity becomes particularly salient when the refugees' population is large.

The more concentrated the settlement, the more refugees have to share their resources, thus leading to potential conflict. When refugees are concentrated, more resources are needed

and because of limited resources, more refugees might have to go without. NRC/CMP (2008) indicate that refugees, "having lost the protection of their homes, families and communities and lacking resources such as shelter, food and water" find themselves at greater risk of being subjected to violence. The refugees may "struggle with traumatic experiences" and are confronted with limited livelihood opportunities, which makes grievance among them more likely. Zetter (2003) asserts: "Policies of encampment [or other settlements that] tend to concentrate high densities of population in specific locations [...] often produce dramatic impacts on the already fragile environments and economies of host countries" which then can lead to conflict. Hegre and Raleigh (2006, p. 4) and Collier and Hoeffler (2004) also argue that concentrated groups include more aggrieved groups and put more pressure on resources. Thus, when refugees constitute a very large group in one settlement or administrative area, aggrieved and with no livelihood opportunities or perspectives in sight, they might be more willing to engage in conflict with other groups to be able to acquire access to the limited resources. Therefore, concentrated refugee settlements may motivate refugees to engage in violence. Opportunity structures are furnished as well through concentrated groups as postulated by the social movement theory on which to some part also theoretical arguments of conflict and settlement scholars are built upon.

Social movement theory and group settlement
Concentrated refugee settlements facilitate interaction between their members, making collective organization for violence more likely (Weidmann 2009, p. 526) and thus creating opportunities for engaging in violence. This is in line with the social movement and conflict literature. Although social movement literature to a great extent focuses on how groups are mobilized, refugee groups in different settlements have been ignored until now. However, it can be used to some extent to explain refugee mobilization. In general, it is assumed that large groups can be more easily mobilized. As Cederman, Giradin and Gleditsch (2009) indicate, "larger groups will be able to stage successful collective action thanks to their superior numbers" (p. 411). Mobilization is facilitated because a higher spatial proximity of groups is assumed in these settlements. Lichbach (1995) is one of several authors that emphasize that geographic proximity can be regarded as an important factor for communication. Weidmann (2007) also points out: "Essentially, what matters for the capability argument [opportunity to fight] is that people are located close to each other and can get together quickly" (p. 6). In that way, there are only low costs for interaction to be overcome and the motivation for violence

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exists. As Lebson (2010) points out: "There exists the motivation and resource mobilization potential for violence" in concentrated refugee settlements. Social-psychological factors are more likely found in concentrated refugee camps than in diffuse refugee communities in urban settings (p. 8-9).

In addition, large populations are more difficult to control (Fearon and Laitin 2003). Besides, rebels can in these instances find cover more easily, and refugees provide a larger recruitment pool for them. As Lischer (2005, p. 35) indicates: "Larger populations [are] regarded as a "greater potential threat" than smaller populations, and they represent a "greater resource for military mobilization and offensive activity" (p. 15; see also Posen 1993).

Therefore, I hypothesize that those regions where refugee populations are very large are more likely to face conflict because the refugees' mobilization is facilitated, more pressures on resources occurs, and as a result grievances levels are heightened and control is more difficult. As Mogire (2011, p. 46) points out, Somali refugees in Tanzania have not engaged in violence, while in Kenya they have because they constitute a much larger population there and are based in very large camps. Johnson (2011, p. 21) also underlines that the "overall population size [of refugees] affects the likelihood of an attack" on them. My first hypothesis, thus, states:

> *H1: Administrative regions with large refugee populations have a higher risk of conflict.*

An administrative region as it is referred to here is the first-order administrative division in a country. If administrative regions have a high number of refugees, they are regarded as having a high concentration level in contrast to administrative zones where refugee numbers are less and thus assumed to be more spread out. Salehyan and Gledistch (2006) already found that large refugee populations could have an effect on the country level. However, in some instances it does not hold true. I will test whether the concentration level within the country is the reason why some countries with large refugee populations face conflict and others do not. Thus, I use a subnational unit of analysis: the administrative division.

Conflict is understood here as at least one conflict event in a given year in an administrative unit. A conflict event is defined as:

> "The incidence of the use of armed force by an organized actor against another organized actor, or against civilians, resulting in at least 1 direct death in either the best, low or high estimate categories at a specific location and for a specific temporal duration" (Sundberg, Lindgren, Padskocimaite, 2011, p. 5).

The effects of refugee concentration levels on conflict can also be seen in Uganda. Since 2005 the "government in Uganda has supported a decongestion process, through which refugees move from overcrowded camps to smaller settlements closer to their homes", and as a result, "security has dramatically improved and the IRA has largely stopped attacks on civilians moving outside the camps" (HPN 2006, p. 3).

Thus, I argue that refugees might cause conflict in two ways. First, refugees can be targets of violence, and second, they can take an active role as fighters. In both cases, a spatial correlation between refugee settlement concentration and conflict might be observed. For example, when refugee camps serve as "lootable resources for rebel groups in ongoing conflicts" (Weidman *et al.* 2007, p. 3) they could indirectly cause conflict. Additionally, "refugees can heighten security risks by […] exacerbat[ing] economic competition, bring[ing] with them arms, combatants and ideologies that are conducive to violence and mobiliz[ing] opposition" (Salehyan and Gleditsch 2006, p. 338). NRC/CMP (2008) point out as well that refugees themselves can be perceived as a cause of insecurity, particularly when arriving in large numbers and when resources are scarce. Although refugee camps "as temporary structures are meant to accommodate often different communities fleeing trauma of persecution and violence – [they] can also create an environment of lawlessness, attract violence and crime or be attacked by armed forces or groups" (p. 365). Bariagaber (2006) goes as far as to state that "contemporary global refugee formations have [...] become enduring problems and serious threats to international peace and security because conflicts and refugee formations feed on each other" (p. 13).

Concentrated refugee settlements – clusters

Large numbers of refugee populations concentrated together, however, might not be the only cause of conflict. Concentrated refugee settlements, meaning several refugee settlements geographically clustered together, could also lead to an increase in the risk of conflict. Of course, one could argue that more refugee settlements automatically mean more refugees but this is not always the case.[4] Many refugee settlements denote places where decongestion processes of large camps have taken place or where from the beginning smaller settlements were preferred and established. More settlements can actually imply that refugees are more spread out in that region. Gabon is an example. Nevertheless, large refugee settlements can
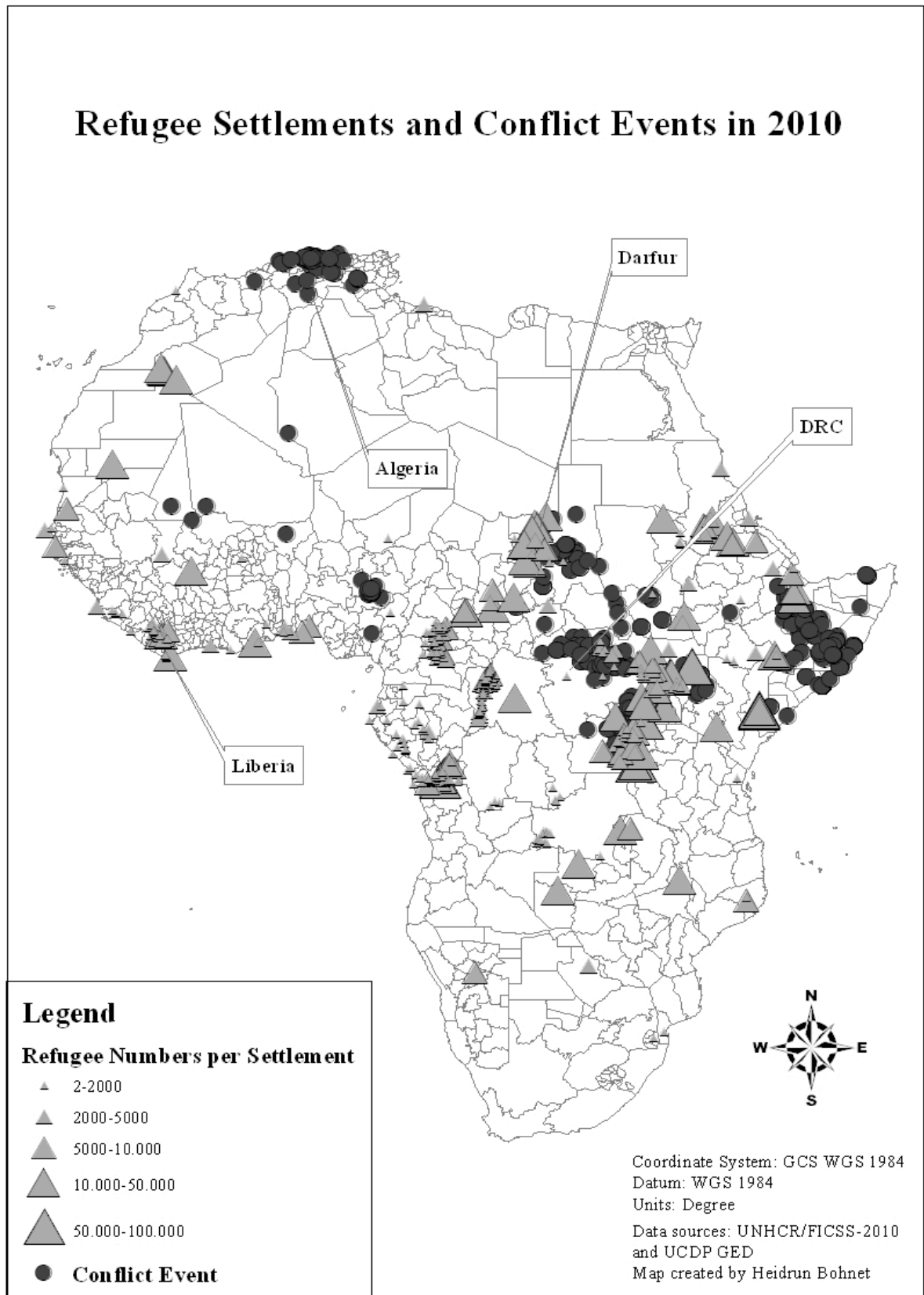
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[4] However, when I checked if there was a correlation between a large number of refugees and a large number of refugee settlements within an administrative unit, no correlation was identified.

also be clustered and, hence, heighten the risk of conflict, as for example in Kenya. In addition, many small settlements concentrated together, such as in Chad and Congo, could also see an increase in the risk of conflict.

Looking at a map of all refugee settlements in Africa in 2010 (see map 1 on next page), a clustering of refugee settlements such as in Uganda indeed seem to coincide in several cases with conflict events (grey triangle symbol for refugee settlement and black dot for conflict event). The refugee settlements include all types: rural, camp, and urban. However, cases of clustering with no conflict events have also been recorded, although these might still emerge in the following year if refugees just recently arrived.[5] It could be that conflict was already there where refugees fled to, but this is unlikely, first because refugees will try to avoid new conflict locations, and second, it is assumed that refugees fleeing from conflict travel more than one administrative unit away (otherwise they would merely be regarded as internally displaced persons). In addition, most refugee settlements were already there well before because most of the refugee settlements in Africa are protracted refugee situations, meaning that they have been there more than five years (Loescher 2008).

The map in any case demonstrates how different refugee settlement patterns may exist in each country and administrative division and, thus, their effects can also differ. For example, a clustering of settlements can be observed in Uganda and Liberia, while in Gabon the settlements are spread throughout the country. If indeed conflict is affected by refugee settlement patterns – as argued in this paper – then analysing refugee settlement patterns is crucial for understanding the link between refugees and conflict. Refugees, in general, are settled very differently in each country depending on the stakeholders, available land, and financial factors as mentioned above. Distances between settlements thus differ strongly. The different settlement strategies in each region can have severe security implications. Concentrated refugee settlements could lead to new conflict.

Map 1: Refugee settlements and conflict in 2010 in Africa

Refugee Settlements and Conflict Events in 2010

Legend

Refugee Numbers per Settlement

▲ 2-2000
▲ 2000-5000
▲ 5000-10.000
▲ 10.000-50.000
▲ 50.000-100.000
● Conflict Event

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree
Data sources: UNHCR/FICSS-2010
and UCDP GED
Map created by Heidrun Bohnet

That distances between (refugee) settlements matter has been put forward by Weidmann (2007, p. 6), Hegre and Raleigh (2006), as well as Buhaug and Ketil Rod (2006). Hegre and Raleigh (2006), looking at a sample of Central African conflicts, find ample evidence that conflicts happen "predominately where populations cluster locally" (p. 27). Communication and mobilization between settlements should be easier when spatially close. As UNHCR (2009) states, "the concentration in one location of refugee and IDP populations [...] can compound vulnerabilities and risks" (p. 1). In Kenya putting two camps very close together has led to a geographical concentration of violence (Crisp, 1999, p. 20). As more refugee settlements are clustered together, the likelihood for interaction between the different settlements is heightened, as is the transportation of small arms. Recruitment pools in these cases are also often larger, and attacks more likely. Therefore, regions where refugee settlements are clustered together, spatially close, should see a higher risk of conflict then I assume, as Weidmann (2007, p. 1) before, that "proximity and population of two settlements are positively related to the movement between them and therefore facilitate [...] activity". I therefore argue that settlement patterns determine opportunities for interaction between groups and when they are facilitated as stated by the conflict literature and social movement theory, conflict is more likely. Posen (1993) also postulates that the geographic distribution of groups can cause security dilemmas. My second hypothesis, consequently, states that:

> *H2: Administrative regions that have a high number of refugee settlements increase the risk of conflict.*

However, it must be noted that refugees cannot always move freely between settlements and not all have access to refugee settlements. Some camps are open and some are closed.[6] In several cases, refugees in fact need special "movement" passes to be allowed to move, such as in the case of Kenya. In Ethiopia, some refugees, such as Eritreans, are allowed to move freely, while others are not. So, it often depends on national policies whether refugees are able to move around freely or not. Because data on the movement policies are not readily available to control for the movement, I assume here that communication and transportation of ideas will be easier in geographically close settlements than in distant ones. Moreover, although rebels should theoretically not have access to refugee settlements, they still often manage to intermingle with them, particularly if the settlement is large. Therefore, opportunities for interaction are there, and conflict might arise in concentrated refugee settlements.

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[6] There is no data available that states if refugee settlements are open or closed.

Methodology and operationalization

To understand how refugee settlement patterns might influence the risk of conflict, a disaggregated approach toward refugees has to be taken. Refugees are not "clumped" together in the same way in each country, but spread out differently. To take these patterns into account, the administrative zone (first-order administrative division, polygon feature) is used as the unit of analysis. I apply the administrative division rather than virtual grid cells as others before (e.g. Weidmann et al. 2007, Melander and Sundberg 2011) because refugee numbers in several cases are given by regions which correspond to administrative zones, although it is acknowledged that different grid sizes need to be accounted for. However, when controlling later in the analysis for the grid size, no statistically significant effect is obtained. I also use the administrative division as the unit of analysis not only to be able to take a closer look at the subnational characteristics of refugees, but at the same time to be able to take into account the larger picture: the spread of refugee settlements (concentration of refugee settlements, clustering effects). Weidmann *et al*. (2007) looks at the effects of individual refugee settlements, but not at their settlement pattern. This study is an attempt to fill this gap.

The region of analysis is Africa. Africa is the focal point because it hosts the largest refugee populations in the world and has had the most conflict events in the last ten years. In 2010, there were 2.2 million refugees recorded in Sub-Saharan Africa (UNHCR 2011). In addition, the UCDP GED conflict dataset that is used for the dependent variable is restricted to Africa. The time frame under consideration is 1999 to 2010. Earlier data on total refugee numbers per settlement are not available. UNHCR only started collecting demographic characteristics systematically in 1999. Before presenting the model of analysis more closely, I will introduce the new refugee location dataset (REFLOC)[7].

Data on the location of refugee settlements and their refugee population numbers

To be able to assess the above-stated hypotheses that administrative regions with concentrated refugee settlements increase the risk of conflict, data on the location of refugee settlements and their total numbers of refugees are needed. For 2010, data can be acquired from UNHCR/ Field Information Coordination and Support Section - 2010.[8] However, UNHCR only keeps track of the most current refugee locations and does not provide any historical data. The

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[7] Dataset created by myself on the geographical location of refugees with information on refugee population numbers per settlement for 1999-2010.

[8] I am very grateful to the UNHCR FICSS department for providing me with the data.

UNHCR Statistical Yearbooks furnish data on the total number of persons of concern in each settlement; nevertheless, data between years are often incompatible. Moreover, merging this population data with the location data is in many cases difficult to achieve. Problems include precision variations in the reporting. For example, in 2000, the total number of refugees is given for a settlement, but 2001 gives no further mention of this settlement from 2000. In some cases, only "various" is stated as the location for refugees in the country. In these instances, the various numbers for this analysis were proportionally[9] distributed to the different administrative zones in the country.

In some years (2001-2003) as well, only those refugee settlements were listed that host more than 5,000 refugees. In addition, names often vary profoundly between reports. Furthermore, not all refugee settlements were present during the whole period of analysis: 1999 to 2010. The statistical yearbooks of UNHCR do not provide data on the establishment and closing date of the settlements; however, this information is recorded in part in the UNHCR location dataset. But again, the exact date of establishment or closing is not always given. Information regarding the establishment or closing of refugee settlements is often only received much later, and the date of when the information was given is used as the reference point, which does not always coincide with the actually opening or closing dates. But as I am only interested in whether a settlement is open in a given year or not, the exact date is not that important, only the year. In those cases where no information was available, I assumed that the refugee settlement was present only in those years where refugee numbers were recorded. For example, if numbers started to be documented in the year 2003 and not in 2004, but then again in 2005, I took this settlement to be open between 2003 and 2005 with 2004 missing data for the number of refugees.

Because of these reasons, data on the exact location of refugee settlements and their population size are very poor. Still, I was able to create a geographically referenced location dataset (points) REFLOC by geo-referencing the missing data with the ERSI World Places locator in ArcGIS and by creating an own locator with the available data given by UNHCR for 2010. The REFLOC dataset covers the whole of Africa (except Madagascar and islands) for the time frame 1999 to 2010 with information on the total number of persons of concern per settlement. I use here *total persons of concern* per settlement because in the refugee settlements not only refugees reside but often persons in similar circumstances that are

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[9] First, the refugee share of each administrative unit in comparison to the total refugee number in the country was calculated without the "various" refugee numbers and then the various numbers were divided up proportionally to that share.

included in the UNHCR statistics and to whom UNHCR refers as persons of concern. They include both refugees and asylum seekers. In addition, the REFLOC dataset includes all settlement types. UNHCR differentiates in their statistical yearbooks between camps, urban, and rural, although this is sometimes a bit misleading because camps are normally located in rural areas. In these cases, "rural" often refers rather to an administrative region than an actual point. The FICSS department of UNHCR makes a more concrete distinction. In their data, they differentiate between refugee centers, camps, location, and accommodations in urban and rural areas. Centers are the most temporary settlement, which can eventually lead to a camp. A camp can evolve into a "settlement", which is defined as having been present for a long time. UNHCR also uses the name "refugee location" when they do not know where exactly the refugees are settled in contrast to refugee accommodation. I include all these types in the REFLOC dataset and for my analysis here. Because I rely mainly on UNHCR data, I define a refugee settlement "as any location where refugees have been recorded by UNHCR". For this analysis, I do not explicitly differentiate between the types of locations, because I am merely interested in whether they are concentrated or dispersed.

The REFLOC dataset is the very first dataset that provides the geographical location of refugees over a time frame with refugee numbers per location. This dataset will help in the future to analyse on the settlement and subnational level and help to steer away from the notion that refugees are spread out equally in each country. Their concentration within a region can vary dramatically and, hence, can have different effects. However, because of a large amount of missing data, only around 52% of the settlements could be assigned with refugee population numbers, and so the missing values were imputed[10] in line with the Amelia procedures by Honaker, King and Blackwell (2012). As they argue, multiple imputations can "reduce bias and increase efficiency compared to listwise deletion", as well as mean imputation or just single imputation methods; therefore, multiple imputation is used here. As there is high missingness in the data, I included a ridge prior (empri option) of 0.1 which helps to make the imputation more stable "by shrinking the covariances among the variables toward zero without changing the means or variances" (Honaker, King and Blackwell 2012, p. 23). Moreover, because I assume that time effects vary across the cross-sections, I add the option for trend-specific imputation to each cross-sectional unit (Honaker, King and Blackwell 2012, p. 23). Five, the default, imputed datasets were created. After imputation, the

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[10] Five imputed datasets were created. Before imputations, the refugee numbers were logged to make the distribution more symmetric and were then transformed back again after imputations.

data was aggregated to the administrative level to be able to get the total numbers of refugees per administrative region. Of course, because the data has been imputed and contains a certain degree of uncertainty, numbers have to be taken with caution.

Dependent variable

I want to analyse the effects of refugee settlements on conflict. Therefore, my dependent variable will be conflict outbreak: "an instance of fatal organized violence". Data comes from the new UCDP Georeferenced Event Dataset (UCDP GED) Version 1.1. (Sundberg, Lindgren and Padskocimaite 2012) which provides exact geographical references of conflict events. An event in the UCDP GED dataset is defined as:

> "the incidence of the use of armed force by an organized actor against another organized actor, or against civilians, resulting in at least 1 direct death in either the best, low or high estimate categories at a specific location and for a specific temporal duration" (Sundberg, Lindgren and Padskocimaite 2012, p. 5).

The dataset has a dyad and actor focus, "tracing the events of all dyads and actors that have crossed the 25 death threshold in any given year of the UCDP annual data" (Sundberg, Lindgren and Padskocimaite 2012, p. 11). It combines three categories of organized violence: state-based, non-state conflict, and one-sided violence, as well as different event types: single-day, summary, and continuous events. However, they are all "mutually exclusive and coded events will therefore be exclusive and non-overlapping" (Sundberg, Lindgren and Padskocimaite 2012, 11). I code conflict as 1 if at least one conflict event falls within an administrative unit in a given year. If no conflict event falls into an administrative unit, the unit receives 0. I include all conflict types because examples of refugee-related violence in all types are to be observed. Although the UCDP GED dataset is not an explicit dataset on refugee related violence, it nevertheless includes refugees as part of an organized group or as civilians in the dataset. Sometimes event locations are also referred to as refugee camps as, for example, the Gatumba refugee camp in Burundi in 2004; an example of actors are Hutu refugees. For the years between 1999 and 2010, there are 1,200 conflict events recorded for 681 administrative zones in Africa.

Independent variables
Refugee settlement concentration

To be able to test whether large refugee population increase the risk of conflict, the total number of refugees per administrative unit is used as the independent variable. I use my own dataset REFLOC to get the total numbers of refugees per administrative region. Numbers

were aggregated from the dataset to the administrative unit. It must be kept in mind that imputed data (5 runs) were used for 48% of the data and numbers, and hence have to be taken with caution. Moreover, because in many administrative regions there are no refugees, this variable is very left skewed and, thus, the variable has been logged transformed, replacing the zeros with 0.1 before logging to hinder the dropout of the observations without any refugees per administrative unit.

To be able to test whether concentrated refugee settlements affect the likelihood of conflict, the count of refugee settlements per administrative unit is taken as a further independent variable. Data comes from the REFLOC dataset as well. All refugee settlements that fall within an administrative unit are counted together. This variable is also left skewed towards zero. Therefore, this variable is also entered logged after adding 0.1 for the zeros.

Control variables

To account for spatial dependence between conflict events – as conflict clusters spatially – I adopt a conditional strategy[11] by including a binary spatial time-lagged variable that indicates for each year whether at least one neighboring administrative unit had a conflict. If an administrative polygon feature touches the boundary of another administrative polygon feature where conflict has been recorded, it is assigned the value of 1. If not, a 0 was assigned. This spatial variable also serves to control for other spreading mechanisms that are not explicitly taken into account to make sure that results do not only present those contagion tendencies (Salehyan and Gleditsch 2006, p. 352).

To control for country-level properties and capture economic development, I use GDP per capita (PPP constant). It is commonly agreed upon in the conflict literature that economic wealth plays a role in the conflict dynamic because wealthier countries have a lower risk of conflict or war (see for example: Fearon and Laitin 2003 and Collier and Hoeffler 2004). Data is available through the World Bank (2011). The variable enters the dataset log-transformed and lagged.

Furthermore, I add the commonly used Polity IV index and its square to control for regime type as conflict researchers have claimed that political systems influence the risk of conflict. Anocracies, or states that are neither democratic nor clearly autocratic, are argued to have the highest likelihood of conflict (Mansfield and Snyder 2002; Hegre *et al.* 2001). Data

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[11] I use a conditional strategy, as I believe there is contagion in the model. Conflict occurrence is interdependent of neighboring conflict events. See for more information Anselin (1988) and Franzese and Hays (2009).

comes from the INDCR data page (Marshall, Jaggers and Gurr 2010).

In addition, I include a variable for total population in each administrative unit. As Hegre and Raleigh (2006) as well as most conflict scholars argue, large populations increase the risk of conflict. Inasmuch they suppose a higher likelihood of conflict if populations are concentrated, I hypothesize the same for refugees. Data comes from ESRI (2010). The variable is entered logged.

As "conflicts are more likely to occur after a previous conflict, and increasing lengths of time at peace may have a self-sustaining effect on decreasing the risk of conflict" (Salehyan and Gleditsch 2006, p. 354), I also control for time dependence in the data by adding a variable that captures the number of peace years between each conflict. In addition, I add exponentials of two and three of this time variable in line with Carter and Signorino (2010) who argue against the common Beck, Katz and Tucker's (1998) splines method. However, because data of conflict events is only available for 1989 onwards and peace years for years before a conflict happened are therefore to be taken with caution, I add a dummy variable that accounts for this uncertainty factor. This dummy variable is coded 1 when peace years are not certain and 0 when they are. This binary variable is then also multiplied by the peace years and the exponentials of the peace years and then added to the analysis.

Summary statistics and model description

The descriptive statistics give some first interesting insights about the distribution of refugee settlements in Africa. The dataset includes 681 administrative units for 47 African countries with 12 time units (1999-2010) that accumulate to 8,172 observations. Of these 681 administrative units, 246 have at least one refugee settlement within their region. Most of the administrative zones have one or two refugee settlements within their borders, but there are administrative regions that have more than 50 settlements. The highest number of settlements is found in the administrative region Likouala in the Republic of Congo, followed by Uganda in the Nile region and the Volta administrative zone in Ghana. I hypothesize that because of their high concentration of refugees, most conflict events will be observed in those regions. Of course, the size of the administrative unit has to be taken into account as well. However, many administrative units are small, but have a high number of refugee settlements; likewise, there are administrative zones that are large and have only very few settlements. Countries' administrative divisions, in general, range from 2 to 50. In the whole of Africa in 2001 there were 720 different refugee settlements counted.

To test how these different settlement distributions affect the likelihood of conflict, four different logit models were used with the robust option set to true which "computes robust standard errors via the sandwich" (Imai, King, and Lau 2012, p. 223) estimator. Because multiple imputation datasets are used that were created through the Amelia procedure (see Honaker, King and Blackwell 2012), coefficients at the end were summarized trough the Zelig summary function (see Imai, King, and Lau 2012, p. 32). Rare-event logit (King and Zeng, 2001) was also used for a robustness check, but no difference in the results was observed. In general, 1,200 conflict events were recorded for the years 1999-2010.

Because host governments or refugees often themselves decide where they settle within a country or where settlements will be established, a possible inference problem may occur. To address this possible inference occurrence, I go about the analysis in two ways. In a first step, the effects of concentrated refugee settlements on conflict, including all administrative units in Africa independent of whether they host refugees or not, will be analysed. In a second step, the focus will be only on administrative units that host refugees.

Therefore, I will run four different models to test the two hypotheses stated above. First, I test hypothesis number 1 to determine whether large refugee populations indeed increase the risk of conflict. In the second model, I investigate the second hypothesis to see whether more refugee settlements in an administrative unit also mean a higher likelihood of conflict. In a third step, I include both independent variables: total number of refugees and total number of settlements per administrative region. In the fourth model, I include both of these independent variables, but only inspect the administrative units that host refugees, in contrast to models 1, 2, and 3 where all administrative units of Africa are included.

Results and discussion

The results in table 1 (see further down) of models 1 and 4 clearly confirm the first hypothesis that administrative regions with large refugee populations increase the risk of conflict. All coefficients are positive and significant. Only in model three is the sign of the coefficient different and no longer statistically significant. However, this can be explained by the fact that the two independent variables in this case correlate strongly with each other. The correlation between the two amounts to 0.95. The reasons for the strong correlation are the many zeros in the two variables. In model four, where I only look at the administrative units where refugees are present, no correlation between the variables is observed. In general, there seems to be no difference between the results of model 1 and 4. Thus, although a bias in model 4 is likely

because the focus only lies on those administrative regions that host refugees, it does not seem to change the results. It can thus be concluded that concentrated refugee populations in any case play an important role in the conflict dynamic.

Table 1: Logit models' results

	Model 1	Model 2	Model 3	Model 4
Total refugees per admin (logged)	0.020** (0.008)	--------	-0.039 (0.025)	0.066* (0.039)
Total settlements per admin (logged)	--------	0.097*** (0.031)	0.236** (0.093)	0.185** (0.085)
Conflict in neighbor admin (spatial lag)	1.276*** (0.133)	1.268*** (0.133)	1.262*** (0.134)	1.290*** (0.199)
GDP (logged and lagged)	0.317*** (0.061)	0.337*** (0.061)	0.343*** (0.062)	0.113** (0.051)
Polity IV	0.030** (0.012)	0.033*** (0.012)	0.037*** (0.012)	0.011 (0.015)
Polity IV squared	-0.011*** (0.003)	-0.011*** (0.003)	-0.011*** (0.003)	0.001 (0.003)
Total pop. per admin (logged)	0.127*** (0.036)	0.122*** (0.036)	0.121*** (0.036)	0.113** (0.051)
Peaceyears	-0.934 *** (0.083)	-0.933*** (0.083)	-0.929*** (0.083)	-0.925*** (0.111)
Peaceyears 2	0.109*** (0.017)	0.109*** (0.017)	0.108*** (0.017)	0.108*** (0.022)
Peaceyears 3	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)	-0.004*** (0.001)
Peaceyear dummy	9.482 (21.398)	9.390 (21.386)	9.320 (21.423)	30.631 (34.193)
Py_x_dummy	-1.544 (4.310)	-1.524 (4.308)	-1.516 (4.316)	-5.949 (6.905)
Py2_x_dummy	0.060 (0.283)	0.059 (0.283)	0.059 (0.284)	0.357 (0.455)
Py3_x_dummy	0.000 (0.006)	0.000 (0.006)	0.000 (0.006)	-0.006 (0.010)
Intercept	-4.371*** (0.595)	-4.262*** (0.595)	-4.039*** (0.611)	-4.423*** (0.846)
Number of observations	8172	8172	8172	2972
Akaike's Inform. Criterion	3415.750	3408.332	3407.818	1769.583

***$p<0.01$, **$p<0.05$, *$p<0.1$, in brackets robust standard errors are reported

The predicted probability of refugees per administrative unit of model 4 also clearly demonstrates a positive relationship while holding the continuous to their mean, ordinals ones to their median, and nominal variables to their mode. Graph 1 shows vertical 95% confidence intervals. This result, therefore, statistically confirms what has been suggested by case studies, namely that large refugee populations can lead to conflict. Examples are to be found in Burundi and Chad. Hence, stakeholders involved in the refugee settlement process should avoid concentrated settlements to hinder the outbreak of new conflict so that refugee settlements remain a "safe haven" and do not become new conflict zones.

Graph 1: Predicted probability
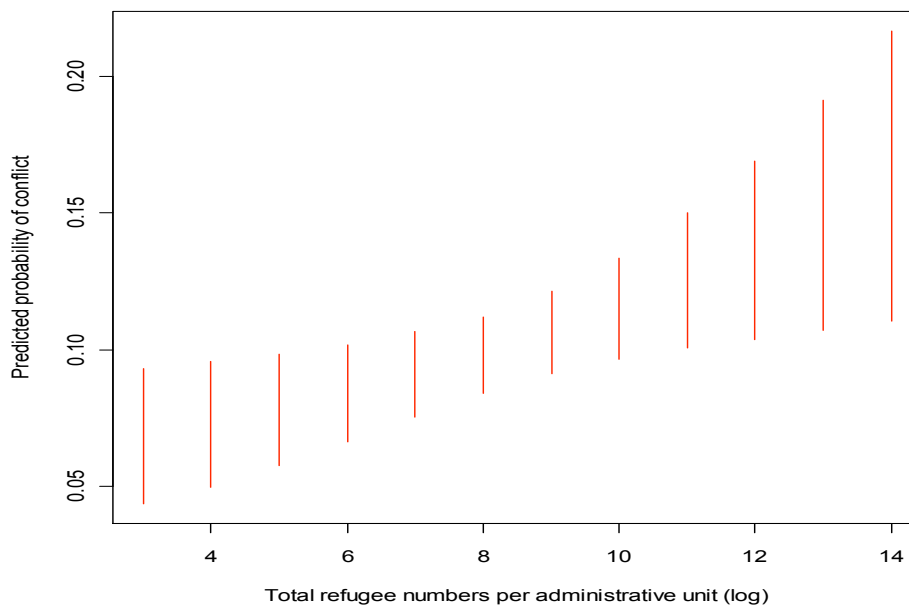
Looking at the total number of refugee settlements, moreover, a positive and highly statistically significant relationship in all three models (2, 3 and 4) between the numbers per administrative region and conflict can be observed. This means that if many refugee settlements are spatially close, conflict is more likely. Thus, it does not matter if settlements hold large number of refugee populations or not; in any case, many refugee settlements clustered together can have severe security implications. Consequently, refugee settlements should ideally be spread out more evenly in one country. However, it is acknowledged that this cannot always be achieved. UNHCR already recommends not building camps with more than 20,000 refugees, but reality often looks different. In Kenya, for example, although UNHCR has pushed for a long time to build another settlement because security incidences were recorded, it was only last year that the host government finally agreed to build a new

settlement (UN News Centre 2011). All stakeholders, however, should keep in mind that deciding against decongestion processes of refugees and settlements could lead to new conflict. Setting refugees in resource-scarce areas might not be the solution. Possibly local integration measures, in the end, might be more suitable for both the host and the local population if refugees cannot return to their homeland, or resettlement to a third country is not an option. Moreover, the results demonstrate that conflicts cluster and thus, events in one administrative region affect others, as demonstrated by the spatial lagged variable of neighboring conflict. The variable in all four models is highly statistically significant and positive. Therefore, to avoid conflict spread, particular attention to the refugee settlement patterns has to be taken.

Furthermore, I analysed whether large populations in an administrative unit also affect the likelihood of conflict. As Hegre and Raleigh (2006) as well as most conflict scholars argue, large populations increase the risk of conflict. The same argument holds true for large refugee populations as seen here in the results. The results are highly statistically significant and positive in all four models. In a further step, I plan to look at the proportion of refugees to the local population to test its effect on the risk of conflict. I hypothesize that a high proportion of refugees will increase the risk of conflict as competition over resources becomes higher.

In addition, I investigated whether the administrative grid size influences the results or has an effect, but it does not and thus was left out as an explanatory variable in the model. This affirms the observation that a larger administrative zone does not automatically mean more conflict events are recorded in that region.

The wealth of the country GDP is, as assumed, highly statistically significant in all four models. Time dependence between conflict events is also confirmed. However, the dummies controlling for uncertainty do not seem to have an influence. Thus, the uncertainty factor does not appear to be an issue.[12]

In the end, I investigated the predictive power of the models with the Receiver Operating Characteristic (ROC) plot that compares the correctly and falsely predicted positive

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[12] Nevertheless, it has to be kept in mind that these are country-level indicators and the focus and unit of analysis is the administrative unit and, hence, a hierarchical structure in the models is present. But because I am mainly interested in the effects of the administrative unit, country-level coefficients are not of great importance here. I did, nevertheless, check if there were country-specific effects that were not taken into account by the country variables. For the most part, these were not present and not statistically significant. However, Kenya showed a positive effect. Thus, in this case country-specific factors might also play a role in the conflict dynamic.

outcomes of whether an administrative unit experienced a conflict event or not. All models demonstrate a high predictive power. The area under the curve is around 88%. In comparison to the baseline model (without the independent refugee variables), however, almost no increase and, thus, no great added predictive power of the refugee variables is to be recorded. This could be explained by the fact, as Salehyan and Gleditsch (2006, p. 352) point out, that the "relationship between refugees and conflict is not a deterministic one". The majority of administrative regions that host refugees have no documented conflict. In addition, other influential factors such as the proportion of refugees towards the local population, the relationship with the local population, and their ethnicity could also play a role in the conflict dynamic and possibly improve the model. Rüegger and Bohnet (2011) and Rüegger (2012a and 2012b) found, for example, that the refugees' ethnicity and their power status is also important to consider to understand the refugee-conflict nexus. Furthermore, additional data on the refugee population numbers and policy indicators for free movement might also make the results more robust. Still, these findings are first important indicators that refugee settlement patterns are vital to the study of conflict and that they can be important to understand the link between refugees and conflict.

Conclusion

In sum, refugee settlement patterns, meaning the distribution of refugees and their settlements within a region, are important factors to consider to be able to understand and explain when refugee-related conflict is most likely. This paper has demonstrated that refugees are not clumped together, are not distributed similarly in each country, but that they are instead spread out differently and that because of this, their effects on conflict outbreak can differ from country to country. The results have shown that large refugee numbers as well as large numbers of refugee settlements within an administrative unit increase the risk of conflict. This has strong policy implications. Concentrated refugee settlements should be avoided by stakeholders, such as host governments who play the main role in deciding where and how refugees should be settled in order to hinder conflict incidences and to guarantee safety for refugees and hosts. Besides creating small settlements, the distances between refugee settlements should also be considered in the future. The clustering of refugees and refugee settlements is to be abstained from.

I would like to emphasize here that I do not want to vilify refugees in any way, but instead only underline that policy decisions which entail placing refugees in resource-scarce

areas and concentrated refugee settlements is not a solution, particularly not a sustainable one, and could lead to security incidences. In addition, it should be kept in mind that only in relatively few refugee settlements does it actually come to conflict, however; also these instances could be avoided if addressed properly. In the end, safety measures will be in the interest of all.

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