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Land Inequality and Conflict in Sub-Saharan Africa

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Abstract

This note succinctly reviews the existing literature on natural resources and conflicts while giving special emphasis on a particular type of natural resource, productive land. Treating land as a separate natural resource constitutes an essential step in our understanding of the roots of conflicts because of the intrinsic peculiarities of productive land. Indeed, contrary to other "lootable" resources, the opportunity cost of fighting over land is the agricultural product itself, while a second major distinction lies in the value of the prize, i.e. agricultural production, which is typically very low, thus implying that the fighting technologies are rather rudimentary. Putting in perspective the existing theoretical and empirical literature, we construct a convincing argument underlying the determinant role of relative (versus absolute) land scarcities in triggering conflicts.

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1 Introduction

Robert Aumann and Thomas Schelling received the 2006 Nobel prize memorial in Economics for their contributions to our understanding of conflict. During the lecture delivered for his award, R. Aumann declared the following:

> War has been with us ever since the dawn of civilization. Nothing has been more constant in history than war. It's a phenomenon; it's not a series of isolated events. [...] Why does homo-oeconomicus, rational men, go to war? What do I mean by rationality? A person's behaviour is rational if it is in his best interests given his information. With this definition, can war be rational? Unfortunately the answer is yes, it can be.

While the history of humanity is neatly summarized in the dark first sentence of this quote, the statement nevertheless conveys a very encouraging message: since conflict is the result of rational actions, understanding the rational motives pushing individuals to use violence against each other may eventually allow us to better contain conflicts. It is along these lines that the field of Peace and Conflict Economics has developed in recent years, and the scholarship has been able to provide us with a much deeper understanding of the factors conducive to conflict. Among the large number of such factors, productive land has received relatively little attention as compared to other natural resources. Land, however, plays a fundamental role in the livelihood of inhabitants in poorly developed countries, and as such merits particular attention. This short paper constitutes an effort to highlight the specific characteristics that differentiate land from the other natural resources when exploring the roots of conflicts. To this end we present a comprehensive review of the related literature and disentangle the mechanisms through which absolute and relative land scarcities may trigger conflict. Because the high frequency of conflicts as well as the abundance of fertile land in Sub-Saharan Africa, we give particular attention to that geographical area.

To understand the differences between land and other natural resources, it is useful to begin by a brief overview of the general literature on natural resources and conflict, before becoming more specific and turning the focus on land.

2 Resource abundance, inequality and conflict

Africa is perhaps the most gifted continent in terms of natural wealth. The presence of riches has nevertheless not proved sufficient to boost the African economies that have been lagging in terms of average growth rates as compared to the rest of

world since they reached independence in the post-WWII period. The picture is in fact much gloomier since the continent has been plagued by civil conflicts that, many specialists concord to claim, are rooted in the very presence of natural resources (Collier, 2007). Yet, despite the extensive literature that has developed around the link between natural resources and civil conflict, no consensus has yet emerged.

The literature on civil conflicts witnessed an important impulse with the initial works of Paul Collier and Anke Hoeffler (1998; 2004). Their thesis stipulates that civil wars are rooted in what they term *greed*, namely in a willingness to appropriate wealth by violent means. According to this view, a higher presence of natural resources is conducive to higher likelihoods of experiencing civil conflicts. Further research on the topic confirmed the causal link of the presence of a "lootable" natural resource such as oil, timber, or diamonds on civil conflicts (Ross, 2001 , Fearon and Laitin, 2003; Ross, 2004; Lujala et al., 2005; Humphreys, 2005, Hegre et al. 2009; Caruso, 2010a). Many competing views have nevertheless questioned these results. Brunnschweiler and Bulte (2009) underline the reverse causality that may bias the empirical results: conflict ridden countries will endogenously increase their dependence on natural resources since the other sectors of the economy are downsized. Robinson et al. (2006) emphasize that wealthy autocrats have the luxury of being able to coopt potential opponents, thus casting doubts on the above cross-country empirical results. Aslaksen and Torvik (2006) propose a theory reconciling the two strands of the literature, yet there is still a very large scientific production not cited in this note[1] which reveals that the debate on the role of natural resources remains an open one.

Since the presence of wealth may affect the incentives to conflict, we would also suspect its partition among the population to play a role. Whether inequality constitutes a driving force of conflicts or not has been at the heart of a half-century controversy among social scientists. In the debate's early phase, the predominant view which became famous after the works of Ted Gurr (1970) and James Scott (1976) posited that conflicts are mainly triggered by strong grievance feelings. Such an argument is *a priori* extremely convincing given that human beings tend to resent situations deemed unfair. Indeed, recent findings in Experimental Economics show that a class of individuals are *strong reciprocators* willing to punish others for norm violations (Camerer and Fehr, 2006), even when such punishments constitute a pure costs to the punisher. According to this theory, one would therefore not be surprised to observe grieved individuals taking up arms in unequal settings to restore some kind of fairness. The inequality thesis has been rebuked by Fearon and Laitin (2003) and Collier and Hoeffler (2004), among others. Various scholars nevertheless insist

[1] see Blattman and Miguel (2010) for a comprehensive review of the literature.

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on pointing at the increased likelihood of observing conflicts in the presence of unequal (Murshed and Gates, 2005; Maystadt, 2010), or polarized (Ostby, 2008) wealth distribution.

Whereas the bulk of the literature has either considered natural resources as a single entity, or else focused on particular mineral resources such as oil or diamonds, few studies have tried to understand the causal links between land availability and conflicts. We concur with Le Billon (2001) in claiming that an amalgam between the various natural resources is likely to be misleading and to obscure the results. Moreover, while the causal links tying natural resources to civil conflicts are multiple and run potentially in opposite direction, we claim that the effects of abundance of land relative to population, and of inequality in land ownership are less ambiguous. Our interest lies in sub-Saharan Africa, because, while historically the African continent has enjoyed higher average amounts of land per capita than elsewhere (Peters, 2004), it has equally been disproportionately hit by civil conflicts (Collier, 2007). The two questions we address in this note are the impact of *absolute* and *relative* land scarcities on civil conflicts in SSA.

3 Land in Sub-Saharan Africa

The high availability of land in SSA gave rise to customary systems of land tenure and management that differ profoundly from the exclusive character of property, common to most of the developed world (Deininger and Castagnini, 2006). Indeed, land allocation decisions have traditionally been taken at the village level and the pooling of land has been widespread across the African continent (Cousins, 2000; Platteau, 2000). Not surprisingly, therefore, most of Africa - with the exception of Southern Africa - has been characterized by an absence of large-scale properties (Moyo and Yeros, 2005), and very scarce organizations centered around agrarian issues (Bernstein, 2005). Yet, land inequality in Sub-Saharan Africa has been on the rise for the past 50 years and has recently attracted the attention of the public in view of the claims that dramatic events such as the Rwandan genocide (André and Platteau, 1998; Yanagizawa, 2009) or the Darfur crisis (Olsson, 2010a; 2010b) may have been rooted in severe pressure on land coupled with unequal distribution of land. Moreover, seemingly inequality-driven occupation movements and land-related disputes have been spreading across the continent as witnessed by the experiences of Zimbabwe (Bernstein, 2005; Binswanger and Deininger, 2007), South Africa (Sihlongonyane, 2005), Ghana (Amanor, 2005), Somalia (Peters, 2004), or Kenya (Quan, 2000, Peters, 2004; Kahl, 2006) to cite but some.

To unravel the land inequality - conflict nexus, it is primordial to understand the distinctive features of land in SSA, as compared to other “lootable resources”.

The first key aspect is that the opportunity cost of fighting over land is the agricultural product itself. While the second one is that the value of the prize, i.e. agricultural production, is typically too low for the fighting technologies to be sophisticated.

Consider first the "endogenous" opportunity cost aspect of land. While early on scholars recognized the importance of the opportunity cost of fighting (see for instance Grossman, 1994), the concept only gained wide acceptance recently. Consider the change of stance of Collier et al. (2009) who recognized that for a rebellion to emerge, not only should it stand out as a profitable operation, but it should equally be *feasible*, in the sense that the rebel organization should have the capacity of mobilizing sufficient resources to operate. This notion of feasibility is closely linked and directly dependent upon the concept of *opportunity cost* of an activity. It has been shown on both theoretical (Dal Bó and Dal Bó, 2010), and empirical grounds (Dube and Vargas, 2009) that a positive shock on labour intensive sectors of the economy will reduce conflict as a direct consequence of the rise in the opportunity cost of fighting. On the other hand, these same studies show that when the capital intensive activity experiences an improvement in the relative price of its produced good, the intensity of conflict is on the rise (see also Caruso, 2010b). When analyzing the land-conflict relationship in agrarian societies, however, our claim is that the opportunity cost of fighting is endogenous. Contrary to the bulk of natural resources, the value of land in under-developed places lies in its use, since - absent speculation (or markets altogether) on land - its sole value is contained in the expected yields. On the other hand, the return from controlling valuable resources such as oil, diamonds, or timber does not depend on one's own effort. Indeed, agents controlling resource-rich territories typically cash-in the value of their property by contracting the exploitation of the resources. One could argue that land has the same potential of being sold or rented-out. But agricultural production does not consist in merely *extracting* the resource. As a consequence, the potential buyers or renters of land being farmers, in weakly institutionalized settings prone to conflict rural agents face credit constraints which reduce the scope for land transactions (Deininger, 2003; Cotula et al., 2004). From a theoretical viewpoint, the implication of the endogeneity of the opportunity cost is that the costs of fighting over land should be modeled as in Grossman (1991) or Skaperdas (1992), i.e. dedicating resources to appropriative activities should amount to reducing the size of the pie at stake in case of conflict.

A second building block is that the value of land in weakly institutionalized places is low comparatively to other natural resources. This feature is determined by world markets, thus implying that local actors take for granted this constraint. On the other hand, land is a diffuse natural resource, as opposed to the "pointiness"

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property of mineral resources [2], thus implying that to match the yields of mineral resources, a landowner should be able to control a comparatively much larger area. The implications of this low-valuedness aspect of land are tremendous. One should indeed expect conflict over land to be driven more by individuals or rudimentary peasants' associations rather than by sophisticated rebel organizations. This implies that the means employed to appropriate land are equally much less developed than when organized groups fight over valuable natural resources. By the same token, therefore, when farmers are being victims of looters or encroachers, they need not have preemptively devoted time to "fighting activities" in order to be able to defend themselves. The consequence in terms of formalization is that the defending party, the farmer, will be endowed with some defensive ability, irrespectively of his time allocation between fighting and farming activities.

To help structure the discussion we develop an elementary model of conflicts that incorporates these two distinctive features of land.

4 An elementary model of conflict

To keep things simple, assume that the society is divided in two groups that differ in their respective ability to generate income. The agents endowed with a small amount of land are labeled the *poor* and can earn an income of y_p per capita if they decide to produce, while the number of *poor* agents equals n_p. We equivalently define y_r ($> y_p$), and n_r ($\gtreqless n_p$) for the rich individuals. Agents simultaneously choose whether to specialize in generating income through agricultural production, or to loot the producing agents. The strength of any agent specialized in fighting equals $a > 0$ (a for *attack*), and the strength of the defending producers is taken to equal $d > 0$[3]. Any fighter can direct his fighting capacity against the number of farmers of his choice so that we take a_{ij} to designate the amount of power wielded by agent i against agent j. The conflict technology π is described by a Tullock success function such that $\pi_{i,j}(a_{1j},\ldots,a_{ij}\ldots a_{a_pj}) = \frac{a_{ij}}{\sum_{k\in n_r} a_{k,j}+d}$, where n_r designates the number of rebels. As already explained, we adopt a general equilibrium approach so that the cost of conflict is measured as an opportunity cost of foregone own production. All players simultaneously decide whether to specialize in farming or fighting. Notice that -by construction - the looters will never find it optimal to attack an agent whose productive ability is not higher than their own since the

[2] On the issue of pointiness see for instance Wick and Bulte (2006).

[3] The related literature typically assumes that a weaponless defender derives no utility under conflict. While such an assumption is understandable in wars opposing organized groups/armies, it is less realistic in contexts of spontaneous civil strife where the conflict technologies are usually very rudimentary.

share of booty they would obtain is necessarily smaller than their own production. Moreover, it easy to see that if some agent i finds it optimal to become a fighter, his optimal strategy is to uniformly allocate his strength among all rich producers. Hence, it is straightforward to show that a necessary and sufficient condition for conflict to be observed is that:

$$\frac{a}{a/n_r + d} y_r > y_p \tag{1}$$

This condition exhibits a poor individual's incentives to become a rebel, given that all other poor agents choose to be producers. This very simple formalization permits us to understand the importance of the opportunity cost of fighting in determining whether or not we observe conflicts. Indeed, the opportunity cost being described by y_p - the income of the poorest individuals - any increase in their income would relax condition 1, thus increasing the scope for peaceful equilibria. A glimpse at this condition also enables us to understand that the opportunity cost of fighting is intimately related to the endowment inequalities, thus implying that these two concepts cannot be considered in isolation of one another.

Denote by μ and σ, respectively, our theoretical society's average income and variance. We thus have:

$$\mu = \frac{n_r y_r + n_p y_p}{n} \qquad , \qquad \sigma = \frac{n_p n_r}{n} (y_r - y_p)^2$$

Running a basic comparative statics exercise on Condition 1 and on the average income and its variance we can deduce the results contained in Table 1.

	μ	σ	Condition 1
y_r	+	+	+
n_r	+	+	+
y_p	+	-	-
n_p	-	+	x

Figure 1: Agricultural production and conflict

With these simple theoretical predictions in mind, we can sequentially discuss whether land scarcities are conducive to civil conflicts, and whether inequality in land ownership is a driving engine of civil strife.

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5 Land and conflict

Land scarcity and conflict

The predominant view in the literature is unambiguously pointing at the lethal consequence of growing land scarcities around the planet (Homer-Dixon, 1999; Diamond, 2005; Kahl, 2006). The history of Easter Island or of the Anasazi in today's New Mexico (Diamond, 2005) are emblematic of how societies may literally collapse and virtually extinguish as a consequence (or not) of the civil strife that is provoked by scarcities in basic commodities (land, fauna). The reasons pushing entire civilizations on the verge of the cliff because of resource scarcities are multiple and intermingled: environmental degradation as a consequence of overexploitation, population growth in periods of relative resource abundance, or even excessive immigration. Yet, one should be careful in drawing hasty conclusion by merely looking at total land (or yield) per capita[4]. The XIX^{th} century Russian revolutionary journal Narodnya Volya (People's Will) once incisively stated that "No village has ever revolted merely because it was hungry" (De Nardo, 1985: 17). For it is not sufficient to be deprived of vital goods to resort to violence and arbitrary appropriation. To visualize this in a more rigorous way, consider the previous section's model, and suppose that $y_p = y_r$. In a world inhabited by perfectly homogeneous individuals, irrespectively of the level of income, no conflict would ever be observed if would-be looters have no fighting advantage over farmers ($d \geq a$). Indeed, no matter the number of individuals, or the per-capita wealth, attacking one's neighbor will not increase one's own income if our income-generating capacities are identical and that the defending party is relatively more capable. This is the typical scenario encountered in a generalized famine situation, provided the shock hits all individuals homogeneously. Consider for instance the Great Famine that struck Ireland in 1845. While it is estimated that more than a million persons died (representing more than $1/8^{th}$ of the total population) as a consequence of the famine over the 1845-1850 period, no civil war erupted in Ireland. It is true that the murder rate did increase, and the authorities raised the number of policemen patrolling, yet no major civil disorder was observed. This comes as no surprise since the population was fairly homogeneous, thus implying that best strategy to cope with the problem was to relax the population pressure by massively migrating.

In a paper that has become a cornerstone of empirical works, Miguel et al. (2004) instrument the growth rate of SSA countries by rainfall. Their findings show the very significative impact of negative income shocks on the occurrence of conflicts. These results, while very interesting in themselves, do not allow us to conclude that the *absolute* level of wealth is a triggering element of conflicts.

[4]The above-mentioned authors repeatedly underline the role of inequality in fueling conflicts.

The paper of Miguel et al. (2004) suggests a negative relationship between income and civil conflicts. Nevertheless, notice that rainfall shocks are not perfectly non-idiosyncratic, and the smaller landholders are likely to be more vulnerable because of their lower capacity of hedging risks. More importantly perhaps, it is likely that any type of relative scarcity related to land translates in a decrease in the per-capita income of the poorest segments of the population (reduction in y_p). This would imply a different mechanism exemplified by André and Platteau's study on the Rwandan genocide that would underlie Mighel et al.'s resluts. In such situations the incentives for the less well-off to loot wealthy landlords increase (relaxation of condition 1). Moreover, the negative relation between income and conflicts has itself been recently questionned. In a recent paper of Macours (2011), empirical evidence shows that over the period 1995-2003 in Nepal, the Maoist insurgency grew as a result of widening inequalities *despite* the rising income of all segments of the population. Hence, while one could draw the conclusion that an absolute decline in wealth (as measured by the GDP per capita, for instance) makes conflict more likely, it bears emphasis that the roots of conflict lie in the *relative* scarcity of land as compared to its *absolute* scarcity.

Land inequality and conflict

When considering agrarian societies, where individuals heavily rely on land and on its biological resources to secure their livelihoods, the most relevant measure of inequality is undoubtedly inequality in access to land. Reflecting the above-mentioned controversy on the roots of conflicts, political scientists have long debated upon the specific effects of land inequality on political violence. The findings were mostly contradictory and thus inconclusive, however, partly because of the different samples employed, and partly because of diverging methodologies. In an early study, Russett (1964) identifies a positive linear relationship between land inequality and political instability, while Mildarsky (1988) posits that violence grows exponentially in land inequality. On the other hand, however, the opposite result is established by Mitchell (1968) on a study on South Vietnam, while Muller and Sellingson (1987) claim that the link - if any - is rather weak. A recent study on land occupations in Brazil (Hidalgo et al., 2010) provides us with some much more convincing evidence because of the rich database used and also because of the econometric rigour of these authors. Their study confirms our earlier assertions by emphasizing the importance of the opportunity cost of "fighting": land occupations are positively affected by a drop in income, and this effect appears to be stronger in more unequal municipalities (where the relative "loot" at stake is larger for the poor landless). Similarily, Macours (2011) shows that the inequality in land ownership is a driving factor in deciding relatively poor peasants to join rebel movements.

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In light of the small theoretical framework we developed the empirical findings establishing a positive causal effect between land inequality and conflict are not surprising. By increasing the income and/or the number of wealthy individuals, i.e. y_r and/or n_r, both the inequality and the incentives for becoming fighters increase. Similarly, a reduction in the poor individuals' income is likely to spark civil strife since it makers Condition 1 increasingly likely to be satisfied. On the other hand, however, increasing the number of poor individuals in the society will directly impact on the inequality measure, while leaving the incentives to encroach unaltered. This observation is essential, for, if unaccounted, the empirical conclusions may turn to be misleading. An even more important lesson we are able to draw from our theoretical construction is that, provided the number of wealthy individuals is not too low, a relative but modest increase in per-capita income inequality (i.e. $\Delta^{+} y_r/y_p$) may prove insufficient to trigger a civil conflict. Thus, while our schematic model primarily points at the conflict spawning effect of income inequality as empirically established by Hidalgo et al. (2010), it also leaves scope for Muller and Sellingson's (1987) findings since we identify situations where the causal link is absent.

The situation in Sub-Saharan Africa

Sub-Saharan Africa (SSA) has been literally plagued by conflicts over the last 50 years. The causes are numerous and complex, and revolve essentially around the existence of valuable natural resources such as oil and timber, and weak institutions and bad governance (Collier, 2007). The link between the agrarian question and conflict has, however, received surprisingly little attention by specialists in the field, perhaps because of the relative recency of the phenomenon. In what follows we attempt to identify some common patterns to most SSA that have contributed to boosting land related conflicts as a consequence of the associated reduction in the opportunity cost of grabbing land, or of fighting over it.

The population growth of SSA has been spectacular. As most African countries are still in the midst of their demographic transition, the average annual population growth rate on the continent is around 2.5%. The population in SSA number barely more than 300 thousand people in 1970, is slightly below one billion nowadays (UN Statistics Division), and the estimations are that the continent's population will increase by one billion inhabitants by 2050 (Anseeuw and Alden, 2010). When considering smaller geographical units, Malthusian pressure may equally be the result of population displacements, which have frequently occured in SSA as a consequence of wars or droughts (Peters, 2004). Equally important in explaining population displacements and inequalities have been the consequences of colonial policies aiming at securing the most fertile land plots to colonial settlers (Bernstein, 2005). These increases in population levels are likely to stimulate conflicts

through two distinct channels. On the one hand, is it recognized in the literature that the demographic pressure in SSA has disrupted the traditional customary land tenure by substituting the ancestral communal land managment by individual property through titlization processes and the marketization of land (Cousins, 2000). The resulting property rights' structure has most often been extremely unequal, reflecting either pre-existing local power-hierarchies (Cousins, 2010), or else the interests of strong land lobbies often benefiting from governmental support (Besteman, 1996; Sihlongonyane, 2005). Indeed, high officials, customary chiefs, and in general people with influence are keen to accumulate land for prestige reasons, but also to improve their ability to further increase their investments (Toulmin and Quan, 2000). These rising inequalities have therefore emerged *at the expense* of the poorest individuals, thus reducing the opportunity cost of appropriating land via illegal means. The second mechanism likely to spur conflicts is market-driven. The mounting scarcity of land increases its value, since the supply of land is rather inelastic (Binswanger et al. 1995). This in turn exacerbates existing inequalities and renders the appropriation of land an increasingly profitable activity.

Some schematic figures may help better visualizing the extent of the problem. In two countries of the African continent that have been among the worse hit by conflicts, the population boom prior to the conflict has been impressive[5]. Olsson (2010b) exposes the striking numbers according to which over the 50 past years the population in Darfur has increased by 600% (partly because of important in-migration as a consequence of droughts). In Rwanda, according to the UN statistics division the population has passed from roughly two to seven million inhabitants between 1950 and 1994. Those conflicts are reminiscent of the fate of Eastern Island inhabitants, or of the Anasazi in today's New Mexico as described by Jared Diamond (2005): growing population pressure and rising associated inequalities, sparked lethal conflicts over dwindling resources that eventually brought whole civilizations to their knees. Elsewhere in Africa, the population is equally on the rise, with land-related conflicts either having already occured or else threatening to emerge.

Natural hazards constitute a second major determinant of rising inequalities in SSA. Droughts are probably the most calamitous natural disaster in agrarian societies, and they have been recurrent over the past 40 years. A prolonged drought hit the Sahel in the late 1970s, North-East Africa in the 70s and 80s, and Southern Africa in early 80s and 90s (Bernstein, 2005). The channels through which they contribute to rising inequalities and to increasing the likelihood of conflict are mul-

[5]We deliberately avoid evoking the case of the RDC because of the extremely important amount of valuable resources that could be the driving force of the repeated and prolonged civil conflicts that have hit this country.

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tiple. A first mechanism explained above, is that prolonged droughts force people to migrate to more fertile places thus increasing the population pressure. The second major problem is the inability of small landowners to cope with temporary negative income shocks. In agrarian regions with underdeveloped insurance and markets, the less well-off may indeed be constrained to sell out their land in periods of economic downturn (Binswanger et al. 1995, Toulmin and Quan, 2000). Since only the wealthiest households prove able to benefit from those "distress sales", the existing inequalities are further dug. Notice that similar patterns have been observed because of the declining prices of the exported agricultural goods (Peters, 2004).

To this inequality augmenting mechanism that succeeds negative income shocks we need to add a factor that further increases the small landholders' fragility. It has been shown that the market value of land in places lacking well developed capital markets typically exceeds that of the income stream one can derive from it since the well-off invest in land to hedge themselves against inflationary pressure, and because land can be used as a collateral (Binswanger et al. 1995). As a consequence, small farmers having sold their "collateral" are unlikely to be able to purchase land back even after good harvests because of the credit constraints that reduce the scope for transactions (Quan, 2000; Deininger, 2003; Cotula et al. 2004). The following quote summarizes well this *persistence of inequality*:

> If access to markets were much or all of the story, then all farmers in any given locality should be able to benefit. But do they? [...] differences are substantial. When and where farm economies blossom, it seems that the great bulk of the marketed surplus comes from a small fraction of the farmers (Wiggins, 2000: 638)

Land inequality and conflict intensity

Land has therefore been under pressure at a growing pace in SSA. And while the land-Gini indices have not yet reached their Latin American equivalent, the aggregate pressure on land is likely to be much more important in SSA. In the same manner that we witnessed rebel movements emerging across Latin America, organizations in favour of land redistribution have multiplied on the African continent[6]. For, while individuals would spontaneously rebel and loot the wealthy, in the presence of prolonged and significant inequalities rebel organizations are likely to emerge. These organizations play a crucial role. Once they are formed, the classical coordination problem among "rebels" is more easily overcome, thus making is

[6]see for instance Toulmin and Quan on South Africa, Azam (2001) on Mali and Niger, Peters (2004) on Somalia, Amanor (2005) on Ghana, or Bernstein (2005) on Zimbabwe, or Médard (2010) on Kenya.

easier for the landless and idle individuals to take possession of the land by illegal means. Land related conflicts represent a cost for society, however. In addition to the losses caused by diverting productive resources to fighting, there are relevant costs resulting from the uncertain economic environment and physical destruction (Deininger, 2003; Binswanger and Deininger, 2007). It thus follows that, unless the government is actually able to deter land invasions and rebellions at a reasonable cost, the second best solution would be to impose land redistribution from the wealthy elite to the landless peasants. This ideal situation does not reflect the reality of most SSA, however. Indeed, in most instances the (formal) institutions may be qualified as weak, with the government itself not being an exception to the rule. Hence, for Land Reforms to be decided and successfully implemented, it is necessary that the redistributing landowners find it optimal to endorse such measures. A quick glimpse at the policies pursued in South Africa and in Kenya deserve some attention.

Under the Apartheid regime, the land owner's property rights were well enforced in South Africa. With the removal of Apartheid laws, and the general relaxation of the regime which allowed for a major inflow of migrants from neighbouring countries, land occupations became rampant in the late 1980s (Sihlongonyane, 2005). In 1994, the post-apartheid government introduced a land reform program aiming at redistributing 30% of the country's land over the following 5 years. In 1998, the Land Rights Bill was supposed to profit 2.4 million households, but the actual number of beneficiaries evantually was around 50,000 households, with only 4% of total land being redistributed (Quan, 2000). The government has not actively opposed squatting practices, but the landowners have adopted a harsh stance by carrying evictions as private actions. The various reform attempts have obviously failed because the government did not have the strength *or* the will to go against the landlords' lobby. It is noteworthy that the landowners oppose land redistribution despite the costly actual situation where resources need to be mobilized to avert land occupations.

In order to lure white settlers in Kenya, the most fertile land was declared property of the Crown, taken to the locals and sold to white colonizers at extremely favourable terms (Binswanger and Deininger, 2007). In the early XX^{th} century, the size of land alienation in the very fertile Rift Valley province led to an area earning the epithet "White Highlands". The Crown Land's Ordinance (1915) allocated Kenyan tribes to very specific land plots called "reserves". Overall the locals' living conditions were harsh, and with the active support of the colonial government, a plentiful of restrictions were placed on subsistence agriculture and squatting. As a consequence, ethnic tensions mounted and the squatting practices quickly spread across the region. Instead of accommodating the local distressed community, the administration in Nairobi implemented measures that reduced the wages of natives,

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limited their livestock, and supported the landowners' eviction actions. The consequences of such moves were of course an intensification of illegal actions with the dwindling of the exit opportunities (Rosberg and Nottingham, 1966). Recognizing the dangers of this policy, Swynnerton's Plan (1954) came into being to contain tensions. And while it seems that the plan was eventually a failure since it essentially benefited the chiefs and the wealthy, its aim was to provide the African farmer with secure property rights over land. After independence, John Kenyatta took over the presidency of the country and implemented land redistribution schemes in the White Highlands, with the agreement of local landlords, as a means of reducing the pressure from squatters (Médard, 2010) while fueling his patronage networks by favouring his ethnic clan, the Kikuyu (Kahl, 2006). While many settlers were literally despoiled during the redistribution process, it is noteworthy that the Kikuyu elites found it profitable not to appropriate all the land, for it would have maintained tensions high.

The experiences of South Africa and of Kenya are probably too different in many respects in order to proceed to a direct comparison. A common ingredient of civil unrest in both cases is the high inequality in land ownership between the wealthy elites on the one hand, and the despoiled peasantry on the other hand. It is nevertheless interesting to contrast the South African experience where the large landlords' will went against the central government's plans, therefore impeding the land reform, with the peculiar Kenyan situation where the land owners were, at least moderately, in favour of land reforms. The schematic model we propose in this note is ill-suited to explain such differences, but a coherent mechanism is proposed by De Luca and Sekeris (2011). When land redistribution is modeled as a public good, i.e. all large landlords benefit from the reduction of conflict subsequent to land redistribution, land reforms will occur if inequality in land ownership is either low, or high. Thus, for intermediate level of inequality as in the South African case[7], the larger landholders are reluctant to "subsidize" the reduction of land pressure on the "free ridding' small landlords, and will accordingly block the redistribution process.

6 Concluding remarks

This short note exposes various mechanisms that generate inequalities which, in turn, are conducive to conflicts. Challenging common wisdom, we claim that absolute scarcities in land alone, while undesirable for obvious reasons, are not sufficient to explain the emergence of conflicts. We construct an argument

[7]The most extreme case of land inequality is assimilated to totalitarian states where the central power controls all landholdings.

according to which inequality in land ownership constitutes the fundamental driving force of uprisings in agrarian societies which are poorly endowed in natural resources. When the various theoretical arguments are applied to Sub-Saharan Africa, with the environmental stress our planet is facing, with the rapidly increasing population on the African continent, and with the economic stagnation crippling this part of the world, one can confidently forecast rising tensions. Echoing Homer-Dixon's (1999) alarmist writings, one should therefore not be surprised if new conflicts, fueled among others by land inequalities, emerged in the coming years.

The field of peace and conflict economics has immensely progressed over the last years and the scholarship has been able to identify specific factors and situations likely to spur conflicts. These advances are highly important since they enable policymakers to act preemptively and thus to potentially prevent conflicts, and their disastrous consequences, from emerging. This note has shed light on a very specific ingredient of conflicts: relative land scarcities. Yet, in light of the existing empirical literature, further research testing the land inequality-conflict nexus with disaggregated data would certainly be warmly welcomed by both practitioners and researchers.

References

AMANOR, K. S, (2005), Night Harvesters, Forest Hoods and Saboteurs: Struggles Over Land Expropriation in Ghana, in Reclaiming the Land, David Philip.

ANDRÉ, C. AND PLATTEAU, J.-P., (1998), Land Relations Under Unbearable Stress: Rwanda Caught in the Malthusian Trap, *Journal of Economic Behavior & Organization*, vol. 34, pp.1 – 47.

ANSEEUW, W. AND ALDEN,, C. (2010), The Struggle Over Land in Africa: Conflicts, Politics and Change. HSRC Press.

ASLAKSEN, S. AND TORVIK, R. (2006), A Theory of Civil Conflict and Democracy in Rentier States, *Scandinavian Journal of Economics*, vol. 108 n.4, pp. 571–585.

AZAM, J.-P. (2001), The Redistributive State and Conflicts in Africa, *Journal of Peace Research*, vol. 38, N. 4, pp. 429–444.

BERNSTEIN, H. (2005), Rural Land and Land Conflicts in Sub-Saharan Africa. In Reclaiming the Land, David Philip.

BESTEMAN, C. (1994), Individualisation and the Assault on Customary Tenure in Africa: Title Registration Programmes and the Case of Somalia, *Africa*, vol. 64, n. 4, pp. 484–515.

BINSWANGER, H. AND DEININGER, K., (2007), History of Land Concentration and Land Reforms, Paper presented at Land Redistribution: Towards a Common Vision, Regional Course, Southern Africa, 9-13 July.

DOI: 10.2202/1554-8597.1208

BINSWANGER, H., DEININGER, K., AND FEDER, G., (1995), Power Distortions, Revolt, and Reform in Agricultural Land Relations, Policy Research Working Paper Series, World Bank.

BLATTMAN, C. AND MIGUEL, E., (2010), Civil War, *Journal of Economic Literature*, vol. 48, n. 1, pp. 3–57.

BRUNNSCHWEILER, C. AND BULTE, E., (2009), Natural Resources and Violent Conflict: Resource Abundance, Dependence and the Onset of Civil Wars, *Oxford Economic Papers*, vol. 61, n. 4, pp. 651–674.

CAMERER, C. F. AND FEHR, E., (2006), When Does Economic Man Dominate Social Behavior?, *Science*, vol. 311, pp. 47–52.

CARUSO, R., (2010a), International Relative Prices and Civil Wars in Africa: a Note, *Peace Economics, Peace Science and Public Policy*, vol. 16, n. 1.

CARUSO, R., (2010b), Butter, Guns and Ice-Cream: Theory and Evidence from Sub-Saharan Africa, *Defence and Peace Economics*, vol. 21, n.3, pp. 269–283.

COLLIER, P., (2007), The Bottom Billion. Oxford University Press, New York.

COLLIER, P. AND HOEFFLER, A., (1998), On Economic Causes of Civil War, *Oxford Economic Papers*, vol. 50, pp. 563–573.

COLLIER, P. AND HOEFFLER, A., (2004), Greed and Grievance in Civil War, *Oxford Economic Papers*, 56 (4), pp. 563–96.

COLLIER, P., HOEFFLER, A., AND ROHNER, D., (2009), Beyond Greed and Grievance: Feasibility and Civil War, *Oxford Economic Papers*, vol. 61, n.1, pp. 1–27.

COTULA, L., TOULMIN, C., AND HESSE, C., (2004), Land Tenure and Administration in Africa: Lessons of Experience and Emerging Issues, International Institute for Environment and Development, London.

COUSINS, B., (2000), Tenure and Common Property Resources in Africa. in Evolving Land Rights, Policy and Tenure in Africa.

COUSINS, B., (2010), The Politics of Communal Land Reform: A South African Case Study. in The Struggle Over Land in Africa: Conflicts, Politics and Change.

DAL BÓ, E. AND DAL BÓ, P. D., (2010), Workers, Warriors, and Criminals: Social Conflict in General Equilibrium, *Journal of the European Economic Association*, (forthcoming).

DE LUCA, G. AND SEKERIS, P. G., (2011), Land Inequality and Conflict Intensity, *Public Choice*, (forthcoming).

DE NARDO, J., (1985), Power in Numbers: The Political Strategy of Protest and Rebellion. Princeton University Press.

DEININGER, K., (2003), Land Policies for Growth and Poverty Reduction: A World Bank Policy Research Report. World Bank and Oxford University Press: Washington, D.C.

DEININGER, K. AND CASTAGNINI, R., (2006), Incidence and Impact of Land Conflict in Uganda, *Journal of Economic Behavior and Organization*, vol. 60, pp. 321–345.

DIAMOND, J., (2005), Collapse: How Societies Choose to Fail or Succeed. Penguin.

DUBE, O. AND VARGAS, J. F., (2009), Commodity Price Shocks and Civil Conflict: Evidence from Colombia, Working Paper, Harvard University and UCLA.

FEARON, J. AND LATIN, D., (2003), Ethnicity, Insurgency, and Civil War, *American Political Science Review*, vol. 97, pp. 75–90.

GROSSMAN, H., (1991), A General Equilibrium Model of Insurrections, *American Economic Review*, vol. 81, 4, pp. 912–921.

GROSSMAN, H., (1994), Production, Appropriation, and Land Reform, *American Economic Review*, vol. 84, n. 3, pp. 705–712.

GURR, T., (1970), Why Men Rebel. Princeton University Press, Princeton.

HEGRE, H., OSTBY, G., AND RALEIGH, C., (2009), Poverty and Civil War Events: a Disaggregated Strudy of Liberia, *Journal of Conflict Resolution*, vol. 53, n. 4, pp.598–623.

HIDALGO, D., NAIDU, S., NICHTER, S., AND RICHARDSON, N., (2010), Occupational Choices: Economic Determinants of Land Invasions, *Review of Economics and Statistics*, vol. 92, n. 3, pp. 505–523.

HOMER-DIXON, T. F., (1999), Environment, Scarcity, and Violence. Princeton University Press.

HUMPHREYS, M., (2005), Natural resources, conflict, and conflict resolution: uncovering the mechanisms, *Journal of Conflict Resolution*, vol. 49, pp. 508–37.

KAHL, C. H., (2006), States, Scarcity, and Civil Strife in the Developing World. Princeton University Press.

LE BILLON, P., (2001), The Political Ecology of War: Natural Resources and Armed Conflicts, *Political Geography*, vol. 20, pp. 561–584.

LUJALA, P., GLEDITSCH, N.-P., AND GILMORE, E., (2005), A Diamond Curse? Civil War and a Lootable Resource, *Journal of Conflict Resolution*, vol. 49, n. 4, pp.538–562.

MACOURS, K., (2011), Increasing Inequality and Civil Conflict in Nepal, *Oxford Economic Papers*, vol. 63, n. 1, pp. 1-26.

MAYSTADT, J.-F., (2010), Does Inequality Make is Rebel? A Microeconomic Approach Applied to South-Mexico, mimeo, CORE, Université Catholique de Louvain.

MÉDARD, C., (2010), Indigenous Land Claims in Kenya: A Case Study of Chebyuk, Mount Elgon District. in Evolving Land Rights, Policy and Tenure in Africa.

MIGUEL, E., SATYANATH, S., AND SERGENTI, E., (2004), Economic Shocks and Civil Conflict: an Instrumental Variable Approach, *Journal of Political Economy*, vol. 112, n. 4, pp. 725–753.

DOI: 10.2202/1554-8597.1208

MILDARSKY, M., (1988), Rulers and the Ruled: Patterned Inequality and the Onset of Mass Political Violence, *American Political Science Review*, vol. 82, n. 2, pp. 491–508.

MITCHELL, E., (1968), Inequality and Insurgency: A Statistical Study of South Vietnam, *World Politics*, vol. 20, pp. 421–438.

MOYO, S. AND YEROS, P., (2005), The Resurgence of Rural Movements under Neoliberalism. in Reclaiming the Land, David Philip

MULLER, E. AND SELIGSON, M., (1987), Inequality and Insurgency, *American Political Science Review*, 81 (2), pp. 425–452.

MURSHED, M. AND GATES, S., (2005), Spatial-Horizontal Inequality and the Maoist Insurgency in Nepal, *Review of Development Economics*, vol. 9, n. 1, pp.121–134.

OLSSON, O., (2010a), After Janjaweed? Socioeconomic Impacts of the Conflict in Darfur, University of Gothenburg Working Paper.

OLSSON, O., (2010b), Market Collapse in Vulnerable Environments: A Model Applied to Darfur, University of Gothenburg Working Paper.

OSTBY, G., (2008), Polarization, Horizontal Inequalities and Violent Civil Conflict, *Journal of Peace Research*, vol. 45, n. 2, pp. 143–162.

PETERS, P. E., (2004), Inequality and Social Conflict Over Land in Africa, *Journal of Agrarian Change*, vol. 4, n. 3, pp. 269–314.

QUAN, J., (2000), Land Tenure, Economic Growth and Poverty in Sub-Saharan Africa. in Evolving Land Rights, Policy and Tenure in Africa.

ROBINSON, J., TORVIK, R., AND VERDIER, T., (2006), Political foundations of the resource curse, *Journal of Development Economics*, vol. 79, pp. 447–468.

ROSBERG, C. AND NOTTINGHAM, J., (1966), The Myth of the Mau Mau: Nationalism in Kenya.

ROSS, M., (2001), Does Oil Hinder Democracy, *World Politics*, vol. 53, pp.325–61.

ROSS, M., (2004), What do we know about natural resources and civil war?, *Journal of Peace Research*, vol. 41, n. 3, pp. 337–356.

RUSSETT, B., (1964), Inequality and Instability: the Relation of Land Tenure to Politics, *World Politics*, vol. 16, pp. 442–454.

SCOTT, J., (1976), The Moral Economy of the Peasant. Yale University Press, New Haven, CT.

SIHLONGONYANE, M. F., (2005), Land Occupations in South Africa. in Reclaiming the Land, David Philip.

SKAPERDAS, S., (1992), Cooperation, Conflict, and Power in the Absence of Property Rights, *American Economic Review*, vol. 82, n. 4, pp. 720–39.

TOULMIN, C. AND QUAN, J., (2000), Evolving Land Rights, Tenure and Policy in Sub-Saharan Africa. in Evolving Land Rights, Policy and Tenure in Africa.

SCOTT, J., (1976), The Moral Economy of the Peasant. Yale University Press, New Haven, CT.

SIHLONGONYANE, M. F., (2005), Land Occupations in South Africa. in Reclaiming the Land, David Philip.

SKAPERDAS, S., (1992), Cooperation, Conflict, and Power in the Absence of Property Rights, *American Economic Review*, vol. 82, n. 4, pp. 720–39.

TOULMIN, C. AND QUAN, J., (2000), Evolving Land Rights, Tenure and Policy in Sub-Saharan Africa. in Evolving Land Rights, Policy and Tenure in Africa.

WICK, K. AND BULTE, E., (2006), Contesting Resources - Rent Seeking, Conflict and the Natural Resource Curse, *Public Choice*, vol. 128, pp. 457–476.

WIGGINS, S., (2000), Interpreting Changes from the 1970s to the 1990s in African Agriculture through Village Studies, *World Development*, vol. 28, n. 4, pp.631–62.

YANAGIZAWA, D., (2009), Propaganda and Conflict: Theory and Evidence From the Rwandan Genocide, mimeo, IIES Stockholm University.

DOI: 10.2202/1554-8597.1208