Land use and the incidence of violence

G. Lambardi, P. Palacios

U. ICESI

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Outline

- Motivation
- The model
- Results
- Concluding remarks

Motivation

- "The Colombian conflict is a contest for political power of long duration and low intensity" (Restrepo et al., 2004)
- Illegal armed actors: left-wing guerrilla (FARC, ELN), paramilitaries, bacrim (criminal bands)
- Total internally displaced persons (IDPs): 5.5 million (1985-2013)
- Largest population of IDPs in the world of concern to the UNHCR, second (after Syria) according to Internal Displacement Monitoring Center

Motivation

▶ Ethnic minorities (Indigenous and Afro-Colombians groups) disproportionally affected by forced displacement

	Afro-Colombians	Indigenous groups
% Total pop.	10,6	3,4
% Displaced pop.	22,0	6,1

Source: DANE, U. Victimas

Motivation

- ▶ Constitution 1991: recognized ethnic diversity and need to preserve cultural identity
- ▶ Law 70/1993: granted rights to collective titling to community councils (CC)
- ▶ Idea: to preserve culture, identity, traditional modes of production
- ▶ "Hunting, fishing or gathering for subsistence will prevail over any commercial, semi-industrial, industrial or sportive exploitation (of land)"

Motivation

- ▶ Large collective titling programs : more than 50,000 km^2, more than 4.5% total area of the country
- ▶ Granted collective property rights: access, withdrawal, management, exclusion; not alienation (sell)
- ▶ Governing body: community councils (CC), ambiguous rights

Motivation

- Extortion is common practice for all illegal groups, known as "vacuna"
- FARC's spokesman Andrés Paris: "The oil companies are paying the war tax in spite of the National Government's threats... with such a tax the oil companies guarantee they can exploit the resources in the area where they are"
- Paramilitaries: "The FJLZ (paramilitary front) taxed every landowner and businessman in its territory. It even taxed drug dealers and cocaine laboratories" (Robinson, 2013)
- Jiguamiando-Curvarado case: evidence of land seizure to plant oil palm

- Can land use have an effect on the incidence of violence (forced displacement)?

- Our hypothesis: if potentially (very) productive land is underexploited in lawless environment, armed group (AG) may decide to reallocate land in order to increase revenue from taxation (extortion)

- Theoretical model with three players: government, AG and farmers

This paper

- AG chooses extortion (illegal tax) and land reallocation (generates IDPs)
- AG's tradeoff: land reallocation increases revenue but also increases probability of detection
- Government cares about electorate size and tax revenue and decides security level (high or low)
- Government's tradeoff: land reallocation (IDPs) reduces number of votes but increases tax revenue
- Farmers are subject to double taxation

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Main results:

▶ 2 interesting equilibria

- High land productivity + subsistence agriculture= government chooses low security, there is land reallocation (IDPs) and double taxation
- High land productivity + modern agriculture= government chooses high security and there is no displacement

Timing

1. Government decides security level (high or low)
2. AG decides land reallocation (therefore displacement)
3. Government and AG set tax rate and vacuna respectively
4. Farmers decide effort. Production is determined and taxes are collected

- Region with T units of land
- Two types of activities: subsistence and modern agriculture
- Fraction of land devoted to modern agriculture γ. This land produces taxable production.
- Modern agriculture requires less than one unit of labor per unit of land
- Fraction of land devoted to subsistence agriculture $1 - \gamma$. This land produces no taxable production
- Subsistence agriculture requires 1 unit of labor per unit of land

Technology and Production

- ▶ Key assumption: no market mechanism to reassign land
- ▶ When land is reassigned by force from subsistence to modern agriculture there is displacement (IDPs)
- ▶ Taxable production per unit of productive land depends on potential land productivity θ and farmer´s effort e
- ▶ $Y = \theta e$

- Farmer´s problem

$$\max_{e}(1 - t - \tau)Y - \frac{e^2}{2}$$

- t : government tax
- τ: vacuna (armed group tax)
- Optimal effor $e^*$and level of production $Y^*$are obtained

Taxation

- AG's problem:

$$\max_{\tau} \tau(1 - t - \tau)\theta^2$$

- AG's optimal vacuna: $\tau^* = \frac{1-t}{2}$

- Government's problem:

$$\max_{t} t(1 - t - \tau)\theta^2$$

- Governments optimal tax: $t^* = \frac{1-\tau}{2}$

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Land reallocation

- AG's problem:

$$\max_q (1 - pr(q))\tau(\gamma + q)Y^* - c(q)$$

- where $pr(q)$ probability of detection as a function of units of land reassigned(q)
- Optimal number of units of land reassigned (q^*) increases with land productivity θ and decreases with fraction of land devoted to modern agriculture and difference in labor intensity

Government

▶ Government cares about electorate size and tax revenue. It decides level of security (high or low)

▶ Expected utility:

$$EU = V(\gamma, q^*, T) + R(\gamma, q^*, t, T) - C(K_i, T)$$

- V transforms population into votes, more displacement less votes
- R stands for tax revenue
- K_i is the cost per parcel of providing security

Government

▶ Government prefers high security if $EU_H - EU_L > 0$ taking into account three effects:

▶ Votes: loss of votes avoided with high security

▶ Tax revenue: higher revenue because less extortion on existing productive land γ but lower revenue due to lack of land reallocation

  • Low security generates land reallocation that increases taxable output but reduces revenue from modern agriculture (double taxation)
  • Government may like land reallocation

▶ Costs: cost differential for higher security

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Equilibria

▶ Two interesting equilibria

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▶ Comparative statics:

- High security equilibrium is more likely if proportion of land devoted to modern agriculture(γ) is high enough
- High security equilibrium is more likely if land productivity (θ) is high provided γ high enough

Concluding remarks

- Afro-Colombians case may correspond to an equilibrium with high land productivity, low security, displacement and taxation by AG
  - A combination of
    - No property rights enforcement in certain areas of the country
    - Government's strong support for oil palm cultivation
- Armed groups might be replacing market in conflict environment
- "The need to adapt agrarian law to the reality of such informal land markets is one argument put forward in several Latin American countries for recent land law reforms that aim to terminate or at least reduce earlier restrictions on the transfer of indigenous communal lands" (Plant and Hvalkof, 2001)

Afro-Colombian IDPs as percentage of total IDPs (2002-2013)