THE PERVERSION OF PUBLIC LAND DISTRIBUTION BY LANDED ELITES
Power, Inequality and Development in Colombia

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Abstract

Over two centuries, Colombia transferred vast quantities of public land into private hands. Much of this process was justified publicly in terms of giving land to the landless and reducing rural poverty. And yet Colombia retains one of the highest concentrations of land ownership in the world. Why? Analyzing the period 1960-2010, we show that the effects of public land distribution across 1100+ municipalities are highly heterogeneous. Where small and medium-sized farms dominate, land distribution increased average farm size, decreased land inequality, and accelerated local development. But where land was concentrated in the hands of a rural elite, distributed land was diverted to bigger farms, resulting in fewer small and more large farms, greater plot size dispersion, and lower levels of development. We explore whether these effects flow through voter turnout, political competition, or public expenditure and taxation. Land distribution increases turnout, makes politics more competitive, and increases public service provision. But landed elites use patron-client ties to distort local policy and decision-making to their benefit. Land distribution's secondary, institutional effects on the distribution of power outweigh its primary effects on the distribution of land.

Keywords: Land reform, public land distribution, inequality, development, *latifundia*, Colombia

1. Introduction

Influential studies have argued that land inequality leads to low agricultural productivity, low growth, high rates of poverty, oppressive social relations, and social unrest and violence (Binswanger, Deininger and Feder 1995, Boix 2003, Mason 1998). Because of this, land reform has been promoted widely and for decades as a remedy for high levels of inequality, and a tool for modernization and social development more broadly (Ansell and Samuels 2014, Lillo 2018, Lipton 2009, Moore 1966). And yet in many of the countries that have implemented land reform, land inequality, poverty and development have continued increasing (Janvry 1981, Janvry and Sadoulet 1989). How can we explain this paradox?

The phrase "land reform" is used in strikingly different ways by different authors and in different countries. For our purposes, it is important to distinguish between two broad varieties: (i) redistributive land reform, in which the state intervenes to redistribute large, private landholdings to poor, often landless farmers (often called "land-to-the-tiller" programs); and (ii) public land distribution, in which the state distributes publicly-owned landholdings into private hands without breaking up large farms. In theory at least, the former should change the structure of a nation's landholding much more radically, transferring land from the top to the bottom tails of the distribution. By contrast, the latter may benefit small farmers, but without challenging the land wealth, social status, or power of large land owners. Bolivia, Cuba, China, Taiwan and South Korea are all examples of the former. Colombia is (mainly) an example of the latter.

This paper analyzes the last fifty years of a significant but highly heterogeneous case of land distribution: Colombia. Since independence in 1821, Colombia has implemented a series of land distribution programs, transferring vacant and colonized state land to rural producers (Albertus 2015). In historical terms the scale is huge. Since 1901, Colombia transferred 23 million hectares of land, equivalent to the total landmass of the United Kingdom. These are the oldest such programs in Latin America, and account for nearly a quarter of all public lands distributed in the region since 1930 (Albertus 2019). While allocation criteria changed significantly during the course of two centuries, most land transfers happened under programs to benefit landless and poor peasants, including squatters. And

yet Colombia retains one of the highest levels of land inequality in the world, alongside striking disparities in regional and municipal development indicators. Why?

Focusing on the period 1960-2010[1], we merge a large database recording the details of each of 484,000 land grants, with data on political, economic, social, territorial, and other characteristics of Colombia's 1100+ municipalities. We offer the database as an empirical contribution. We use this data both to probe the paradox of Colombian land distribution, and to shine a light on some of the underlying institutional dynamics at work in other countries that have attempted it.

We distinguish between pre-existing distributions vs. land-distribution-induced allocations, and investigate the effects of the latter on plot sizes, land inequality, and on development. We then explore some credible political and fiscal channels through which such effects might occur, focusing on political participation, political competition, and public expenditure and service provision. To our knowledge, this is the first quantitative study of the effects of land distribution and land concentration on municipal-level inequality and development in Colombia[2].

Our analysis is predicated on the notion that land distribution is not a simple policy instrument the main effects of which are first-order. Like other complex institutional reforms (Faguet and Shami 2019), land distribution is a complex instrument that sets in motion important institutional changes across various dimensions of economics, politics and society. It can be expected to have significant effects not just on agricultural productivity and output, but also factors further afield such as the distribution of status and power in society, the types and quantities of public services provided locally, and political competition, amongst others (Bardhan, Luca, Mookherjee and Pino, 2014; Janvry, Gonzales-Navarro and Sadoulet, 2014; Keswell and Carter, 2014).

Furthermore, these effects may not impact municipalities symmetrically, but may instead vary as much as municipalities are themselves different from one another. This is because in each relevant dimension under study, the effects of land distribution depend on a municipality's characteristics. Distributing land in a sparsely populated, flat, lowland region on the frontier that lacks large landowners is not the same as doing so in the mountainous central highlands where landed elites are long established. Vastly different initial conditions will lead to different outcomes, and different long-term development

implications. Colombia's descriptive statistics bear this out, as we shall see below.

The main heterogeneity we focus on is the extent of concentrated landholdings in a municipality. We capture this through our measure of *latifundia* in 1960 – large farms of 500 hectares[3] or more – as a proportion of a municipality's total rural cadaster, normalized in per capita terms. For a study of inequality and development, *latifundia* is interesting in its own right, and also as a proxy for the concentrated economic, social and political power that concentrated landholdings potentially confer upon rural elites. This theme is developed further below. We expect land distribution to have different effects in municipalities where land is concentrated in *latifundia* vs. those where it is not. In practice this proves strikingly true, and helps explain mixed results from 50 years of land distribution in Colombia.

Table 1 provides simple descriptive statistics for Unsatisfied Basic Needs (UBN), the Gini coefficient of land ownership, the amount of land distributed by hectares, and potential land distribution– a normalized proxy for allocable land that we explain below – broken down into terciles by the degree of land concentration as measured by *latifundia*. The first tercile contains municipalities with the lowest presence of *latifundia* in 1960, and the third tercile contains the highest. We see that both UBN and the land Gini rise as we move up terciles, even as the amounts of land allocated or available for allocation rise significantly. The implication is that more land distribution is associated to more land concentration and lower municipal development.

[Table 1 about here]

Put another way, descriptive evidence suggests that Colombia contains *both* of the Iversen-Soskice (2009) types within its borders: polities that are initially far more egalitarian, where land has been allocated and our development indicator is better; and polities that are initially highly unequal, where much more land has been distributed but our development indicator is worse. In such a context, can land distribution have the expected positive effects on poverty and inequality in egalitarian municipalities, and at the same time negative effects where pre-existing land concentration is high?

The rest of this paper proceeds as follows. Section two provides a review of relevant literature, focusing on the economic and political mechanisms by which inequality in landholdings might affect development. Section three explains the land distribution process in Colombia, including key descriptive

statistics. Section four presents our data and methodology. Section five presents our results, and section six concludes.

2. Land Inequality and Development

The literature on land reform is far larger than that on land distribution. Hence we review relevant studies from both strands here. A large literature addresses the effects of land distribution/reform on agricultural productivity, investment, crop yields, farmer incomes, and related variables. These can be called the "first-order effects" of land policy. We do not focus on those here. Instead, we follow many authors (e.g. Besley, Burchardi and Ghatak (2012), Lipton 2009) to argue that "second-order effects" are potentially more powerful. Those operate via changes in underlying political and institutional relations, which in turn can affect the distribution of income, opportunity, political participation, and economic growth. This is especially true given the relatively long, fifty-year time frame we analyze. Such a view echoes broader arguments in such influential studies as Acemoglu and Robinson (2012), Acemoglu et al. (2001), Engerman and Sokoloff (1997, 2002), and North, Wallis and Weingast (2009), to name just a few, on the importance of underlying institutions for explaining long-run development. The remainder of this section examines how land inequality affects development via economic and political mechanisms.

2.1 Economic incentives of large landholders

Galor et al. (2003, 2009) plumb the deep interconnections between land inequality and economic development, beginning from first principles. Capital and skills are complementary in a way that land and skills are not. Rising human capital increases output, productivity and profits in firms, as workers' efforts are multiplied by greater capital intensity and more advanced technologies. This is good not only for workers, who are more productive and whose wages accordingly rise, but also for firm owners and managers, as profits increase. The same relationship does not hold for large landowners, however. The nature of the agricultural economy is that increasing human capital raises the wages of agricultural workers faster than their productivity and is thus a profit-decreasing strategy for large landowners. Small landowners may support human capital investments that increase their off-farm income opportunities, as Gerbash and Siemers show (2010), but large landowners will tend to oppose them. This is especially true in *latifundista*-dominated polities, where the benefits of investments in public education and healthcare

would be enjoyed by many but the costs borne by few. In such places the few will oppose such investments and will have the power to impose their will. This echoes the well-known analysis of Paige (1975), in which large landowners ally with the state to repress small farmers and landless laborers, leading to rural revolt and revolution.

Based on this logic, Galor et al. (2003) predict that public expenditure on education will fall as land inequality rises. They find empirical support in cross-state data from the early-20th century US. They also analyze the case of Korea, where major land reform was followed by a massive increase in public expenditure on education. Between 1949 and 1950 family farms increased more than five-fold, from 349,000 to 1.8 million, while tenant farm households fell from 1.1 million to virtually none. During the years that followed, government education expenditure soared from 8% to 15% of the total public budget. Because of the complementarities between physical and human capital, capitalists were the prime beneficiaries of rising human capital amongst the masses. The authors conclude that landlords, not capitalists, are the principle opponents of human capital investments, economic development, and social mobility in society.

In the same perspective, Cinnirella and Hornung (2016) find that the concentration of land in the hands of large owners is associated with lower school enrolment in 19th century Prussia. But after serfdom is abolished, counties with serfdom and high initial land concentration experience higher educational enrolment, as the expansion of agriculture and freedom of occupational choice drive greater demand for education.

Acemoglu et al. (2008) find contrary results much closer to home. Focusing on municipalities in the Colombian department of Cundinamarca, they find a positive relationship between land inequality in the 19th century and current levels of economic development. In a weakly institutionalized setting like 19th century Cundinamarca, they argue, large landowners may have counterbalanced the power of the rapacious politicians, leading to higher provision of public goods. Likewise, Galán (2011) shows that municipalities in Cundinamarca with more unequal landholdings in the 19th and 20th centuries have higher education levels, lower poverty, and more public goods provision today. This is echoed in the

"good extraction" logic of Faguet, Sánchez and Matajira (2017), and implies that Colombia may not conform to the landowner oligarchy pattern of some other countries in the region.

One reason – and a characteristic that sets Colombia apart from many countries – is its stark "internal frontier" (Fajardo 2002, Machado 2013). This frontier distinguishes territory the state occupied and governed from territory and localities that the central state abandoned. The result was order at the center and a more arbitrary, primitive sort of power punctuated by chaos and violence across much of the periphery (O'Donnell 1993, Gutiérrez 2014), creating wide disparities in long-term development across space (Boone 2012, LeGrand 1986).[4] This spatial heterogeneity will prove central to our analysis; we return to it below.

Nugent and Robinson (2010) explore the effects of land distribution in Colombia, Costa Rica, El Salvador and Guatemala. All four countries displayed very similar initial conditions at independence: levels of development, colonial history, language, religion, climate, topography, factor endowments, technologies, and dominant export crops. But as they entered an export-led phase of rapid economic growth in the second half of the 19th-century based largely on coffee (another shared feature), they adopted very different landholding structures. In Colombia and Costa Rica, coffee production was dominated by smallholder farms. In Guatemala and El Salvador, large coffee plantations became the rule. This difference was mostly driven by legislation. Colombia and Costa Rica both passed laws similar to the US 1862 Homestead Act, protecting smallholders and allowing them to gain title to land. In Guatemala and El Salvador, by contrast, powerful elites passed laws at the onset of the coffee boom that facilitated mass land grabs. Elites wrested lands from freeholders and indigenous populations and converted them into large coffee plantations that used extreme labor repression. Coffee production requires significant investments, the authors point out, for which secure private property is essential. Both sets of countries achieved this, but in completely different ways.

Nugent and Robinson (2010) and Paige (1993, 1997) show that different legal reforms were promulgated by very different kinds of elites. From the mid-19th century onwards, dominant elites in smallholder countries like Colombia and Costa Rica were mainly commercial in origin, with interests in manufacturing, trade, banking, and the urban economy more generally. In countries like El Salvador and

Guatemala, by contrast, dominant elites were large landowners heavily invested in the agricultural economy and rural society. These different interests generated different priorities that affected much more than property rights. For example, Colombia introduced universal male suffrage in the 1850s; approximately 46% of adult males voted in the 1856 election, a figure high by international standards of the time. The ultimate result a century later is per capita GDP in Colombia and Costa Rica roughly twice that of Guatemala and El Salvador, levels of human development that are much higher, and institutions and practices of democracy that are far more robust.

Finally, and focusing on contemporary Colombia, Offstein (2005) presents precise measures of rural land distribution at the national, departmental and municipal levels using the same Agustín Codazzi Geographical Institute (IGAC)[5] data we use. He finds a negative correlation between per capita free investment and the land Gini, implying that municipalities with a more equal land distribution choose to deliver more public goods. Land inequality does not, however, seem to explain variations in municipal-level violence.

2.2 The political mechanism: Patron-client relations

Where does large landholders' power come from? How do they exercise it? By what mechanism do landholders sway political decisions at the local and national levels? We can answer these questions through the analysis of patron-client relations in rural areas[6].

Patron-client relations are characterized by oligarchic patterns of behavior and habits of deference and subordination on the part of voters towards established notables, who are recognized as natural leaders. They are typical of rural areas with stable populations where social relations follow long-established patterns[7]. According to Scott, these elements "are most apparent in the ties between a high-status landlord and each of his tenants or sharecroppers in a traditional agrarian economy – a relationship that serves, in a sense, as the prototype of patron-client ties" (p.93).

Patron-client ties describe the micro mechanism by which landlords exert pernicious control over peasants' lives and choices. The clientelistic exchange is defined by asymmetric reciprocity, in which each partner provides something the other values. Goods and services typically provided by patrons include: protection, security, employment, access to arable land, to education, and to food in bad times.

Clients typically provide: political services such as canvassing, organizing, demonstrating, and voting in favor of the patron's preferred candidates and causes; military or fighting duties, often in informal vigilante or bandit groups; labor services on the patron's estate; and payment of rent, interest and other charges (Scott 1972a & 1972b). As in most exchange, the receiver is likely to value the gift more highly than the giver. For example, a client may value access to a plot of the patron's land more highly than the patron does; a patron may value political and labor services his clients provide more highly than they value their own time. But beyond the instrumentality of their relationship, Scott (1972a) points out, there often lies "a durable bond of genuine mutual devotion that can survive severe testing" (p. 94).

The patron-client relationship is nonetheless deeply unequal and prone to the exploitation and oppression of clients. This is because the patron is far more important to the client than the client is to the patron. More precisely, the marginal benefit a patron receives from any particular client is low, whereas the benefits a client receives from his patron are high and may be critical to his family's livelihood. The patron's 'gifts', and hence her power, are often rooted in monopoly control over a resource or technology that is valuable to the polity (Medina and Stokes 2007). Examples include land, a grain elevator, a mill, a school or a grocery store. In the case of infrastructure and services, the patron's control may be indirect, via ownership of the land on which the infrastructure sits, and not of the infrastructure itself, a phenomenon Shami (2012) refers to as control via 'interlinked markets'. The proffering of material goods by clients will often take the form of threats (implicit or explicit), for example of exclusion from a critical market or service, rather than inducements.

Monopoly power in the provision of critical needs allows patrons to make heavy demands of clients. Clients are typically poor and operate near the subsistence threshold. Slim margins mean they prefer to minimize their losses rather than maximize gains by taking risks that may plunge a family into hunger or worse (Scott 1972a). In an economy offering few options, their incentives are to sacrifice their independence and serve their patron (Escobar 2002). In turn, the patron's incentives are to provide clients with a subsistence livelihood and physical security above some minimum threshold such that her legitimacy is not undermined in the eyes of the community, and peasants do not defect or revolt. The precise balance of reciprocity will tend to shift back and forth over time. But it is structurally loaded in

favor of patrons.

These ideas have been tested in many contexts. Martin (2014) shows how patron-client ties in Punjab, Pakistan undermine citizenship and democracy by effectively privatizing access to, and control over, the state. For Martin (2014), the disproportionate social, political and economic power that some landlords possess interact with an inefficient local state to subvert policy implementation, bureaucratic procedure, and the rule of law. Along similar lines, Pattenden (2011) and Jeffrey (2001) explore how elites in rural Karnataka and Uttar Pradesh reproduce their power by colonizing the state and appropriating its resources. Studies like this suggests that the role of a powerful landed elite is still dominant in rural areas.

What do landowners use their powers of patronage to achieve? They typically suppress rural wages and access to credit; prevent organization by landless or poor farmers, or intervene in such organizations when they form; constrain labor mobility and urbanization; monopolize access to higher quality land and other resources; and manipulate the rural vote (Albertus 2017). Their influence over their clients' votes gives them significant electoral power, which they use to elect themselves or allies to positions of power in local government, and – in league with larger associations of landowners – at the regional and national levels as well (Paige 1997). Miranda's classic study of clientelism in Colombia (1977) identifies just such a mechanism at work in Colombia. Landowners' hold on the rural vote can give them representation in national legislatures that is disproportionate to their numbers or economic weight. It can also invert political accountability, leaving voters (clients) accountable to parties (patrons) for their actions, rather than parties to voters (Stokes 2009).

Landowners use this power to repress public investment in public goods, like education and health, and other services and infrastructure likely to benefit their rural clients, which might raise their patronage-price or free them from their clientage altogether, for example by facilitating migration (Dávila and Leal 2010, Pizano 2001). In the aggregate, landlords' interest in the continuing poverty and dependence of peasants undercuts investment in public goods and slows economic development not just of their regions, but of the national economy.[8] This is why patron-client relations are characteristic of disproportionately poor countries, both across the world and across time (Stokes 2009), and continued to

define politics in much of rural Colombia through the end of the 20th century (Dávila 1999).

Throughout all of this discussion, the key factor has been control over large tracts of land. This is what confers upon landholders their patronage powers, which in turn allow them extraordinary scope to intervene in electoral competition, undermine democratization, and repress economic and social development. The opposition of large landholders to land reform will thus go far beyond their reluctance to give up an asset. Alienation from their land implies a direct loss of power, status, authority and prestige in society. It is something *latifundistas* will fight tooth and nail to block, or – once implemented – reverse.

2.3 Theoretical predictions

How should we expect patron-client relations to interact with the distribution of state-owned land in Colombia? Where agricultural land is concerned, Colombia' municipalities can be divided into: (i) those with high *latifundia*, where land is highly concentrated; and (ii) those with low or no *latifundia*, characterized by a smallholder agricultural economy. These very different distributions of land will give rise to very different political and social environments. Between them lies a broad third group (iii) characterized by intermediate levels of latifundia and smallholder farming, with political and social characteristics that lie between the extremes.

Concentrated landholding grants elites disproportionate power in their local communities. Faced with attempts to transfer state-owned land to the landless, their most powerful strategy is to capture this land for themselves. Elites will use their varied levers of social and economic power in a number of ways, along the lines outlined above, to achieve this; we mostly lack adequate data to measure these means. This gives elites two distinct instruments for achieving their goals: (1) control over local governments, which can actively aid their land reconcentration efforts; and (2) disproportionate influence in Congress, as national parties compensate elites' ability to deliver the local vote with an outsize say over land policy.

Where *latifundia* is low, we expect the distribution of land to previously landless peasants to increase the number of smallholder-farmers. This should, in turn, increase voter turnout, as beneficiaries' greater wealth and status will encourage them to vote, as will their increased stake in public affairs.

Higher turnout should, in turn, lead to greater political competition, and hence smaller margins of victory and lower vote totals for winning parties in both local and national elections. Greater political competition should in turn lead to higher investment in public goods, as parties compete for smallholders' votes. By contrast where *latifundia* is high, we expect its incremental effect to be negative on turnout, on political competition, and on political concentration. This should, in turn, lead to lower public investment, both as a result of lower political competition, and as an intentional strategy by elites to keep rural labor repressed.

But making this sequence work in practice is not easy. Borras and Franco (2010) highlight the paradox: pro-poor land policies are needed to improve development and equality in poor and unequal places; but these are precisely the places where political and economic power are concentrated in the hands of a landed elite, who will try to block the execution of such policies.

The political channel we investigate here is only one of several plausible mechanisms, although one for which relatively high-quality data exist. There is much anecdotal evidence that landed elites have also used nonelectoral means to dominate local politics and reconcentrate land in their own hands (e.g. Gutiérrez 2014, Ronderos 2014). This includes organizational power, which Albertus (2019) argues Colombia's "agrarian bourgeoisie" has deployed to steer land grants away from poor peasants, towards itself. Our results are consistent with his, which analyze a parallel patron-client mechanism that runs through local fiscal policy. He also examines overt violence perpetrated by paramilitaries on peasants, and the forced displacement of millions of rural people during Colombia's decades-long conflict. These are important alternative channels; lack of space prevents us from addressing them here.

3. Trends of Public Land Distribution in Colombia

Land is distributed highly unequally in Colombia, with a concentration of ownership amongst the highest in the world. Land inequality has been closely linked to rural poverty and the economic exclusion of the rural population (Acemoglu et al. 2008, Gutiérrez 2014). The latter largely explains Colombia's long-standing program of public land distribution. But high concentrations of landholding and large estates – *latifundia* – have nonetheless endured to the present.

The distribution of land in Colombia is deeply rooted in its colonial experience and the 19th

century expansion of the agrarian frontier. During the colonial period, large properties emerged from the system of *encomiendas* established by the Spanish Crown. *Encomiendas* were royal grants that allowed the *encomendero* to extract tribute and labor from indigenous people living in a particular area, in exchange for protecting and Christianizing them. Technically the *encomienda* did not assign ownership, but rather an inheritable right to use a piece of land. In practice, however, *encomiendas* were treated as private property, and were eventually transformed into *latifundia* – great estates – when landlords formalized their titles. At the same time, other Spanish and *criollo* farmers received smaller plots from the crown, creating an unequal, two-tiered initial distribution of land. Over time, the latter category grew steadily as Spanish-indigenous *mestizos* grew from a negligible share of the population to become the majority. Initially outsiders, their clamor for inclusion in the country's legal and economic life was assuaged through the sale of public land by the crown. As colonial *encomiendas* gave birth to *latifundia,* colonial indigenous reservations, *resguardos*, gave rise to small estates, *minifundios*, in particular regions, when communal lands were privatized to surviving indigenous populations[9] (Ankersen and Rupert 2006, Colmenares 1997). As the indigenous population declined, many mestizos invaded *resguardos* and seized the land.

The landholding structure inherited from colonial times did not change after independence (Bértola and Ocampo, 2013). Over the two centuries that followed, the defining characteristic of Colombian land policies – including those intended to benefit the rural poor – has been the transfer of publicly held land. Less than one-half of one percent of total land distributed was confiscated or purchased from large landlords. Very little redistributive land reform has ever occurred. Hence the large estates at the top of the land distribution remained mostly unchallenged through two centuries of land policies. But at the same time, vast quantities of public land were distributed to peasants and farmers.

The total area of Colombia is 110 million hectares, of which 60 million ha are registered private property. Between 1901 and 2012, the state granted nearly 23 million ha to peasants and agricultural businesses in over 565,000 plots, equivalent to 20% of Colombia's total area. To put this in perspective, over the past century Colombia has distributed land equal to the total area of the United Kingdom, Romania, or Ghana, about twice the area of Greece or South Korea, six times the size of Switzerland, and

seven times the size of the Netherlands. As for any country, land distribution in Colombia has idiosyncratic characteristics. But there is no denying that land tenure has been changed by policy, and on a huge scale.

Colombia was born bankrupt. During the 19th century, land distribution focused on raising funds to pay off public debts and fomenting a land market. Legislation facilitated bondholders' accumulation of large landholdings (Zambrano 1982)[10]. Towards the end of the century, more emphasis was placed on promoting agrarian development and enhancing the efficient use of land (Sanchez, López and Fazio 2010). During the 20th century, the focus shifted again towards resolving rural conflicts and strengthening squatters' rights (Le Grand 1986, Saffon 2017). But it was not until seminal Law 135 of 1961 that land distribution in Colombia went into high gear. Seeking to develop rural areas, improve domestic food supplies, and respond to the Alliance for Progress, distributions increased from about 90,000 to 600,000 ha per year; the number of beneficiaries more than sextupled. It is notable that the 1961 law explicitly called for redistribution via the break-up of *latifundia*, and for a few years such redistributions did occur. But landed interests were able to defund the public agency charged with expropriation, and redistribution soon petered out (Janvry 1981). Allocation of public lands slowed after 1973, and then increased again following the 1991 Constitution (Centro Nacional de Memoria Histórica 2016)[11].

Figure 1 provides time series data on yearly distributions in area and number of plots. Figure 2a shows the distribution of land grants in hectares between 1961-2010 by size[12]. Interestingly, the largest two categories are the medium 20-200 ha range, and the large >500 ha range. It is important to note that even a 200 ha farm, while not small, is not yet large by Colombian or Latin American standards; based on the IGAC definition we define *latifundia*, or large landholdings, as properties of 500 ha or more. Also, none of the laws discussed above provided full property titles *per se*, but rather Administrative Resolutions of land allocation to a private party. Obtaining full title thereafter was a straightforward process with modest costs that many beneficiaries did not pursue. Figure 2b shows the structure of landholding in Colombia in 2010. It is notable that the smallest farms account for 60 percent of all plots by number, but only 3.7 percent of total farm hectares. By contrast, the largest *latifundias* account for only 0.3 percent of farms by number but 29.3 percent of all farm hectares.

Two facts stand out about land in Colombia: (1) the magnitude of public land distribution has been significant, both in terms of the quantity of land allocated and the number of people benefiting; and (2) land inequality, and high levels of land concentration, have not decreased over time. As Helo and Ibañez (2011) point out, 42% of private land is concentrated in properties larger than 200 ha, and the Gini coefficient for land reached 0.863 in 2009. *Latifundia* remain a significant feature of the Colombian countryside and have recently increased in size (Mora and Muñoz, 2008). Thus the broad structure of landholding inherited from the Spanish – a small number of large landowners and a large number of small landowners – persists.

But their distribution is highly uneven. Largely for historical reasons, *latifundia* are concentrated in a minority of Colombian municipalities (the third tercile of Table 1). These are areas with significant indigenous populations during colonial times. The Spanish, in search of labor, settled here. Though *latifundia* spread modestly beyond these initial areas over time as the "internal frontier" expanded, hundreds of municipalities never experienced any *latifundia*, and hundreds more did only at low levels. Only in the top tercile can we say that *latifundia* is an important characteristic of the structure of land tenure. This creates several "different Colombias" that developed along different lines over long periods of time: areas dominated by *latifundistas*, where we expect politics to be characterized by patron-client relations; areas where *latifundia* is absent, where we expect patron-client ties to be weak; and one or more sets of areas in-between, characterized by intermediate levels of *latifundia* and patron-clientelism.

[Figure 1 about here]

[Figures 2a and 2b about here]

4. Data and Methodology

We examine the effects of public land distribution on municipal-level development and land inequality, focusing on its differential effects in the presence vs. absence of *latifundia*. We then explore one plausible political mechanism by which the concentration of landownership might cause land distribution's effects to vary. We focus on the period 1960-2010 for two reasons: (1) although we have very detailed data on land distribution going back to 1901, data on our dependent variables is only available at municipal level from 1973 onwards; also (2) the pace of public land distribution increased

significantly with Law 135 of 1961, as mentioned above, and so the latter half-century is where one would expect to find the most important effects.

4.1 Data

Our database combines historical data from several sources. Public land distribution data comes from the Colombian Institute of Rural Development (INCODER), which provided individual-level data on beneficiary, plot size, date, and municipality for each of nearly 484,000 land grants between 1961 and 2010. Data on Unsatisfied Basic Needs (UBN) comes from the National Statistics Department, and varies between 0, when all basic needs are satisfied, and 100, when none are. Our land data (Gini coefficients of plot sizes, structure of landholding, average plot size and the coefficient of variation of plot sizes) are constructed for each municipality using rural cadastral data from IGAC for 1985, 1993, 2005 and 2010. Variables for the extent of *latifundia* and its share of the total rural cadaster are calculated from IGAC data from 1960. *Latifundia* are defined according to IGAC as properties of 500 ha or more.[13] Lastly, electoral data are from the Colombian National Registry and compiled by the Universidad de los Andes (Pachón and Sánchez 2014). All per capita values are calculated using lagged population data from the national census[14].

Appendix 1 presents summary statistics of the variables used in our estimations. Public land distribution has taken place in almost all Colombian municipalities, and the average size of rural properties is 47 ha. Average land inequality is high, at 0.69, and in some municipalities reaches extremely high values of 0.98 for both plot size and value. Medium size properties account for about 40% of rural land, *latifundia* for 37%, and small properties for 33%. The average municipality in 1960 had 13,445 ha of *latifundia,* representing 14% of rural property. But dispersion is very high, with *latifundia* in 1960 ranging from 0 ha to as much as 1.45 million ha and 98.8% of all land in a municipality.

4.2 Methodology

To determine the effects of public land distribution on development and inequality, we would like to estimate

$$y_{it} = \boldsymbol{\delta}_i + d_t + \gamma_1 \mathrm{PLDpc}_{it} + \gamma_2\, \mathrm{PLDpc}_{it} * \mathrm{L1960}_i + \gamma_3 \mathrm{L1960}_i * d_t + \gamma_4 Avail_{i,t-1} +$$

$$\sum \phi_j Controls_{i,to} * d_t + DEP_i * d_t + \varepsilon_{it} \,, \quad (1)$$

where dependent variable y represents development and inequality outcomes of interest. We use Unsatisfied Basic Needs (UBN) as our key measure of development; as measures of land inequality we use the land Gini coefficient of plot sizes[15], the average size of rural properties, and the coefficient of variation of plot sizes. Variables $\boldsymbol{\delta}$ and d are municipal and departmental, and year fixed effects, respectively. $PLDpc_{it}$ represents potential land distribution in per capita terms (see below) while $L1960_i$ is per capita *latifundia* (larger than 500 hectares) in 1960, previous to the public land distribution laws of 1961, capturing the relative size of large landholdings in municipality *i*. This variable captures the prevalence of *latifundia,* and the relative power of the landed elite in a municipality prior to post-1961 distributions. *Avail* is the estimated proportion of the municipal area available for distribution in the previous period. In order to reduce likely biases in the estimations we include a set of controls. $Controls_{i,to}$ contains a battery of variables previous to 1960 that are potentially correlated with outcome variables and/or some of the right-hand-side variables, including municipal Area and municipal Area squared, presence of African descendants and indigenous population in 1912 (a dummy equal to 1 when the proportion of these two groups in a municipality exceeds the 1912 national average), flatness of terrain, soil fertility, violence between 1948 and 1960, cadastral property values in 1960, and prior literacy rate (1951)[16]. All of these are interacted with corresponding time dummies. We also control for departmental (state) trends where a municipality *i* is located (*DEPi*dt*). And ε_{it} is the error term. All variables are subscripted by municipality *i* and year *t*.

Our key policy variable is public land distribution. But we cannot introduce simple indicators of public land distribution (plots, ha, or per capita) as regressors in this equation because of the endogeneity bias that would result. As land distribution policies have aimed to reduce poverty, improve land inequality, and increase rural development, it is likely that land allocation actions at the local level have been largely driven by poverty and inequality. Naïve OLS estimates would thus produce biased estimators. To correct for this, we construct an exogenous measure of land distribution called Potential Land Distribution per capita, PLDpc. This variable distributes the total land area allocated each year in Colombia in proportion to each municipality's area, correcting the latter for previous years' distributions.

This procedures resembles the computation of a Bartik instrument (Bartik 1991, Blanchard and Katz 1992). To construct PLD, we first calculate Potential Land Allocable in each municipality:

$$Potential\ Land\ Allocable_{it} = \frac{corrected\ area_{i,t}}{\sum_i corrected\ area\ of\ municipalities_{it}} * total\ hectares\ allocated_t \quad (2)$$

Corrected area captures the total area of the municipality corrected by previous land allocations. The correction involves two elements: (i) for each municipality, we discount the area of land allocated between years t-1 and t; and (ii) areas are corrected only in municipalities where actual allocations took place between years t-1 and t. Total hectares allocated is the total numbers of hectares allocated in the whole country in year t. Our concept of land allocable for public land distribution is thus based on national, and not local, trends. Corrected municipal area is defined as follows:

$$Corrected\ area_{i,t} = corrected\ area_{i,t-1} - land\ \ allocated_{i,(t-1,t)} \quad (3)$$

Potential Land Distribution per capita is thus defined as municipality i's total allocable land summed between 1961 and year t, expressed in lagged per capita terms:

$$PLDpc_{i,t} = \left(\sum_{1961}^{t} Potential\ Land\ Allocable_{i,t}\right)/population_{i,t-1}. \quad (4)$$

It can be interpreted as the intensity of the intent-to-treat, given national public land distribution trends and the quantity of land available in a municipality. Figure 3 shows correlations between actual and potential accumulated hectares of land distribution for 1973 and 2010. We see that Potential Land Distribution is a good, but not perfectly correlated, predictor of real land distribution – a desirable characteristic for an exogenous proxy.

[Figure 3 about here]

We expect the coefficients on PLD to be negative for estimates of poverty or land inequality, implying that public land distribution benefits poorer populations and improves the distribution of land – i.e. the first-order effects of land distribution obtain. Land distribution's second-order effects, operating through changes in political power and public institutions, should over time reinforce these trends. We test these ideas in a second set of estimations, explained below. We expect the coefficient on *latifundia* to be positive for both poverty and land inequality, in accordance with the literature reviewed above. This implies that where land is highly concentrated, elites are able to either capture public land distribution for their own benefit, or capture local institutions in ways that benefit them at the expense of the poor. In

such places, the positive effects of land distribution will be undermined. Following the same logic, we expect the coefficient on the interaction of PLDpc and *latifundia* to be positive for both as well.

Our specification is parsimonious with few controls. We omit other commonly-used controls, such as indicators of education, tax revenues, or political and violence variables, due to probable endogeneity and/or multicollinearity. As explained above, we do control for a battery of pre-1960 variables interacted with time dummies, to capture likely correlations between potential public land distributions and dependent variables. As potential land distribution resembles a Bartik instrument, we expect such correlations to be zero. We estimate for over 800 of Colombia's 1100+ municipalities[17] using information for the period 1961-2010.

In order to investigate the political mechanisms by which any effects identified in equation (1) occur, we further estimate a variation of (1) that substitutes dependent variable p_{it} for y_{it}, where p_{it} denotes voter turnout, electoral margin of victory, and winning party's proportion of the vote in local and Congressional elections, for municipality i and year t. And to investigate the fiscal channels through which any political effects then flow, we substitute f_{it} for y_{it}, where f_{it} is public investment per capita, public service expenditure per capita, and per capita tax revenues, for municipality i and year t.

5. Results: Land Distribution, *Latifundia,* Inequality and Development

Inequality

How did public land distribution affect inequality? For each of three dependent variables of inequality we present four regressions, increasing the number of control variables each time, as a test of robustness. Models 1-4 in Table 2 show that public land distribution decreases the Gini coefficient of plot sizes, with estimated coefficients significant at the one and five percent levels.[18] The land distribution-*latifundia* interaction term has a positive coefficient but is insignificant throughout. Models 5-8 show that public land distribution increases the average size of rural properties, a result significant at the one percent level and with very stable coefficients across models. But the land distribution-*latifundia* interaction term is negative and also statistically significant at the one percent level, implying a countervailing effect. Models 9-12 show that land distribution decreases the coefficient of variation of plot sizes – a measure of the dispersion of overall landholding size. But the land distribution-*latifundia*

interaction term is positive and statistically significant at the five and 10 percent levels, implying that while land distribution tends to equalize plot sizes, the presence of *latifundia* offsets this effect. In other words, while public land distribution reduces dispersion in landholding, likely making land distribution more equal, the presence of *latifundia* pushes in the opposite direction. Our coefficients are robust to the inclusion of a battery of pre-1960 socioeconomic, ethnic and political controls, and departmental trends. Errors are clustered at municipal level in all estimations. We also control for the share of public land allocated; this coefficient is not significant[19]. This may capture the relevance of each municipality in national-level land distribution policy. Our evidence implies this is not driving our findings.

[Table 2 about here]

These results imply that land distribution in Colombia decreased inequality in landholdings between 1961-2010. The estimated effect of a one-log-unit increase in land distribution (in hectares per capita) is a reduction of 0.012 points of the land Gini. Keeping in mind that the Gini ranges between 0 and 1, this effect is not insignificant. Put another way, an increase of one standard deviation in potential land allocated decreases the Gini coefficient of plot sizes by 0.021 points (=1.27*-0.012), equivalent to 21 percent of its standard deviation, or three percent of its mean.[20] The presence of concentrated landholdings – and the rural elites they imply – appears to worsen land inequality, though our evidence for this is weak. The indicator of dispersion shows a similar pattern. A one-standard-deviation increase in potential land distribution decreases the coefficient of variation by 0.25 units, equivalent to seven percent of its mean or 18 percent of its standard deviation. In contrast, the presence of latifundia in 1960 increase the coefficient of variation. Thus, a one-standard-deviation increase in the *latifundia*-distribution interaction term increases the coefficient of variation of plot sizes by 11 percent of its standard deviation.

Land distribution also affects the average size of landholdings, but here the effect is positive. An increase of one standard deviation in potential land distribution increases average plot size by 0.22 log units, or 1.25 ha. The presence of *latifundistas*, however, mostly counters this effect. Our results suggest that a one-standard-deviation increase in the interaction term *decreases* the average size of rural properties by 0.10 log units (=0.06*1.74), equivalent to 1.11 ha. The concentration of landholding thus counteracts 89 percent of the beneficial effects of land distribution on average plot size.

Table 3 probes the distributional effects of land distribution further by estimating its effects on per capita landholdings across various size categories. We see that land distribution increases landholdings in all of the size categories except the largest, corresponding to *latifundia,* where the effect is statistically nil or marginally significant. The biggest coefficient is for the 20-200 ha/capita range, followed by the 3-10 ha/capita range. All of these coefficients are significant at the one percent level. But in standardized terms, we see larger effects in the smaller categories: an increase of one standard deviation in potential land distribution increases the number of plots smaller than three ha by 0.20 log units, equivalent to 145 percent of its mean. Standardized effects for 3-10, 10-20 and 20-200 ha/capita are 115 percent, 105 percent and 72 percent of their means, respectively.

[Table 3 about here]

The *latifundia* interaction term is similarly significant (mostly) at the one percent level, but with signs that change in a way that is telling. The interaction term is positive for all four largest size categories, including the largest. But it is negative for the two smallest size categories. These results imply that land distribution increased per capita landholdings across small, medium and large landholdings, but most strongly amongst medium-large properties of 20-200 ha[21]. This effect is complemented by the *latifundia* effect above 10 ha/capita. But below 10 ha, *latifundia* has the opposite effect, decreasing the number of small farms. This is worth underlining: the incremental effect of *latifundia* on a program to give small plots of land to poor farmers is *fewer* small farms. Also notable is that the *latifundia* effect exceeds the pure land distribution effect for the largest two categories, both as coefficients and in standardized terms. In other words, in the presence of *latifundia* public land distribution begets more *latifundia*.

Development

Table 4 examines the effects of public land distribution and *latifundia* on municipal-level development, measured by the relatively broad measure of Unsatisfied Basic Needs.[22] Equations 1-4 test alternative specifications of our basic model as a robustness check. Land distribution is negative and statistically significant at the one percent level in all four specifications. Once again, the land distribution-*latifundia* interaction term has the opposite sign and is statistically significant at the one

percent level throughout. Our estimates are robust to the inclusion of different sets of controls.

[Table 4 about here]

By decreasing unsatisfied basic needs, land distribution is associated with increasing local development. A one-log-unit increase in per capita land distribution is associated with reductions in UBN of between 1.9 and 2.9 units. To put this in context, a one-standard-deviation increase in land distribution would decrease UBN by as much as 3.7 points, equivalent to six percent of its mean or 15 percent of its standard deviation. But once again, these effects are mostly undone by concentrated landholdings. Using model (4) with all controls, a one-standard-deviation increase in land distribution decreases UBN by 2.5 points; a one-standard-deviation increase in the *latifundia* term drives UBN back up by 1.9 points, effectively undoing three-quarters of the positive effect of land distribution on development.

Summary

Taken together, our results imply that the effects of public land distribution in Colombia are not symmetric across municipalities, but highly heterogeneous. And theory provides strong reasons why we should expect the effects of state-owned land distribution to vary significantly with context. On its own, land distribution decreases land inequality, increases average plot size, and decreases dispersion in the distribution of land ownership. It does so not by breaking up large farms – Colombia's land distribution did not work that way – but rather by increasing the lower and middle ranges of the distribution. In so doing, it alters that distribution from a right-skewed bimodal one – with peaks at the extremes, a "missing middle", and a high degree of dispersion – towards a more normal, more even distribution. Public land distribution also improves local development. Impressively, our estimates imply that the magnitude of this effect in standardized terms rivals the effect on land inequality. Land distribution reduces unsatisfied basic needs, a measure of development that naturally prioritizes poorer Colombians. This is a notable finding given that any reasonable chain of causality would link land distribution more tightly to land inequality than to a broader, multidimensional measure of development.

But the presence of *latifundia* – concentrated landholdings – undermines this, reducing land distribution's effects on average plot size, number of plots in smaller categories, and development. These counter-effects are significant in size. Our results imply that *latifundia* counteracts between 66-79 percent

of the beneficial effects of land distribution on development, and 89 percent of the effect on average plot size. It appears that large landowners are able to prevent the benefits of land distribution from flowing to the poorest farmers, instead capturing this land for themselves.

These results are point estimates at average values for all municipalities. If our overarching finding is that pre-existing large landholdings strongly mediates the effects of public land distribution, then we need to know more. At what thresholds of inequality do land distribution's effects switch from positive to negative for the variables we estimate? When does land distribution improve inequality and development and when does it make them worse? The graphs that follow answer these questions by calculating the incremental effects of land distribution vs. land concentration separately on Colombian municipalities decile by decile. We recalculate our canonical equation using coefficients estimated above and decile averages to calculate estimated $\hat{y}$ values for each decile of Colombian municipalities ranked by *latifundia*. By alternately setting the land distribution and the interaction terms to zero and subtracting $\hat{y}$ values, we can easily estimate incremental effects of land distribution and *latifundia* on each dependent variable.

Figures 4a and 4b show the incremental effects of land distribution and *latifundia*, as well as the net effect (green line, discussed above), on two measures of land inequality – the Gini coefficient of land ownership, and the coefficient of variation of plot sizes.[23] The two figures tell very similar stories. Public land distribution decreases inequality throughout the distribution but does so more strongly in the higher deciles of land concentration – where the underlying problem it seeks to remedy is greater – as we would expect. *Latifundia* has no effect in the lowest deciles, again as we would expect since its value there is zero or very low. But above the 8th decile *latifundia* has a sharply increasing effect that completely counteracts, and then exceeds, the beneficial effect of land distribution. By the tenth decile, the *latifundia* effect is 162 percent of the land distribution effect on the land Gini, producing a net increase of 0.08 Gini points. Similarly for the coefficient of variation of plots sizes, by the tenth decile the *latifundia* effect is 121 percent of the land distribution effect, producing a net increase in dispersion of 0.05 points[24]. In other words, transferring public land in the presence of high *latifundia* not only does not decrease land inequality but actually makes it worse.

[Figures 4a and 4b about here]

Figure 5 shows the incremental effects of land distribution and *latifundia* on different categories of plot sizes. Land distribution's strongest effects are to increase landholdings in the intermediate 20-200 ha/capita category, followed by the smaller 3-10 ha/capita category, and then the 10-20 and <3 ha/capita categories. Land distribution's smallest effects are on the 200-500 and >500 ha/capita categories, as we would expect, though these are still positive. The effects of *latifundia*, by contrast, are negative for farms smaller than 3 and 10 ha/capita, but then rise consistently to the 20-200 ha/capita category, above which they plateau. The net effect of land distribution on landholdings is positive across all categories, with a broadly secular rise (given by *latifundia*) from smallest to largest farms, and a large upward spike at 20-200 ha/capita. In sum, distributing public land increases landholdings of all sizes, but does so more for medium and larger farms than for the smallest.

[Figure 5 about here]

Figure 6 shows the incremental effects of land distribution and *latifundia* on local development. Land distribution decreases UBN throughout, thereby increasing development; it does so most strongly in the highest deciles, especially the 9th and 10th, where the prevalence of latifundia landholdings is the greatest. *Latifundia* has a roughly mirror-image, opposite effect that counters this land distribution effect. In the lower deciles, *latifundia's* influence is small. But it then grows rapidly, countering 40 percent of the land distribution effect in decile 7, and 62 percent in decile 8. By decile 9 *latifundia* undoes fully 100 percent of the land distribution boost to development. In decile 10 the *latifundia* effect is -161 percent of land distribution's beneficial effect. As a result, the net effect of land distribution in the presence of the most concentrated landholdings is strongly negative. In these municipalities, additional increments of land distribution actually worsen local development.

[Figure 6 about here]

Patron and Clients in Action?

How did *latifundistas* manage to counteract the effects of public land distribution in the municipalities they dominated? As patrons in a patron-client setting, they had a range of tools at their disposal, including their wealth, status, control over land, manipulation of interlinked markets, and

mobilization of the rural vote, as described above. Unfortunately, data capturing most of these forms of power do not exist at the municipal level for Colombia. But we do have detailed data on electoral results and public financial flows for all of Colombia's municipalities, permitting us to probe the relationships between public land distribution, *latifundia* and two key vectors of power: local political competition and local taxation and spending decisions.

There are solid theoretical reasons to think that greater competition in a political system leads to more responsive government, more and higher quality public goods, and pro-growth economic policies (Besley, Persson and Sturm 2010, Faguet 2012, Kosec et al 2018, Stasavage 2005), which in turn will be reflected in higher taxes and spending. While there is no one commonly accepted measure of political competition, many of the variables scholars have used combine measures of turnout with the closeness of electoral results. The logic is that an election is more competitive when larger portions of the electorate vote and more than one party has a realistic chance of winning. Hence we investigate the effects of per capita land distributions on local political competition, specifically electoral turnout and political concentration, given different levels of *latifundia*. We expect *latifundia* to repress turnout and increase political concentration, implying lower levels of political competition.

We then turn to policy outputs, examining land distribution and *latifundia's* effects on public investment, expenditure and taxation at the municipal level. Such decisions on the one hand follow from the political dynamics described above, in that a more competitive politics should lead to greater public goods provision, while *latifundia*-type capture should repress the same. But on the other hand, public finance decisions represent a separate channel in which *latifundistas* and other powerful interests can use non-electoral means – e.g. wealth, status, manipulation of interlinked markets – to get what they want.

Table 5 examines the effects of land distribution and *latifundia* on electoral turnout in municipal council elections between 1972 and 2007, and for Congressional elections (lower house) between 1970 and 2010. We focus on these two types of elections because they more closely reflect local political dynamics than Senate or Presidential elections. Here and in the results that follow, *latifundia* proxies for patron-client relations. We present alternative specifications of each model with increasing numbers of controls.

The results show that land distribution is associated with higher voter turnout across the board, implying an increase in political competition. All our coefficients are positive, significant at the one percent level, and, for each elected body, vary within a relatively narrow range regardless of specification. By contrast, the *latifundia* interaction term is almost completely insignificant and changes sign once. We interpret this as no evidence in support of our theory that patron-client ties reduce voter turnout. Hence, we cannot establish that in municipalities with highly concentrated landholding, land distribution decreased, or indeed affected at all, political participation. The same holds for Congressional elections.

Our results could be interpreted as implying that new land owners participate more in local politics, perhaps as issues to be discussed or decided on affect their interests. This possibility is supported by qualitative evidence for Colombia's Cordoba region, where Ocampo (2014) shows that the patron-client relationship is a transaction in which local politicians facilitates privileged access to public goods or assets for clients, who collect votes for patrons in return. By this mechanism, patron-client ties would not counteract the political participation-boosting effect of land distribution, and may even *increase* it further.

[Table 5 about here]

Table 6 examines the effects of land distribution and *latifundia* on electoral political concentration. As measures of concentration we use the winning party's margin of victory and its overall level of support. Where parties win with bigger margins and higher overall levels of support, concentration is higher and hence the system is less competitive. As before, we present alternative specifications of each model with increasing numbers of controls. We see that land distribution reduces electoral victory margins for municipal and lower house elections. These results are significant at the one percent level for municipal elections, and at the one and five percent levels for the lower house. Land distribution has no statistically significant effects on the winning party's level of support in municipal elections, but a negative and significant effect for Congressional lower house elections. All of these results are robust to different specifications.

Our results imply that, as expected, land distribution increases political competition in both local

and national elections in Colombia. But municipalities with high *latifundia* show no evidence of lower political competition as a result of patron-client ties working through the electoral process, as we theorize above. Based on this evidence, we can only speculate about how, or indeed if, patron-client ties operate electorally in municipalities with high *latifundia*. One possibility consistent with our evidence is that land distribution could lead to the activation of new voters, meaning voters moving to a municipality to obtain land, or existing residents registering to vote for the first time upon receiving land. Patrons might use their power to capture them and persuade them to vote for the candidates they favor. Such a mechanism could lead to higher turnout and greater competition (if different patrons favor different candidates), but no systematic effect on which parties win. But this is only speculation, and a question ripe for further research.

[Table 6 about here]

The political competition literature predicts that greater competition will lead to higher levels of public investment and public service provision, and greater tax effort. But on the other hand, as discussed in section 2.2, tax revenues and spending on social services and public goods tends to be lower where land inequality is high. Which of these opposing effects holds for Colombia? We employ a fixed effects seemingly unrelated regressions (SUR) model[25] to examine the relationship between land distribution and *latifundia* on per capita public investment, public service expenditure, and tax revenues for the period 1970-2006.

The results in Table 7 show that per capita local public investment in social services and public goods[26], public service expenditure per capita, and tax revenues per capita all increase with land distribution. These relationships are robust to different specifications and are all significant at the one percent level. By contrast in places with high *latifundia,* the effect of land distribution is to decrease public investment, public service expenditure, and tax revenues per capita. These results are also all significant at the one percent level and robust to different specifications.

Hence both predicted, opposing effects appear to operate in Colombia. How do we explain this? Distributing land leads to more political participation and more competitive elections. This in turn increases public investment and expenditure on public goods and public services in which the mass of

voters are interested, leading such municipalities to exert greater tax effort. But large landowners provide their own primary services privately, and thus have little incentive to spend on public goods. They would furthermore prefer lower local taxes and fees. How do they turn such objectives into results? Unfortunately our evidence cannot say; it does not appear to be via the electoral mechanism. As we argue above, patrons have a variety of sources of power, and hence a variety of means for getting their way. Identifying which of these are at play in *latifundista*-dominated municipalities remains a topic for further research.

[Table 7 about here]

6. Conclusion

Colombia has distributed vast quantities of public land since independence, to landless and poor peasants, large landholders, and to everyone in-between. What effects did this have on inequality and development? These questions are interesting not just for their own sake, but because they shed light on more complex questions of how elements of the institutional environment, such as the distribution of land, affect reforms aimed at boosting development. Our evidence shows that public land distribution had heterogeneous effects in Colombia. On average, land distribution increased the size of rural properties, decreased land inequality, decreased dispersion in the distribution of landholdings, and increased development. But in some municipalities the prevalence of *latifundia* – highly concentrated landholdings – significantly counters these beneficial effects, resulting in smaller rural properties, more dispersed landholdings, and lower levels of development. It is notable that in such places, a program publicly marketed as distributing land to the landless and poor produced instead greater land inequality and an increase in medium and large farms.

Evidently, public lands at some level intended for the poor were captured by the rich in some municipalities, but reached the poor in others. By what mechanisms did these divergent results come about? Where *latifundia* was low or absent, land distribution directly improved the wealth, income and well-being of the poor by transferring productive assets to them. But land distribution's indirect effect is more interesting and potentially more powerful. Peasants who received land saw their social status rise. This, in turn, led them to participate more in local and national politics, raising electoral turnout and also

the competitiveness of local and national elections. And increasing participation and competition led to more investment and expenditures in public services. Having taken on greater expenditure demands, such municipalities also increased their tax effort. Lastly, the combination of productive assets for the poor with greater public investment and service provision decreased poverty and increased development in these municipalities.

By contrast, municipalities with a high concentration of landholding (in the 9th and 10th deciles of *latifundia*) present opposite results. Here the beneficial effects of public land distribution were counteracted – often at levels above 100 percent – by a pernicious *latifundia* effect. In such municipalities, large landholders used their power to capture land intended for the poor. In such municipalities, the distribution of public land increased the number of *latifundias* (above 500 hundred ha) and lowered the number of small plots (under 10 ha). This changed the structure of landholding, likely allowing large landholders to strengthen their grip on local politics. It follows logically that land inequality, measured by a greater dispersion of plot sizes and a higher number of the largest plots, also increased. The combination of greater land inequality and fewer small farms with lower public investment and service provision increased poverty and decreased development in these municipalities.

Our results suggest that *latifundistas* have significant power in the local political economy of Colombia. They are able to repress investment in public goods, provision of public services, local tax receipts, and to alter the structure of landholding. But we see little evidence that their power is channeled via elections. Whatever other means they have of getting their way unfortunately remain beyond the scope of this paper. Some of them may be informal or illegal, and hence difficult to measure. But they are visible in our fiscal results, and so we do not doubt that they exist. We do not claim that this fiscal mechanism is the only channel between land inequality, patron-client relations and development, nor indeed that we have teased it out completely. We claim merely that it is one plausible channel that is empirically robust.

Our evidence suggests that land distribution in Colombia could have achieved far more. Landowning elites' grip on local power allowed them to undermine the distribution of public lands to landless and poor peasants in municipalities where they dominated, and divert land to themselves. And so

the redistributive goals of national legislation were perverted into a "Colombian model of land reform" that distributed public lands to landowners, often very large ones. Where landed elites were absent, this model was good for the poor and good for development. But where landed elites dominated, the lot of the poor worsened. Hence we can say that in purely analytical terms, it was a mistake not to redistribute *latifundia*. Doing so would likely have accelerated Colombia's development. Directly extracting land from the top of the distribution and redistributing it amongst the bottom could have powerfully reduced inequality. More potently, the countervailing power of elites would have been undermined. Distortion and capture in local politics would have been stymied. And Colombians today would be more equal, less poor, and more free.

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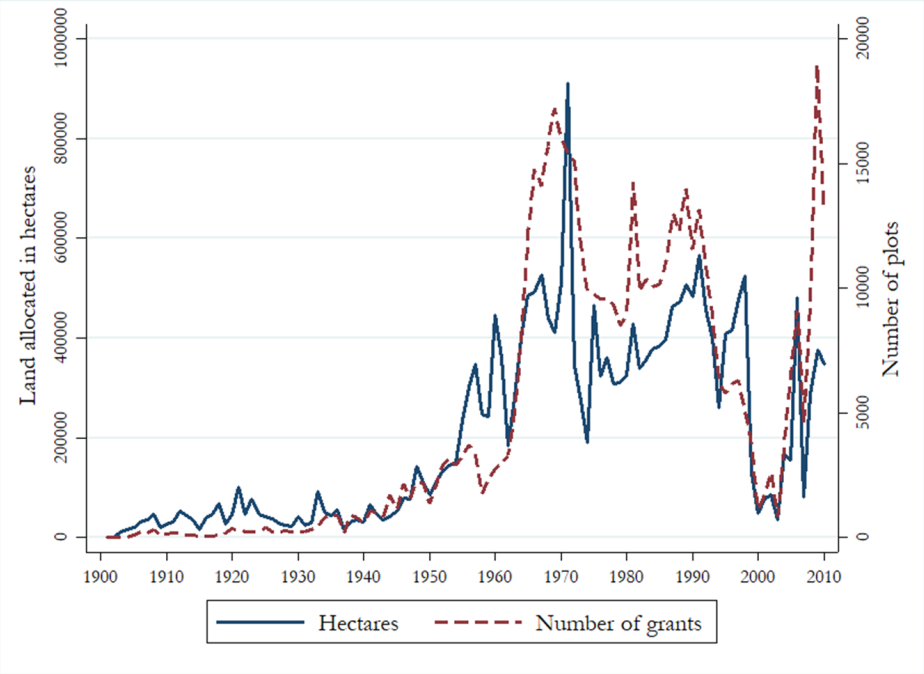
Table 1: Unsatisfied Basic Needs, Gini, and Public Land Distribution Summarized by *Latifundia* Terciles

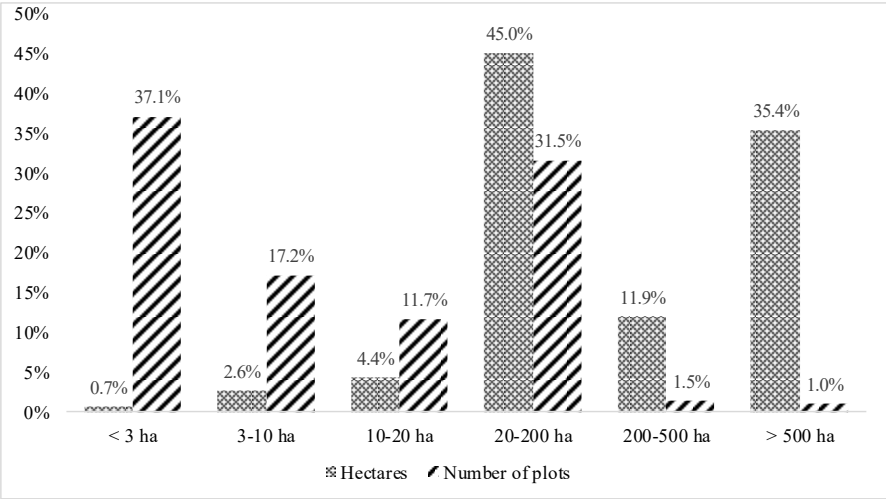
Variable	Obs	Mean	Std. Dev.	Min	Max
1st Tercile Latifundia					
UBN 2005	282	38.285	16.989	7.122	100
Gini 2010	249	0.543	0.129	0.243	0.879
Allocated land ha pc	282	1.220	5.246	0	58.886
Potential land distribution ha pc	282	1.716	4.904	0.010	54.099
2nd Tercile Latifundia					
UBN 2005	247	40.180	17.655	9.429	87.169
Gini 2010	227	0.632	0.100	0.339	0.876
Allocated land ha pc	247	4.718	21.065	0	302.909
Potential land distribution ha pc	247	2.206	5.508	0.070	80.478
3nd Tercile Latifundia					
UBN 2005	263	46.756	18.601	8.689	100
Gini 2010	248	0.638	0.108	0.169	0.875
Allocated land ha pc	263	10.717	30.421	0	282.076
Potential land distribution ha pc	263	6.151	17.654	0.061	169.142

Note: *UBN* data comes from the 2005 National Census, Gini data comes from IGAC, *Allocated land* data is taken from INCODER and *Potencial Land Distribution* is our exogenous measure of land distribution.



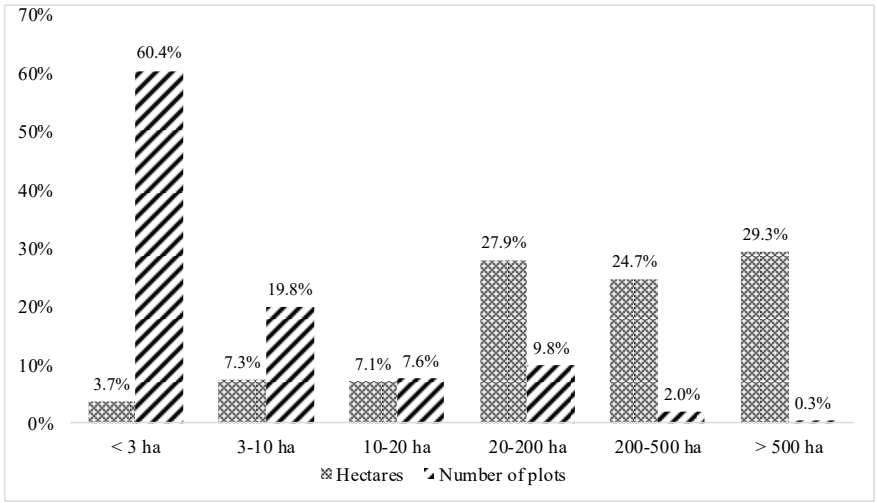
Source: Information System of Rural Development, SIDER-INCODER; Authors' calculations

Figure 1: Land Distributions in Area (Ha) and Plots, 1901-2012



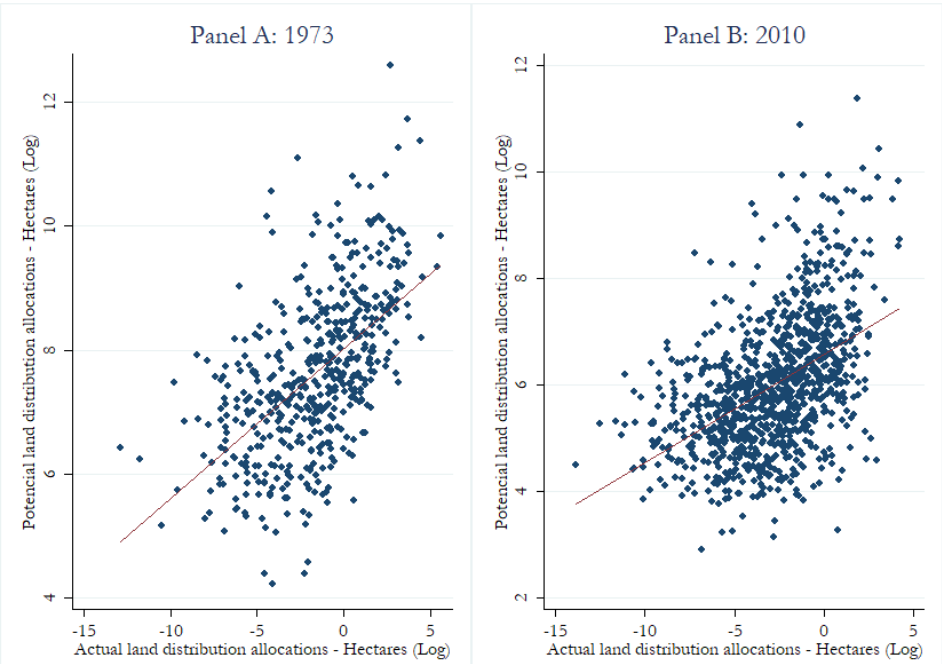
Source: Rural Development Information System SIDER-INCODER. Authors' calculations

Figure 2a: Land Allocation by Plot Size (percent of total), 1961-2010



Source: Rural Development Information System SIDER-INCODER. Authors' calculations

Figure 2b: Structure of Landholding by Plot Size (percent of all plots), 2010



Source: Authors' calculations

Figure 3: Potential and Actual Land Distributions

Table 2: Effects of Public Land Distribution and *Latifundia* on Land Inequality

VARIABLES	(1) Gini Coefficient of Plot Sizes	(2) Gini Coefficient of Plot Sizes	(3) Gini Coefficient of Plot Sizes	(4) Gini Coefficient of Plot Sizes	(5) Average Size of Rural Properties (Log)	(6) Average Size of Rural Properties (Log)	(7) Average Size of Rural Properties (Log)	(8) Average Size of Rural Properties (Log)	(9) Coefficient of Variation of Plot Sizes	(10) Coefficient of Variation of Plot Sizes	(11) Coefficient of Variation of Plot Sizes	(12) Coefficient of Variation of Plot Sizes
Potencial Land Distribution (per capita hectares and log)	-0.019***	-0.015**	-0.014**	-0.012**	0.175***	0.178***	0.176***	0.174***	-0.220***	-0.200***	-0.167***	-0.196***
	(0.007)	(0.006)	(0.006)	(0.006)	(0.021)	(0.022)	(0.022)	(0.023)	(0.048)	(0.050)	(0.051)	(0.054)
Potencial Land Distribution*Latifundia (per capita hectares and log)	0.003	0.001	0.006	0.007	-0.062***	-0.054***	-0.052***	-0.060***	0.098**	0.071*	0.067*	0.083**
	(0.005)	(0.005)	(0.004)	(0.005)	(0.017)	(0.017)	(0.017)	(0.018)	(0.040)	(0.040)	(0.040)	(0.041)
Municipal share of allocated land	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Latifundia x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area^2 x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Soil Quality x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Flatness Index x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Ethnicity 1912 x Year	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Interaction Literacy Rate 1951 x Year	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Interaction Previous Violence (1948-1951) x Year	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Interaction Log Cadastral Value 1960 x Year	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Department Trends	No	No	No	Yes	No	No	No	Yes	No	No	No	Yes
Observations	1,628	1,628	1,628	1,628	3,164	3,164	3,164	3,164	3,164	3,164	3,164	3,164
R-squared	0.016	0.178	0.384	0.438	0.356	0.375	0.386	0.440	0.063	0.087	0.099	0.152
Number of municipalities	814	814	814	814	814	814	814	814	814	814	814	814

Note: Panel estimates with municipal and year fixed effects. *Gini* data is available in 2005 and 2010. *Average Size of Rural Properties* and *Coefficient of Variation of Plot Sizes* are avaiable in 1985, 1993, 2005 and 2010 . *Potencial Land Distribution* is our exogenous measure of land distribution. *Latifundia pc (Log)* is per capita latifundia in 1960. *Soil Quality* is our estimated measure of municipalities' quality of soil using IGAC data. *Flatness Index* is our estimated measure of municipalities' flatness terrain using IGAC data. *Ethnicity 1912* is a dummy equal to one when the proporcion of indigenous and blacks in a municipality exceeds the national average in the 1912 Census. *Literary Rate* is the proporcion of people who read and write in the 1951 Census. *Previous Violence* (1948-1951) is a dummy equal to one if the municipality had events of violence between 1948 and 1951. *Log Cadastral Value 1960* is the total cadastral appraisal (rural and urban) by municipality in 1960. Clustered standard errors at the municipality level in parenthesis where possible *** p<0.01, ** p<0.05, * p<0.1

Table 3: Effects of Public Land Distribution and *Latifundia* on the Structure of Landholding

VARIABLES	(1) <3 ha/capita (log)	(2) <3 ha/capita (log)	(3) 3-10 ha/capita (log)	(4) 3-10 ha/capita (log)	(5) 10-20 ha/capita (log)	(6) 10-20 ha/capita (log)	(7) 20-200 ha/capita (log)	(8) 20-200 ha/capita (log)	(9) 200-500 ha/capita (log)	(10) 200-500 ha/capita (log)	(11) >500 ha/capita (log)	(12) >500 ha/capita (log)
Potencial Land Distribution (per capita hectares and log)	0.151***	0.160***	0.216***	0.217***	0.170***	0.174***	0.332***	0.340***	0.083***	0.089***	0.032	0.045*
	(0.006)	(0.006)	(0.009)	(0.009)	(0.008)	(0.008)	(0.020)	(0.017)	(0.012)	(0.011)	(0.023)	(0.024)
Potencial Land Distribution*Latifundia (per capita hectares and log)	-0.035***	-0.028***	-0.021***	-0.016**	0.014**	0.023***	0.075***	0.106***	0.091***	0.102***	0.103***	0.098***
	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.007)	(0.016)	(0.014)	(0.010)	(0.009)	(0.018)	(0.020)
Municipal share of allocated land	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Latifundia x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area^2 x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Soil Quality x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Flatness Index x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Ethnicity 1912 x Year	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Interaction Literacy Rate 1951 x Year	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Interaction Previous Violence (1948-1951) x Year	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Interaction Log Cadastral Value 1960 x Year	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Department Trends	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	1,630	1,630	1,630	1,630	1,630	1,630	1,630	1,630	1,630	1,630	1,630	1,630
R-squared	0.470	0.526	0.489	0.533	0.452	0.546	0.449	0.634	0.339	0.514	0.133	0.176
Number of municipalities	815	815	815	815	815	815	815	815	815	815	815	815

Note: Panel estimates with municipal and year fixed effects. *Structure of landholdings'* data is available in 2005 and 2010. *Average Size of Rural Properties* data is available since 1985. *Potencial Land Distribution* is our exogenous measure of land distribution. *Latifundia pc (Log)* is per capita latifundia in 1960. *Soil Quality* is our estimated measure of municipalities' quality of soil using IGAC data. *Flatness Index* is our estimated measure of municipalities' flatness terrain using IGAC data. *Ethnicity 1912* is a dummy equal to one when the proporcion of indigenous and blacks in a municipality exceeds the national average in the 1912 Census. *Literary Rate* is the proporcion of people who read and write in the 1951 Census. *Previous Violence* (1948-1951) is a dummy equal to one if the municipality had events of violence between 1948 and 1951. *Log Cadastral Value 1960* is the total cadastral appraisal (rural and urban) by municipality in 1960. Standard errors at the municipality level in parenthesis
*** p<0.01, ** p<0.05, * p<0.1

Table 4: Effects of Public Land Distribution and *Latifundia* on Local Development

VARIABLES	(1) UBN	(2) UBN	(3) UBN	(4) UBN
Potencial Land Distribution (per capita hectares and log)	-2.876***	-2.385***	-1.889***	-1.954***
	(0.590)	(0.571)	(0.557)	(0.561)
Potencial Land Distribution*Latifundia (per capita hectares and log)	1.532***	1.156***	1.086***	1.103***
	(0.428)	(0.422)	(0.380)	(0.383)
Municipal share of allocated land	Yes	Yes	Yes	Yes
Interaction Latifundia x Year	Yes	Yes	Yes	Yes
Interaction Area x Year	Yes	Yes	Yes	Yes
Interaction Area^2 x Year	No	Yes	Yes	Yes
Interaction Soil Quality x Year	No	Yes	Yes	Yes
Interaction Flatness Index x Year	No	Yes	Yes	Yes
Interaction Ethnicity 1912 x Year	No	No	Yes	Yes
Interaction Literacy Rate 1951 x Year	No	No	Yes	Yes
Interaction Previous Violence (1948-1951) x Year	No	No	Yes	Yes
Interaction Log Cadastral Value 1960 x Year	No	No	Yes	Yes
Department Trends	No	No	No	Yes
Observations	3,260	3,260	3,260	3,260
R-squared	0.837	0.844	0.863	0.864
Number of municipalities	815	815	815	815

Note: Panel estimates with municipal and year fixed effects. *UBN* data is taken from 1973, 1985, 1993 and 2005 Census. *Potencial Land Distribution* is our exogenous measure of land distribition. *Latifundia pc (Log)* is per capita *latifundia* in 1960. *Soil Quality* is our estimated measure of municipalities' quality of soil using IGAC data. Flatness Index is our estimated measure of municipalities' flatness terrain using IGAC data. *Ethnicity 1912* is a dummy equal to one when the proporcion of indigenous and blacks in a municipality exceeds the national average in the 1912 Census. *Literary Rate* is the proporcion of people who read and write in the 1951 Census. *Previous Violence (1948-1951)* is a dummy equal to one if the municipality had events of violence between 1948 and 1951. *Log Cadastral Value 1960* is the total cadastral appraisal (rural and urban) by municipality in 1960. Clustered standard errors at the municipality level in parenthesis *** p<0.01, ** p<0.05, * p<0.1

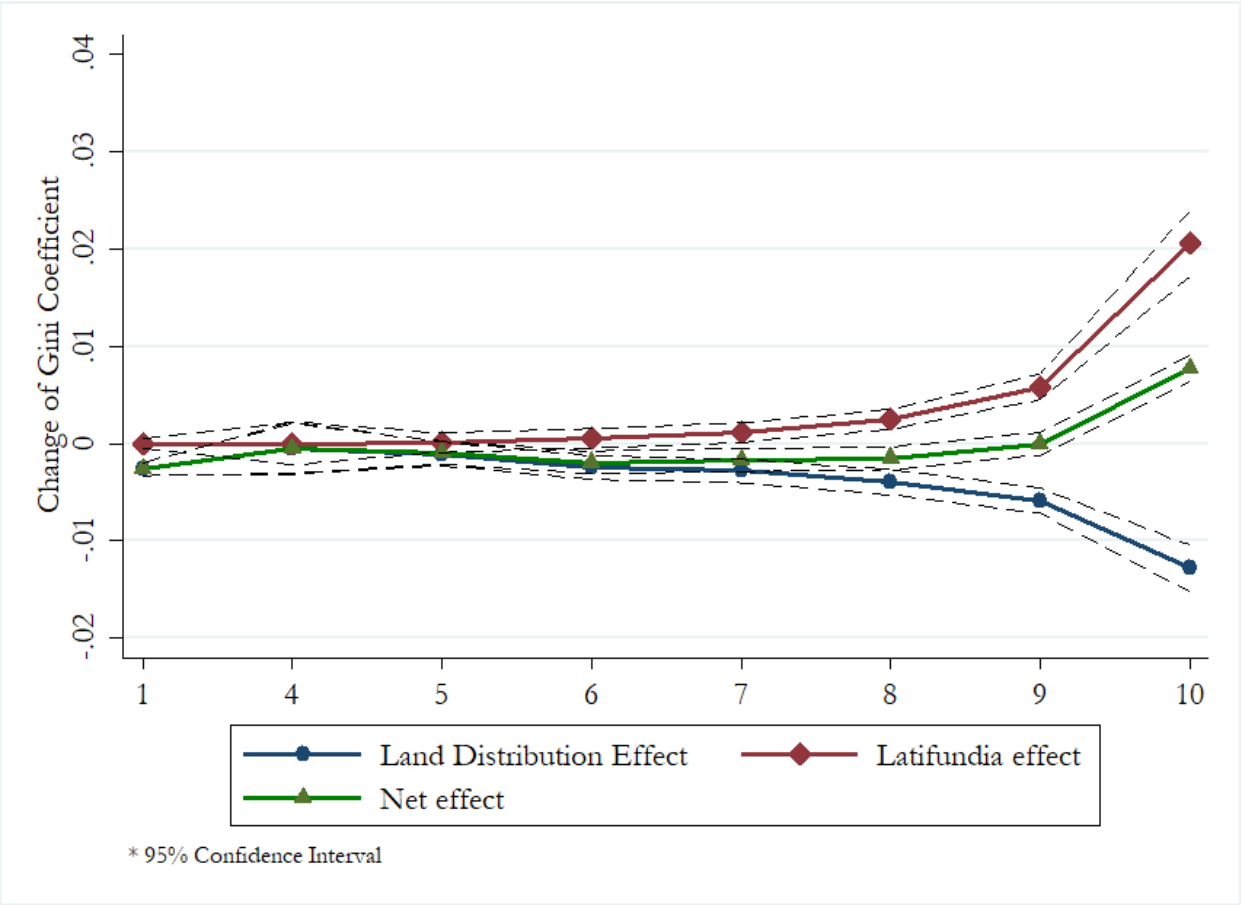


Figure 4a: Estimated Effects of Land Distribution and *Latifundia* on Gini (by decile of *latifundia* per capita)

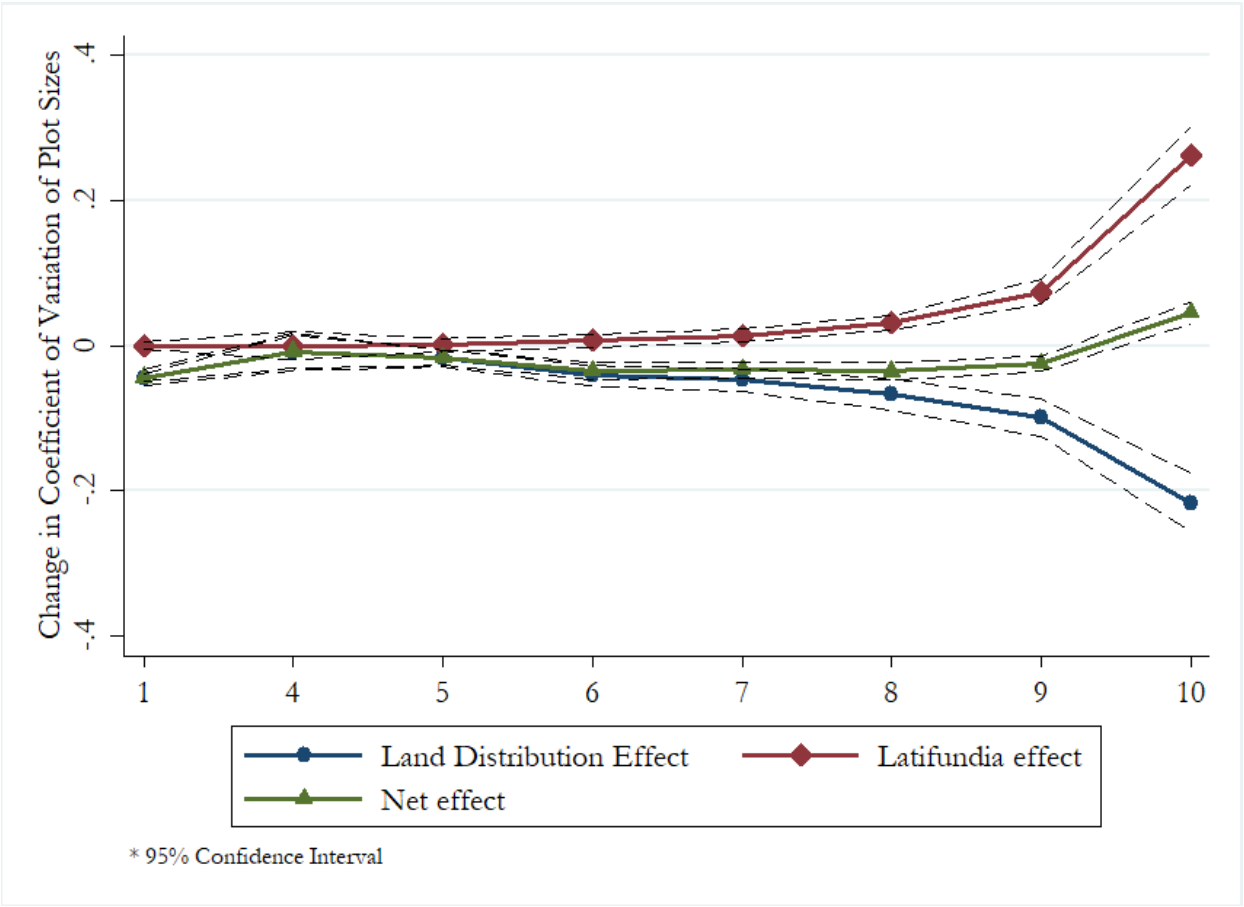


Figure 4b: Estimated Effects of Land distribution and *Latifundia* on the Coefficient of Variation of Plot Sizes (by decile of *latifundia* per capita)

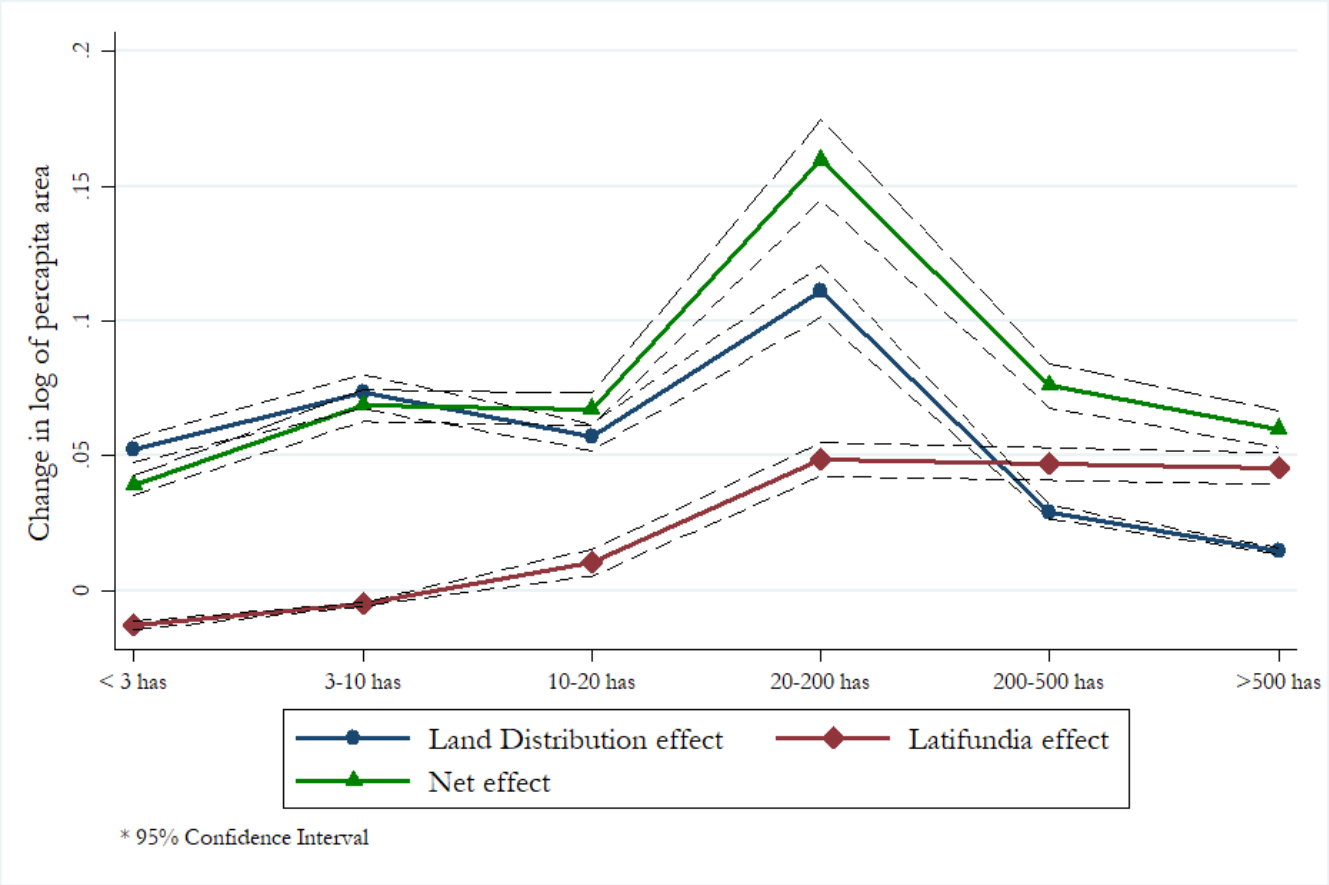


Figure 5: Estimated Effects of Land distribution and *Latifundia* on the Structure of Landholding

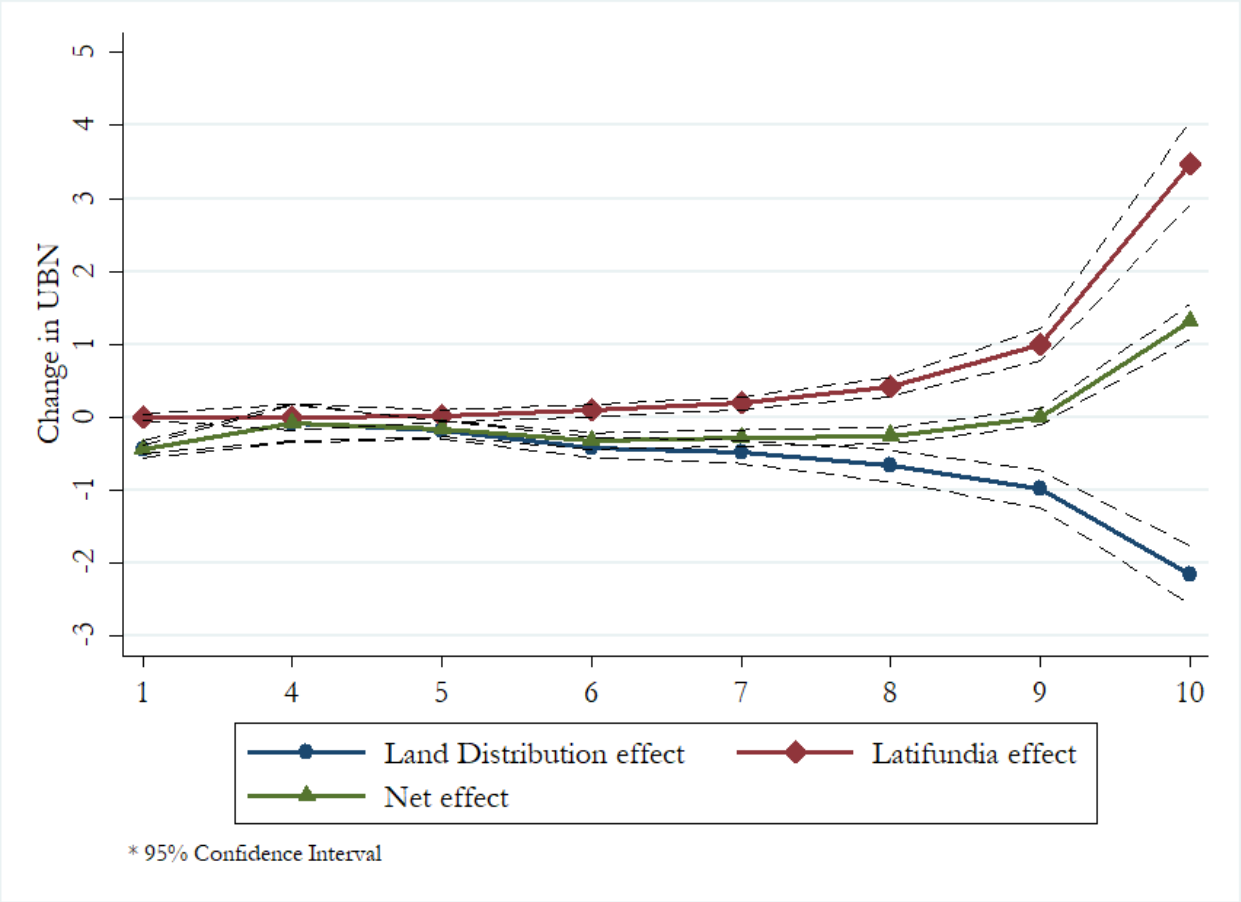


Figure 6: Estimated Effects of Land distribution and *Latifundia* on Local Development

Table 5: Effects of Public Land Distribution and *Latifundia* on Electoral Turnout

VARIABLES	(1) Voter Turnout in Municipal Councils Elections	(2) Voter Turnout in Municipal Councils Elections	(3) Voter Turnout in Municipal Councils Elections	(4) Voter Turnout in Municipal Councils Elections	(5) Voter Turnout in Lower House Elections	(6) Voter Turnout in Lower House Elections	(7) Voter Turnout in Lower House Elections	(8) Voter Turnout in Lower House Elections
Potencial Land Distribution (per capita hectares and log)	0.101***	0.104***	0.106***	0.108***	0.055***	0.068***	0.072***	0.077***
	(0.010)	(0.011)	(0.010)	(0.009)	(0.007)	(0.007)	(0.007)	(0.006)
Potencial Land Distribution*Latifundia (per capita hectares and log)	-0.005	0.006	0.007*	0.003	0.005	0.002	0.004	0.003
	(0.009)	(0.004)	(0.004)	(0.003)	(0.008)	(0.006)	(0.006)	(0.005)
Municipal share of allocated land	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Latifundia x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area^2 x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Soil Quality x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Flatness Index x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Ethnicity 1912 x Year	No	No	Yes	Yes	No	No	Yes	Yes
Interaction Literacy Rate 1951 x Year	No	No	Yes	Yes	No	No	Yes	Yes
Interaction Previous Violence (1948-1951) x Year	No	No	Yes	Yes	No	No	Yes	Yes
Interaction Log Cadastral Value 1960 x Year	No	No	Yes	Yes	No	No	Yes	Yes
Department Trends	No	No	No	Yes	No	No	No	Yes
Observations	11,105	11,105	11,105	11,105	7,948	7,948	7,948	7,948
R-squared	0.648	0.654	0.662	0.712	0.317	0.339	0.364	0.458
Number of municipalities	815	815	815	815	815	815	815	815

Note: Panel estimates with municipal and year fixed effects. We use the elections from 1972 to 2007 to estimate the voter turnout in municipal councils (elections were every 2 years until 1994. In this year they changed to every 3 years until 2003, where they changed to every fourth year). Also we use the elections from 1970 to 2006 to estimate the voter turnout in lower house elections (elections are every 4 years). Electoral data comes from Pachón and Sánchez (2014). *Potencial Land Distribution* is our exogenous measure of land distribution. *Latifundia pc (Log)* is per capita *latifundia* in 1960. *Soil Quality* is our estimated measure of municipalities' quality of soil using IGAC data. Flatness Index is our estimated measure of municipalities' flatness terrain using IGAC data. *Ethnicity 1912* is a dummy equal to one when the proporcion of indigenous and blacks in a municipality exceeds the national average in the 1912 Census. *Literary Rate* is the proporcion of people who read and write in the 1951 Census. *Previous Violence (1948-1951)* is a dummy equal to one if the municipality had events of violence between 1948 and 1951. *Log Cadastral Value 1960* is the total cadastral appraisal (rural and urban) by municipality in 1960. Clustered standard errors at the municipality level in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Table 6: Effects of Land distribution and *Latifundia* on Political Concentration

VARIABLES	(1) Electoral margin of victory	(2) Electoral margin of victory	(3) Electoral margin of victory	(4) Electoral margin of victory	(5) Winning Party Support	(6) Winning Party Support	(7) Winning Party Support	(8) Winning Party Support
PANEL A: MUNICIPAL COUNCILS ELECTIONS								
Potencial Land Distribution (per capita hectares and log)	-0.085***	-0.064***	-0.054***	-0.050***	-0.015	-0.013	-0.013	-0.010
	(0.016)	(0.015)	(0.015)	(0.015)	(0.010)	(0.010)	(0.010)	(0.010)
Potencial Land Distribution*Latifundia (per capita hectares and log)	0.019	-0.007	-0.004	-0.005	0.009	-0.000	0.000	-0.001
	(0.014)	(0.008)	(0.008)	(0.008)	(0.008)	(0.004)	(0.004)	(0.004)
Observations	11,115	11,115	11,115	11,115	11,115	11,115	11,115	11,115
R-squared	0.335	0.338	0.354	0.358	0.549	0.552	0.560	0.563
PANEL B: LOWER HOUSE ELECTIONS								
Potencial Land Distribution (per capita hectares and log)	-0.068***	-0.047***	-0.037**	-0.035**	-0.019**	-0.020**	-0.019**	-0.017**
	(0.014)	(0.014)	(0.015)	(0.015)	(0.008)	(0.008)	(0.008)	(0.008)
Potencial Land Distribution*Latifundia (per capita hectares and log)	0.016	-0.003	0.000	-0.001	0.007	0.006	0.007	0.005
	(0.010)	(0.010)	(0.010)	(0.010)	(0.006)	(0.006)	(0.006)	(0.005)
Observations	7,959	7,959	7,959	7,959	7,959	7,959	7,959	7,959
R-squared	0.202	0.207	0.225	0.234	0.424	0.430	0.446	0.452
Municipal share of allocated land	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Latifundia x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area x Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area^2 x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Soil Quality x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Flatness Index x Year	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Interaction Ethnicity 1912 x Year	No	No	Yes	Yes	No	No	Yes	Yes
Interaction Literacy Rate 1951 x Year	No	No	Yes	Yes	No	No	Yes	No
Interaction Previous Violence (1948-1951) x Year	No	No	Yes	Yes	No	No	Yes	Yes
Interaction Log Cadastral Value 1960 x Year	No	No	Yes	Yes	No	No	Yes	Yes
Department Trends	No	No	No	Yes	No	No	No	Yes

Note: Panel estimates with municipal and year fixed effects. We use elections from 1970 to 2006 to estimate the margin of victory and the share of the winner party in lower house elections (elections are every four years) present in Panel A and municipal councils' elections (elections were every 2 years until 1994. In this year they changed to every 3 years until 2003, where they changed to every 4 years) present in Panel B. Electoral data comes from Pachón and Sánchez (2014) *Potencial Land Distribution* is our exogenous measure of land distribution. *Latifundia pc (Log)* is per capita *latifundia* in 1960. *Soil Quality* is our estimated measure of municipalities' quality of soil using IGAC data. Flatness Index is our estimated measure of municipalities' flatness terrain using IGAC data. *Ethnicity 1912* is a dummy equal to one when the proporcion of indigenous and blacks in a municipality exceeds the national average in the 1912 Census. *Literary Rate* is the proporcion of people who read and write in the 1951 Census. *Previous Violence (1948-1951)* is a dummy equal to one if the municipality had events of violence between 1948 and 1951. *Log Cadastral Value 1960* is the total cadastral appraisal (rural and urban) by municipality in 1960. Clustered standard errors at the municipality level in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Table 7: Effects of Land Distribution and *Latifundia* on Public Goods, Services and Taxes

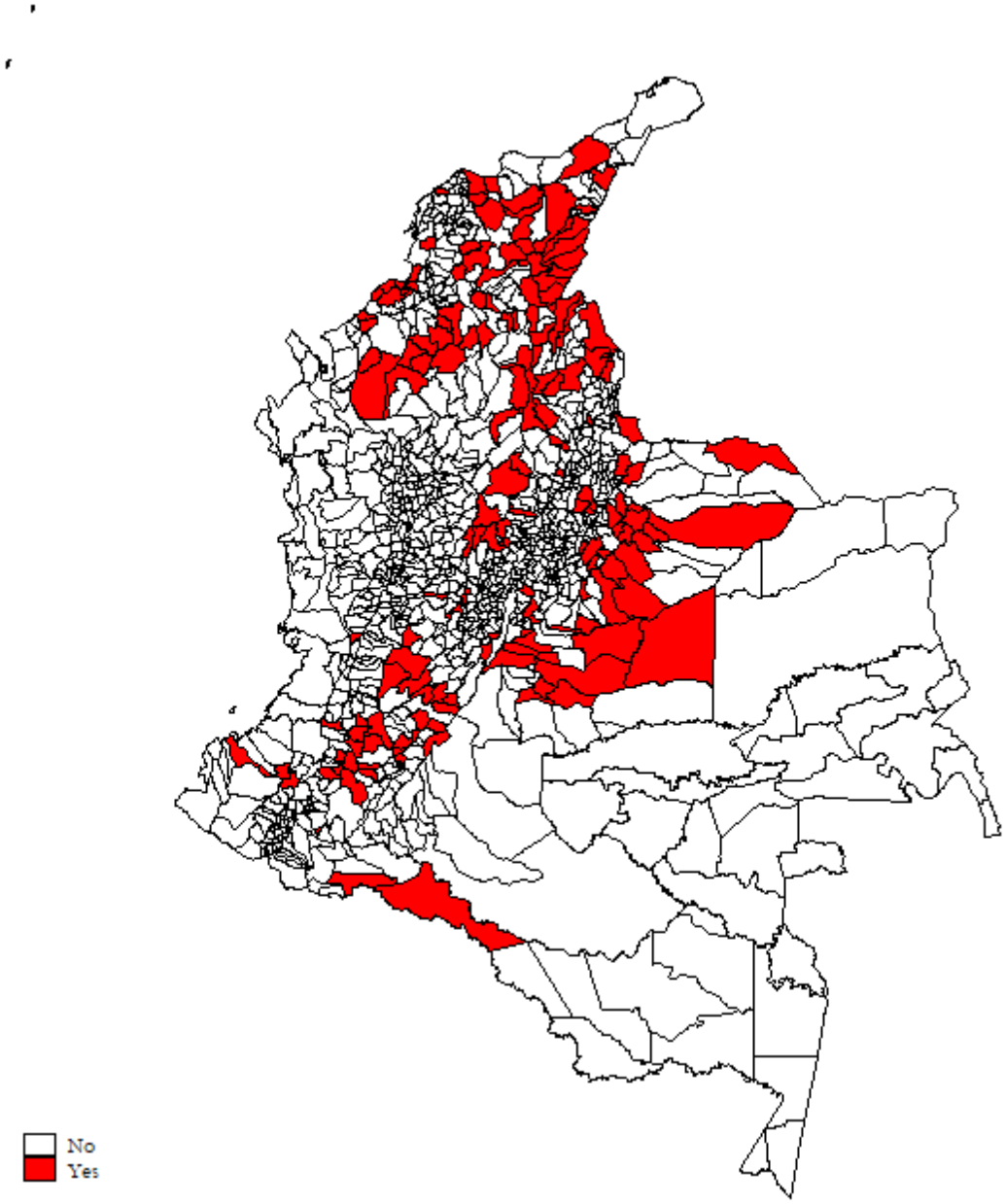
	SUR MODEL					
	(1)	(2)	(1)	(2)	(1)	(2)
VARIABLES	Public investment per capita (Log) DNP	Public investment per capita (Log) DNP	Public service expenditure per capita (Log) DNP	Public service expenditure per capita (Log) DNP	Tax revenues per capita (Log) DNP	Tax revenues per capita (Log) DNP
Potencial Land Distribution (per capita hectares and log)	1.005***	1.044***	0.687***	0.696***	0.311***	0.348***
	(0.029)	(0.029)	(0.018)	(0.018)	(0.029)	(0.028)
Potencial Land Distribution*Latifundia (per capita hectares and log)	-0.240***	-0.262***	-0.110***	-0.114***	-0.081***	-0.093***
	(0.023)	(0.023)	(0.014)	(0.014)	(0.023)	(0.022)
Municipal share of allocated land	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Latifundia x Year	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area x Year	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Area^2 x Year	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Soil Quality x Year	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Flatness Index x Year	Yes	Yes	Yes	Yes	Yes	Yes
Interaction Ethnicity 1912 x Year	No	Yes	No	Yes	No	Yes
Interaction Literacy Rate 1951 x Year	No	Yes	No	Yes	No	Yes
Interaction Previous Violence (1948-1951) x Year	No	Yes	No	Yes	No	Yes
Interaction Log Cadastral Value 1960 x Year	No	Yes	No	Yes	No	Yes
Department Trends	No	Yes	No	Yes	No	Yes
Observations	20,780	20,780	20,780	20,780	20,780	20,780
R-squared	0.859	0.866	0.515	0.534	0.634	0.648

Note: SUR estimates. *Public Investment, Operating Expenses and Revenues* variables are taken from the National Department of Planning (DNP). These variables are expressed as the (log) real average per capita, using 2010 prices *Potencial Land Distribution* is our exogenous measure of land distribution. *Latifundia pc (Log)* is per capita latifundia in 1960. *Soil Quality* is our estimated measure of municipalities' quality of soil using IGAC data. *Flatness Index* is our estimated measure of municipalities' flatness terrain using IGAC data. *Ethnicity 1912* is a dummy equal to one when the proporcion of indigenous and blacks in a municipality exceeds the national average in the 1912 Census. *Literary Rate* is the proporcion of people who read and write in the 1951 Census. *Previous Violence* (1948-1951) is a dummy equal to one if the municipality had events of violence between 1948 and 1951. *Log Cadastral Value 1960* is the total cadastral appraisal (rural and urban) by municipality in 1960. Standard errors at the municipality level in parenthesis *** p<0.01, ** p<0.05, * p<0.1

Appendix 1: Summary Statistics of Variables Used

Variables	Obs	Mean	Std. Dev.	Min	Max	Years	Source
Land Inequality and Poverty characteristics							
UBN	4075	56.49	24.10	3.04	100.00	1973-2005	National Census
Gini Coefficient of Plot Sizes	1628	0.70	0.10	0.02	0.98	2005-2010	IGAC
Gini Coefficient of Plot Values	1628	0.67	0.09	0.21	0.98	2005-2010	IGAC
Average Size of Rural Properties (Log)	3164	2.98	1.16	0.54	6.77	1985-2010	IGAC
Coefficient of Variation of Plot Sizes	3164	3.39	1.36	0.37	9.82	1985-2010	IGAC
Structure of Landholdings characteristics							
Plots by Size Ranges Less than 3 has percapita (Log)	1630	0.14	0.15	0.00	0.84	1985-2010	IGAC
Plots by Size Ranges 3-10 has percapita (Log)	1630	0.24	0.20	0.00	1.25	1985-2010	IGAC
Plots by Size Ranges 10-20has percapita (Log)	1630	0.21	0.17	0.00	1.41	1985-2010	IGAC
Plots by Size Ranges 20-200 has percapita (Log)	1630	0.60	0.48	0.00	3.17	1985-2010	IGAC
Plots by Size Ranges 200-500 has percapita (Log)	1630	0.22	0.33	0.00	2.47	1985-2010	IGAC
Plots by Size Ranges more than 500 has percapita (Log)	1630	0.20	0.48	0.00	4.55	1985-2010	IGAC
Land Distribution characteristics							
Allocated land hectares pc	4075	1.08	6.98	0.00	284.60	1973-2010	INCODER
Allocated land hectares pc (Log)	4075	0.32	0.61	0.00	5.66	1973-2010	INCODER
Potencial Land Distribution-Hectares pc	4075	0.78	3.52	0.00	94.31	1973-2010	Own calculations
Potencial Land Distribution-Hectares pc (Log)	4075	-1.38	1.27	-6.42	4.55	1973-2010	Own calculations
Latifundia in 1961 hectares pc (Log)	3930	0.14	0.19	0.00	0.99	1961	INCODER
Proportion of Latifundia 1961 over rural cadastral (hectares)	4075	0.56	0.91	0.00	7.50	1961	INCODER
Municipal share of allocated land	4075	0.00	0.00	0.00	0.02	1973-2010	INCODER
Political characteristics							
Voter Turnout in Municipal Councils Elections	11105	0.28	0.12	0.00	1.00	1972-2007	Pachón and Sánchez (2014)
Voter Turnout in Lower House Elections	7948	0.27	0.09	0.00	0.98	1970-2006	Pachón and Sánchez (2014)
Electoral margin of victory in Municipal Councils Elections	11115	0.40	0.30	0.00	1.00	1972-2007	Pachón and Sánchez (2014)
Electoral margin of victory in Lower House Elections	7959	0.42	0.29	0.00	1.00	1970-2006	Pachón and Sánchez (2014)
Winning Party Support in Municipal Councils Elections	11115	0.64	0.20	0.11	1.00	1972-2007	Pachón and Sánchez (2014)
Winning Party Support in Lower House Elections	7959	0.65	0.19	0.17	1.00	1970-2006	Pachón and Sánchez (2014)
Fiscal characteristics							
Public investment (In millon Colombian Pesos, 2010 prices)	21228	2630.47	18376.54	0.00	603720.38	1985-2010	DNP
Operating expenses (In million Colombian Pesos, 2010 prices)	21228	2749.97	13279.15	0.00	588530.88	1985-2010	DNP
Tax revenues (In million Colombian Pesos, 2010 prices)	21228	7708.39	35018.17	0.00	1266365.50	1985-2010	DNP
Public investment per capita (Log)	21157	-3.85	1.31	-12.06	0.53	1985-2010	DNP
General public services per capita (Log)	21182	-2.56	0.62	-18.21	2.59	1985-2010	DNP
Tax revenues per capita (Log)	20868	-1.96	1.53	-8.99	2.37	1985-2010	DNP
Social and Institutional characteristics							
Percentaje of afro and indigenous population	815	17.10	16.83	0.00	94.06	1912	1912 Census
Dummy of afro and indigenous population above the national mean	815	0.25	0.43	0.00	1.00	1912	1912 Census
Literacy Rate	815	0.35	0.11	0.02	0.75	1951	1951 Census
Dummy of violence between 1948 and 1951	815	0.14	0.35	0.00	1.00	1948-1951	CEDE
Cadastral Value 1960 (Log)	815	9.49	1.10	5.70	14.32	1960	IGAC
Geographic Characteristics							
Soil Quaility	815	2.83	1.23	1.00	8.00	-	IGAC
Flatness Index	815	7.54	3.41	0.00	17.67	-	IGAC

Appendix 2: Map and List of Municipalities in Deciles Nine and Ten by *Latifundia* per capita (1960)



Department	Municipality	Department	Municipality	Department	Municipality
ATLANTICO	PIOJO	CORDOBA	AYAPEL	META	EL CALVARIO
BOLIVAR	ACHI	CORDOBA	BUENAVISTA	META	FUENTE DE ORO
BOLIVAR	BARRANCO DE LOBA	CORDOBA	CANALETE	META	GUAMAL
BOLIVAR	CORDOBA	CORDOBA	LORICA	META	PUERTO GAITAN
BOLIVAR	MARIA LA BAJA	CORDOBA	LOS CORDOBAS	META	PUERTO LOPEZ
BOLIVAR	MOMPOS	CORDOBA	MOMIL	META	PUERTO LLERAS
BOLIVAR	MORALES	CORDOBA	MONTELIBANO	META	SAN JUAN DE ARAMA
BOLIVAR	SAN FERNANDO	CORDOBA	MOÑITOS	META	SAN MARTIN
BOLIVAR	SAN MARTIN DE LOBA	CORDOBA	PLANETA RICA	NARIÑO	EL CHARCO
BOLIVAR	SAN PABLO	CORDOBA	PUEBLO NUEVO	NARIÑO	LEIVA
BOLIVAR	SIMITI	CORDOBA	PURISIMA	NORTE DE SANTANDER	ABREGO
BOYACA	AQUITANIA	CORDOBA	SAN ANTERO	NORTE DE SANTANDER	CONVENCION
BOYACA	BELEN	CORDOBA	SAN BERNARDO DEL VIENTO	NORTE DE SANTANDER	EL CARMEN
BOYACA	CHISCAS	CORDOBA	TIERRALTA	NORTE DE SANTANDER	EL ZULIA
BOYACA	CHITA	CORDOBA	VALENCIA	NORTE DE SANTANDER	SARDINATA
BOYACA	GUICAN	CUNDINAMARCA	BELTRAN	NORTE DE SANTANDER	TIBU
BOYACA	LA VICTORIA	CUNDINAMARCA	CABRERA	NORTE DE SANTANDER	TOLEDO
BOYACA	MUZO	CUNDINAMARCA	FOMEQUE	SANTANDER	BETULIA
BOYACA	OTANCHE	CUNDINAMARCA	GUASCA	SANTANDER	CIMITARRA
BOYACA	PAJARITO	CUNDINAMARCA	GUAYABETAL	SANTANDER	COROMORO
BOYACA	PAYA	CUNDINAMARCA	PUERTO SALGAR	SANTANDER	ENCINO
BOYACA	PISBA	CUNDINAMARCA	SAN BERNARDO	SANTANDER	HATO
BOYACA	PUERTO BOYACA	CUNDINAMARCA	YACOPI	SANTANDER	PUERTO PARRA
BOYACA	SOCOTA	HUILA	AGRADO	SANTANDER	PUERTO WILCHES
BOYACA	TOTA	HUILA	AIPE	SANTANDER	SABANA DE TORRES
BOYACA	TUTAZA	HUILA	ALGECIRAS	SANTANDER	SUCRE
CALDAS	LA DORADA	HUILA	BARAYA	SANTANDER	VETAS
CAUCA	INZA	HUILA	LA ARGENTINA	SUCRE	CAIMITO
CAUCA	JAMBALO	HUILA	PAICOL	SUCRE	MAJAGUAL
CAUCA	LA VEGA	HUILA	PALERMO	SUCRE	PALMITO
CAUCA	MORALES	HUILA	RIVERA	SUCRE	SAN BENITO ABAD
CAUCA	PAEZ	HUILA	SALADOBLANCO	SUCRE	SAN MARCOS
CAUCA	PURACE	HUILA	SAN AGUSTIN	SUCRE	TOLU
CAUCA	SILVIA	HUILA	TESALIA	TOLIMA	ATACO
CAUCA	SOTARA	HUILA	TELLO	TOLIMA	CHAPARRAL
CAUCA	TOTORO	HUILA	VILLAVIEJA	TOLIMA	PIEDRAS
CESAR	VALLEDUPAR	HUILA	YAGUARA	TOLIMA	RIOBLANCO
CESAR	AGUSTIN CODAZZI	LA GUAJIRA	RIOHACHA	TOLIMA	RONCESVALLES
CESAR	BECERRIL	LA GUAJIRA	BARRANCAS	TOLIMA	SANTA ISABEL
CESAR	BOSCONIA	LA GUAJIRA	URUMITA	VALLE DEL CAUCA	RIOFRIO
CESAR	CHIMICHAGUA	MAGDALENA	ARACATACA	ARAUCA	ARAUCA
CESAR	CHIRIGUANA	MAGDALENA	ARIGUAINI	CASANARE	YOPAL
CESAR	CURUMANI	MAGDALENA	FUNDACION	CASANARE	AGUAZUL
CESAR	EL COPEY	MAGDALENA	PIVIJAY	CASANARE	CHAMEZA
CESAR	EL PASO	MAGDALENA	PLATO	CASANARE	MANI
CESAR	GAMARRA	MAGDALENA	PUEBLOVIEJO	CASANARE	NUNCHIA
CESAR	LA GLORIA	MAGDALENA	REMOLINO	CASANARE	PAZ DE ARIPORO
CESAR	LA JAGUA DE IBIRICO	MAGDALENA	SANTA ANA	CASANARE	PORE
CESAR	LA PAZ	MAGDALENA	SITIONUEVO	CASANARE	SABANALARGA
CESAR	SAN ALBERTO	MAGDALENA	TENERIFE	CASANARE	SACAMA
CESAR	SAN DIEGO	META	ACACIAS	CASANARE	TAMARA
CESAR	SAN MARTIN	META	CABUYARO	CASANARE	TAURAMENA
CESAR	TAMALAMEQUE	META	CASTILLA LA NUEVA	PUTUMAYO	PUERTO ASIS
		META	SAN LUIS DE CUBARRAL	PUTUMAYO	PUERTO LEGUIZAMO
		META	CUMARAL	PUTUMAYO	SIBUNDOY

Appendix 3. Computing Land Distribution and *Latifundia* Effects for Figures 4, 5 and 6

Values for figures 4, 5 and 6 were obtained by estimating the following regression for each dependent variable (Gini, coefficient of variation of plot sizes, structure of landholding, and unsatisfied basic needs):

$$y_{it} = \boldsymbol{\delta}_i + d_t + \gamma_1 \mathrm{PLDpc}_{it} + \gamma_2 \mathrm{PLDpc}_{it} * \mathrm{L1960}_i + \gamma_3 \mathrm{L1960}_i * d_t + \gamma_4 Avail_{i,t-1} + \sum \phi_j Controls_{i,to} * d_t + DEP_i * d_t + \varepsilon_{it} \quad (1)$$

We estimate predicted values of the dependent variable for the following cases, by <u>decile:</u>

(a) Replace potential distribution per capita (PLDpc_{it}) in equation (1) with actual distributions per capita. This yields predicted value $\widehat{y_{it}}^0$.

(b) As above, but now holding $\gamma_1 = 0$. This focuses on the incremental effect of land distribution in areas with pre-existing *latifundia*, and yields predicted value $\widehat{y_{it}}^1$.

(c) As in (a) above, but now holding $\gamma_2 = 0$. This focuses on the incremental effect of land distribution holding any *latifundia* effect to zero, and yields predicted value $\widehat{y_{it}}^2$.

Distinct land distribution and *latifundia* effects are then calculated as follows:

<u>Land distribution effect</u> = $\widehat{y_{it}}^1 - \widehat{y_{it}}^2 = \widehat{\gamma_1}$

This is equivalent to subtracting predicted values with land distribution minus predicted values without land distribution.

<u>*Latifundia* effect</u> = $\widehat{y_{it}}^0 - \widehat{y_{it}}^1 = \widehat{\gamma_2}$

This is equivalent to subtracting predicted values for land distribution with *latifundia* minus predicted values for land distribution without *latifundia*.

<u>Net effect</u> = Land Distribution effect + *Latifundia* effect = $\widehat{\gamma_1} + \widehat{\gamma_2}$

95% confidence intervals are obtained from the standard errors (σ) of estimators ($\widehat{\gamma_1}, \widehat{\gamma_2}, \widehat{\gamma_1} + \widehat{\gamma_2}$), as follows:

$$CI = \bar{x} \mp 1.96\left(\frac{\sigma}{\sqrt{n}}\right)$$

where n corresponds to the number of observations in each decile.

[1] Most of Colombia's land distribution and land reform policies followed Law 135 of 1961. Data availability constrains us to the period 1960-2010.

[2] Other quantitative studies of Colombia have analyzed the relationship between public land distribution and different socio-political variables. For instance, Albertus and Kaplan (2012) find that land distributions can prevent the emergence of insurgency when they tackle peasants' grievances, but may incentivize insurgency when land distribution is weak or insufficient appease such grievances. Lopez-Uribe (2018) observes that during the 1960s and 70s public land was used to "buy off" the leaders of the peasant movement in order to reduce the consolidation of communist organizations, and to diminish future insurgency activities. Older quantitative studies (e.g. Lorente 1985) did not benefit from the data we now have available, and relied mainly on more aggregated descriptive statistics.

[3] Large landholding, or *latifundia,* are defined as land plots above 500 hectares. An ideal definition of *latifundia* would be multidimensional, incorporating factors like land fertility, elevation, and closeness to large markets. But data limitations do not permit this for the period we examine. Hence we default to the Colombia's official land statistics measure, which uses the 500 hectare threshold (Agustín Codazzi Geographical Institute (IGAC), 2009).

[4] Boone (2012) argues that the uneven reach of the state in Latin America and Africa is often intentional, serving specific political purposes, rather than being evidence of state failure.

[5] Acronyms of Colombian institutions are given in the Spanish original.

[6] Urban clientelism generally expresses itself through political machines, which are non-ideological organizations interested primarily in securing office for their leaders and distributing particularistic rewards to their supporters (Stokes 2009). The classic political machines of Chicago and New York in the late 19th and early 20th centuries are two prominent examples.

[7] Scott (1972a) defines the patron-client relationship as "a special case of dyadic (two-person) ties involving a largely instrumental friendship in which an individual of higher socioeconomic status (patron) uses his own influence and resources to provide protection or benefits, or both, for a person of lower status (client) who, for his part, reciprocates by offering general support and assistance, including personal services, to the patron." (p.92)

[8] In 1972, an agreement between rural and agricultural businesses, known as the Chicoral Pact, agreed to restrict the objectives of agricultural policy to enhancing productivity, thereby practically ruling out any possibility of land expropriations in pursuit of social or political objectives.

[9] The relationship between proportion of *latifundia* in a particular municipality in 1961 and the structure of the colonial institutions can be established through the following equation:

$$\frac{Latidundio}{Mun_{Area}}_{1961} = 3.31 + 0.012 * \log(Indigenous)_{1560}$$

$$-0.2 * Encomienda\_Influence + Geographical\_Controls.$$ N=634, R2=0.16.

All variables are significant at the 1% level. The equation suggests that the formation *of latifundia* was affected by two forces: a positive one driven by the availability of labor, and a negative one driven by the greater availability of land away from indigenous settlements.

[10] Zambrano (1982) shows that after independence, Congress eased the conditions for allocating public land to bondholders and large farmers. As prices per hectare (around two pesos) were quite low and plot sizes large (200 ha), there were strong incentives to concentrate land.

[11] According to the Centro Nacional de Memoria Histórica (2016) during 1962-1986 both land acquisition and land delivery to peasants progressively increased, partly due to improvements in the administrative and technical capacity of the Colombian Institute of Land Reform (INCORA).

[12] Sanchez and Villaveces (2016) find that the departments with the highest number of allocated plots during 1960-2010 were Meta (9.2%), and Antioquia, Nariño and Arauca with around 5.2% each. Meta had the highest number of allocated hectares.

[13] Colombia's cadastre unfortunately does not cover all 1120 municipalities. Our results are valid for the 80 percent for which there is information. Any time-invariant measurement errors would be captured by fixed effects, and so would not bias our results. Any systematically time-variant measurement errors would also be captured by fixed effects. Measurement errors that vary randomly in time would lead to underestimation, making our results lower-bound estimates.

[14] Lagged to avoid endogeneity. Population growth might credibly be driven by land allocations.

[15] We also estimate using the Gini coefficient of plot values, but do not report these as they are very similar to the Gini of plot sizes.

[16] Flatness of terrain facilitates rural economies of scale, and is thus highly correlated with *latifundia*. Soil fertility and prior literacy rate are strongly correlated with higher income and lower poverty. In contrast, historical presence of

Afro-Colombian and indigenous groups are correlated with higher poverty rates. Past cadastral property values and literacy rates are expected to be correlated to lower poverty and lower inequality, and likely correlated with the presence or persistence of *latifundia*.

[17] Nearly 200 municipalities are excluded from the econometric exercises as no information was collected for them in the 1960 agrarian census.

[18] Results for the Gini of plot values are very similar.

[19] Full results omitted to save space but available upon request.

[20] For a rough comparison, 0.021 points is larger than the difference in income Ginis between Denmark and Iraq, or Finland and Albania. World Bank data; https://data.worldbank.org/

[21] This result coincides with the structure of landholdings described by Lorente (1985). This author indicates that 20-200 hectare properties comprised 36% of the properties in 1960 rising to 43% in 1984. This increase may be partially explained by the patterns of public land distribution during this period.

[22] As compared, for example, to local income per capita or tax receipts.

[23] Appendix 3 provides more detail on how Figures 4a, 4b, 5 and 6, were constructed.

[24] Appendix 2 provides a map of Colombia highlighting in red where municipalities in the ninth and tenth deciles by *latifundia* per capita (in 1960) are located, and also a comprehensive list by department.

[25] We use a fixed effects SUR model because the local tax collection and spending decisions are likely to be highly correlated.

[26] In Colombia most local public investment consists of education, health and sewerage. Central government transfers and own tax revenues are used to finance such spending.