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The effect of commodity price shocks on public lands distribution: Evidence from Colombia

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ABSTRACT

How do commodity shocks impact the privatization of public lands? This paper examines this question through the lens of the establishment of private property rights over public lands in Colombia, which has had one of the Western Hemisphere's largest public land distribution programs during the last century. Using data on exogenous international coffee price shocks along with data on land suitability for coffee production as determined by agro-climatic conditions and roughly 250,000 public land grants, I find that coffee price increases generate more public land grants in municipalities where land is more suited to coffee production. Additional tests suggest that the findings are driven by the power of organized cultivators to steer the land grant process in their favor. The findings shed light on the role of organized actors in the countryside extending private extension of control over public territory – a phenomenon that has drastically diminished public lands and natural spaces in numerous countries over the last two centuries.

How do commodity price shocks impact the distribution of public lands? I examine this question in Colombia, which, like most countries in Latin America, has long been buffeted by commodity booms and busts. Commodity cycles and their impacts have fundamentally shaped Latin American economic history (Bulmer-Thomas, 2003; Cardoso & Faletto, 1979; Gruss, 2014; Thorp, 1998). Furthermore, commodity cycles are critically linked to land possession and use, property rights, and agriculture. Examples are legion, ranging from the effects of soybean demand on deforestation in Brazil's Amazon (Alston, Libecap, & Mueller, 1999; Nepstad, Stickler, & Almeida, 2006; Pacheco, 2012) to the impact of beef prices on settlement and land privatization in eastern Bolivia (Klein, 1992) to the consequences of oil palm expansion for smallholder titling in Peru (Bennett, Ravikumar, & Cronkleton, 2018).

Colombia is a particularly important subject of analysis when linking price shocks to public land distribution because of the outsized importance of public land distribution over the last century. Public land distribution entails the state-directed granting of state-owned land to private citizens. This is in distinction to land reforms that redistribute private land from some citizens to others, with land acquired by the state through undercompensated expropriation, as in post-revolutionary Bolivia and Mexico, or market-value purchase, as in contemporary Brazil and South Africa.[1] Within Latin America, Colombia has had the most longstanding program of public land distribution and one of the largest relative to cultivated land area. From 1900 to 2012, nearly 23 million hectares of public lands were distributed to private citizens (Villaveces & Sánchez, 2015, pp. 23–24).[2]

This paper mainly focuses attention on coffee price shocks in Colombia for several reasons. First, coffee has long been enormously economically important in Colombia. Over most of the period of analysis from 1980 to 2011, coffee was the second largest export after oil. Second, because of Colombia's terrain and climate, coffee cultivation is widespread: it is cultivated in nearly half of Colombia's municipalities and employs the most labor in the agricultural sector.[3] Third, there are high-quality data on the suitability of land to coffee cultivation as determined by agro-climatic conditions, actual cultivation, and coffee prices. Finally, because of the geographical determinants of coffee production in Colombia along with the concentration of international production across relatively few countries, it is possible to generate strong instruments for local-level shocks to coffee income, enabling a causal empirical analysis that identifies the impact of commodity shocks on localized public lands distribution.

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[1] See Albertus (2015, Ch. 4) for a full typology of land reform. The section below also discusses land reform in greater detail.

[2] For comparison, there were 50 million hectares of agricultural holdings in Colombia in 2000.

[3] Municipalities are Colombia's lowest-level administrative unit, nested within its 32 departments. At the outset of the period of analysis, there were slightly over 950 municipalities. The median municipality had a population of 9700 with 77% living in rural areas, and median land area was 278 km^2.

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The analysis leverages data on roughly 250,000 grants of public lands to individuals over the period 1980–2011 across Colombia's national territory. The empirical strategy employs exogenous shifts in the international price of coffee along with data on municipal-level agricultural suitability for coffee cultivation to examine how coffee price shocks impact public land distribution. I find that when the price of coffee increases, land grants increase differentially in municipalities that are more agro-climatically suitable to coffee cultivation. The same is true in municipalities with a greater extent of land cultivated with coffee.

Additional empirical tests demonstrate that these findings are plausibly driven by the power of organized coffee cultivators to steer land grants in their favor. Coffee price shocks have a larger impact on public land grants in more unequal municipalities and deliver larger than average plots to petitioners. Public land grants are not driven by local government revenue, which itself could be driven in part by commodity prices. Land grant patterns are not driven by a purely economic mechanism such as access to credit or to banking more generally. Furthermore, the results do not run through municipal-level party politics, the incidence of violence, or the presence of armed groups. Finally, the results are generalizable to commodity price shocks in other agricultural products where producers are similarly concentrated, organized, and established politically, such as bananas, sugar, and palm, but not to price shocks in less organized agricultural sectors such as tobacco.

What emerges is a picture of an organized, politically connected "agrarian bourgeoisie" as the presumptive winner of Colombia's enormous project of granting private property rights over public lands in recent decades. Squatters and wage laborers struggle to compete with organized interests in winning land grants.

1. Land reform and public land distribution in Latin America

Latin America inherited a legacy of unequal and semi-feudal land ownership following Spanish and Portuguese colonization (de Janvry, 1981; Engerman & Sokoloff, 2002; Thiesenhusen, 1989). The late-nineteenth century export boom exacerbated these patterns (Coatsworth, 2008). Beginning in the early 20th century, however, numerous countries in Latin America undertook enormous programs of land reform that radically shifted the distribution of property ownership (Albertus, 2015). Land reform accelerated during the Cold War and in the wake of President Kennedy's 1961 Alliance for Progress (Kaplan, 2017).

The most high-profile land reform programs centered on land redistribution: the undercompensated or uncompensated expropriation of land from the private sector and its redistribution to the land-poor. Regimes such as those in post-revolutionary Bolivia, Chile under Allende, Cuba under Castro, Mexico under the PRI, and Peru in the 1970s under military rule seized large landowner property and redistributed it to peasants. Several other governments implemented less radical programs of land negotiation: the acquisition of land from the private sector with market-value compensation or above and its subsequent transfer to the land-poor. Examples include Brazil after 1993, Costa Rica beginning in the 1960s, and Venezuela from the 1960s-early 1990s. Still others, such as Colombia and Ecuador, focused on public land distribution: the state-directed transfer of state-owned land to settlers.[4] In practice, many governments implemented several types of land reform simultaneously.[5]

[4] Appendix Table A1 lists the extent and driving logic for all cases of public land distribution in the Western Hemisphere since 1900.

[5] Land reform can also encompass cognate policies including tenure reforms, titling, and the creation of private land markets. See Albertus (2015, Ch. 4) and Lipton (2009) for an overview.

Public land distribution has moved in tandem with economic development and population growth in many developing countries since the 19th century (Barbier, 2010). Today they constitute an active frontier for capitalist expansion (Kelly & Peluso, 2015). In Latin America alone, where the data are most comprehensive, 106 million hectares of public lands were made private from 1930 to 2008, constituting nearly one-fourth of all cultivable land (Albertus, 2015, p. 8). This figure is on par with the roughly 109 million hectares of public lands granted under the US Homestead Acts between 1862 and their formal closure in 1986 (Crutchfield, 2015). It is slightly smaller than the 128 million hectares of land redistribution in Latin America from 1930 to 2008, but substantially larger than the 37 million hectares transferred through market-value compensated land negotiation (Albertus, 2015, p. 8).

Fig. 1a plots the extent of three major types of land reform – land redistribution, land negotiation, and public land distribution – in Latin America since 1930. Fig. 1b displays the extent of public land distribution in Colombia and Latin America more broadly since 1930. The distribution of public lands in the region has easily impacted tens of millions of rural dwellers and transformed rural labor and production. Colombia's longstanding public land distribution program constitutes nearly a quarter of all public land distribution in Latin America since 1930 (see Albertus, 2015, pp. 131–133).

2. Commodity shocks and public land distribution

There is ample case-based evidence that price shocks operating through public land grants can have enormous political consequences. The wheat price boom of the 1860s and during WWI spurred a frenzied pace of homesteading in the United States, with the latter period ending in the Dust Bowl as a drought struck just as millions of acres of prairie were uprooted, setting the stage for transformative New Deal programs to aid farmers (Lockeretz, 1978). The soybean price spike in the 1970s–1980s catalyzed frontier agriculture on public lands in Brazil's Amazon and generated large-scale deforestation (Alston et al., 1999), a pattern repeated in the 2000s with growing Chinese demand (Nepstad et al., 2006; Pacheco, 2012). The early 1970s commodity boom, especially in natural gas and the price of beef, drove breakneck settlement of eastern Bolivia through public land grants (Klein, 1992), displacing indigenous tribes and paving the way for the early 2000s gas wars. And contemporary rising demand for oil palm is impacting land titling and land use strategies in Peru's Ucayali region (Bennett et al., 2018).

How do commodity price shocks impact public land grants, and what accounts for local-level variation in the pace and timing of public land grants in response to price shocks? This is an especially relevant question given that most public land distribution programs endure for decades and that agricultural production and land ownership the world over are subject to price shocks, even if governments can cushion shocks somewhat.

2.1. Channels linking commodity price shocks and public land distribution

Theoretically, there are at least three main channels linking commodity price shocks to the distribution of public lands to private citizens. Two of these serve to *increase* public land grants, albeit for different reasons. First, commodity booms generate financial incentives for economic actors to expand production and extend their holdings provided that the price increase is perceived as lasting long enough to justify investment. This is well documented in cases ranging from soybean production tied to land conversion and deforestation at the frontier of state-owned land in