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CONCENTRATION AND POLITICAL COMPETITION: EVIDENCE FROM COLOMBIA
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ABSTRACT

We study the relationship between two sources of political power and property tax revenues in contemporary rural Colombia. First, de jure political power is the extent to which local political elites can capture the public administration for their own benefit. Second, de facto political power is the extent to which economically powerful landowners can influence policy. Using a panel of municipalities, we show that places with either high economic or high political concentration raise more taxes, but places with both high political and economic concentration perform worse.

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RECAUDO DEL IMPUESTO A LA PROPIEDAD RURAL EN UN CONTEXTO DE CONCENTRACIÓN ECONÓMICA Y COMPETENCIA POLÍTICA: EVIDENCIA PARA COLOMBIA

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RESUMEN

Este trabajo estudia la relación existente entre dos fuentes distintas de poder político y el recaudo del impuesto a la propiedad rural en Colombia. Primero, el poder político de jure captura hasta qué medida las élites políticas locales pueden capturar la administración pública para su beneficio personal. Segundo, el poder político de facto captura la capacidad de los terratenientes poderosos económicamente de influenciar las políticas locales. El trabajo explota un panel de todos los municipios colombianos y muestra que los lugares con alta concentración económica o alta concentración política experimentan un mayor recudo, pero los lugares con altos niveles de los dos tipos de concentración tienen un peor desempeño tributario.

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Rural property tax revenue in the face of economic concentration and political competition:

*Evidence from Colombia**

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Abstract

We study the relationship between two sources of political power and property tax revenues in contemporary rural Colombia. First, *de jure* political power is the extent to which local political elites can capture the public administration for their own benefit. Second, *de facto* political power is the extent to which economically powerful landowners can influence policy. Using a panel of municipalities, we show that places with either high economic or high political concentration raise more taxes, but places with both high political and economic concentration perform worse.

Keywords: Rural property taxation, political power, political concentration, economic concentration, Colombia.

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1. Introduction

In Colombia, land has been at the epicentre of political and violent disputes between local political and economic elites and large masses of dispossessed citizens. In this scenario, property taxation is not only a matter of economic efficiency but also, and especially, a strategic mechanism to extract rents and to shape specific forms of land ownership. In this paper, we study the relationship between different forms of political power and rural per capita property tax revenues at the local level in Colombia. In particular, we explore how the interplay between political concentration (a form of *de jure* political power) and economic concentration (a form of *de facto* political power) affects the economic performance of local governments as measured by their capacity to raise taxes.

We find that, everything else equal, both political and economic concentration increase property tax collection. However, we also find that in places with both high political as well as economic concentration, tax revenues are significantly lower. We propose a political economy interpretation of these results. Everything else equal, large landholdings are easier to tax because property rights are better defined for larger rural properties. However, it is in the interest of the landed elite to maintain land concentration and protect unproductive landholdings. This objective cannot be achieved without influencing local decision-making, a condition that may be favored by the presence of political concentration. Hence, to the extent that economic elites can capture the public administration to shape tax institutions, they will make sure to maintain low tax bases, low tax rates, and a poor tax collection capacity. On the other hand, political elites that have no ties with local landownership will seek to extract rents for their own benefit, for instance, by increasing tax revenues.

We study the potential mechanisms of our results and find that influencing the local tax base with political purposes seems to be the main tool to achieve the objectives of the local elites. In particular, both high political and economic concentration are associated with higher property values and a more updated cadastre. However, in places with both high political, as well as economic concentration property values are smaller and the cadastre less up to date. In Colombia, the capacity of influencing the size of the tax base at the local level lies in the jurisdiction of both the Mayor and the City Council.

To the best of our knowledge, this paper is the first empirical study on the effect of political and economic concentration on rural property taxation using sub-national variation. Our dataset covers the period 2000-2010 and our estimates are robust to including municipality and time fixed effects, which control respectively for any time-invariant municipal heterogeneity and for aggregate temporal shocks. In spite of the inclusion of the two-way fixed effects, we have neither a natural experiment to take advantage of, nor instrumental variables for both political and economic concentration at the local level. When there are two endogenous regressors of interest instrumental variables not only have to be correlated with them and satisfy the exclusion restriction, but also need to be orthogonal to one another. Hence, an instrumental variables approach in this setting is rather unlikely.

Thus, to the extent that there may be time-varying omitted confounders, we cannot claim that our effects are causal. However, in addition to the two-way fixed effects, we control for a battery of time-varying municipal characteristics potentially correlated with tax revenues, and so we believe that omitted variable bias hardly confounding our findings. In any case, the existing literature focuses by and large on case studies or cross-national variation, for which identification is even more problematic, measurement error is more likely and the identification of potential mechanisms is elusive.

This paper is related to the literature of political economy of taxation. This literature suggests that tax performance is shaped by existing institutional arrangements and by the capacity of interest groups to influence them, rather than by efficiency concerns. For instance, Olson (1982), Przeworski (1990), Cheibub (1998), Acemoglu, Johnson, and Robinson (2005), DiJohn (2010, 2006), Profeta and Scabrosetti (2007) and Acemoglu, Bautista, Querubín, and Robinson (2008) deal with how specific political arrangements affect tax rates, tax systems, and tax collection. In addition, this paper contributes to Colombia-specific literature on the determinants of tax performance at the local level. Examples include: Echavarría (1987), Hofstetter (1997), Iregui, Ramos, and Saavedra (2001), Penning (2003), Chemonics International INC. (2004), Leibovich (2005), Iregui, Melo, and Ramos (2005), Kalmanovitz and López (2008); Reyes (2008, 2009), Acción Social (2010) and Kalmanovitz (2010). This literature suggests that institutional reasons, such as the lack of cadastral updating, the internal conflict and the control exerted by the landed elite, partially explain the country's poor tax performance.

The remainder of the paper is organized as follows. Section 2 provides historical background on the Colombian local (de jure and de facto) political power. Section 3 describes the data and section 4 the empirical strategy. Section 5 discusses the empirical results. Finally section 6 concludes.

2. Local power in Colombia and its influence on rural property tax

In this section we discuss the Colombian political arrangement at the municipal level in order to substantiate our empirical strategy, presented in section 4.

According to Gibson (2008), even if a country is under a democratic system, there might be some forms of authoritarianism at the sub-national level. This is because local elites devise strategies to keep power in their hands. Gibson suggests that democratization processes are not homogeneous and that national democratic policies can be reversed or blurred at the local level. In Latin America ‘elites might have had an interest in resisting the growth of public services, especially those that provide to segments of the populations that are perceived as quite unlike their own’ (Sokoloff and Zolt, 2005: 24).

In Colombia, land has been at the epicentre of local politics and its control a major objective of local elites. Thus, property taxation is not only a matter of financing local expenditure but also a mechanism to shape strategic land ownership. As argued by Fajardo (2002), historically land control and land concentration have had guaranteed access to cheap labor, a pattern that started in colonial times with an institution called *encomienda*, which guaranteed land domination and access to indigenous and slave labour. This pattern persisted after independence through direct and indirect mechanisms aiming at blocking small peasants from acquiring land.

This implies that the land distribution pattern inherited from the colonial period is highly concentrated and tied to the power of local elites. Thus, historically land ownership has been independent of its productivity and rather has been a source of exclusion and of pre-modern social and political relations, which in turn have damaged the consolidation of a democratic culture and democratic institutions at the local level (see Fajardo, 1986, 2002; Uribe de Hincapié and Álvarez, 1987; Jaramillo, Mora and Cubides, 1989; Berry, 2001, 2002; Palacios, 2002; Kalmanovitz and López, 2008; Reyes, 2008; among others).

To the extent that land is an important and valuable source of political, economic, social and even military control, local elites will attempt to secure access to land, create barriers of entry for competitors and favour policies that strengthen their control. Such policies are those that support or even deepen land concentration, unproductive landholdings, and low costs of owning properties. Taxation policies can of course be used for this purpose. For instance, low or minimal land tax pressures (e.g. small bases, low rates and poor collection methods) will minimize the fiscal responsibilities of the landed elite and will increase the profitability margin of land ownership. Indeed, negligible rural property taxation is the dominant pattern in Colombia.

To succeed in implementing low rural property taxes, land elites have to influence policy decision-making. In Colombia, two local institutional bodies intervene in the process of defining rural property taxation: the City Council and the Mayor. Specifically, the City Council is in charge of writing the municipal tax legislation, which establishes tax rates (within a range fixed by the national Congress), collection methods and payment incentives and penalties. In turn, the Mayor is in charge of collecting land tax, updating the municipal land registry, including the identification of new properties and updating of cadastral values. Since both authorities are democratically elected, the electoral process is likely to be a mechanism by which powerful local elites can shape policy decision-making. According to Kalmanovitz and López (2007), landowners in Colombia have traditionally influenced City Councils in order to get lower tax rates. Yet, the elite might also influence local taxation through illegal means such as bribing local Council members or judges to avoid prosecution for tax evasion, or by issuing threats and even using violence.

Colombia's recent political history is plagued with attempts to establish institutional designs that can offset the power of the local elites and their influence in policymaking. For nearly a century, following the 1886 Constitution, local politics were highly centralized and hierarchical: Following the advice of members of Congress, the President appointed department Governors, who in turn appointed municipal Mayors. As a consequence, legislators were the main link between the centre and regions, and patronage was rampant. In order to foster political competition at the local level, in 1986 the democratic election of Mayors was established, and that of Governors came with the 1991 Constitution (which followed that of 1886).

However, in spite of the abrupt institutional changes, traditional local elites managed to keep their local the *facto* power. Indeed, several scholars have argued that

political decentralization opened the door for the highly entrenched local elites to use non-democratic methods such as the use of violence (see Forero, Hidalgo, Jimenez, Ortiz and Pulido, 1997; Sánchez and Palau, 2006; Peralta, 2008; Gutiérrez, 2010b; Garay, 2010 and Barberena, 2010). Not surprisingly, Peralta (2008) argues that the ideal of promoting democracy at a local level through the democratic election of Mayors was more a procedural democratic feature than a mechanism to actually increase the voice, representation, inclusion, accountability and transparency of local politics¹.

In the language of Acemoglu and Robinson (2008), while electoral institutions have largely changed in the last 25 years in Colombia, there have been no significant transformations in the distribution of power. Indeed, traditional elites have accommodated to the changes implemented and managed to keep power. In other words, the political advantages that democracy creates for citizens may push the elites to a greater use of 'de facto' power, as they have more chances to lose their wealth and profits, and therefore are more willing to invest in activities (such as violence and threat) to avoid such negative future consequences. Acemoglu and Robinson (2008) call this political equilibrium a 'captured' democracy.

There has to be a large enough incentive for the landed elite to invest in de facto power in a democratic environment. Land in Colombia offers substantial rewards. One source of large benefits arises from the gap between cadastral values and market prices, implying enormous capital gains when selling the land. In this context, any policy decision that would alter the scheme of expected benefits associated with land control would create incentives to invest in de facto power².

Some scholars argue that there has been a long-term process of criminalization of the rural elite in Colombia (Duncan, 2006; Reyes, 2009; Gutiérrez, 2010a). During the fifties, the rural elite interacted with illegal armed actors to exert de facto political power, especially when the tensions between the two traditional political parties ended up in the outbreak of a civil war³. In the past thirty years, traditional rural elites have invested in

¹ There are of course exceptions. Some municipalities, especially capital cities, have experienced open electoral contests with new political actors and more inclusive politics. In Bogotá, for instance, 'opinion votes' are thought to largely influence the election of Mayors since at least the mid-1990s.

² Thus, instead of greater political participation, the result of the reforms has been making the elites adapt to secure their rent seeking through other means. As illustrated by Castro (2006), in the few cases where new political and social organizations have managed to win local elections at the municipal and department level in Colombia, these new forces have not kept power for more than one period, and sometimes even got contaminated by traditional and corrupt politics. This is what the sociologist Michels (1911) calls 'The Iron Law of Oligarchy'.

³ There is a consensus that Colombia's current situation of violence and conflict is a heritage of the period known as *La Violencia* (1948-58). During that time, the confrontation between the two major political parties, liberals and conservatives, exacerbated the conflict especially in rural areas and took the lives of at least 180.000 Colombians. A consociational agreement put an end to the conflict and fostered a period of political calm, the *Frente Nacional*

self-defence as a mechanism to curb guerrilla threats. According to Medina (2005), fifty seven per cent of the landed elite involved in cattle ranching activities said they had supported the paramilitaries, while thirty two per cent acknowledged supporting guerrilla groups.

The use of violence is not unique to pre-existing elites as a way to hold on to their previous levels of control over the local decision-making process. New actors may also irrupt violently to secure rents. Duncan (2006) suggests that illegal actors, specifically paramilitaries, found in the decentralization process a profitable way to capture local-level politics and thus, public rents. Therefore, accessing land for new elites was seen as strategy to capture municipal rents and territorial control (land control, asset control and political control). Of course, old and new rural elites, who share common objectives, are likely to form alliances. Indeed, the rise of a new rural elite did not mean a switch of interests or the replacement of the traditional elite for a new one, but rather the persistence of rural interests by combining traditional political power (the *gamonalismo* system of local chieftains, the party system, etc.) with de facto political power (violence, threat, bribes, etc.). In the words of Gutiérrez (2010a): ‘rural elites and paramilitary machineries have been able to build relatively stable territorial structures of governance, in which they hold full control’ (2010a p. 234). In another telling quote, Acemoglu, Robinson, and Santos (2013) argue that non-state armed actors can persist because they can be in a symbiotic relationship with specific politicians holding power: paramilitaries deliver votes to politicians whose preferences are relatively close to theirs, while the politicians they helped get elected implicitly or explicitly support laws and policies of their liking.

Political pressure around taxation is not an exclusive matter of Colombian politics. As Fjeldstad and Semboja (2000) assert, for the case of Tanzania, taxes are unpopular and Council members aiming to be re-elected will avoid any tax increase; ‘in some cases, councillors are also reluctant to raise local taxes and charges because they are major local landowners or business people who seek to minimize their personal tax burden’ (2000:23). Indeed, the authors emphasize the role of important stakeholders, including bureaucrats and politicians, as well as powerful taxpayers, in resisting changes in an attempt to protect their influence and control over rents. Moreover, as suggested by

(national front), which guaranteed 16 years of power sharing between liberals and conservatives. Meanwhile, during the sixties, a former peasant self-defence movement that fought during the days of *La Violencia*, gave birth to FARC (See Washington Office on Latin America, 1989 and Henderson, 1985).

Acemoglu (2003), elites' opposition to certain policies is not a simple matter of losing economic rents, but especially a matter of losing political power. In that sense, the elite will block any initiative of institutional change that threatens their power.

3. Data

To test whether rural property taxation is affected by different forms of political power in Colombia, we constructed a dataset using information on local elections, land distribution, tax revenues, and geographic and socioeconomic variables at the municipal level. The municipality is Colombia's most disaggregated administrative unit, and it is where decisions on property tax rates, exemptions, mechanisms of tax collection, and the process of cadastral updating take place. Colombia has about 1,100 municipalities, and our sample includes 970, after eliminating municipalities under the jurisdiction of independent cadastral agencies for which public data is not available⁴.

Our dependent variable is rural property tax revenue per capita, which captures the tax performance at the local level (Table 1, Panel A). Since there is no administrative information on property tax collection that is specific to rural areas, we construct this variable using the total municipal property tax revenue weighted by a rurality index and normalized by the municipal rural population. The source of the revenues data is *Departamento Nacional de Planeación*, (DNP, the Planning Ministry of Colombia); rurality index is computed by the *United Nations Development Program* (UNDP) and accounts for the extent to which municipalities are mainly rural; and municipal population comes from *Departamento Administrativo Nacional de Estadística* (DANE, the Colombian national statistics office).

Our independent variables of interest are measures of political and economic concentration. Using data from *Registraduría Nacional del Estado Civil* (the Colombian national registry), we construct our measure of political concentration, or de jure political power, based on the Herfindahl Index of the local Mayor and City Council elections that took place in 2000, 2003 and 2007 (see Table 1, Panel B)⁵. This measure captures the extent to which elections are competitive or not, and hence whether one interest group (candidate or political party) is overrepresented in the municipal executive decision-making. This is in turn likely to be correlated with low representation of broad interests

⁴ These include all the municipalities the department of Antioquia (125), and the cities of Cali and Bogotá.

⁵ The Herfindahl Index measures the concentration of votes for a particular candidate or party in each election.

and low accountability, and with a higher risk of capturing public rents through mechanisms available to the municipal administration, including tax policy (Acemoglu et al., 2008). Thus, the lack of electoral competition at the local level means that the local government is more likely to be captured by local elites, and public policies will be distorted in favor of their interests (Bordignon, Cerniglia, and Revelli, 2002 and Acemoglu and Johnson, 2005).

In turn, our measure of economic concentration, or de facto political power, is land concentration at the local level. We capture this concept by computing the percentage of land that is owned by the ten per cent richest landlords among all rural properties registered in the local cadastre. This measure takes values between 0 and 1, where high values mean greater concentration (Table 1, Panel B). This variable is calculated with information from *Instituto Geográfico Agustín Codazzi* (IGAC, Colombia's national geographic institute).

To reduce the scope that the association between our concentration measures and tax revenues is driven by omitted factors, we control for a battery of municipal characteristics (Table 1, Panel D). First, as a scale control, we include the rural municipal population. Second, we include geographic characteristics such as altitude, the area of the municipality, the availability of water (presence of rivers and lakes) and soil erosion and quality. This information is gathered from IGAC and *Instituto de Hidrología, Meteorología y Estudios Ambientales de Colombia* (IDEAM). Third, we include controls that account for the municipal economic 'isolation' including the distance from every municipality to the department's capital city, and the rurality index. Fourth, we control for legal and illegal rents such as the exploitation of natural resources at the local level and the number of hectares cultivated with illegal coca crops. Mining information comes from the Ministry of Mines and coca growing from the *United Nations Office for Drugs and Crime* (UNODC). Lastly, we include a judicial efficiency index (constructed by Fergusson, Vargas, and Vela (2013)) which measures the number of criminal justice cases resolved and not left unpunished, relative to the all the cases that enter the criminal justice system. This allows us to capture the quality of the judicial system at the local level and hence the incentives of local elites to divert public funds for their own interests.

In order to test whether the effect of political and economic concentration on tax performance occurs via changes in the tax base of municipalities, we look at to other two outcomes and think of them as potential mechanisms. These are the land value per capita and the cadastral update-lag (Table 1, Panel C). The value of rural properties and the

information of the timing of cadastral updates both come from IGAC. We compute the cadastral update-lag as the number of years elapsed since the local land registry was last updated.

4. Empirical Strategy

In this section, we propose a parsimonious empirical strategy to assess the extent to which rural property taxation is affected by de jure and de facto political power in the form of political and economic concentration.

Using an Ordinary Least Squares (OLS) regression model with municipal and time fixed effects, we estimate the impact of both political and economic concentration (as well as their interaction) on the outcome of interest as well as on the potential mechanisms. We estimate:

$$Y_{it} = \alpha_i + \lambda_t + \beta_1 HPC_{it} + \beta_2 HEC_{it} + \beta_3 (HPC \times HEC)_{it} + \delta' \mathbf{X}_{it} + \varepsilon_{it} \quad (1)$$

where Y is per capita rural property taxation (or one of the mechanisms). HPC stands for high political concentration (in either the local Mayor or the local City Council election). This is measured using an indicator of the values of the Herfindahl Index that are above the median (0.44 for Mayor's election and 0.29 for City Council election). HEC stands for high economic concentration and it is measured using an indicator of the values of the percentage of land in the hands of the wealthiest decile of landowners that are above the median (0.59). α_i and λ_t are municipality and year fixed effects, which account respectively for any time invariant municipal characteristic that might be correlated with tax performance, and for any aggregate shock that affects all the municipalities at the same time. \mathbf{X} is a vector of control variables that includes the variables described in section 3⁶. Lastly, ε is the error term. The coefficient β_1 captures the effect on rural property tax performance of having high de jure political power but low de facto political power. In turn, β_2 captures the effect of having high de facto political power but low de jure political power. Finally, β_3 is the additional effect of having both high political concentration and economic concentration.

The identification assumption is that, conditional on controlling for the variables described in section 3; our concentration variables are uncorrelated with the error term. If

that is the case, the OLS model consistently estimates the effect of political and economic concentration on economic performance as measured by rural property tax revenues. As mentioned, even if the municipality fixed effects reduce the scope of omitted confounders, there may still be time varying omitted variables that drive both the concentration measures and tax performance. Thus, in the absence of instrumental variables or a natural experiment, our results can only be interpreted as causal under the assumption that there are no such time-varying confounders.

Equation 1 is estimated separately with *HPC* computed from the election of Mayors and the election of the City Council (these results are reported in Tables 2 and 3 respectively). However, in order to see the robustness of our results to accounting for the two types of political concentration jointly (together with economic concentration), we run the following model:

$$Y_{it} = \alpha_i + \lambda_t + \gamma_1 HPC_{M,it} + \gamma_2 HPC_{C,it} + \gamma_3 HEC_{it} + \gamma_4 (HEC_{it} \times HPC_{M,it}) + \gamma_5 (HEC_{it} \times HPC_{C,it}) + \gamma_6 (HPC_{M,it} \times HPC_{C,it}) + \gamma_7 (HEC_{it} \times HPC_{M,it} \times HPC_{C,it}) + \phi' \mathbf{X}_{it} + \mu_{it} \quad (2)$$

where the sub indices *M* and *C* of *HPC* stand respectively for *Mayor* and *Council*.

In this specification γ_1 (γ_2) captures the effect of high political concentration in the election of the Mayor (City Council) in municipalities with both low political concentration in the election of the City Council (Mayor) and low economic concentration; γ_3 captures the effect of high economic concentration in municipalities with low political concentration on both the local executive and legislative branches, γ_4 (γ_5) captures the additional effect of high economic concentration in municipalities with high political concentration in the election of the Mayor (City Council) but low political concentration in the election of the City Council (Mayor); γ_6 captures the additional effect of high political concentration in the election of the Mayor in municipalities with high political concentration in the election of the City Council but low economic concentration. Finally, γ_7 captures the differential effect of high political concentration in the election of the Mayor in municipalities with both high political concentration in the election of the City Council and high economic concentration.

⁶ The time invariant controls are of course not included in the specifications that have municipality fixed effects.

To the best of our knowledge, the joint effect of political and economic concentration (or de jure political power and de facto political power) on economic performance at local level or has not been studied in the literature.

5. Results

5.1. Main results

Table 2 reports our main results focusing on high political concentration in the election of the local Mayor. Column 1 shows the linear relationship between rural property tax collection per capita and high de jure and de facto political power, together with their interaction. Columns 2 to 9 include, in an additive way, various sets of controls, to account for the multidimensional municipal heterogeneity that may both affect concentration variables and tax revenues. The last column (9) includes, in addition to all time-varying controls, municipality and year fixed effects that account respectively for all the additional (time-invariant) municipal heterogeneity, and for aggregate time shocks that may affect tax collection in all municipalities (for instance the business cycle).

Looking at our preferred (and most demanding) specification (column 9), we find that both political and economic concentrations are associated with higher tax revenues (although the later association is not statistically significant at conventional levels in column 9). In addition, the interaction between both types of concentration is negatively associated with tax revenues. We interpret these results in the following way: Everything else equal, large landholdings are easier to tax because property rights are better defined for larger rural properties. However, it is in the interest of the landed elite to maintain land concentration and protect unproductive landholdings. This objective cannot be achieved without influencing local decision-making, a condition that may be favored by the presence of political concentration. Hence, to the extent that economic elites can capture the public administration to shape tax institutions, they will make sure to maintain low tax bases, low tax rates, and a poor tax collection capacity. On the other hand, political elites that have no ties with local landownership will seek to extract rents for their own benefit, for instance by increasing tax revenues.

In terms of magnitudes, the average property tax collection per capita in places where both political concentration (measured using the election of Mayors) and economic concentration are low is 0.00927 millions of Colombian pesos –COP- of 2008 (see the

coefficient of the constant term in column 9). In places with high political concentration but low economic concentration, per capita revenues are 0.00106 millions of COP higher. Conversely, in places with high economic concentration but low political concentration per capita revenues are 0.0019 millions of COP higher, but this difference is not significant. Finally in places with high values of both types of concentration per capita revenues are about two-thirds the average of places with low levels of both types of concentration (i.e. 0.00281 millions of COP *lower*).

Table 3 reproduces the same results but using the elections of the City Council (instead of those of the Mayor) to compute the measure of high political concentration. While the magnitudes are somewhat higher, the results are qualitatively unchanged: both political and economic concentrations are associated with higher tax revenues but the interaction between them is associated with a worse tax performance.

In contrast to what is often claimed in the literature, and particularly by Colombian scholars, local landed elites cannot offset harmful taxation unless they are able to control political decision-making. In other words, the existence of a landed elite is not sufficient to reduce property taxation.

Table 4 presents the results of regression model 2, which includes both measures of political concentration simultaneously (together with their individual interaction with economic concentration, their interaction with one another, and the triple interaction of the three concentration variables). Focusing on our preferred specification (column 9), the results are consistent with those of Tables 2 and 3. Specifically, it is still the case that in places with high political concentration (of either type) but low economic concentration the tax revenues are higher than in the benchmark case with low levels of both economic and political concentration (however this difference is not statistically significant). Moreover, as in the previous tables, relative to the benchmark, per capita tax revenues are higher in places with high economic concentration but low levels of both types of political concentration (significant at the 1 per cent level). Finally and also consistent with the previous results, the interaction of political concentration and economic concentration is negative and significant regardless of how political concentration is measured⁷.

⁷ Note that even if the triple interaction is positive and significant the coefficient of this term does not offset in magnitude the sum of the coefficients of the two double interactions of high political concentration with high economic concentration, which means that under this specification it is still the case that places with high levels of both political and economic concentration perform worse in terms of tax collection.

The main message of Table 2, Table 3 and Table 4 is that, in contrast to what is often claimed in the literature, and particularly by Colombian scholars, local landed elites cannot offset harmful taxation unless they are able to control political decision-making. In other words, the existence of a landed elite is not sufficient to reduce property taxation.

5.2. Robustness

Our results do not depend on the choice of the specific measures of political and economic concentration described in section 3. Table 5 shows the robustness of our results to using alternative measures. In particular, as a measure of political concentration other than the Herfindahl Index, we use the share of votes of the winning candidate or party. The idea is that the larger this share is, the less competitive the election was and the more political power the winner candidate has⁸. In addition, for the case of economic concentration we look at the share of the land owned by the richest 1 per cent of landowners and at the land Gini coefficient (both based on information from IGAC).

Table 5 presents these robustness checks. We do so using the most demanding regression model, that estimates simultaneously the effect of political concentration of the Mayor and the City Council (equation 2), and includes all the time-varying controls and two-way fixed effects (as in column 9 of Tables 2 to 4). Column 1 of Table 5 keeps the baseline measure of economic concentration (the share of land owned by the richest decile of landowners) and shifts the proxy political concentration from the Herfindahl Index to the share of votes of the winning candidate (winning party, for the case of the City Council) to compute the dummy for high political concentration. As in Table 4 (column 9), the coefficient of the non-interacted proxy of high economic concentration ($HEC_{tenpercent}$, where the subindex is added to distinguish it from the alternative measures used to study robustness) is positive and significant. Likewise, the interaction of high economic concentration with each one of the measures of high political concentration (HPC_M^{Share} and HPC_C^{Share} , where the superindices added to distinguish it from the benchmark measure) is negative and significant. Finally, also as in Table 4, while the triple interaction is positive and significant the magnitude of the coefficient does not offset the sum of the two negative coefficients of the aforementioned (double)

⁸ We are aware that high share of votes can show a large public acceptance for the candidate, nevertheless, in Colombia, large public acceptance is more likely to happen in large cities like Medellín and Bogotá while the rest of the

interaction terms. The same is true in the subsequent columns: column 2 keeps the high political concentration measures based on the Herfindahl Index but changes the high economic concentration proxy from the benchmark measure based on the share of land owned by the richest decile of landowners to the land Gini coefficient. Instead, column 3 looks at the share of land owned by the richest 1 per cent landowners. Overall, our results support the finding that while political and economic concentration individually are associated with higher tax revenues, their interaction is associated with lower revenues.

5.3. Mechanisms

How can local political elites influence tax revenues to either capture public rents or to reduce the taxation burden of the landed elite? We now explore the role of two potential mechanisms related to the autonomy of the municipality Mayor and the Council members to manage and update local land registries, thus shaping the tax base of their ruled municipalities. If local governments are interested in increasing tax revenues, this has to be done either by increasing the tax rates, land values, cadastral information, or by improving mechanisms of tax collection. Our data allows us to test two such mechanisms, related to the ability of local authorities to affect revenues by changing the tax base. These are the registry-recorded value of land and the willingness to update the cadastre. To test whether political and economic concentration affect these channels we estimate the regression model specified in equation 1, but using the two mechanisms as dependent variables.

Colombia's law assigns to the executive branch of municipalities (the Mayors) the responsibilities of tax collection and cadastral updating. In turn, the City Council is responsible for defining tax rates, tax exemptions, and fines. Nevertheless, both authorities interact to jointly achieve tax revenues' objectives. In practice, the City Council can make decisions about cadastral updates and the Mayor influences tax rates⁹.

Results are presented in Tables 6 and Table 7, for the case of political concentration in the election of the Mayor and in the election of the City Council respectively¹⁰. All

municipalities, a high level of share of votes is associated with large political influence of local political machines that exert influence on elections.

⁹ For instance, the cadastral update process is decided and contacted by the Mayor. However, once the process is finished the Council has to approve the updated cadastre so that it can be used for taxation purposes.

¹⁰ Results from estimating equation 2 with the joint effect of political concentration in the election of the Mayor and in the election of the City Council generate estimates that are robust to the ones presented in these tables and are available upon request.

specifications include the entire set of controls and the two-way fixed effects. Column 1 of both tables estimates the effect on per capita land value and column 2 on the cadastral update lag.

In both cases we find that political and economic concentration affect property values in the same way they affect property tax revenues, which suggests that land values are a likely instrument through which revenues are affected. Similarly, both economic and political inequality decrease the time elapsed since the last cadastral update but their interaction increases it, a results that is also consistent with the use of the cadastre as a mechanism of shaping local tax revenues.

In addition, we find significant negative effect of our concentration measures on the cadastral update-lag, suggesting that both local forms of de jure political power reduces the update lag, or, in other words, make efforts to update cadastral values, therefore greater values of rural land. However, in presence of high political power and high economic power, cadastral update has a greater lag therefore it can be said that political elites achieve their aim to extract rents for their own benefit and that landed elite achieves the goal of maintaining land concentration influencing local decision-making.

6. Conclusions

In Colombia, land has been at the epicentre of political interest between local political and economic elites. In this scenario, property taxation is not only a matter of economic efficiency but also, and especially, a strategic mechanism to extract rents and to shape specific forms of land ownership. In this paper, we study the relationship between de jure political power, de facto political power and per capita property tax revenues at the local level in Colombia. In particular, we explore how the interaction between political and economic concentration affects the economic performance of local governments as measured by the capacity to raise taxes.

Using a rich municipal level panel dataset for Colombia, we show that both political and economic concentration increase property tax collection. We also find that in places with both high political concentration as well as economic concentration, tax revenues are significantly lower. These results are consistent with the idea that political elites try to extract rents for their own benefit by increasing tax revenues. Moreover, while it is in the interest of the landed elite to secure policies aiming at maintaining land concentration and protecting unproductive landholdings, this objective cannot be achieved without

influencing local decision-making, a condition that may be favored by the presence of political concentration. We explore the potential mechanism of these results and show that the local powerful elites influence tax performance is by shaping land property values and decision on cadastral update, ruling out alternative mechanisms.

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Table 1: Descriptive statistics

Variable	Obs.	Mean	Std. Dev	Min	Max
<i>Panel A: Outcomes</i>					
Rural Property Tax Revenue per capita ^a	9639	0.018	0.026	0	0.581
<i>Panel B: Political Power Variables</i>					
Mayor Herfindahl Index	9049	0.423	0.122	0.134	1
City Council Herfindahl Index	9637	0.326	0.170	0	1
Mayor vote share	9049	0.518	0.128	0.204	1
City Council vote share	9611	0.438	0.176	0.109	1
Share of land in the hands of the richest ten percent	8642	0.590	0.108	0.151	0.972
Share of land in the hands of the richest one percent	8493	0.209	0.090	0.044	0.942
Land Gini coefficient	9417	0.687	0.111	0	0.982
<i>Panel C: Mechanisms</i>					
Per capita rural land value	9520	5.137	8.157	0	321.196
Cadastral Lag ^b	8820	6.746	5.456	0	55
<i>Panel D: Controls</i>					
<u>Scale</u>					
Log Rural Population	9578	8.835	0.855	5.565	11.774
<u>Geography</u>					
Elevation	9010	1177.976	917.022	2	3087
Water availability	9151	3297176	567310.1	1333010	5625773
Erosion	9151	1.924	1.058	0	5
Soil Quality	9151	2.741	1.239	0	8
<u>Isolation</u>					
Distance to Department Capital	9010	114.930	93.232	0	600
Rurality Index	9649	46.369	10.919	2.99	96.7
<u>Rents</u>					
Per capita Mine Royalties	9578	0.032	0.214	0	5.914
Land Cultivated with Coca	9652	94.84	610.094	0	16524
<u>Institutional Quality</u>					
Judicial Efficiency Index	9423	0.878	1.284	0	32.889
<u>Conflict Outcomes</u>					
Guerrilla Attacks per capita	9631	0	0	0	0.002
Paramilitary Attack per capita	9631	0	0	0	0.005

^a Measured as the product of the total property tax revenue per capita and the rurality index. The unit is millions of Colombian pesos of 2008.

^b Numbers of years elapsed since last cadastral update.

Table 2: Effect of political and economic concentration on per capita rural tax revenue
(Political concentration computed based on the election of Mayors)

Dependent variable: <i>Per capita rural property tax revenue</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
HPC _M ^a	-0.00219*** (0.000786)	-0.00245*** (0.000788)	-0.00229*** (0.000835)	-0.00144* (0.000873)	-0.00148* (0.000873)	-0.00156* (0.000869)	-0.00159* (0.000861)	-0.000714 (0.000872)	0.00106* (0.000548)
HEC ^b	0.0146*** (0.00168)	0.0152*** (0.00169)	0.0134*** (0.00172)	0.0116*** (0.00170)	0.0115*** (0.00171)	0.0115*** (0.00171)	0.0113*** (0.00169)	0.0116*** (0.00168)	0.00196 (0.00121)
HEC × HPC _M	-0.00470*** (0.00177)	-0.00493*** (0.00178)	-0.00449** (0.00177)	-0.00332* (0.00176)	-0.00338* (0.00175)	-0.00328* (0.00176)	-0.00332* (0.00174)	-0.00377** (0.00171)	-0.00281** (0.00134)
Constant	0.0140*** (0.000848)	0.0327*** (0.00647)	0.0154* (0.00818)	0.0431*** (0.0102)	0.0430*** (0.0104)	0.0434*** (0.0109)	0.0411*** (0.0107)	0.0305*** (0.0106)	0.00927 (0.0430)
Observations	8,137	8,137	7,889	7,889	7,889	7,876	7,876	7,876	8,137
R-squared	0.071	0.076	0.102	0.129	0.130	0.130	0.139	0.200	0.821
<i>Controls</i>									
Scale (Log rural population)		✓	✓	✓	✓	✓	✓	✓	✓
Geography			✓	✓	✓	✓	✓	✓	
Isolation				✓	✓	✓	✓	✓	
Rents (legal and illegal)					✓	✓	✓	✓	✓
Institutional Quality						✓	✓	✓	
Conflict							✓	✓	✓
Year Fixed Effects								✓	✓
Municipality Fixed Effects									✓

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

^a High Political Concentration, equal to 1 if the Herfindahl Index for Mayor elections exceeds the median (0.437).

^b High Economic Concentration, equal to 1 if the the percentage of land owned by the wealthiest 10% of landowners exceeds the median (0.588).

Table 3: Effect of political and economic concentration on per capita rural tax revenue
(Political concentration computed based on the election of the City Council)

Dependent variable: <i>Per capita rural property tax revenue</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
HPC _C ^a	-0.00259*** (0.000886)	-0.00312*** (0.000887)	-0.00277*** (0.000922)	-0.00162* (0.000950)	-0.00161* (0.000950)	-0.00157* (0.000948)	-0.00113 (0.000950)	0.00317*** (0.00105)	0.00192*** (0.000604)
HEC ^b	0.0160*** (0.00162)	0.0165*** (0.00163)	0.0147*** (0.00163)	0.0132*** (0.00158)	0.0132*** (0.00158)	0.0132*** (0.00157)	0.0132*** (0.00156)	0.0134*** (0.00154)	0.00341*** (0.00114)
HEC × HPC _C	-0.00904*** (0.00169)	-0.00917*** (0.00168)	-0.00860*** (0.00174)	-0.00787*** (0.00168)	-0.00790*** (0.00168)	-0.00792*** (0.00169)	-0.00808*** (0.00167)	-0.00799*** (0.00165)	-0.00538*** (0.00117)
Constant	0.0140*** (0.000775)	0.0357*** (0.00628)	0.0167** (0.00799)	0.0417*** (0.00978)	0.0417*** (0.00997)	0.0419*** (0.0105)	0.0396*** (0.0103)	0.0270*** (0.0101)	0.0117 (0.0399)
Observations	8,637	8,637	8,268	8,268	8,268	8,248	8,248	8,248	8,637
R-squared	0.088	0.095	0.120	0.143	0.145	0.145	0.151	0.206	0.820
<i>Controls</i>									
Scale (Log rural population)		✓	✓	✓	✓	✓	✓	✓	✓
Geography			✓	✓	✓	✓	✓	✓	
Isolation				✓	✓	✓	✓	✓	
Rents (legal and illegal)					✓	✓	✓	✓	✓
Institutional Quality						✓	✓	✓	
Conflict							✓	✓	✓
Year Fixed Effects								✓	✓
Municipality Fixed Effects									✓

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

^a High Political Concentration, equal to 1 if the Herfindahl Index for Council elections exceeds the median (0.289).

^b High Economic Concentration, equal to 1 if the percentage of land owned by the wealthiest 10% of landowners exceeds the median (0.588).

Table 4: Effect of political and economic concentration on per capita rural tax revenue
(Political concentration measured both with the election of the Mayor and that of the City Council)

Dependent variable: <i>Per capita rural property tax revenue</i>									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
HPC _M	-0.00262** (0.00114)	-0.00266** (0.00113)	-0.00265** (0.00120)	-0.00198 (0.00132)	-0.00201 (0.00130)	-0.00214 (0.00131)	-0.00214* (0.00129)	-0.00116 (0.00123)	0.000475 (0.000699)
HPC _C	-0.00273** (0.00127)	-0.00315** (0.00126)	-0.00305** (0.00127)	-0.00183 (0.00134)	-0.00179 (0.00134)	-0.00176 (0.00134)	-0.00105 (0.00135)	0.00479*** (0.00148)	0.00130 (0.000945)
HEC	0.0171*** (0.00189)	0.0178*** (0.00191)	0.0157*** (0.00193)	0.0141*** (0.00189)	0.0140*** (0.00189)	0.0141*** (0.00188)	0.0140*** (0.00187)	0.0144*** (0.00184)	0.00400*** (0.00137)
HEC × HPC _M	-0.00281 (0.00265)	-0.00325 (0.00268)	-0.00283 (0.00269)	-0.00200 (0.00267)	-0.00202 (0.00266)	-0.00188 (0.00266)	-0.00185 (0.00265)	-0.00231 (0.00254)	-0.00381** (0.00159)
HEC × HPC _C	-0.00979*** (0.00239)	-0.0100*** (0.00239)	-0.00923*** (0.00235)	-0.00894*** (0.00233)	-0.00895*** (0.00233)	-0.00899*** (0.00233)	-0.00918*** (0.00230)	-0.00850*** (0.00225)	-0.00745*** (0.00180)
HPC _M × HPC _C	0.00191 (0.00145)	0.00173 (0.00144)	0.00180 (0.00152)	0.00136 (0.00164)	0.00132 (0.00164)	0.00140 (0.00164)	0.00104 (0.00163)	-0.00163 (0.00160)	0.000303 (0.00113)
HEC × HPC _M × HPC _C	0.00262 (0.00389)	0.00299 (0.00390)	0.00265 (0.00387)	0.00282 (0.00381)	0.00276 (0.00381)	0.00272 (0.00379)	0.00267 (0.00377)	0.00202 (0.00368)	0.00500** (0.00216)
Constant	0.0150*** (0.000920)	0.0377*** (0.00655)	0.0192** (0.00823)	0.0435*** (0.0103)	0.0433*** (0.0104)	0.0438*** (0.0109)	0.0413*** (0.0108)	0.0281*** (0.0106)	0.0117 (0.0420)
Observations	8,137	8,137	7,889	7,889	7,889	7,876	7,876	7,876	8,137
R-squared	0.091	0.098	0.121	0.142	0.144	0.144	0.151	0.205	0.823
<i>Controls</i>									
Scale (Log rural population)		✓	✓	✓	✓	✓	✓	✓	✓
Geography			✓	✓	✓	✓	✓	✓	
Isolation				✓	✓	✓	✓	✓	
Rents (legal and illegal)					✓	✓	✓	✓	✓
Institutional Quality						✓	✓	✓	
Conflict							✓	✓	✓
Year Fixed Effects								✓	✓
Municipality Fixed Effects									✓

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. See notes on Tables 2 and 3 for explanations of the independent variables.

Table 5: Effect of political and economic concentration on per capita rural tax revenue - Robustness

Dependent variable: <i>Per capita rural property tax revenue</i>			
	(1)	(2)	(3)
$HPC_M^{Share\ a}$	0.000979 (0.000732)		
$HPC_C^{Share\ b}$	0.00115 (0.000877)		
$HEC_{Tenpercent}$	0.00431*** (0.00135)		
$HEC_{Tenpercent} \times HPC_M^{Share}$	-0.00341** (0.00141)		
$HEC_{Tenpercent} \times HPC_C^{Share}$	-0.00716*** (0.00157)		
$HPC_M^{Share} \times HPC_C^{Share}$	-3.28e-05 (0.00101)		
$HEC_{Tenpercent} \times HPC_M^{Share} \times HPC_C^{Share}$	0.00343* (0.00191)		
HPC_M^{HHI}		-0.000195 (0.000806)	-0.000235 (0.000832)
HPC_C^{HHI}		0.000236 (0.00115)	0.000886 (0.00104)
$HEC_{LandGini\ c}$		0.00207 (0.00141)	
$HEC_{LandGini} \times HPC_M^{HHI}$		-0.00301* (0.00158)	
$HEC_{LandGini} \times HPC_C^{HHI}$		-0.00540*** (0.00179)	
$HPC_M^{HHI} \times HPC_C^{HHI}$		0.000797 (0.00127)	0.000609 (0.00117)
$HEC_{LandGini} \times HPC_M^{HHI} \times HPC_C^{HHI}$		0.00402* (0.00208)	
$HEC_{Onepercent\ d}$			0.00290** (0.00147)
$HEC_{Onepercent} \times HPC_M^{HHI}$			-0.00264 (0.00163)
$HEC_{Onepercent} \times HPC_C^{HHI}$			-0.00677*** (0.00180)
$HEC_{Onepercent} \times HPC_M^{HHI} \times HPC_C^{HHI}$			0.00482** (0.00211)
Constant	0.0103 (0.0419)	0.0436 (0.0370)	0.0175 (0.0435)
Observations	8,137	8,864	7,998
R-squared	0.823	0.804	0.823
<i>All Controls</i>	✓	✓	✓

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

^a High Political Concentration, equal to 1 if the Mayor's vote share exceeds the median (0.516)

^b High Political Concentration, equal to 1 if the vote share of the elected Council's majority party exceeds the median (0.409)

^c High Economic Concentration, equal to 1 if the the land Gini coefficient exceeds the median (0.691)

^d High Economic Concentration, equal to 1 if the the percentage of land owned by the wealthiest one percent of the population exceeds the median (0.193)

Table 6: Effect of political and economic concentration on potential mechanisms of tax revenue

Dependent variable:	<i>Per capita rural land value</i> (1)	<i>Cadastral update lag</i> (2)
HPC_M^{HHI}	0.399 (0.248)	-0.650** (0.280)
$HEC_{Tenpercent}$	1.745** (0.727)	-1.063 (0.722)
$HEC_{Tenpercent} \times HPC_M^{HHI}$	-0.905** (0.381)	0.834** (0.380)
Constant	36.04** (15.61)	25.15** (11.37)
Observations	8,119	8,135
R-squared	0.686	0.593
<i>All Controls</i>	✓	✓

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7: Effect of political and economic concentration on potential mechanisms of tax revenue

Dependent variable:	<i>Per capita rural land value</i> (1)	<i>Cadastral update lag</i> (2)
HPC_C^{HHI}	0.447** (0.188)	-0.684*** (0.252)
$HEC_{Tenpercent}$	1.654** (0.684)	-0.758 (0.658)
$HEC_{Tenpercent} \times HPC_C^{HHI}$	-1.309*** (0.361)	0.740** (0.339)
Constant	35.86** (14.74)	26.62** (10.90)
Observations	8,617	8,639
R-squared	0.683	0.584
<i>All Controls</i>	✓	✓

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1