

The Political Economy of Frontier Settlement and Land Privatization in Argentina and Australia, 1810-1850

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Abstract

This paper compares public land disposal and the emergence of property-rights on the frontier in the first half of the nineteenth century in the Province of Buenos Aires, Argentina, and New South Wales, Australia. The most prominent theory of the emergence of property rights on frontiers proposes a natural progression from open access, to *de facto* property rights from informal claims, to *de jure* rights, which evolve from growing political demands of settlers and entrants. We argue that this approach ignores the political supply side when, according to record, governments of these settlement economies often claim frontier land as public land to meet revenue demands. We show that a revenue-maximizing government, under certain conditions, when faced with competing claims of squatters, will not enforce its claim to public land, allowing squatters effectively to take it over. The government's decision depends on the costs of enforcement, the opportunity costs of squatters, and the threat of violence on the frontier, especially from indigenous peoples who oppose settlement. The contrast between Argentina and Australia confirms the main predictions of the model and explains why the progression from *de facto* to *de jure* property rights is born out in the process of frontier settlement in New South Wales but not in the province of Buenos Aires, where settlement of frontier land was achieved by an original specification of *de jure* property rights.

What motivates governments to give away rights to their public lands? One might expect them to try to capitalize on the value of lands possessed to maximize the stream of revenue obtained from them. If so, one would expect them either to sell them to obtain revenue or, under some conditions, they might hold onto public lands, possibly lease them, for a period of time until the best discounted price can be obtained. The frontier societies of European settlement of the nineteenth century, where vast extensions of lands were initially claimed as public and then disposed of later, provide interesting cases for observing whether government behavior reflects such a calculation. It often appears to the contrary. Often governments end up giving away the land, forgoing the opportunity to use it to generate revenue, even at times when revenue is badly needed. The revenue objective seems to take second place to other objectives.

This paper compares the policies of public land disposal of New South Wales (Australia) and the Province of Buenos Aires (Argentina) in the first half of the nineteenth century, when public land policies in each country were first established and set the patterns of ownership that later generations would inherit. The main question is: How did the revenue objectives of these two governments influence their policies of public land disposal? Early on, both countries adopted policies intended to use public lands to generate government revenue, yet both ended up virtually giving away vast quantities of public lands to concentrated landholding interests – sheep grazers in New South Wales and cattle grazers in Buenos Aires.

The question addressed here fits into a larger dialogue about differences between “neo-Europes,” especially how property rights emerged differently among them. Weaver (2003), in a comparative study of frontier settlement and property-rights, contrasts the British colonial experience with Argentina to underscore how inherited legal and cultural outlooks shaped the conflicts that emerged between concentrated landholders and aspiring smallholders often on lawless frontiers (pp. 13-15). Alston, Harris and Mueller (2009) focus on how property rights emerged to mitigate conflicts between large- and smallholder interest groups. They compare Australia, Brazil, and the United States’ Great Plains, and show how the initial lack of government involvement in property-rights formation was eventually reversed in each case by growing demands on the parts of private stakeholders to have a third-party resolution of conflict.

Curiously, Alston, Harris and Mueller, and Weaver find “a lack of supervision” from government; land was left in “open access,” giving settlers free reign to squat wherever they chose (Alston, Harris and Mueller 2009, p. 3; Weaver 2003, p. 12). It seems puzzling. Authorities invariably looked at vast “desert,” “crown,” or “public” lands with an eye toward government revenue. Why would governments in need of revenues give away vast quantities of public land especially when their organizational capacities to levy conventional taxes were limited?

If governments sometimes gave priority to other objectives, as in the common Jeffersonian explanation of the homestead policy of the United States, it is less obvious here. The notion that American or British colonial attitudes may have been more “amenable to populism” does not help to explain the emergence of concentrated holdings of land by squatters in New South Wales or *estancieros* in Buenos Aires. For the period in question, both places came to be dominated by large landholding interests accused of “locking up” or “monopolizing” vast quantities of public land that should have been available to smallholders.

Other patterns of settlement differed as well between the two places. Why, for example, did the emergence of squatting become such a prominent theme in Australian history, evoking an image of the period as “the squatting age,” when, in contrast, squatting is scarcely mentioned as a factor in the rise of “the landholding bourgeoisie” in Argentina?¹ In the context of the United States, studies have examined questions about the relative efficiency consequences of using the institutions of squatting or homesteading when privatizing public land (Anderson and Hill 1990, Dennen 1977, Libecap and Johnson 1979). Anderson and Hill, for example, argue for the efficiency properties of sales, finding that squatters and homesteaders “engage in premature development of the land” (1990, p. 191). Yet in our observation, governments sometimes had little control over the matter. Settlers sometimes defied the law when they settled open lands. Making squatting and other institutions or norms of settlement endogenous to the model may offer some insights into why patterns of settlement differ.

The costs and benefits of establishing the government’s claim or property right

¹ References are to Stephen H. Roberts, *The Squatting Age in Australia* (1935) and Jacinto Oddone, *La burguesía terrateniente argentina* (1956).

are central to our explanation. Before a government could raise revenues from public lands it had to assert and enforce its claim to the public land. If it took no such action, squatters moved to assert their own preemptive claims, which were difficult to deny when well-established (Weaver, pp. 74-76). In early stages of settlement, land values on the frontier were so low that the expected revenue gain may not have been large enough to justify the cost of enforcement. We develop a model to explain when and why governments chose, or chose not, to assert its claims to public land and then sell or lease it rather than leave it for squatters to claim, in effect, giving it away. The predictions of the model offer an explanation of the contrasts between early public land policies in New South Wales and the Province of Buenos Aires.²

Our analysis draws from Alston, Harris and Mueller (2009), who model the emergence of *de facto* and *de jure* property rights in frontier societies as derived from the private incentives that induce settlers to demand property rights. It extends earlier work of Alston, Libecap and Mueller (1999a,b) and Alston, Libecap and Schneider (1996) by introducing a framework for analyzing the political demands of various private stakeholders and their influence on government policies toward frontier land policy. They describe how as the interests of stakeholders evolve, political demands emerge that call for the government to enter and provide *de jure* property rights. That they consider only the demand side of the political process is an important omission, since, as we have observed, governments had intrinsic interests in public lands as a source of revenue. Alston, Harris and Mueller (2009) assume public lands were left in open access. We consider that, by declaring lands as “public,” the government asserted at least a nominal right to determine how these lands were used or disposed, including the right to manage them in the state’s interest as a source of revenue.

Another important feature of frontier societies, often neglected in the literature, is the potential for conflict with first peoples. Both countries claimed large expanses of public land that was, to be sure, sparsely populated, but not uninhabited. Conflicts between peoples over these lands threatened the security of property rights and value of the lands in the neo-European settlements. Douglas Allen (1991) finds in the case of the

² The term “Buenos Aires” is used in the paper to refer to the province of Buenos Aires except when explicit reference is made to the “city of Buenos Aires”,

United States that the threat of violence on the western frontier influenced early institutional development with implications for long-run growth. Other studies have similarly found the threat of violence to have an influence on institutions of exchange or property rights, such as Umbeck (1981) and North, Wallis, and Weingast (2009). We find that different capacities for violence among the Aborigines of the subcontinent and the Indians of the *pampas* had an important influence on public land policies in New South Wales and Buenos Aires.

Our comparison benefits from well-known similarities in the two countries' factor endowments and settlement histories. A number of studies compare Argentina, Australia and Canada, provoked by the contrast between the similarities of factor endowments against the differences in long-run economic outcomes. Using a wide variety of frameworks, studies have emphasized how institutions seem to play a key role in the divergence in long-run experiences in these settlement economies with similar factor endowments.³ Others find Argentina to be a "curiosity" or an enigma (Weaver 2003, p. 13; Prados de la Escosura and Sanz-Villarroya 2009). Engerman and Sokoloff (1997) could not find a way to incorporate Argentina into their factor-endowments argument about the divergence of New World long-run growth paths. From Engerman and Sokoloff, or Acemoglu, Johnson and Robinson (2002), one might expect Argentina to have turned out more like Australia. Although this paper offers no explanation of long-run economic divergence, our findings seem to lend support for a factor-endowments interpretation, which accounts more comprehensively, among other things, for first peoples' capacities for resistance.

The paper proceeds as follows: Section I provides background for the two countries. Section II discusses a few central concepts from Alston, Harris and Mueller (2009) which we adopt, and it explains some key difference in our approach. Section III develops our model of government's land policy decisions. Section IV applies the model to New South Wales, and Section V applies it to the Province of Buenos Aires.

³ The comparative literature on Argentina and British settlement economies, Australia or Canada, includes Adelman 1987, Duncan and Fogarty 1984, Platt and Di Tella 1985, Prados de la Escosura and Sanz-Villarroya 2009, Schedvin, 1990, Solberg, 1987, Taylor 1992,

I. Origins, Settlement and Public Land Transfers

Global demand for wool and cattle products (hides, tallow, and jerked beef) in the early 19th century offered new prospects for pastoral exports for colonies with common endowments of vast, sparsely settled grasslands with access to the sea. Local pastoral interests set their sights on laying a claim to unsettled land in the vast expanses of crown lands of New South Wales (NSW) and in the former *tierras realengas* of the Spanish viceroyalty of Río de la Plata. Nevertheless, before 1810, pastoral exports had not been important for either colony. Both remained small settlements whose primary functions, despite the abundance of fertile land, were not agriculture.

NSW was founded by Great Britain in 1788, as a penal colony to house convicts. In 1810, NSW had a population of 10,452, of which over 70 percent were convicts or ex-convicts. Activities of the NSW Commissariat—the local arm of the British Treasury’s Commissary—a colonial agency that kept in store and allocated vital goods for colonial officials, military officers, and convicts, issued bills of exchange, and regulated prices of staple goods—were central to the new penal economy. Shipping to and from NSW was interrupted during the Napoleonic wars, bringing a halt to convict arrivals. The end to that conflict brought an increase in shipments of prisoners and stimulus from trade.

Land grants by the NSW Governor to military officers, officials, and freed convicts facilitated a slow development of private markets in agricultural goods and labor. By 1821 only 85 square kilometers of land had been granted. During the 1820s the NSW Governor began to grant lands and provide access to convict labor to British settlers with capital. Active resistance to the Colony’s expansion by some of the 250 Aboriginal groups residing in NSW, particularly onto valuable lands bordering rivers, required Governors to send military garrisons to the frontier regularly to protect settlers. A transition to allocation of colony land by auction sale began in 1826 with a 5-year survey of colony lands open for settlement, the proclamation of Boundaries of Settlement in 1829, and the 1831 issuance of the Ripon Regulations in by London’s new Whig ministry which required NSW crown lands within the Boundaries of Settlement to be sold at auction subject to a minimum upset price.

As the colony’s authorities were directing settlers towards crown lands for sale within the boundaries of settlement, two new developments refocused the attention of

settlers to the forbidden lands beyond the officially sanctioned settlement boundaries. First, the introduction from 1818 of new breeds of Merino sheep selected for Australia's arid environment increased the profitability of sheep grazing and allowed millions of acres throughout New South Wales to be quickly reallocated from traditional Aboriginal uses into potentially profitable sheep runs. Second, a series of exploratory expeditions into NSW's interior rapidly changed colonists' knowledge of the continent's resource endowments. Exploratory expeditions, some commissioned by the NSW government, that made important discoveries include (to name a few) Wentworth, Lawson, and Blaxland's crossing of the Blue Mountains in 1813, Surveyor General John Oxley's 1817 and 1819 explorations of the courses of the Lachland and Macquarie Rivers; Captain Currie and Major Ovens voyage on the Murrumbidgee River in 1823; Allan Cunningham's discovery of Pandora's Pass in 1823 and the Darling Downs, the Dumaresque, Gwydir and Condamine Rivers in 1827; the 1829-1830 expedition of Captain Charles Sturt to the Murrumbidgee River and subsequent voyage down the Murray River; the Henty brothers establishment of a settlement at remote Portland Bay in 1835; and the three expeditions undertaken by Surveyor General Thomas Mitchell to Kindur, the Namoi, and, most prominently, his 1836 wagon trek from Sydney through Australia Felix. The explorations provided potential settlers with valuable information regarding the presence of Aborigines, the extent of land that could potentially be used for grazing, the availability of water for stock, presence of navigable rivers, and information on routes over which stock could be walked to these interior lands.

Between 1820 and 1845, squatters engaged in a series of rushes to occupy and establish *de facto* claims to lands both within and beyond the official boundaries of settlement. By 1840, there were over 700 licensed and hundreds more unlicensed sheep stations beyond the official settlement boundaries, with some stations claiming more than 500,000 acres. Spread out over territory more than four times larger than the Nineteen Counties (19 million acres), the stations with the aid of just over 8,000 shepherds grazed over 1.3 million sheep and 371,000 cattle (Roberts, 1935, p. 214; 1846 Census). These stations represented a massive expansion of western settlement into interior lands traditionally used by Aboriginal groups and far from the "impotent administration" of the

Sydney colonial government.⁴ Their establishment of sheep stations on crown lands closed to settlement posed particular challenges to the Colonial Office in London and the NSW Governor, as their presence on these lands was counter to London's official land policies as embodied in the 1831 Ripon Regulations. During the 1830s a rise in violence between squatters and between squatters and Aborigines on lands outside the Nineteen Counties" led squatters to request third-party enforcement of their claims by the government; concurrently, the increase in the value of these lands induced the government to reassert its rights to the lands and their revenue streams. A series of Acts specifying restrictive *de jure* rights for *de facto* squatter claims were enacted in 1833, 1836, and 1839 by the NSW Legislative Council. Between 1839 and 1846, the squatters, Governor Gipps, and the London government battled over the additional rights, if any, to be assigned to squatters using crown lands. As we discuss in more detail in Section IV, the dramatic increase in wool shipments from Australia to London (see Table 1) ultimately provided the squatters with sufficient influence on the London government to attain more secure medium-term rights in sheep stations beyond the boundaries.⁵

Table 1: Population, Settlement Areas, and Stocks of Sheep and Cattle, 1810-1855

	NSW	BA	NSW	BA	NSW	BA
	Population (000s)		Official area of settlement (000s km ²) ^a		Stock of sheep in NSW or cattle in BA (1820 = 100)	
1810	10.5	92.0		33.3	33	141
1820	28.1	118.6		41.0	100	100
1829	39.8	130.2	55.5		804	167
1833	59.7	137.4	55.5	182.7	1583	143
1840	118.5	163.9	55.5+		3918	146
1855	545.0	273.9	55.5+	88.7		150

^a For NSW, area within official boundaries only. For BA, areas defined by official line of defense.

Sources:

⁴ In the words of Noel Butlin (1994, p. 131).

⁵ Data on the NSW stock of sheep are questionable, as prior to 1835, they were illegally depastured on crown waste lands and had incentives to underreport stocks beyond the settlement boundaries to government authorities. After 1835 the license fee paid by a squatter for a sheep station depended on the number of sheep depastured on the station, thus providing an incentives to underreport stocks to government authorities.

The city of Buenos Aires was founded in the 16th century, but remained a military outpost in the Spanish imperial economy and center of contraband. Until 1776, direct trade between Buenos Aires and Spain, Brazil or other countries was prohibited; and even intracolonial trade was heavily restricted. When the imperial fiscal system underwent reforms in the 18th century, the trade prohibitions against Buenos Aires were lifted, and the viceroyalty of Río de la Plata was created that stretched from Upper Peru (Bolivia) to the banks of the River Plate, which contained what became an important route for transshipment of silver down the Paraná and Plate rivers en route to Spain. The city and port of Buenos Aires thus became an important commercial center for the silver trade, closely linked to a commercial axis along the Argentine littoral to Upper Peru (Adelman 1999, Burgin 1946).

By 1810, the area occupied by Buenos Aires remained small, about 30,000 km², extended at its farthest no more than 100-120 km southward from the Río de la Plata, and held a population of about 92,000, of which at least 40 percent lived in the city (Amaral 1998, p. 121; Best; Garavaglia, p. 41). The size of the settlement, on the south bank of the Río de la Plata, had been limited since its founding by hostile indigenous tribes that controlled the lands to the south and west. Spanish colonizers had been unable to subdue the nomadic peoples of the *pampas*, and violent encounters between the two populations increased over the next centuries. The Indian adoption of the horse, rising population pressure, which resulted in the eastward migration of Chilean Indians into the Argentine pampas, and depletion of the wild cattle population, the primary staple of the nomadic tribes, contributed to rising violence and intensified opposition to any further territorial expansion of the Spanish settlement.

Napoleon's invasion of Iberia precipitated the Revolution of 1810 in Buenos Aires, followed by years of fighting against Spain and civil war. The redrawing of political borders cut Buenos Aires merchants off from Upper Peru, their source of silver for the silver trade. Meanwhile the opening of international trade increased opportunities for local entrepreneurs to raise cattle for the export of hides, tallow and salted beef (Adelman 1999 p. 26, Brown 1979 p. 30, Halperín Donghi 1969). Prior to 1810, the cattle industry had expanded to the north and into the Banda Oriental (now Uruguay); political

fragmentation and other events of 1810 induced interest in Buenos Aires in extending the grazing of cattle into the public lands in the *pampa* to the south of the Río de la Plata.

The changed economic and political conditions after the fall of the empire led within a few years to a new political order in Buenos Aires, which Halperín Donghi has referred to as the “landholding hegemony,” a conglomerate of vertically related interests including cattle raisers and rural militiamen, meat-salting industrialists, and merchants of hides, tallow and jerked beef (1969, p. 54). The vertically integrated cattle interest became such a dominant force, it is said, that currying favors to it became a necessary condition for remaining in power. Frontier and public land policies became a centerpiece of public policy in all governments in the province of Buenos Aires after 1821 (Halperín Donghi, 1969, p. 56; Lynch 1989).

But meeting political demands for expansion to the south forced governments to confront indigenous violence. Unlike in New South Wales, “squatters” had not gone out *en masse* on their own beyond the boundaries of settlement to settle on new lands. The risk of Indian attack was too great, and the settlers were too vulnerable without military support (Amaral, p. 63, Cárcano Tapson 1962; Zimmerman 1945). As a consequence, a series of military campaigns against the Indians were conducted between 1821 and 1833 in pursuit of territorial expansion. Although most attempts were failures, two successful campaigns, in 1826 and 1833, together added over 150,000 km² (xxx and xxx acres respectively) to the area of settlement.⁶ As new public land was pacified, the provincial government opened it for settlement, adopted policies to privatize it, mostly initially through long-term leaseholds, and sought to “populate” it with people or cattle. Populated mostly by cattle-raising *estancias*, it increased by a factor of 6 between 1810 and 1833 but changed little afterward (See Table 1).

It is often argued that the Argentina’s course of development was reversed by the rise of the *caudillo* governor, Juan Manuel de Rosas (1829-32, 1835-52), whose rule was so closely tied to the cattle interest that the two are almost indistinguishable.⁷ In its inclination toward policies that favored cattle interests, however, Rosas was not terribly

⁶ Garavaglia (1999, p. 41) gives the area occupied in 1780 at 29,970 km² and in 1833 at 182,665 km².

⁷ For example, see Weaver (2003, p. 15).

different from his predecessors. His rule is tainted by a ruthless turn against his political opponents, especially after 1839. But relative to the short-lived governors that preceded him, his leadership was distinguished by its longevity (few of his predecessors lasted more than a few months), strong political base, and military successes in the desert campaigns of 1826 and 1833. His contributions to territorial expansion were not easily maintained in his absence. Table 1 shows a contraction in the area of settlement of the province by 1855, which was a consequence of his fall in 1852 and which evoked a resurgence of indigenous opposition.

Growing prospects for pastoral exports in both Buenos Aires and New South Wales were thus similarly tied to events leading to higher demands in international markets for wool and cattle products derived from global industrial expansion. Local interests in the pastoral sectors responded by seeking to obtain property rights to settle vast lands claimed as public lands. Resistance from indigenous peoples who asserted competing claims of sovereignty to these lands was not insignificant. What consequences did indigenous violence have for governments' choice of public land policies?

II. Property Rights and Value of Frontier Land

To model the demand for land on the frontier, we adopt the framework of Alston, Harris and Mueller (2009), which considers the value of land on the frontier in relation to its distance from the market center and land scarcity. The net present value of land falls as it becomes more remote. Outputs shipped to market, and inputs brought from it, incur transportation costs that increase with distance. At some distance from the market center, returns are just high enough to make it worthwhile to settle. If there were no other cost to obtaining the property rights to frontier land (such as a competing indigenous claim), this distance would define the economic frontier.

In early stages of frontier settlement, the cost of defining property rights *de jure* acts as a deterrent to their acquisition. If the expected discounted rent from acquiring title does not exceed the cost of acquiring it, settlers may choose to do without it. In the earliest stages of settlement, when there is little or no competition over the land, settlers may use the land in open access without interfering with their neighbors and without consideration of property boundaries. The added value, or rent, from defining property

rights may be zero. But as competition for land increases, settlers' willingness or demand to define or acquire rights to their land increases. Increasing population density and competition for land thereby are the driving forces of evolution of property rights on the frontier.

The Alston-Harris-Mueller framework sketches out two transitions from *de facto* to *de jure* property rights. Beginning in the stage of open access, as land values rise, new claimants migrate to the frontier, and settlement density increases. As they do, land values are dissipated by a "tragedy of the commons" either from overuse or from conflict between settlers. In the first transition, incentives emerge for settlers to cooperate to form "commons arrangement," a common set of rules or norms, that specifies and enforces each settler's *de facto* property rights. Such second-party commons arrangements may involve the informal cooperation between neighbors or the formation of a club or private association. The second transition takes place when second-party *de facto* specification and enforcement are replaced by *de jure* property rights. As migration to the frontier continues and competition for land increases, cooperative arrangements often break down as conflict emerge between incumbent claimants who seek to exclude encroachment and new entrants who dispute the incumbent rights to vast claims. As rising land values make the cost of acquiring *de jure* property rights worthwhile, one or more stakeholding groups may approach government to demand a *de jure* specification and enforcement of property rights.

Our approach differs by how and when government first enters the picture. The Alston-Harris-Mueller framework assumes that, in the early stages, the state leaves land in open access and does not interfere as private actors establish *de facto* claims. Government is responsive to constituents' demands for *de jure* property rights, but it does not enter to establish them until constituents demand them. We introduce a government compelled by an intrinsic need to raise revenue, eager to tap the public land resource for revenue generation since high transaction costs limit the collection of taxes or other forms of revenue (to be developed in Section III).

The government's revenue interest seems to conflict with the Alston-Harris-Mueller assumption that states left land on the frontier in open access, in effect, giving the land away. Why would governments in need of revenues give land away instead of

capitalizing on its value to generate revenues? Our model explains why an optimal government decision would often leave some frontier land in open access. The reasoning parallels that for private settlers. Just as settlers sometimes considered land on the frontier of too little value to acquire *de jure* property rights, so too governments sometimes found the most remote lands of too little value to justify the costs of specifying or enforcing property rights there. When the government failed to assert its claim, under some circumstances, settlers chose to squat and claim it for themselves.

Figure 1 highlights some of the key features of this framework.⁸ The horizontal axis measures the distance of a plot from the market center. Line *ad* represents the net present value (NPV) of land at each distance when property rights are specified and enforced by a *de facto* claim. The vertical distance between *ad* and *ac* is a first-approximation representation of the added value, or rent, from *de jure* enforcement of property rights at each distance. Thereby, line *ac* represents the NPV of land at each distance if land is secured by *de jure* property rights.⁹

The treatment of risk and its depiction $\rho(r)$ in Figure 1 depend on the relative threat of violence from indigenous populations. Alston, Harris and Mueller (2009) do not contemplate an independent external threat on the frontier, other than disputes of competing claimants. Their analysis assumes that the frontier becomes more peaceful, with a lower risk of dispute, as one move farther out into the frontier and the competition for land falls. The implied relationship in Figure 1 is shown by the broken line *abd*, whereby the vertical distance between *bd* and *bc* represents the rents from *de jure* relative to *de facto* property rights at each distance. It assumes that $\rho(r)$ falls with distance more quickly than $v(r)$ so that beyond distance *M* on the frontier there is no added benefit from *de jure* relative to *de facto* property rights.¹⁰ This assumption would not be valid if the

⁸ Figure 1 is adapted from Alston, Harris and Mueller (2009) Figure 1, p. 7.

⁹ In the model in Section III, we denote line *ac*, the NPV of land secured by *de jure* property rights, as $v(r)$, a function of distance, r . Line *ad* is denoted as $(1 - \rho)v(r)$, where ρ is a risk factor that captures the differential risk of property loss from having *de facto* rather than *de jure* property rights. If settlers have *de facto* claims, and $s(r)$ depicts the private security cost of defending a *de facto* claim, then the economic frontier is K ; that is, settlers with *de facto* claims are unwilling to settle outside K .

¹⁰ Their approach focuses on claimants' protection against legal disputes from within the settlement community. Rents from secure property fall more than proportionately with

threat of indigenous hostility is significant. The threat of indigenous violence causes the risk of loss of property or lives to be greater as settlers moved farther into indigenous territory and away from the protections of the settlement community. Accordingly, $\rho(r)$ rises at greater distances or is possibly U-shaped. Figure 1 depicts two possible curves, *de* and *df* that may plausibly represent $(1 - \rho)v(r)$ when ρ is U-shaped. If the risk of loss from the indigenous threat rises more gradually, the settlement frontier becomes *L*, and if it rises more steeply, the settlement frontier is *M*. Obviously, the shape of ρ and of $(1 - \rho)v(r)$ are not strictly known and differ by country depending on the indigenous threat and institutions that affect property rights security.

As a first approximation, for the model presented in the following section, we depict ρ as a constant so that $(1 - \rho)v(r)$ is captured by line *ad* in Figure 1. This is done strictly to simplify the exposition in the basic analysis. In most applications, we are interested in local values of ρ , and need not know the shape of the function $\rho(r)$ from the market to the frontier. Nonetheless, alternative plausible shapes can extend the basic model in applications to specific countries.

The Alston-Harris-Mueller framework makes a further distinction between *de facto* and *de jure* specification and *de facto* and *de jure* enforcement of property rights, as in the matrix shown below.¹¹ Most studies bundle specification and enforcement, considering only the combinations on the diagonal; but Alston, et al., argue that the off-diagonal combinations are not uncommon and often are important for understanding transitions from *de facto* to *de jure* property rights in specific cases. For example, if squatters settle initially and make (first- or second-party) *de facto* claims, government

distance than *de facto* NPVs because competition for land increases when land values are greater. Near the market center, owners have more to lose in a legal dispute if they do not possess a firm title to their land, and competing claimants have more to gain from disputing weak claims. In remote, frontier areas, legal disputes between members of the settlement community are less likely because an potential disputant can more easily find an undisputed plot of land to claim that is near the value of the disputed plot. See discussion in Alston, Libecap and Mueller (1999), pp. 84-85.

¹¹ Alston, Harris and Mueller (2009, p. 4) distinguish between first-, second- and third-party specification and enforcement in a 3 x 3 matrix. We suppress the distinction between the first- and second-party specification and enforcement because our study focuses on the second transition from *de facto* (first- or second-party) property rights to *de jure* property rights, whereas their study examines both transitions.

may later recognize and enforce the *de facto* specifications as preemptive *de jure* rights. Alston, et al., show that land privatization in Brazil followed this pattern, as the government eventually recognized and granted *de jure* rights to coffee planters whose claims originated as squatters' claims. This contrasts with the western United States, where the federal government initially ignored but eventually denied the *de facto* claims of cattle ranchers. Australia fell somewhere between the two – the colonial government, after 1835, progressively recognized some of the *de facto* claims of squatters but denied others. On the opposite off-diagonal, a government may specify *de jure* property rights but fail to enforce them. Settlers who have acquired *de jure* property rights may have no choice but to defend them privately or in collaboration with neighbors. We observe below that this was not uncommon at various times from 1810 to 1852 in Argentina, where political instability reduced government's ability or resolve to enforce property rights.

Table 2. Possible Combinations of *de facto* and *de jure* Specification and Enforcement

		Enforcement	
		<i>De facto</i>	<i>De jure</i>
Specification	<i>De facto</i>	<i>de facto</i> specification, <i>de facto</i> enforcement	<i>de jure</i> specification, <i>de facto</i> enforcement
	<i>De jure</i>	<i>de facto</i> specification, <i>de jure</i> enforcement	<i>De jure</i> specification, <i>de jure</i> enforcement

Our baseline model bundles the specification and enforcement of *de facto* and *de jure* property rights. However, we observe, similar to Alston, et al., that off-diagonal combinations of specification and enforcement do occur in application and provide additional insight into the dynamics of the privatization of public land in specific cases.

III. A Model of Public Claims of Frontier Land

The model combines features of Allen (1991), McGuire and Olson (1996), and Alston, Harris and Mueller (2009). Two stylized types of government suggested by McGuire and Olson (1996) are adapted to the problem of the alienation and settlement of

sparsely populated land, as in Alston, Harris, and Mueller (2009), on a frontier where an indigenous population opposed to the settlement threatens to attack, steal livestock, or destroy physical capital, as in Allen (1991). Our model focuses on the government's need to raise revenues to provide public goods or services. Revenues may be raised by claiming unsettled land as public land and then trying to sell or lease it, or by collecting taxes. As in Alston, Libecap and Mueller (1999), the value of lands falls as one moves away from the center of settlement, and lands on the frontier may not be valuable enough to justify government enforcement of property rights.

The Government's Problem: Begin with the problem of raising government revenues. Assume the government sought to maximize its revenues to provide two classes of public goods or services, the specification and enforcement of property rights to land (on the frontier), E , and other government services, G . It had two sources of revenue: sales of public lands, L , and taxes, tY , where t is the tax rate and Y is the value of production in the "taxable sector." Since governments at that time typically collected most of their taxes from activities with low transaction costs of collection, such as customs or land taxes, the taxable sector is defined as the sector or sectors that provided the main tax base. The McGuire-Olson model assumes an income tax. In our model, Y is interpreted alternately as the value of taxable property or capital, and t a direct tax; or Y represents customs traffic, and t an ad valorem customs duty. The former is perhaps more appropriate for New South Wales, and the latter is appropriate for Buenos Aires; yet the specification is general enough to permit other interpretations.

As for revenues from land, the government made a prior claim to lands on the frontier as public lands, available to raise revenues. Yet to make any exchange of public land for revenue effective, the government first had to assert and enforce its claim on the public land, which was costly. This is a key point of the model. If the government did not enforce its claim, private individuals could squat and evade purchase. Consistent with existing literature, once squatters occupied and established *de facto* claims to a piece of land, it may have been difficult for the government to reassert its claim *ex post*.

Other sources of government revenue are treated in the model as taxes derived from the taxable sector. The taxable sector is a function of G and E . Provision of property rights or other types of government services contributed to the development and growth

of the settlement, including the tax-base sector. Collection of taxes and the provision of public goods generally were also costly. We assume the cost of public goods provision, including tax collection, is a function of the expenditure on government services, $C(G)$.

To summarize, the government seeks to maximize net revenues, which are the sum of public land sales and tax revenues net of enforcement costs and the cost of other public services; that is, $L + tY - E - C(G)$. The policy variables it chooses to optimize are the extent of public lands it enforces, explained in the next section, and the provision of other government services.

The Market for Public Land. At what price would the government set its claims of public lands? The sales price depends on private assessments of the net present value (NPV) of the land to be sold.¹² The relationship is depicted in Figure 1 as curve $v(r)$, which shows a decline in NPV as the distance from the market, r , increases. For simplicity, the relationship is characterized as linear, which is a good description if land is homogenous and transportation takes place on a straight line at a constant freight rate per km. Imagining the market (population center or port) as a single point on a featureless plain, the area settled in the model is represented by a circle that radiates from the market. The perimeter, or area adjacent to it, is the frontier. Of course, $v(r)$ may shift in response to many factors that affect an export-led settlement economy, such as immigration, terms of trade, and imports of foreign capital.

It should be noted, that we describe revenues derived from land as “sales.” Both New South Wales and Buenos Aires transferred public land using sales, leases and grants for services rendered. The model does not distinguish between the various transfer instruments used in practice.¹³

[Figure 1 here]

Government enforcement of a *de jure* property right offers greater security than private enforcement of a *de facto* claim. A settler who can rely on third-party government

¹² Assume no integration of indigenous people into the settlement economy land market, so the potential buyers are all members of the settlement community.

¹³ In the model, we do not distinguish between various transactions made to transfer public land in exchange for government revenues, whether monetary or in kind. In the static model, “sales” may account for other types of transfers observed in our cases, such as leases or grants in compensation for services, without loss of generality.

enforcement, faces lower risk of loss from dispute, encroachment or theft; or lower private security costs. In Figure 1, $v(r)$ is drawn assuming *de jure* rights and government enforcement. Private enforcement is less secure, the risk of property loss is greater, and the value of the land is lower. The value of land enforced privately is depicted by $(1 - \rho)v(r)$, where ρ is a risk factor that captures the expected loss if government enforcement is absent.

As for the price at which a unit of public land sells, assume the government perfectly discriminates its offer price for a unit of public land based on its distance, r , from the market. The price of public land, $p(r)$, is thus a function of distance, r , as are land values. The government may try to extract the entire value of the land by setting $p(r) = v(r)$. However, in setting the price of public land, it must consider the opportunity costs of prospective buyers. Besides purchasing public land, prospective buyers may otherwise claim land preemptively by squatting on it. To do this, they forgo the property-rights protection of the state, but they also evade paying for the land. If the government's offer price exceeds the opportunity cost of squatting, which otherwise potential buyers may choose to do, the government's attempt to sell public land will be unsuccessful.

An individual who squats on public land, is, in effect, disputing the state's claim to the land. If the government does not take action to remove the private claimant, the political costs of doing so at a later date may become prohibitive. Failure to expel squatters, therefore, implies the granting of a preemptive *de facto* right. To maintain its claim, therefore, the government must incur enforcement costs, $e(r)$. Net government revenues from sale of a plot of land are thus $p(r) - e(r)$, to account for the enforcement costs of maintaining its claim. Enforcement costs are a function of r as they increase with distance from the government seat or population center.

If the enforcement costs are too great, the government may choose not to enforce its claims. However, if it should choose to enforce its claim, its comparative advantage in the use of violence ensures that enforcement is effective. Private individuals will thus not squat on enforced land. However, since $p(r)$ declines with distance and $e(r)$ rises, the government is unwilling to enforce its claims beyond a certain distance, thus creating an *enforcement boundary* at distance r^E from the population center.

Prospective buyers have the option to settle within the enforcement frontier and

purchase a *de jure* right to public land at price p , or they can settle outside the frontier, where payment to the government claimant is not enforced. Outside the enforcement frontier, however, land claims are *de facto* and more insecure. Therefore, a plot of *de jure* land has a value of $v(r)$, but a plot of *de facto* land has a value of $(1 - \rho)v(r)$. Settlers outside the frontier must engage in self-enforcement, or second-party collective enforcement, so they incur additional private security costs to defend their claims, denoted $s(r)$. Private protection may range from purchases of arms and sheepdogs to maintenance of a private militia. If the type of security needed involves small arms, dogs or other individualized measures, the costs may be localized or not a function of distance, $s(r) = s_0$. However, if security threats call for a private militia, they may be a function of distance; although, if the militia is privately organized, it may differ from $s(r)$.

Settlers choose whether to settle on plot of *de jure* property inside the enforcement boundary or on *de facto* property outside of it. At the enforcement boundary, r^E , they are unwilling to purchase public land for the *de jure* property right if its net value is less than the net value of adjacent lands outside the frontier. A necessary condition for a sale of public land, therefore, is that the value from purchased *de jure* land minus its price, $v(r) - p(r)$, be at least as great as the value from squatted land minus the cost of private security, that is:

$$v - p \geq (1 - \rho)v - s$$

The condition stated in terms of the sales price is:

$$p \leq \rho v + s$$

This states that the government is constrained against setting a price for public land that exceeds opportunity cost of settling outside the enforcement frontier, which is the sum of the loss in expected land value due to insecurity and the cost of private security. (The risk factor, ρ , and cost of private security, s , are not independent, but since the model treats the effectiveness of private security as fixed, the relationship is suppressed here.)¹⁴

The option of squatting on insecure land implies that sales of public land must include a government obligation to continue to enforce the private *de jure* property right

¹⁴ Intuitively, ρ should be dependent on the effectiveness of private security. However, in our admittedly simplified model, settlers do not choose a level of security; they only choose whether or not to squat. If they squat they pay a cost s to undertake the customary private security measures. Thereby the relationship between ρ and s is suppressed.

after the sale. Private individuals have no incentive to purchase *de jure* land on the frontier if the sales contract does not bundle the *de jure* right with government enforcement. *De facto* claims can be made at zero price. If enforcement is to be *de facto* in either case, the settler gains nothing from purchasing the *de jure* right. That is, $p(r) + s \leq p(r) + s + p$ for any nonzero price of public land.

Autocratic government. Now that the basic elements of the model are established, we turn to the baseline form of the model. Assume a strong, autocratic government that acts on its own behalf, independent of control by local private interests (McGuire and Olson 1996). This assumption may be considered a good first approximation for British colonial rule of New South Wales, in which the British Colonial Office could act autonomously, if it wanted to. It is less appropriate for Buenos Aires, where the government in power was weak, often at risk, and subject to the demands of elite interest groups and rival political leaders. We will extend the model in the next section to consider a government that must seek the support of a coalition of private interests (constituents or an elite power base) to remain in power.

Revenues from public land sales are a function of an area in Figure 2. For example, if $p(r)$ were set equal to $p(r) + s$ for all r between 0 and r^{EI} , then the revenues from public land sales along a straight line extending from the market to a point r^{EI} on the perimeter of the frontier are represented by the area underneath $v(r)$ from 0 to r^{EI} , as shown by the shaded area in Figure 2.

[Figure 2 here]

In a featureless plain, the distance r^E along any radius renders the same revenues so that gross revenues from public land sales are a function of the integral, $\int_0^{r^E} p(r) dr$; enforcement costs are a function of $\int_0^{r^E} e(r) dr$; and net revenues from land sales are $L = F \left(\int_0^{r^E} [p(r) - e(r)] dr \right)$. As for other sources of government revenues, the size of the taxable sector is a function of the provision other public services, G , as well as externalities from production in the expanded of the area of settlement, captured by r^E , so that Y is a function of G and r^E . The government problem, therefore, takes this form:

$$\max_{r^E, G} \left(\int_0^{r^E} [p(r) - e(r)] dr \right) + tY(G, r^E) - C(G)$$

subject to: $p(r) \leq \rho v(r) + s(r)$

First-order necessary conditions for an interior solution are:

$$F'(\rho - e) + tY_r = 0 \quad (2)$$

$$tY_g - C' = 0 \quad (3)$$

Where $Y_r = \frac{\partial Y}{\partial r}$, and $Y_g = \frac{\partial Y}{\partial g}$. Assuming the constraint is binding, Equation (2) can be rewritten as:

$$F'(\rho v + s - e) + tY_r = 0$$

This necessary condition identifies the optimal distance at which the government will enforce its claim to the public lands, and subsequently, the private property rights of buyers. The condition is straightforward to interpret. Since F' is a function that transforms the marginal analysis along a radius into an area, $F' > 0$. If the marginal effect of expanding the area of *de jure* property rights, Y_r , is zero, then r^E is chosen such that $e = \rho v + s$. It simply says that the government will choose to enforce its claims, and property rights thereafter, up to the point, r^E , where the marginal cost of government enforcement is equal to the marginal cost of private enforcement at distance r^E . At that point the cost of enforcing a public claim at the edge of the frontier equals the private cost of settling the plot *de facto*, including both loss of value from insecurity and any additional private outlays for security that would have been unnecessary with government enforcement. This point is shown in Figure 2 as r^{E1} .

If, on the other hand, $Y_r > 0$, then the government has an incentive to extend its *de jure* enforcement a little farther out into the frontier because it will reap positive externalities in the taxable sector, its alternative source of revenues. This is depicted as r^{E2} in Figure 2, where the distance from b to a is tY_r / F' , which is positive if Y_r is positive.

The baseline model predicts the effects of several key variables – the private value of land, the risk of loss when property is insecure, and the cost of private security measures and enforcement of government claims. If most of the value of the property can be maintained with a small expenditure on private security, the government will define an enforcement boundary, r^E , that is closer to the population center; that is, it will be

relatively conservative or reluctant to move into the frontier to enforce claims to public land or prevent squatters from preempting those claims. Meanwhile, settlers will choose to squat beyond the enforcement boundary as long as $(1 - \rho)v \geq s$. The model, therefore, predicts a von-Thünen band of squatter settlements with *de facto* claims that forms outside the boundary, r^E , beyond which the government ceases to enforce its claims, and terminates at the distance, r^S , the gain of settling a plot unprotected land is equal to the cost of private enforcement. Figure 3 depicts the enforcement boundary, r^{E1} , and the settlement boundary, r^S , for the simpler case of $Y_r = 0$.

[Figure 3 here]

The existence and extent of this band of *de facto* claims is one pattern of settlement that distinguishes early nineteenth-century New South Wales and Buenos Aires. The model predicts that the band of squatter settlements would be wider the lower are the costs of private security and risk of loss on land without third-party enforcement, for given $e(r)$. Sharply rising $e(r)$ would tend to widen the band further. We find for New South Wales that relatively low private security costs, s , and risk, ρ , on the frontier discouraged the government from asserting its claims to an extensive band of public lands that became vast squatters' settlements in an early stage of settlement. Beyond a certain point the enforcement costs were perceived to be too high, and the private security costs and risk of squatting were low. The model explains the Colonial government's weak resolve to assert its claim as consequence by the low opportunity cost. It cost little to squat a little farther out and evade the purchase price.

The opposite was true for Buenos Aires where the costs of effective private security and risk of loss of property and lives were much greater. No squatting tradition comparable to New South Wales existed. Certainly there were exceptions, and cattle were allowed to roam on the open *pampa*, but settlers did not tend to venture out in droves to squat on *de facto* land claims. Settlements on the frontier were typically led by a government financed military expedition to pacify the area to be settled. The specification of property rights was *de jure* at the founding of most settlements, and government enforcement was expected if not always successfully provided.

Redistributive Government. To extend the baseline model, we consider a second form of government, which attempts to capture in a simple way the role of special-

interest influence on land disposal policy. Our approach adapts the redistributive government variant in McGuire and Olson (1996). As they argue, governments often derive support from a dominant ruling interest. In a democracy it may be a majority coalition of constituents. In an oligarchy or dictatorship, it may be a particular elite power base upon which the government relies to remain in power. In either case, the model assumes that government chooses policies that redistribute the wealth of society to itself and its supporting interests. While avoiding too much additional complexity, it aims to capture the common view in the historiography that successive governments in Buenos Aires had to bend to powerful cattle raising interests.

Following McGuire and Olson, we treat the government and the dominant ruling interest as a combined or single interest. The government's objective function consists of the revenues collected by the state plus the added wealth of the ruling interest, the government's power base. The government sets its policies not only to generate revenues for the state but also to increase the net wealth of its supporters.

How does this affect the government's preferences for revenues from enforcing its claims of public lands on the frontier? Assume that a share, α , of the net NPV of the sales of *de jure* land inside the enforcement boundary, r^E , will go to buyers who are supporters of the government. The remainder, $1 - \alpha$, will go to other settlers. Similarly a share, β , of the net NPV of *de facto* land outside r^E will go to squatters who are supporters of the government; and a share, γ , of the benefits from other public goods go to supporters of the government.

The government's objective function combines its own net revenues from public land sales and taxes and the net present value that goes to its supporters, as a consequence of its enforcement policy toward public land and the provision of other public goods. The NPV from settlement received by the private supporters from settling secure and insecure public land is: $\int_0^{r^E} [\alpha(v - p)] dr + \int_{r^E}^{\infty} [\beta(vv - s)] dr$. The private post-tax earnings from other activities, if β is the share of the earnings of these activities that go to supporters, is $r(1 - \theta)Y$. And the government will choose r^E and G to maximize:

$$F \left\{ \int_0^{r^E} (v - p) dr + \int_0^{r^E} [\alpha(v - p)] dr + \int_{r^E}^{\infty} \beta[(1 - \rho)v - s] dr \right\} + tY - C + r(1 - \theta)Y$$

Simplified it becomes:

$$F \left\{ \int_0^{r^E} [(1-\alpha)p + \alpha v - s] dr + \int_{r^E}^{\infty} \beta [(1-\rho)v - s] dr \right\} + tY - C + r(1-t)Y$$

Maximization with respect to r^E yields the first-order condition:

$$F'[(1-\alpha)p + \alpha v - s - \beta(1-\rho)v + \beta s] + tY_r = 0 \quad (4)$$

In the case of $Y_r = 0$, it can be simplified to

$$s = (1-\alpha)p + \alpha v - \beta[(1-\rho)v - s] \quad (5)$$

or

$$s = (\rho v + s) + (\alpha - \beta)[(1-\rho)v - s] \quad (6)$$

Consider the form expressed in equation (6) first. The first set of parentheses on the right-hand side reproduces the expression in the first-order condition of equation (2) in the autocratic government variant. As for the remaining terms, $(1-\rho)v - s \geq 0$ at r^E because squatters will not settle at a distance for which it is negative. It therefore holds as a strict inequality if any squatters are willing to settle outside r^E . If the dominant ruling interest expected to receive a larger share of private returns on account of government presence, then $\alpha - \beta > 0$ -- to be expected if they received privileged access to public land, or selective enforcement of their property rights, as in Haber, Razo and Maurer (2003). If so, the government would choose an r^E at which $s(r^E)$ is greater than that of the baseline model. The ruling interest thus demanded and received a greater the extension of government-enforced land, to which it also expected privileged access, and the band of squatting is thus reduced or possibly eliminated.

IV. Applications of the Model to New South Wales

A. Autocratic Governance of a Very Distant Colony

The original objectives behind Great Britain's establishment of a government-run colony on the remote shores of Southeastern Australia are well known. For Britain, the end of the American Revolutionary War in 1783 meant not only the loss of the thirteen

colonies, but also their closure after 1784 to new shipments of British convicts. London picked Botany Bay as the location for a new penal colony based on favorable comments made by Captain James Cook during his 1770 exploration of the continent's southeastern coast and on a 1783 proposal offered to the British government by one of Cook's officers, Joseph Banks, to establish a colony near Sydney Harbor (which, somewhat ironically, did not include convicts as potential settlers).

Upon the formal establishment of the New South Wales colony on 7 February 1788, Governor Philip invoked the doctrine of *terra nullis* and claimed the entire Australian continent for the crown.¹⁵ During the colony's first 33 years, the Colonial Office in London viewed NSW almost exclusively as a destination for convict shipment. The organization of the NSW government reflected this. From 1788 to 1823, the Secretary of State for the Colonies appointed a Colonial Governor who was vested with both executive and legislative powers to rule the penal colony as an agent of the British government. The Secretary of State provided both general and specific policy directives to the NSW Governor who acted as the Secretary's agent and was also his main source of information about conditions in the colony as well as problems requiring government's attention. Free settlers—a share of the NSW colonial population that grew rapidly after 1800—had recourse to NSW courts but did not have a right to trial by jury.

¹⁵ The NSW expedition established a third prison settlement in Van Diemen's Land (VDL) in 1803 after NSW colonial officials became concerned that France would claim the island. Our analysis does not consider how land rights changed in Van Diemen's Land or how events in Van Diemen's Land affected development of land rights in NSW. One reason is that the British government granted requests by VDL settlers to become a separate colony on 14 June 1825, well before most of the major NSW events analyzed in this paper occur.

London's decision in 1836 to charter a colony for free settlers, South Australia (SA), likely had some influence on NSW land policy because SA land and immigration policies were designed following the optimal principles of colonization championed by Edward Gibbon Wakefield. Wakefield's plan requires a relatively high minimum price on public land offered for sale to colonists. Why, however, would one buy expensive SA land when one could buy NSW land at a lower price or squat on NSW public lands outside the boundaries of settlement? Understanding this, the nine colonial commissioners for South Australia lobbied the Colonial Secretary in the late 1830s to increase the minimum price at which NSW public land could be sold to private buyers and were rewarded with increases in the minimum upset price in both August 1838 and May 1840.

Butlin (1994, p. 69) found that “total British budgetary expenditures averaged, throughout 1788-1822, just on two-thirds of NSW and VDL gross domestic product.” They covered the cost of shipping prisoners to the colony, the portion of convict subsistence that could not be recovered from their labor, the colonial government’s expenditures on the Commissariat and prisons, as well as the cost of maintaining the colony’s military garrison. The Colonial Secretary’s office in London was given a fixed budget to be allocated for the governance of the entire British colonial system. With its original narrow orientation as a prison colony, the Colonial Secretary’s initial objective with respect to NSW colony could be characterized simply: Minimize the cost of running the distant prison.

Land settlement also was not a critical issue at the colony’s inception, as it was not expected that a colony populated primarily by convicts and freed convicts would attract many private settlers or capital. The initial reliance on government-run farms to produce sufficient food and on the Commissariat to allocate food and other essential suppliers to convicts, officials, and free settlers produced only a small supply of agricultural products and necessitated extensive imports of grain to feed the colony’s population. The slow development of NSW’s private economy before 1812 was also tied to the sporadic disruption of shipping to-and-from Britain during the Napoleonic Wars (1799-1815). The small number of ships that arrived at and departed from Sydney limited migration of free settlers to NSW, left little opportunity to export NSW products, and restricted the flow of information to Britain regarding opportunities in NSW. The NSW Governors used restrictive land grants (modeled after those used to privatize crown lands in Canada and the Cape Colony) that allowed them to make relatively small land grants (30 acres) to free settlers, emancipated convicts, and convicts with “tickets of leave” that allowed them to work and live outside the usual convict assignment system.¹⁶ Noncommissioned Marine officers and commissioned officers after 1792 received grants of 100 acres.¹⁷ Recipients promised to pay an annual quit rent and to reside on and farm

¹⁶ The government issued tickets of leave to convicts who were released prior to the full completion of their sentence.

¹⁷ Allen (2002) has analyzed how such a back-loaded compensation system could provide efficient incentives to naval personnel in the 18th and 19th centuries to pursue risky

the land. Both conditions were routinely violated; quit rent arrears were common, and the lands frequently left idle.

Governor Macquarie's arrival in 1810 led to an increase in activity directed towards establishing more private farms and reducing dependence on the Commissariat to supply and allocate goods. During his tenure, he issued more tickets of leave to convicts, increased the number of land grants made to emancipated convicts, vigorously pursued public infrastructure projects in Sydney (e.g., government buildings, a hospital) and completed construction of major roads connecting rural areas to Sydney. The British Government resumed shipping convicts to NSW in 1813 after Napoleon's first defeat, and Governor Macquarie assigned many of the new convicts to work on construction of his many public projects. Macquarie's nearly twelve-year tenure was marked by the growth of grain supplies from private farms, which were much more productive than the colonial government's farms, and the emergence of a nascent private economy in a number of sectors including whaling, timber, wool, leather, and building construction (Belich 2009, pp. 261-278)

Macquarie's autocratic ways—he was the last military governor—and his assignment of new convicts primarily to public infrastructure projects rather than to settlers' enterprises led settlers to lodge complaints with the British government. London sent an investigative commissioner, John Bigge, to NSW in 1819 to investigate the colony's soaring expenditures. The 1821 Bigge Report recommended fiscal cutbacks in NSW and urged London and the NSW government to implement policies that would spur economic development and thereby reduce the fiscal burden borne by London.¹⁸ The British government responded to Bigge's Report by reducing its subsidy to NSW; directing the NSW Governor to augment British subsidies with additional public revenues derived from the colonial economy; and establishing a legislative council to advise the Governor. The strategy for increasing NSW public revenues was to implement

strategies with a higher chance of military success.

¹⁸ The Bigge recommendation for NSW fiscal cutbacks came during a period when London was trying to reduce government expenditures to cope with the fiscal burden of the enormous debt incurred during the Napoleonic Wars.

policies to expand the tax base, i.e., the private colonial economy. Towards this goal, London directed Governor Brisbane to assign more convicts to private enterprise rather than public projects and to increase the size (typically to between 1,000 and 2,000 acres) of land grants to settlers with sufficient capital to develop them and to capitalists in England who hired an agent to develop them.¹⁹ In addition, recipients of land grants would be allowed to purchase up to 4,000 additional acres of crown lands within the Boundaries of Settlement.

The establishment in 1824 and the expansion in 1829 of the NSW Legislative Council, consisting of the Governor and five colonial officials appointed by the Colonial Office, provided weak checks to the Governor's autocratic powers. With little power of its own, (as it could not initiate legislation and the Governor had final authority over all legislation), the Legislative Council could provide a check on the Governor's exercise of power by expressing its views and other information in its reports and correspondence to be conveyed to the Colonial Secretary. An 1829 Act of Parliament expanded the Council to 15 members, allowed no more than 8 of its members to be officials (including the Governor), and seven land owners and householders from various geographic constituencies. With almost half of its members being farmers, graziers, and merchants, the views and votes of Legislative Council members with interests in cattle and sheep grazing, agriculture, banking, and trade became parts of the votes and records of the Council, thereby providing a further check on the Governor's power to confiscate the wealth of private parties.

Such reforms within the existing system of convict assignment and land grants were, however, merely preludes to four major changes in London's land allocation and colonial development policies implemented between 1825 and 1831. London's first initiative came in 1825 when the Colonial Secretary directed Governor Brisbane to initiate a survey of crown lands that the Governor intended to open for settlement and to divide them into parishes, hundreds, and counties. The Surveyor-General's work proceeded slowly but as early as 1826, Governor Brisbane concluded that the survey had

¹⁹ The one million acres granted to the Australian Agricultural Company in 1824 was a singular outlier. Settlers regularly misrepresented their capital to obtain a larger land grant.

moved far enough along to issue an order delineating the approximate boundaries of “Nineteen Counties” (see Figure 4) that encompassed all lands either currently settled or that the NSW government intended to open for settlement. In his order, the Nineteen Counties define the “Limits of Location,” the area within which a person provided with a land grant from the Governor could search for and select suitable land.²⁰

The second major change came in October 1829 with the Colonial Government’s formal proclamation of the Limits of Location. It explicitly delineated the boundaries of the Nineteen Counties and warned against settlement on crown “waste lands” outside these boundaries. A third change came in 1831 when the Colonial Office issued the famous “Ripon Regulations” that required all colonial governments to privatize crown lands within their defined settlement boundaries by selling them at auction at a minimum upset price of 5 shilling per acre. The fourth major change was the 1831 decision by the Colonial Office and Governor Bourke to dedicate the gross revenue from NSW land sales to provide loans to poor young women (ages 15-30) and families of poor artisans and skilled workers to cover their passage to NSW.

A more sweeping look at NSW’s first 44 years (1788-1831) shows that Britain’s objectives for NSW changed in the late 1820s and early 1830s and that the change in objectives provides support for the four major policy changes imposed on NSW by London. As discussed above, convict transportation to NSW allowed London to relieve overcrowding in its jails and to force permanent migration of its “undesirable” convict population. While London was initially willing to bear large costs to establish and maintain a remote penal colony, this willingness declined with the end of the Napoleonic Wars. London’s strategy to reduce its subsidy was to implement policies designed to promote NSW’s private economy and to use tax revenues generated by the expanding economy to fund the jail. Since development of the private economy was closely tied to the speed at which public land could be privatized and brought into production, the Colonial Office turned to a variant of the privatization model employed by the U.S. government in the Old Northwest: Offer surveyed blocks of lands within concentrated

²⁰ Government Order 5 September 1826 (1 *Callaghan's Statutes* 390n, HRA I, xii, 539-41); approved by the Secretary of State, Bathurst to Darling, 2 April 1827 (HRA I, xiii, 219-30).

geographic areas at the frontier for sale and settlement.

The fourth change in policy, London's decision to dedicate gross revenues from NSW land sales to subsidizing the cost of passage to NSW for poor English migrants, has roots in the 1829 publication of Wakefield's *Letter from Sydney*, which outlined a proposal to subsidize immigration to supply labor to NSW enterprises. In Wakefield's scheme, assistance to migrants is financed with revenues from the sale of NSW public lands to more established, wealthier colonists. London's decision to assist NSW migrants also has roots in the October 1830 election that brought the Whig Party to power in London and established a new objective for the NSW colony. The debate within the reformist Whig ministry regarding alternative policies to alleviate poverty in the south of England was important for colonial policy, as one of the policies under review was to assist migration of poor families to Britain's colonies.

In 1830 the odds were low that a poor English worker considering migration would choose NSW rather than the United States or Canada due to the higher cost of steerage passage (£30-40) for the 16,000 mile voyage (compared to £5 passage to Canada), the longer time required for the sea voyage to Sydney (124 days on average in 1830) than to Canada (21-26 days on average in 1830), and the NSW reputation in England as a land of dangerous convicts, lawless bushrangers, and terrible isolation (Burroughs, pp. 69-75).

The difference in passage costs was, however, almost fully eliminated by a combination of factors. First, the cost of steerage passage to NSW fell from £30-£40 to roughly £18-£20 in 1830-1831. Second, from October 1831, the British government and the NSW government provided assistance to selected poor English workers and families to cover the cost of passage to NSW. A prolonged debate over the use of a variety of new colonial taxes to pay for the passage subsidies was resolved in March 1832 with Governor Bourke and the Legislative Council allocating revenues from NSW land sales to provide an £8 loan to women between the ages of 15 and 30 who would otherwise be unable to migrate and a loan of £20 to support migration by families of skilled workers and artisans.²¹ The increase in the migrant flow was relatively small due to poor administration of the program by British officials responsible for recruiting migrants. In

²¹ The loans were essentially grants as they were rarely repaid.

its first four years of operation (1832-1835), only £35,392 from land sales revenues of £160,095 was spent on immigration assistance, with the balance returned to the Colony's general fund (Abbott, 1971, p. 141). Noting the surplus, in 1834 the British government transferred responsibility for police and goal expenditures to NSW. To recapture use of the fund for immigration, NSW devised a parallel system of recruitment that paid bounties to colonists who offered advance passage to qualified migrants.

Declining revenues from land sales between 1835 and 1838 would, however, limit the use of passage subsidies and the flow of migrants from Britain. Average annual migration flows from Britain to NSW increased from an annual average of 1,400 migrants in 1830 and 1831 to an annual average of just 3,444 people over the following six years.²² The few years would be different. Driven by a multi-year boom (1837-1840/41) in the NSW economy, the colony's second big land rush of the 1830s, and expanding land sale revenues dedicated to subsidizing the cost of passage to NSW, British migration flows soared to an annual average of 18,528 people over the 1838-1841 period. For Australian land owners and squatters, the assisted migrants—roughly 55,000 of the 103,650 migrants from Britain to NSW between 1832 and 1843—allowed for significantly faster expansion of cattle and sheep grazing during the late 1830s and early 1840s, a period marked by significant expansion of into the interior of Victoria, Queensland, and New England.

B. The Limits of Location

Even before the issuance of the Ripon Regulations in 1831 completed the transformation of the Colonial Office's policies for privatizing crown lands—from discretionary grants by the governor to sales of surveyed lands within the colony's limits of location at auction with a minimum upset price, many colonists circumvented the official mechanism for obtaining land. Rather they chose to occupy without payment public grasslands with access to water located beyond the Nineteen Counties. To define

²² Other factors, such as high income growth in the destination country (i.e., the booming NSW economy at the beginning and end of the 1830s) and wide circulation of information about opportunities for migrants in the destination country (i.e., large number of pamphlets extolling NSW opportunities), are typically linked to increased migration flows. See Baines (1995).

their claims, squatters built rudimentary structures near the main water source and worked with neighbors to document a series of linked geographic marks to define claim boundaries to new settlers searching for land. Squatters also developed first- and second-party strategies for enforcing their *de facto* rights against claims by their neighbors, new settlers, and Aboriginal groups who had resided on or harvested resources from these lands prior to squatter settlement.²³

Before analyzing settler motives (in part IV.C below), we should inquire whether the new British land settlement policies were poorly conceived and executed or whether they were endogenously formed to account for conditions at the NSW frontier. In our model (Section III), we demonstrated that if government enforcement of *de jure* property rights is costly, then it has incentives to draw a “boundary of settlement” beyond which the marginal benefit to the government from enforcing state-established property rights in a particular parcel of land is less than the government’s marginal cost of enforcement. At the boundary of the NSW frontier, a settler’s *de jure* rights in his land and stock would be impaired if other settlers graze stock on his land without consent; bushrangers or other sheep graziers steal stock, or Aborigines raid the settler’s farm. As the potential for theft of stock and violence directed towards squatters and their employees increases, this raises the marginal cost to the government of providing third-party enforcement and should induce the government to draw more restricted settlement boundaries. Whether settlers chose to squat on land beyond the boundaries depends on the price of land inside the boundaries, the marginal cost of first-person and second-person enforcement against actions taken by other settlers, and the threat posed by Aboriginal groups.

²³ Newly arrived squatters often tried to fill in the less desirable land between two earlier squatter claims and, by allowing their stock to graze onto their neighbors’ claims, attempted to incorporate a portion of their neighbors’ claims. See Dennen (1976) for an analysis of how this process worked with respect to cattlemen who grazed stock on public lands in the U.S. West closed to settlement and private use. Dennen also showed how competition for these grasslands led to the formation of cattlemen’s associations during the 1870s and 1880s to facilitate second-party enforcement of their *de facto* rights against new cattlemen, sheep graziers, and Native American tribes.

The alternative to occupying unclaimed lands within band of earlier squatter claims was to occupy land beyond the last squatter settlement. In our model, we assume that land throughout Australia is homogeneous but for its distance (r) from the market.

Was, however, the threat of violent Aboriginal raids against settlers at the frontier large enough to warrant the NSW's government's 1826 and 1829 regulations strictly limiting the extent of lands open to settlement?²⁴ This is a difficult question to answer in an absolute way, as Aboriginal resistance to foreign settlement in NSW is perhaps the most contentious topic in Australian history. We concur with Broome (2009), Connor (2008), and Coates (2006) that Aboriginal groups vigorously resisted the foreign occupation of their lands whenever it became clear that they would no longer be able to live on the land or share in harvesting its resources. In many instances Aboriginal forces had sufficient weaponry and organizational capacity to respond to attacks from trained British soldiers with firearms.²⁵ When they were outnumbered or faced superior firepower, Aboriginal groups often used guerilla tactics against settlers and soldiers rather than directly confronting armed soldiers or settlers. Aborigine raids on farms and their households, were typically conducted in groups of 6-20 men, but in some cases involved up to 200 men with goals of taking resources they could easily take and use (e.g., stores of food, sheep, and cattle), destroying resources that could not easily be taken, and injuring or killing settlers, families, and employees. The extent of the Aboriginal resistance was sporadic, flaring up when settlers occupied more valuable frontier lands, e.g., fronting a river or with access to water supplies. The small size of most Aboriginal groups and histories of inter-group warfare tended, in any case, to limit their ability to conduct sustained resistance. Aboriginal forces also did not incorporate horses into their resistance efforts in the first half of the nineteenth century, and this placed them at a considerable disadvantage after 1826 when the use of mounted police and soldiers in

²⁴ Similar boundaries of settlement were imposed in other British colonies where settlers at the frontier faced significant resistance from organized groups of indigenous peoples. After acquiring France's territories in North America during the French-Indian War, the British government issued the Royal Proclamation of 1763. It prohibited American colonists from purchasing land or settling in the newly acquired territories. The Dutch East India Company also used settlement boundaries. In 1688, the Governor of the company-controlled Cape Colony set tight settlement limits around Cape Town after two wars with the Cape's indigenous people, the Khoikhoi.

²⁵ Breach loading guns took up to 45 seconds to reload. In that time, an accomplished Aborigine could throw up to 6 spears. Knowledge of terrain also favored Aborigines. See Connor (2006).

NSW became more common.

It is, however, notable that individual Aborigines as well as many tribal groups responded positively in many cases to offers by settlers to share a land's resources and for the Aborigines to continue to live on the land (Broome, 2009). Settlers in the 1830s who negotiated with Aborigines to share land resources experienced little violence and reported generally productive interactions.

A heuristic case can be made that a much larger expansion of the limits of location would have required additional British soldiers, a request unlikely to be fulfilled by a British government attempting to reduce its subsidies to the colony. Until the late 1820s, settlers located on NSW frontier lands whose farms had been raided by Aboriginal groups usually requested and received a deployment of soldiers who would search for the attackers and remain at the settlement for a period of time. It was understood, however, that there were high opportunity costs to third-party enforcement of unrestricted settlement of the frontier. With only 500-600 British soldiers stationed on the Australian continent in 1830, it is unlikely that they could have provided expected levels of third-party enforcement to settlers dispersed over today's states of Victoria and New South Wales, an area several times the size of the Nineteen Counties. We note that the 1829 Proclamation of the Limits of Location states that the NSW Government would not dispatch British soldiers to respond to an Aboriginal raid on a settlement beyond the Limits of Location.

The 1826 proclamation of the "Limits of Location" was ignored by settlers as early as 1827 when sheep farmers began to occupy lands beyond the limits and to bear the cost of enforcing their claims against raids by Aboriginal groups. Nor is there any evidence that the stern, more detailed proclamation of 1829 was paid more attention. Why did settlers ignore the colonial government's proclamation of 1829? There are at least three non-mutually exclusive factors that may have been at work. First, as discussed in Section II, in the late 1820s and early 1830s, exploratory expeditions were returning to Sydney with "news" about the interior, including the location of massive expanses of high quality grasslands along their route and information about the routes to them from the Nineteen Counties. Settlement expanded in all directions around Sydney as enterprising colonists walked flocks of sheep people struck out with their sheep to find

new grazing lands. By the early 1830s, a full-blown land rush had developed, with settlement spreading far beyond the Nineteen Counties. From 1835, a second rush to lands in Victoria was triggered by John Batman's attempt to purchase 600,000 acres near Port Phillip from Aboriginal groups and by news from such expeditions as Surveyor General Mitchell's 1836 trek from Sydney to Port Phillip. En route, Mitchell discovered "Australia Felix", a huge grasslands tract in Victoria. Mitchell's report on his discovery induced colonists to invest in stock and walk them, following in the tracks of Mitchell's wagons, to the valuable lands. From the south, VDL colonists crossed the Bass Strait and began to claim lands. Accommodating government policy to the land rush in Victoria, Governor Bourke officially opened Port Phillip and surrounding areas to settlement in April 1836, established a government administration in September 1836, and began sales of land in Port Phillip in June 1837.

In our model, an increase in the value of land leads to an incremental change in government policy and to settlers choosing to squat on more distant public lands. Events are generally consistent with these predictions, as the 1830s land rush massively extends squatter settlement. Our model also implies that the government should extend the Limits of Location. Opening Port Phillip and the surrounding region to settlement in 1836 is consistent with our theory, although the Limits of Location determined by the Nineteen Counties continued to be officially in force through 1835. However, as we discuss below, the 1836 Act passed to regulate squatting beyond the limits essentially eliminated all location limits in the NSW Colony, specifying instead a two-tier system of property rights in crown lands.

The second reason behind settlers' decision to ignore official settlement boundaries was the high opportunity cost to the Governor of using the army garrison to evict squatters on a massive scale. The colonial government took no effective steps to remove the squatters, primarily because its options in responding to them were limited. One option was to use British military forces to force the squatters to return to the 19 counties. Grey (1990) argued that military forces in the colony (4 battalions in 1840) were too limited to send off to protect far-flung settlements. If soldiers were sent, it would not only entail additional expense, but the operation would take place in a region with limited or no roads, unfamiliar terrain, and potential threats from Aboriginal groups.

Roberts (1935) argued that withdrawal of soldiers from settled areas could have increased security problems at the colony's jails and reduced public safety in nearby towns as well as slowly progress on public infrastructure projects using gangs of convicts guarded by soldiers. A request to London for additional soldiers from other British garrisons in Asia would have mitigated costs to NSW colonists and increased prospects for success, but would have imposed significant costs on the London government.

The third potential reason behind the settlers' decision to move into prohibited lands may have been their expectation that the additional profit from a *de facto* land claim in the remote interior outweighed the expected additional cost that might result from small-scale Aboriginal raids on their farm. Alston, Harris, and Mueller (2009) provide a review of the second-party enforcement measures used by squatters. We note only that the surge of violence in Victoria and Queensland from 1840 may well have come as a surprise to squatters who formed their expectations based on the first 50 years of settlement.

C. Reasserting the Government's Rights to Occupied Crown Lands

After issuing the Limits of Location proclamation in 1829, Governor Darling did not respond to the growing occupation and use of crown lands both within and beyond the limits of location except to repeat his warning that use of crown lands beyond the limits was illegal, and use of crown lands within the limits required payment of a lease rent of £5 per section. The government's lack of action against the squatters was rooted in the limited options available to it; the decision of many of the colony's more prominent and wealthy landowners to establish sheep stations beyond the boundaries; and the Governor's grudging acknowledgement that expansion of the land-intensive cattle and sheep would be facilitated by allowing the squatters to graze sheep beyond the limits.

Edward Gibbon Wakefield commented that it is "just as possible to prevent squatting in a colony as to prevent it on the extensive districts of crown lands in Wales", but the analogy is not without its problems. However, dispatching soldiers from the army garrison to remove squatters and their stock was an option not chosen by Governor Bourke for reasons discussed in Section IV.B above.

Another option that NSW governors exercised was to enact regulatory legislation

governing squatter occupation so as to establish the crown's rights to receive income from and determine the use of squatter-occupied public lands. Between 1833 and 1839, the NSW Legislative Council passed three acts to regulate squatting. The 1833 and 1836 Acts provided some administrative apparatus for regulating squatters on crown lands inside the limits (1833) and beyond the limits (1836) but lacked sufficiently strong sanctions for noncompliance as well as a mechanism for enforcing compliance. The 1839 Act remedies the defects in the 1836 Act and acts to re-establish third-party enforcement in the crown lands. The reassertion of government's control over some rights adhering to squatter-occupied crown lands set the stage for a battle between the squatters and Governor Gipps during the 1840s over the package of lands rights that would accrue to squatters after they productively settled crown lands for a period of time. Below we briefly review the 1833 and 1836 Acts and analyze the forces leading to the 1839 Act more fully.

In 1833, Governor Bourke offered a bill to regulate squatting activity, but only within the Nineteen Counties. Passed by the Legislative Council in August 1833, the Act provided for grazing of stock on unsold crown lands within the boundaries of settlement by paying a rent set at auction with an upset rent of £1 per section of 640 acres.²⁶ Graziers who owned land within the Nineteen Counties and who purchased leases on unsold lands adjacent to their tract had complained to Governor Bourke about the unfair advantages realized by the squatters, who often did not own land, grazed relatively few stock, and were ex-convicts or ticket-of-leave men. District Commissioners were established to resolve complaints and to administer the system, but they had little power to enforce their decisions and were in general either inactive or ignored by major landowners over the next decade.

After an exchange of views with the Colonial Secretary regarding squatting on crown lands beyond the limits, Governor Bourke received a memorial from "certain proprietors of stock respecting the evils" that resulted from the presence of squatters on crown lands (Abbott 1971, p. 137). In July 1836, the Legislative Council passed an Act²⁷

²⁶ 4 William IV, No. 10. Abbott (p. 137) argued that Governor Bourke meant for the Act to apply to lands beyond the limits of location.

²⁷ 7 William IV, No. 4.

intended to regulate squatting on land beyond the limits of location. Its provision required division of these lands into administrative districts and the appointment of a commissioner for each district who would have the power “to protect crown lands from encroachment, intrusion, and trespass”; hear and resolve disputes between squatters; and require payment of an annual license fee set at £10 (Burroughs, p. 147). The Act warns squatters that if the NSW government were to extend its settlement boundaries, their lands could be confiscated and put up for sale without compensation for improvements or a right of first refusal (Burroughs, p. 150).

Enforcement of the 1836 Act was, however, plagued by many of the same problems as the 1833 Act, as the District Commissioners did not have a mechanism to enforce their decisions. Many squatter failed to pay the license fee, in part because they did not have to pay, and in part because the license did not refer to a specific parcel of surveyed land but rather conveyed an annual right to graze stock on “undefined” lands claimed by the squatter. However, in one important respect, the 1836 Act had far reaching consequences: It effectively opened **all** unallocated crown lands beyond the limits of location to selection by squatters who paid an annual fee and confined their activities to grazing of cattle and sheep. A March 1839 decision by the Supreme Court of New South Wales ruled that a squatter who had taken out an annual license was secure in his claim against intrusion by any party but the crown.²⁸

Historians usually represent the 1836 Act as a compromise by Governor Bourke, who saw the need to enact and enforce regulations specifying the rights and responsibilities of squatters occupying crown lands and to protect small squatters against legal actions from large squatters and land owners meant to drive them from their claims. Governor Gipps arrived in Sydney in December 1838 and was immediately under pressure from both the Colonial Office and leaders and influential supporters of the new South Australia colony to enact stronger measures to enforce crown rights and to limit squatting. In addition, Gipps was particularly alarmed by the sharp rise in violent encounters between Aborigines and squatters that were taking place in Victoria and were emerging in Queensland. Some squatters in these newly opened regions had reacted to the unexpectedly strong resistance by massacring those remaining on the land (Broome,

²⁸ Scott v. Dight.

2009). The newly arrived Governor moved to prosecute the squatters alleged to have been behind the incident.²⁹ The surge in violent encounters at the start of his term provided another reason for the Governor to move quickly to strengthen mechanisms to enforce the law beyond then limits of location. In February 1839, Gipps convened a special session of the Legislative Council to consider legislation that would vest District Commissioners with the power to remove a squatter's license without any provision for appeal, to remove or destroy stock, to define the boundaries of the run, to investigate charges of violence against Aborigines, to collect license fees and taxes, and to muster a force of squatters to serve with him. A small force of mounted police in each district would allow the Commissioner to enforce his decisions. Squatter opposition on the Legislative Council eliminated the Commissioner's power to muster a force of squatters, but all other powers remained intact in the Act passed by the Council in March 1839 (Roberts, pp. 85-92). Gipps moved immediately to define squatting districts, appoint Commissioners, and implement the bill's provisions.

D. From an Autocratic to a Redistributive Equilibrium

The NSW government's reassertion of the crown's *de jure* rights in all land beyond the boundaries of settlement transformed both the *de facto* and *de jure* rights of squatters. After payment of an annual £10 fee, the squatter received a license providing exclusive rights to graze cattle and sheep on an unspecified, unsurveyed acreage. The license entitled the holder to third-party enforcement by the district commissioner and his small contingent of mounted police against efforts by aboriginal groups or other squatters to occupy or harvest resources from their claims.³⁰ Despite these benefits from third-party enforcement of their use rights, a squatter's rights to his occupied land were diminished by the NSW government's annual option not to renew the license and, in this instance, to take possession of site-specific improvements on the land without paying

²⁹ Aborigines were neither allowed to give testimony in court nor to hold title in NSW land.

³⁰ An opposing argument is that the 1839 regulations provided the commissioner with the power to redistribute land from the squatters because the boundaries of their claims had not been defined by a land survey, thereby allowing room for a district commissioner to redistribute rights in disputes between squatters.

compensation. Governor Gipps' decision in August 1842 not to renew the license of William Lee fueled squatter concerns.³¹

The diminished position of the squatter occurred just as the economic boom of the late 1830s ended and a severe depression began that persisted through 1843/1844. It also coincided with new regulations and legislation from London that raised the minimum price of crown waste lands throughout Australia.³² With these events, a new crown lands policy that both satisfied squatter demands for more secure rights and met London's minimum price constraints was no longer feasible.

In 1843, with depression conditions still prevailing, Governor Gipps proposed two sets of regulations, the Occupation Regulations and the Purchase Regulations, that would change the terms of licenses and provide longer leases to squatters. However, in order to secure a long-term lease, a squatter would be required to purchase 320 acres of his claim at auction.

Buckley (1957) provided a classic analysis of the two sets of proposed regulations. He argued that they were designed to increase revenues available to the NSW government to assist British migrants to the colony. The collapse of land sales and land sales revenue in 1842 and 1843 had led Gipps to suspend assisted migration in 1843, and Buckley maintained that Gipps responded to this situation by searching for additional revenue sources that could be fully or partially used to assist migrants. He described in much detail how Gipps attempted, without much success, to collect quit rents in arrears; to force squatters on crown lands within the Nineteen Counties to pay the required lease rent; to increase license revenues from squatters via his proposed Occupation Regulations; and to increase land sale revenues via the Purchase Regulations.

Our interpretations of events builds upon Buckley's (1957) pioneering analysis and places his interpretation firmly within the context of our model. First, we note that the objective function of the London government with respect to its NSW colony surely changed in the aftermath of the 1837 Report of the Molesworth Committee. The Report recommended that London take immediate action to rapidly wind down transportation to NSW and to restrict assignment of convicts to settlers far from established settlement

³¹ See *Sydney Morning Herald*, 24 August 1842.

³² May 1840 regulations issued by Lord Russell.

areas. London responded by suspending transportation to NSW in May 1840, and Governor Gipps took measures to limit and phase out the assignment of convicts to private settlers.³³ These actions had the effect of raising squatters' demand for migrant labor.

In Section IIIA, we argued that from 1831 the London Government had two central objectives for the NSW colony: To serve as a prison for British convicts and to provide resources to subsidize migration of England's poor to the colony. With the narrowing of its objective for NSW, London had incentives to focus its resources and colonial policies in the early 1840s to facilitate migration.³⁴ Gipps' fast transition to London's objective function helps to provide a foundation for his unpopular decisions to seek new revenues from landowners and squatters. The push by the Governor to collect additional revenues from NSW property owners and squatters during a deep and prolonged depression is otherwise inexplicable. Even more difficult to explain with a logic internal to the NSW colony is Governor Gipps' push to restart migration assistance during a period of high unemployment.³⁵

To this point, our analysis has continued to employ the assumption—used in our initial model of public claims to frontier land—that the London government acted as an autocrat, implementing policies to further its own objectives for the NSW colony rather than the objectives of the NSW population or particular NSW interest groups. Certainly, the enthusiastic endorsement of Gipps's Occupation Regulations and Purchase

³³ The 22 May 1840 Orders in Council suspended transportation of convicts to NSW. Transportation was formally prohibited on 1 October 1850.

³⁴ One could argue that with the rise of the NSW wool industry, London would reformulate its objective function for NSW to include benefits to the government and its supporters from securing the supply of a critical raw material (wool) used by a large British industry (woolens) from a British colony rather than from its traditional sources of supply in Spain and Germany.

³⁵ XXXX (1970) praised Gipps focus on migration assistance during the depression as an example of a Governor acting in the long-run interest of the colony. Once the Depression ended, expanding agrarian enterprises would demand more labor. Moreover, the end of convict transportation implied the end of the regular flows of emancipated convicts into the NSW labor supply. With the flow of emancipated convicts declining, it would have been in the interests of agrarian interests as well as the London government to support new policies that would increase flows of assisted immigrants.

Regulations by the Colonial Secretary, Lord Stanley, in his January 1845 despatches to Governor Gipps as well as his rejection of squatter arguments against them is consistent with this view.³⁶ Stanley's explicit endorsement of Gipps' suggestion that revenue from the squatting districts could further immigration to the colony is also notable.

Why, then, did Parliament just 18 months later reverse London's course by passing the Australian Lands Act? The Act provided the squatter with a relatively long lease (14 years in most districts beyond the limits), a pre-emptive right to buy a part of his run (at least 160 acres) for £1 per acre, and the right to cultivate the land for subsistence purposes. The terms represented a dramatic reversal from those in the Occupation and Purchase Regulations that had been so favorably received by Lord Stanley. Buckley (1957), Abbott (1970), Burroughs (1969), Weaver (2003), and Belich (2009) are united in their view that the reversal in policy occurred after a group of English and NSW businessmen with interests in the Australia wool trade³⁷ developed alternative proposals for the Colonial Secretary to consider. A small group met with Lord Stanley four days later and presented a petition that criticized the new law's requirement that squatters purchase their homesteads and requested instead that the squatters be provided with 21-year leases. Stanley requested that the group present their proposals in more detail, and in June 1846 he received a plan for legislation signed by 60 representatives of the leading English firms connected with the wool trade. A plan developed by Stanley to provide 21-year leases to be sold at auction was rejected by the small group of squatters who had travelled to London to lobby the British government. Stanley then decided to propose a plan that would provide a 7-year lease without competition to the run's occupant and eliminate the requirement to purchase the run's homestead. George Hope, the Parliamentary Undersecretary, introduced a bill with these provisions, but it failed to pass. At the end of 1845, William Gladstone became Colonial Secretary and legislative action was deferred until Earl Grey replaced him in 1846.

³⁶ Stanley had submitted Gipps' arguments for the two sets of regulations to the Land and Immigration Commission, and with his January 1845 despatches he enclosed a report from the Commission that commended his "powerful reasoning" (as quoted in Abbott, p. 171).

³⁷ The group included prominent NSW squatters and their supporters; officials from banks, shipping companies, and importers providing services to the NSW wool trade; and representatives of the British woolens manufacturers that purchased the NSW wool.

Grey's reworking of the bill provided additional concessions to squatters. It provided a longer lease (14-year lease at a rental proportional to the run's carrying capacity) for all squatters beyond the limits except those in the intermediate districts near Port Phillip (8-year lease with allowance to sell lease at end of each year); leases could be renewed at an increased rent if the land was still included in the unsettled (interior) district; and only the occupying tenant could purchase a station's land during the term of the lease. At expiration, a right of preemption or compensation for improvements was recognized (Burroughs, 1967, p. 321).

Why did the squatters win such a substantial victory? The development of a political organization encompassing English companies with backward and forward linkages to Australian wool production and representatives of the Australian graziers could well be characterized as the end of London's autocratic rule of NSW politics and the beginning of a period in which the government and a briefly dominant interest group act together to redistribute some wealth to both parties (i.e., our second model in Section III). The aforementioned combination of English firms with forward and backward linkages to colonial grazing interests was particularly effective because of the dramatic increase in the value of shipments of wool to Britain over just a 15-year period. Australian wool accounted for just 6.6 percent of the value of wool imported into England in 1831, but the proportion would increase to 30 percent in 1845 and to 50 percent in 1850. (Burroughs, Appendix I). The effect of the backward and forward linkages was to provide Australian sheep graziers with indirect representation in Parliament, as the prosperity of the "linked" British interests now critically depended on receiving large quantities of wool from NSW. We argue that indirect representation in Parliament was critical for the squatters, as it had the effect of endogenously changing the model governing London's decision from the autocratic model to the redistributive model. Given London's new objective function which incorporated interests gaining from the NSW wool trade, it is unsurprising either that the NSW government took action to stabilize the sheep industry by accommodating and confirming *the de facto* property rights of the squatters in the lands beyond the official settlement boundaries or that Parliament passed legislation in 1846 to support those arrangements.

V. Applications of the Model to Buenos Aires

A. *Risks of Settling the Frontier*

Unlike New South Wales, settlers of the *pampas* did not venture out on their own to squat on unclaimed land. The risk was too great, and the cost of providing private protection was prohibitive even for the largest *estancieros*. Third-party protection of the military was essential, at a scale that could not have been achieved by second-party enforcement of claims. These observations are consistent with the prediction of the model, in which a more insecure frontier would lead to a greater extension of the government's frontier of enforcement and a retraction of the distance settlers were willing to settle without government enforcement. In extremely risky conditions, the predicted band of squatters on the frontier could be reduced to nothing or almost nothing, which appears to be a reasonable characterization of outcomes in Buenos Aires in this period.

Nomadic tribes had effectively prevented the territorial expansion of the Spanish empire since the 17th century; the risk of attack had increased after 1730. The principal aggressors lived far to the south and conducted campaigns to raid and pillage the haciendas and herds on the Buenos Aires frontier. Their methods included cattle and horse rustling, sacking *haciendas*, ambushing parties of travelers, theft, and killing or taking prisoners. The scale of invasion ranged from acts in small bands to large-scale operations involving hundreds, occasionally thousands, of warriors. For a large-scale invasion, multiple tribes would often gather to coordinate their attacks. Altogether these campaigns might result in the seizure of tens of thousands of head of cattle. The stolen herds were driven south and marketed to indigenous communities even as far as southern Chile (Barba, pp. 23-27; Best 1960, vol. 2, pp. 317-21; s.a. Amaral, p. 135).

In short, contrary to conventional stereotypes, the European military might was not superior to the indigenous forces, known for outstanding horsemanship and effective use while mounted of traditional weapons. Creole militiamen stationed on the frontier to defend settlements were outnumbered, and military regiments sent out from the city to pursue invaders were ineffective because the invading parties were more familiar with the terrain and easily escaped (Barba, p. 24; Best, vol. 2 pp. 317-21, 325-53). Cattle interests saw in the *pampa* to the south an almost endless resource for the expansion of the industry. But it was not empty "wasteland"; it was "Indian territory;" and establishing a

de facto right to this land was never as simple as riding out and staking a claim.

For its defense, beginning in 1741 the Spanish colonial government built and maintained a line of forts to the south to protect the city of Buenos Aires and its surroundings from invasion (Barba, p. 25). The “frontier line” (*linea de fronteras*) defined by the series of forts was not impermeable; in fact, it was easily breached by the invaders. But it created an official boundary beyond which military forces would not be present to protect settlements from invasion (Cárcano, pp. 25-27). Before 1810, the line had never extended farther than 100 to 120 km inland to the south from the Río de la Plata or the city of Buenos Aires, as shown in Figure 4.

Estancias for raising livestock, towns, or villages were sometimes established up to the line of defense, but rarely beyond it. Before 1826, this line stopped at the Salado River.³⁸ In his examination of *estancia* records, Amaral observes that by 1810 a few *estancias* had been founded on the Salado River, but none were beyond it (p. 63). Beyond the frontier line, there was some open access use of the land beyond the frontier line, but it marginal and temporary. There were no fences, so except where natural boundaries prevented it, cattle easily wandered across the line, frequently rounded up and brought back. There were a few inhabitants of the countryside beyond the forts, but these tended to be people on the margins of society, who used the land and cattle they found but did not claim land or raise cattle. Such marginal uses of the land involved no improvements and frequently suffered retreats in periods of increased violence (Amaral, pp. 135, 185; Cárcano 1917, pp. 14, 26, Coní 1938, p. 16).³⁹ To lower the risk from attack, new settlements tended to be organized around military forts or outposts. Towns thus were planned and founded alongside new forts. Land grants were given, often to unpaid veterans of the wars, to populate and fortify the frontier, on condition that the recipients

³⁸ There was one exception -- the fort at Kaquelhuincul, near the town of Dolores, founded in 1817. However, intensification of raids in 1821 resulted in the abandonment of settlements in the districts south of the Salado until 1826 (Infesta, p. 73).

³⁹ Others did venture out. The legendary *gaucho* was certainly not deterred from wandering beyond the line of forts. However, the *gaucho* at this time was known as a criminal element, ethnically diverse, who lived at the margins of society, comfortable among the Indians. The *gaucho* lived by harvesting resources from lands on the frontier but did not establish a *de facto* claim over specific lands (Coní, “Contribución”; Slatta, pp. 7-29).

would occupy and use the land, obligated also to assist in the defense of the district (Cárcano pp. 27-30; Infesta, p. 73).

With the silver trade cut off after 1810, the future prosperity of the newly independent province appeared to lie in the expansion of the land-intensive grazing of cattle for the export market. Responding to the political demands of influential entrepreneurs, successive governors of the province organized “desert campaigns” in 1820-21, 1823-24, 1826-27, and 1828-34 to push back the boundaries of Indian control, to extend the line of defense to the south. Although most desert campaigns resulted in failure, a few were successful. Territorial expansion was achieved only in fits and starts and not without setbacks. Figure 4 shows the advancement of this boundary during the years 1819-1852, which did not extend south of the Salado River until 1826. The most notable successes were the successful campaigns of 1826, under the leadership of Colonel Rauch, and of 1833, under the leadership of Colonel Rosas (Best 1960, vol. 2, pp. 317-21, 325-53, Tapson), The effect of each on the territorial expansion is shown in Figure 4 (Cárcano, pp. 26, 87-89; Garavaglia, pp. 39-41; Infesta, p. 16).⁴⁰

B. Fiscal Objectives and Land Policy

Ten years of warfare had left government finances in a state of confusion and deeply in debt. In 1821, the public debt amounted to 2 million pesos (approximately the same as the all government receipts for that year), consisting primarily of treasury bills, obligations from forced loans, war bonds, and various unpaid obligations (Burgin, pp. 52-54; Halperín Donghi 1982).⁴¹ With revenues from silver dried up, the government had yet to find sufficient new sources of revenue to stabilize the finances of the new republic. The most important source was customs income, which for decades after 1821 accounted

⁴⁰ In the interim years, the line of defense was not static; but it is widely accepted that the effective boundaries of the province were drawn and redrawn as described. Also relevant, some of the territorial gains of 1833 were lost after the fall of the Rosas dictatorship in 1852.

⁴¹ The estimate is from Burgin, pp. 52-53. Adelman 1999, p. 96, gives a lower figure of 1.6 million pesos, citing cites a Ravignani (1911) as the source. This figure seems to have overlooked the findings of the special commission set up by Rodríguez to ascertain the nation’s indebtedness, which found another 400,000 of claims against the government for payment of supplies and salaries (Burgin, p. 53).

for more than 85 percent of annual government receipts throughout the period of study (See Table 3).⁴² A second possible source of revenue was the direct tax (*contribución directa*) on capital improvements on land, but it was difficult to collect taxes on land or rural capital; hiding the value of improvements was easy and not uncommon (Amaral, pp. 14, 195, 200; Burgin, pp. 47-49, 167, 195-97). It rarely amounted to more than 3-4 percent of annual revenues. But new streams of income were needed to avert fiscal crisis.

A third possible source of revenue was public land. Programs were adopted at various times to transfer public land by sale, lease or grants of land in compensation for services. One of the first acts of the revolutionary government had been to claim the *tierras realengas* of the former viceroyalty as public or “fiscal” lands.⁴³ The vast holdings of public land offered what appeared to be an almost endless source of wealth, if it could be tapped. Among the earliest provisions were authorizations in 1813 to sell public land on the frontier to raise revenues for the war and in 1817 to grant frontier land to revolutionary veterans in compensation for military service.

The sale of public lands did not generate much revenue; the reasons are not hard to find. The land was insecure and vulnerable to attack. According to one report, prices at which frontier land was selling were no more than one month’s rent (Coní, pp. 36, 163). The land grant program of 1817 was intended serve two purposes. Besides compensating former soldiers for their services, it was also intended to try to fortify the line of defense by encouraging settlement on the frontier. Grants were awarded conditional on occupation and use within six months, plus an obligation to assist local militias to defend the settlement against the Indians. But this was at time when the military capacity was weakened by years of war. The first fort and settlement built south of the Salado River, in 1817, was destroyed by Indian attacks in 1821. The raids in those years penetrated even up to the suburbs of Buenos Aires. Properties purchased or granted in the most exposed areas were abandoned. “If they couldn’t guarantee the property rights of the land they

⁴² Years in which they fell below often coincide with years of the blockades. Buenos Aires suffered blockades from Brazil in 1826-28, France in 1838-40, and England and France in 1845-48 (Burgin, pp. XX; Newland and Salvatore, p. 23)

⁴³ The Spanish empire had incorporated the Indian territories but also recognized the indigenous rights to them and mediated conflicts or disputes between the creole and indigenous communities.

gave away,” Cárcano asks, “how could they possibly sell it?” (1917, pp. 30-31). If the revenue from sales was disappointing, it was because the risks of settlement were too high.

The administration of Martín Rodríguez (1821-24) undertook the first effort at financial reform under the leadership of the Minister of Government, Bernardino Rivadavia. As part of a comprehensive reform, a plan was devised to consolidate and convert the state’s various circulating obligations into long-term funded debt. To do this, in 1821, the government was authorized to issue bonds of 5 million pesos, with additional authorizations in 1823 and 1824, bonds amounting to 6.4 million pesos had been issued by the end of 1824 (Bordo and Végh, 463-66; Burgin, 52-54).⁴⁴ As security for the public debt, the government pledged all mobile and immobile property of the province as guarantee “under a special mortgage”.⁴⁵ Then in April 1822 it prohibited the alienation of public land in any form, declaring that all public land must remain in the possession of the state as long as it should serve as security for the public debt. A few months later, the government provided for a legal instrument to mobilize the use of encumbered public land. Although public land could not be sold, it could be transferred by means of a long-term leasehold referred to as *emphyteusis*. A Roman institution, handed down through Spanish medieval law, the emphyteusis contract under Spanish law offered the most complete transfer of rights possible while meeting the state’s obligation to reserve the land as a guarantee for the public debt.⁴⁶ The Argentine emphyteusis was a special application of the institution, which provided a lease of public land of 20 years, under the law of 1824, reduced later, by a reform in 1828, to a 10-year term renewable for a second

⁴⁴ This included the infamous London loan of 5 million pesos, issued through Baring Brothers, that defaulted a few months later, triggering an international financial crisis in 1825 (Burgin 1946, pp. 55-56).

⁴⁵ From the text of the decree, reproduced in Coní, pp. 161-62. Coní refers to this decree as the “mother of the emphyteusis.”

⁴⁶ In its Roman and medieval forms, it provided a very long-term separation of use rights from ownership, in effect, long-term, or even perpetual, lease. Full rights of ownership to land were not granted in the Spanish empire. Emphyteusis was apparently used commonly in the Spanish empire as one of three institutions for privatization of use rights of the Spanish patrimony (Adelman). The Argentine *emphyteusis* was a modified version of the traditional instrument in that it applied only to property owned by the state, where as the traditional contract was between private individuals; and the term of the lease was shorten that that customary under the

term. The transfer of rights for the duration of the emphyteusis was made in exchange for an annual rent, called the *canon*, determined as a percentage of the value of the land, initially 3 percent, but later increased to 4 percent for agricultural and 8 percent for livestock operations (Cárcano, pp. 53-59; Coní, pp. 32-38, 162-64; Infesta 2007, pp. 30-31).⁴⁷ These contracts were also freely transferable.

Almost continual warfare and debt crisis made the problem of increasing revenues a major preoccupation of the succession of governors of the province in the 1820s and 30s. Failure of Rivadavia's financial reforms led quickly to default on the foreign debt in 1825, the adoption of inconvertible paper currency in 1826, and inflationary finance thereafter (Bordo and Végh; Burgin; Irigoín 2000a,b). The default contributed to the first Latin American debt crisis. The crisis spread quickly to London (Dawson 1990; Marichal 1989). The security of public land in emphyteusis did not prevent British foreign bondholders from "having their first experience with defaults by sovereign states," as Neal and Weidenmier (2003, p. 481) observe; however, it did continue to be held as security for the growing domestic debt.

When emphyteusis was first established, it was expected to become sizable source of revenue. The stream of rental payments, however, was never as great as expected, on average about 7.6 percent of annual revenues in the 1820s and 30s. Its share was more double than that of the direct tax, but still a distant second to customs revenues. On the other hand, it did become the principal institution for the transfer of public lands in the first half of the 19th century, and it became an important political resource as cattle interests came to dominate political influence (Halperín Donghi, p 56).

In her exhaustive examination of the records of public land claims filed with the Notary General, María Elena Infesta (2007) finds that the majority of land that was

⁴⁷ The *canon*, originally 3 percent of the assessed value of the land under the emphyteusis law of 1824 was increased under the law of 1826 to 8 percent on pasture land and 4 percent on arable. The method for assessing land values was changed from time to time. Initially, three zones were designated within which land was valued at 2000, 800 and 200 pesos per square league, respectively, depending on whether the zone was near to or far from the city of Buenos Aires or the Río de la Plata. The emphyteusis law of 1826 abandoned the fixed zones and provided that assessment would be conducted by a jury of 5 neighbor citizens (*vecinos*). The assessment and the canon were subject to possible revision 10 years after date of the contract (Cárcano; Coní; Infesta, pp. 33-37).

privatized during the period 1823 to 1852 was transferred by emphyteusis.⁴⁸ (The last emphyteusis claims on record are of 1840.) Table 4 summarizes Infesta's findings. She finds records for 3254 sq. leagues, or 2.7 million acres, of land that were transferred from the public domain in one of three forms of transfer – sale, emphyteusis or grant. From her figures we estimate that 76 percent of the all transfers of public lands were given in emphyteusis between 1823 and 1840.

Considering the other two types of transfers of public lands, from data provided in Infesta, we estimate that about 22 percent was transferred in the form of land grants, and only around 3 percent, or perhaps a bit more, was privatized by sale. This is not to say that land sales on the frontier were unimportant. Almost half of all land that was ever held in emphyteusis (about 36 percent of all transfers of public land in the period) was sold under Rosas between 1836 and 1843, much of it to the holders of emphyteusis contracts. Land privatized initially as a leasehold, emphyteusis, was subsequently converted to ownership. (See Table 4.) Therefore, although sales became important later to complete the transfer, emphyteusis and land grants, in order of importance, were the two principal institutions used for the initial transfer of public land into private hands. For land south of the Salado River, it was these two institutions that governed the majority of initial assignments of private property rights. To implement them, legal provisions were made requiring surveys, formal demarcation property boundaries, and maintenance of a land registry. ,Once the *de jure* specification was made, the original costs of measurement need not be incurred again when the plot was sold.

C. De Jure Specification

Cárcano emphasizes how innovations to modernize the measurement and definition of property rights were “indispensable” for a sound system of property rights, since the former Spanish system of defining boundaries and rights to land suffered a number of “deformities” that compromised the “security of property, its clarity, and

⁴⁸ The principal source for her estimates are the claims registered in the emphyteusis registry of the Notary General of the Government of the Province of Buenos Aires (Escribanía General de de Gobierno la Provincia de Buenos Aires) (Infesta, p. 46). The date of the claim is found on 86 percent of all claims identified. The Notary General of became the central repository for public land claims and transfers (Infesta, Oddone).

transfer” (pp. 34, 42, 56). Certainly, imperfect demarcations and poor records of property held in emphyteusis would not serve well to claim the streams of rental income due the government. The Rodríguez government took important steps in 1824 to modernize the *de jure* institutions of property-rights specification by setting up a Topographical Department, first, to conduct a general survey of land to be opened for emphyteusis, and, then, to keep an official land registry of surveys and claims filed. Under the emphyteusis law, procedures were established by which each claimant was required to conduct a specific survey for each claim, at the claimant’s expense, which had to be examined by the court and filed with the land registry before the claim could be approved (Cárcano, p. 42; Infesta 2007, pp. 32-37).⁴⁹ Obviously, the legitimate collection of revenue from emphyteusis required property-rights definition adequate enough to delimit the *enfiteuta*’s rights and obligations under the contract – the size of the claim determined the amount in rent due the government.

The specification of property rights in new territory to the south followed a pattern in which the public claim and legal provisions for *de jure* specification preceded the government’s actual taking possession of the land. For example, in preparation for the campaign of 1826, a law of October 1825 asserted the public claim to the targeted lands and provided for the survey and subsequent transfer of these lands to be opened for emphyteusis. It also prohibited emphyteusis outside the targeted line of defense. These provisions preceded the decree of September 1826 that authorized the campaign (Cárcano, p. 66).

Similarly the provisions for *de jure* transfer of land in emphyteusis preceded the years in which most of the claims were filed (Infesta, pp. 38-40). Figure 5 shows that most (over 60 percent) of the claims of public land in emphyteusis were made in the years 1826-28 and 1833-34.⁵⁰ Peaks in 1826 and 1834 coincide with successful desert campaigns of those years. The peak in the figure in 1828 reflects the claims filed in

⁴⁹ A act of 30 June 1826 provided for the compilation public registry of all claims in emphyteusis under the supervision of the Notario Mayor de la Presidencia de la República, referred to as the “Gran libro de la propiedad pública.” It provided that no claim of emphyteusis not in the official registry would be recognized by law (Oddone, pp. 50-51).

⁵⁰ The last year the emphyteusis law was in effect was 1840.

anticipation of a failed territorial expansion. After announcing a plan to extend the line of defense south to Bahia Blanca, Governor Dorrego opened the projected new lands for emphyteusis. Although many claims were filed, the campaign was unsuccessful, and the area remained insecure. The desert campaign of 1833 conquered roughly the same area. It appears that most claims granted in 1828 and after were scarcely exploited until after the 1833 pacification of those lands (Infesta, pp. 38-39).

De jure specification and enforcement were not perfect in an environment of political instability, scarce government resources, and bureaucratic inexperience with modern methods of measurement.⁵¹ Some public land was known to be occupied without title, but these claims apparently fell mostly inside the old line of defense, not in the new public land acquisitions, probably a legacy of the Spanish system of defining and recording property rights to land, which continued to influence property rights in the area of former colonial settlement (Amaral, pp. 69-70, 101, 187; Dye, pp. 195-98). To resolve the issue, the government provided for *de jure* recognition of *de facto* claims in disputed lands north of the Salado, if the claimants could demonstrate continuous occupation of the lands. Efforts to correct the problem, however, were apparently not fully eliminated; it resurfaces as Rosas tried to crack down in 1835 on various forms of evasion of the rent on emphyteusis lands (Infesta, pp. 36, 41, 74-75; Coní, pp. 34-36, 162-63).⁵² Flaws were also discovered with the new system of property rights specification under the supervision of the Topographical Department, in the methods adopted for doing surveys. Surveys were often done in isolation causing many overlapping claims, and many legal disputes. In 1835, Rosas tried to correct the problem by calling for a new general survey of the province, district by district (Coní, p. 126).

The early years of political instability introduced other problems. For example, the book in which the central land registry was kept seems to have been lost in the transition after the fall of the national government in 1827 and takeover of the provincial

⁵¹ Garavaglia and Gelman (1995) observe that the association of legal ownership of land and access to land should not be taken for granted, especially in the colonial period. After 1820, when the evidence suggests a greater tendency toward establishing ownership, one still must admit that the relationship between legal ownership and use of the land remains understudied (pp. 81-82).

⁵² Oddone observes that we do not know if *enfiteutas* who failed to file their claims with the central registry were ever denied their claims (p. 51).

government by the Federalists. Governor Dorrego, therefore, called upon the Topographical Department to recreate the registry by requiring all claimants of emphyteusis to come forward and petition their claims. Failure to file would result in forfeiture of the right (Infesta, pp.37- 38; Oddone pp. 50-51). Such incidents reveal certain imperfections in the specification of *de jure* rights, and political disruption to their maintenance, but they underscore the effort and intent of government actors to establish *de jure*, rather than *de facto*, specification of the bundle of rights transferred under emphyteusis. The assignments thus made served as well to underpin the sale of emphyteusis lands in later years.

D. The Ruling Interest

The revenue stream from emphyteusis was never as great as the founders of the policy had anticipated. The “redistributive government” variant of the model in Section III tries to capture in a highly simplified way how the influence of a dominant ruling interest -- in Buenos Aires, the cattle interest -- might affect the prediction of the baseline model. The model predicts an even stronger inclination to extend *de jure* rights on the frontier either to generate government revenues or private earnings of politically influential supporters of the government.

Governments in the early years of independence, answerable to cattle interests clearly had to sacrifice the revenue objectives of emphyteusis to accommodate the interests of the dominant sector. Indeed, almost from its outset, public land policy was designed as much to accommodate the cattle sector as to tax it. For example, one criticism brought against the original legislation was that it allowed excessive claims, often left idle, because no upper limit had been set for the size of *emphyteusis* claims.⁵³ To satisfy critics, a reform of 1828 set the maximum claim at 12 square leagues (32,478 ha), but it placed no restriction on transfers., A number of vast properties were thus consolidated through purchases of existing emphyteusis contracts (Infesta, pp. 37-38, Oddone, 47-70).

Political demands to reduce the rental fees were also met. First, the reform of

⁵³ The original legislation did establish a minimum plot size, which was $\frac{3}{4}$ square league (1 sq. league = 2699.84 ha) (Infesta, p. 31).

1828 cut rental fees in half. But more important was the practice of setting the rental fee as a percentage of the value of land assessed only once every ten years, payable in paper currency.⁵⁴ Fixed land assessments in an environment of depreciating inconvertible paper currency resulted in steadily falling rental fees in real terms. In 1828, an *enfiteuta* who acquired frontier land assessed at 2000 pesos, which would have paid 160 pesos annually per square league under the 1826 law, now paid 80, but with depreciation of the paper peso, by 1830 the real value paid was only 34 pesos (Cárcano, pp. 67-68; Irigoín 2000).⁵⁵ Besides its depreciation, payment of rent was not always enforced. This may have been a casualty of political instability, with some improvement under stronger political leadership. Rosas took measures in 1832 to enforce payment, Coní observes that earning from emphyteusis increased during his government (Coní, pp. 113-14; Cárcano, p. 74).

The ruling interest could not forever ignore the fiscal crisis. Irigoín points out that inflationary finance was a favored policy of Rosas' supporters, preferred to bond finance since only the supporters of the Rosas regime would buy the bonds. Inflation was distributed equally among supporters and opposition (Irigoín, 2000a). But, restored to power in 1835, Rosas faced the challenge of burgeoning internal debt (more than 20,000,000 pesos in 31 December 1835). Rosas tried to use reform of public land policy to bring the debt problem under control (Burgin p. 176; Coní, pp. 118-24).

The first measure of note is the reauthorization of public land sales in 1836. In May 1836 he requested authorization to sell 1500 square leagues (4 million ha) of public land, either in emphyteusis or baldía (wasteland), to be used to amortize the public debt. Before it was approved, the legislative assembly debated whether public land legally be sold because since it was under mortgage for the public debt. The view of the Minister of Hacienda was ultimately adopted, to the effect that: the act of selling public land and applying its proceeds to amortize debt would qualify as an act of exercising the guarantee

⁵⁴ On the provisions for assessing land values, to account for land quality, the 1826 law provided that land assessment would be conducted by juries of five local citizens (vecinos). It was observed that juries tended to understate land values, which reduced the rental revenue. In the 1828 reform, it was decided that the jury system be replaced by fixed assessments of 3000 pesos per square league for land north of the Salado River and 2000 pesos for land south of the river (Cárcano, p. 67; Infesta, pp. 38-39).

⁵⁵ Depreciation estimated by the peso price of gold on the Buenos Aires stock exchange, reported in Burgin, p. 69.

(Coní, p. 122). Another objection raised was that the land could not be sold because it was under contract with the *enfiteuta*. Therefore, the authorization bestowed by the assembly imposed the restrictions that land in emphyteusis could only be sold to the *enfiteuta*, and all sales proceeds had to be applied directly to the amortization of the public debt. In other words, as Coní points out, the contractual obligations of the state both to creditors and holders of emphyteusis contracts were “religiously respected” (Coní, pp. 118, 120-27, 135).⁵⁶

A contrast should be made here between Rosas’ treatment of *de jure* and *de facto* claims. Whereas he respected the *de jure* rights of the *enfiteutas*, he had no tolerance for those who had not kept their rentals up to date. To the latter, in effect, *de facto* claimants, he gave a two-month preference for the purchase of their land, after which it would be sold to the first bidder at the prices established under the law of 1836 (Infesta, pp. 41-44).

Disappointing revenues from public land sales led to a shift from encouragement to coercion. It took place at a time when Rosas was becoming increasingly more autocratic and vindictive. In 1838, the first set of emphyteusis contracts of 10-year duration signed under the 1828 law would begin to expire. The 1828 law had stated that these contracts would be renewable, subject to new assessments and revision of the rental fee. Violating these provisions, Rosas defined a zone roughly correspondent to the area that had been brought within the line of defense by 1826 and announced that emphyteusis contracts on properties within the zone would not be renewed and put up for sale. Existing *enfiteutas* had a two-month right of preference to purchase them, after which they would lose the right of preference; although, they were to be compensated for any improvements.⁵⁷ All emphyteusis lands within the zone were subject to sale, not just

⁵⁶ Coní remarks that in order to show his commitment to use the proceeds from public land sales to retire the debt, he decreed in September of 1836 that authorized payment for public land in treasury bills, which he altered in November to require that payment could only be made in treasury bills, although the latter provision failed and was abandoned (pp. 124-25; Infesta, pp. 94-97). Rosas further pronounced that the lands of *enfiteutas* who had not paid the *canon* would be sold and gave a two-month right of first refusal to the contract holder (Coní p. 127).

⁵⁷ Improvements were to be assessed by two representatives, one named by each party. In case of disagreement, a third assessor would be named by the local justice of the peace (Coní, p. 130).

those whose contracts had expired (Coní, pp. 129-30, 251-53).⁵⁸

The growing capacity of government to enforce property rights meant also a capacity to confiscate them. After 1838, Rosas began a vindictive oppression of his political opponents, including massive confiscation of their property. It is unknown how much land was confiscated, but land warrants for 669 square leagues (4.5 million acres) were issued to Rosas' political supporters. Protection and enforcement of property rights became at that time highly selective to the benefit of Rosas' political supporters and against the Unitarian opposition.

Adelman describes Rosas as one who wielded the power of the state to enforce property rights as a means to redistribute them to private interests who supported him (1999, pp. 111, 116). Yet selective use or manipulation of the law to bestow favors on supporters seems to have developed more strongly over time and took on its more extreme forms after 1839 as his struggle to remain in power intensified. Before 1838, Rosas adopted legalistic positioning opportunistically rather than a literal interpretation of the law, for example, to end leases on a single date and to justify refusal to renew them (Coní, pp. 127, 135-38). Thus *de jure* specification of rights to frontier land was transformed over time into selective *de jure* re-specification and enforcement dependent on the political identity of the claimant. Without rule of law, *de jure* specification did not ensure *de jure* enforcement.

So it was that the territorial expansion of the province was achieved by means of military campaigns that, when successful, resulted in the conquest and addition of large expanses of land on the frontier. The government immediately asserted its claim to new territorial acquisitions by establishing procedures and institutions for enforcing *de jure* specification and assignment of property rights to govern the settlement of pacified public lands.

⁵⁸ Coní argues that Rosas found a loophole in ambiguous language in Article 1 of the 1828 law, which provided for ten-year contracts beginning 1 January 1828. Although many contracts were not immediately taken out, Rosas took the commencement date in the law as literal date of contract and proclaimed that the termination date of all contracts signed under the 1828 law ended on 31 December 1837. Article 4 of the same law provided that, at the completion of the first ten years, the contracts would be renewed for the canon set in the 1828 law.

VI. Conclusion

Our paper thus raises doubts about the generalizability of the notion of a progression of property rights from open access to *de facto* private claims to *de jure* titled land driven by the political demand-side. Such a progression, which the literature on property rights and frontier settlement has proposed, seems to encompass the emergence of property rights to public lands in a number of settlement regions, including New South Wales (with some qualifications); but it fails to do so in Buenos Aires. The most prominent theory analyzes a settler economy in which settlers are migrating to a frontier where government has left public lands effectively in open access. As frontier land becomes more valuable, settlers make claims and coordinate commons arrangements, which constitute *de facto* property rights to the land. As competition for the land increases, incumbents confront new entrants, and one of the two groups seeks government intervention to assign *de jure* property rights. Governments respond by defining *de jure* rights that may either accommodate incumbents' claims or deny them and provide means for entrants to acquire rights to frontier land. Alston, Harris and Mueller (2009) use this framework to explain conflicts between cattlemen and homesteaders in the western United States, squatters and selectors in Australia, and large and small squatters in Brazil.

But the progression from open access to *de facto* to *de jure* property rights begs the question about the role of government in the initial phases of settlement. Invariably, in name at least, governments in settlement economies eyed crown land or public land as the patrimony of the state, and perceived it as a resource to be tapped to provide revenues. In the United States, for example, revenues from frontier land sales provided 10.8 percent of federal government receipts over the 1820-1860 period (Carter, 2006). Other governments often failed, in spite of official dispositions, to make effective claims to the frontier until after it had been settled and apportioned by private *de facto* claims. Governments might have chosen to be the first-movers onto the frontier lands, to set up institutions to assign and transfer *de jure* property rights; but often they were not. The assumption in the literature that governments chose to leave land in open access at early stages of settlement often seems to fit the facts, if not the official line about rightful claims to public lands.

But why the divergence between official and effective claims? The discrepancy between official and effective government claims is explained by the cost of enforcement.⁵⁹ A nominal claim costs nothing, but an effective claim that can be sold to a private party requires the government to incur enforcement costs to maintain equivalence between the *de jure* and the *de facto* rights to the land. Our basic model of a revenue-maximizing government shows that enforcement of the public claim depends on the opportunity cost to settlers of acceding to the government claim, i.e., the costs to settlers of squatting beyond the reach of government and providing their own enforcement against claims by other settlers or indigenous peoples.

The contrast in the degree of violence in New South Wales and the province of Buenos Aires introduces a source of exogenous variation in the conditions on the frontier that leads to alternative predictions about the opportunity costs to settlers of acceding to government *de jure* claims on lands beyond the frontier. When the risk of violence was relatively low, or manageable by means of second-party enforcement, the opportunity costs to settlers were low and settlers ventured out to squat in disregard of public claims. The government, finding it too costly to prevent squatting, left the land, in effect, in open access, at least until *de facto* claimants called on it to intervene with *de jure* specification and enforcement, à la Alston, Harris and Mueller. Their research demonstrates how this line of reasoning helps explain transitions from *de facto* to *de jure* land rights in the western United States, Brazil (both the coffee regions of São Paulo and Paraná, and the Amazonian regions), and New South Wales (1998, 1999a,b, 2009). Our analysis of the NSW government's assignment of *de jure* rights to squatters via its 1836 and 1838 acts to regulate squatting is, however, only partly consistent with the demand-driven analysis of Alston, Harris and Mueller. We find evidence that the government's specification and enforcement of *de jure* rights in frontier land may have been associated with the search by the London Colonial Office and the NSW Governor for a revenue stream—such as revenues from land sales, station licenses, quit rents, or leases—to assist migration of English paupers and their families to NSW. Such changes of policy may be induced by

⁵⁹ See Tarui and Roumasset (2010) for a dynamic model of changes in property rights that accounts for “the fixed costs of institutional change and the variable costs of enforcement and governance” associated with different property right regimes.

political demands of constituents (demand side), but may also be induced by upwardly revised estimates of potential revenues (supply side), which, as our model shows, might be caused by rising land values, falling government enforcement costs, or increased frontier violence.

When, however, the risk of violence to settlers was high, or if settlers required third-party protection, the government role not only in enforcing but also in specifying *de jure* property rights was significant even in the early stages of settlement. The province of Buenos Aires, exposed on its southern flank to hostile indigenous tribes with significant military might, is an exception that proves the rule.⁶⁰ When the private costs of squatting were high, the government interest was not so willingly evaded. The apparent inconsistency, then, between the revenue objectives of settlement economy governments and their apparent willingness to give away land or leave it in open access is explained by the cost of enforcement of the public claim and the opportunity costs to settlers of accepting it. Governments chose to give away public land when the value of the expected stream of revenues was exceeded by the cost of appropriating it.

⁶⁰ With respect to the 1836 and 1838 acts reasserting third-party government enforcement in NSW crown lands occupied by squatters, we note that several historians, e.g., Stephen Roberts and Peters Burroughs, have identified the rise in violence from 1835 between Aboriginal groups and squatters as a factor behind Governor Gipps' decision to strengthen enforcement of regulations governing squatter behavior.

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Figure 1

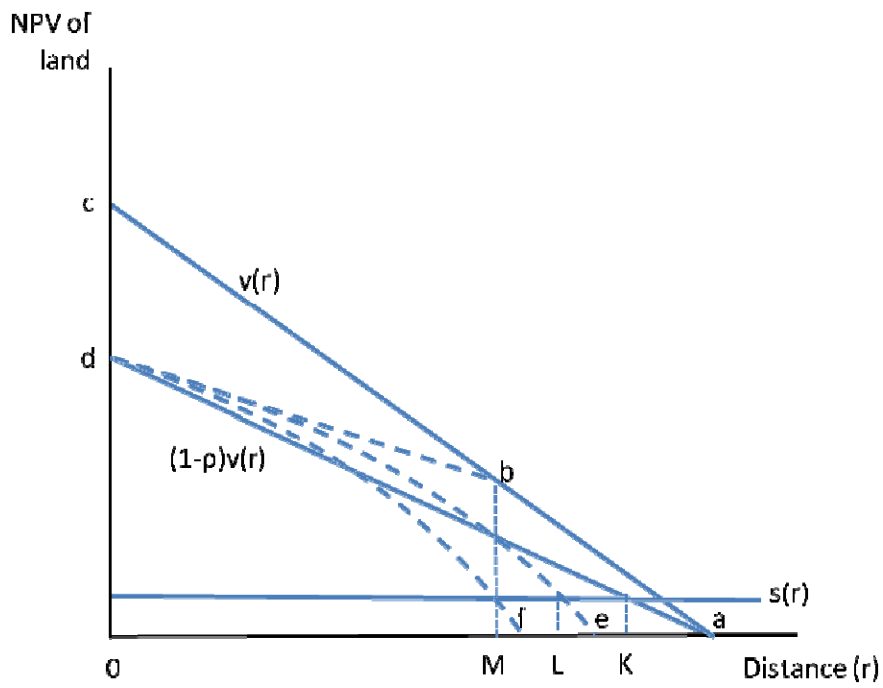


Figure 2

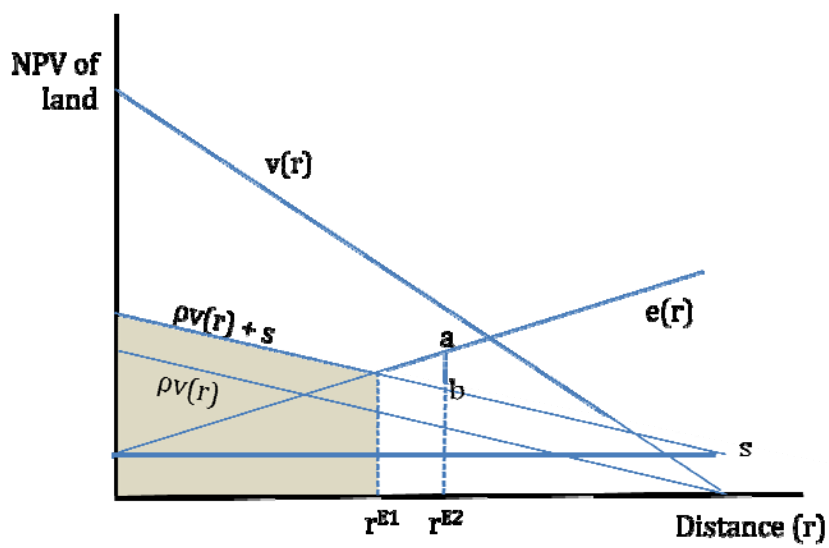


Figure 3

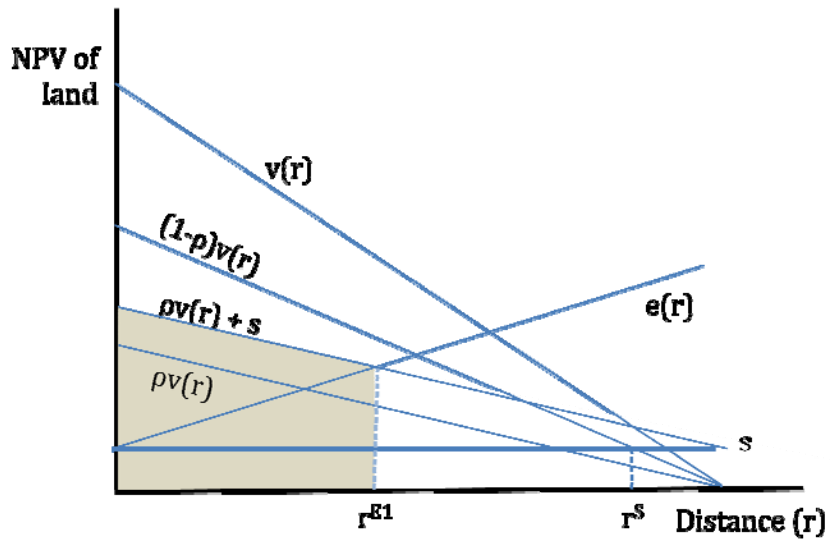
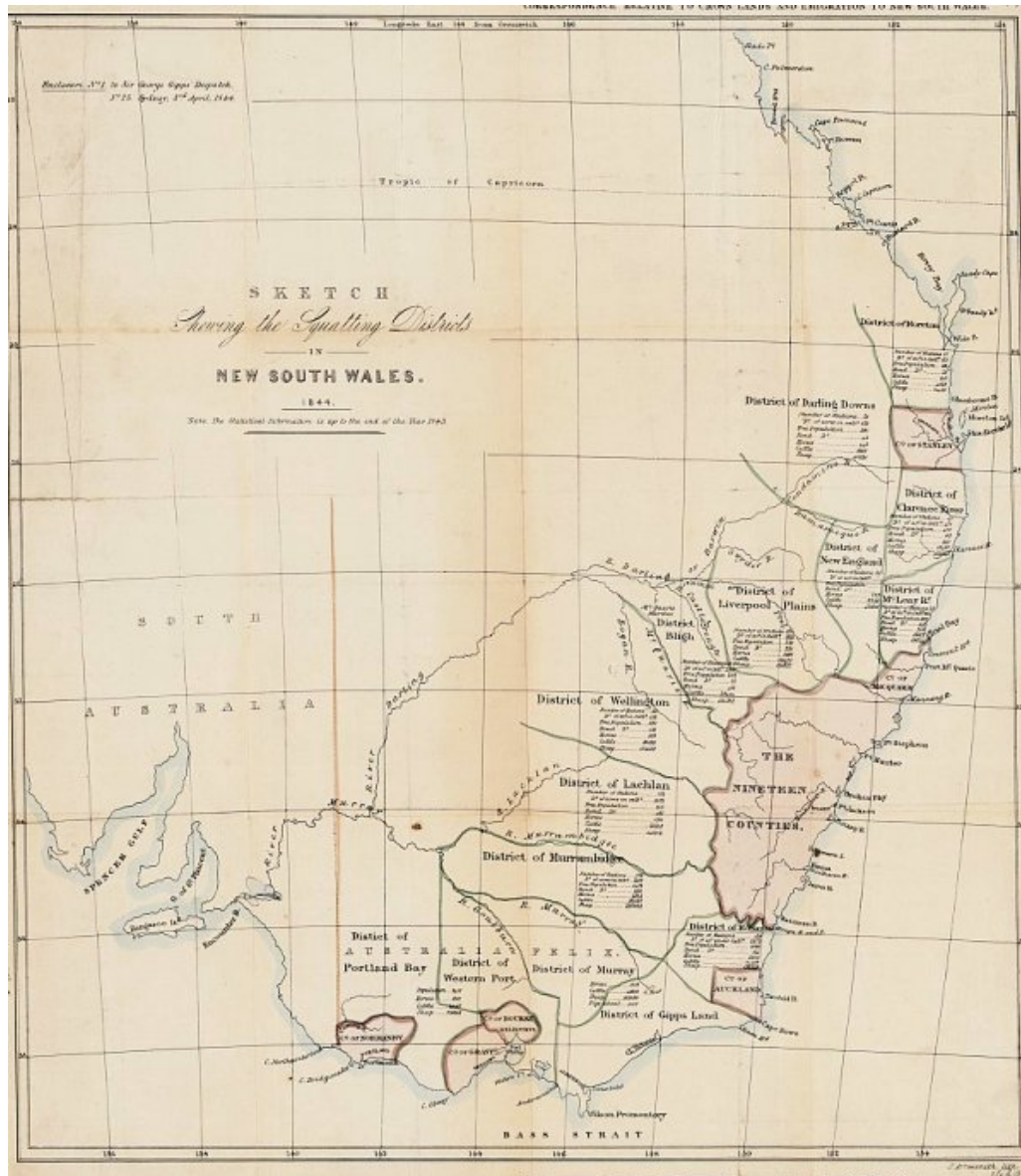
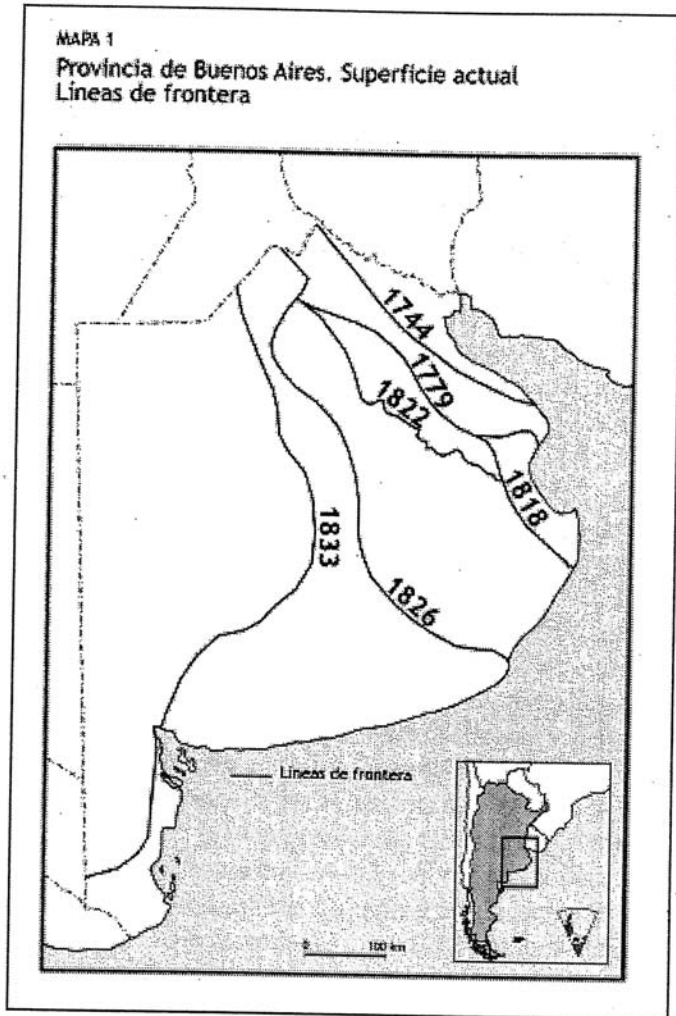


Figure 4. Map of New South Wales, in 1844, showing the Nineteen Counties and surrounding squatters' districts



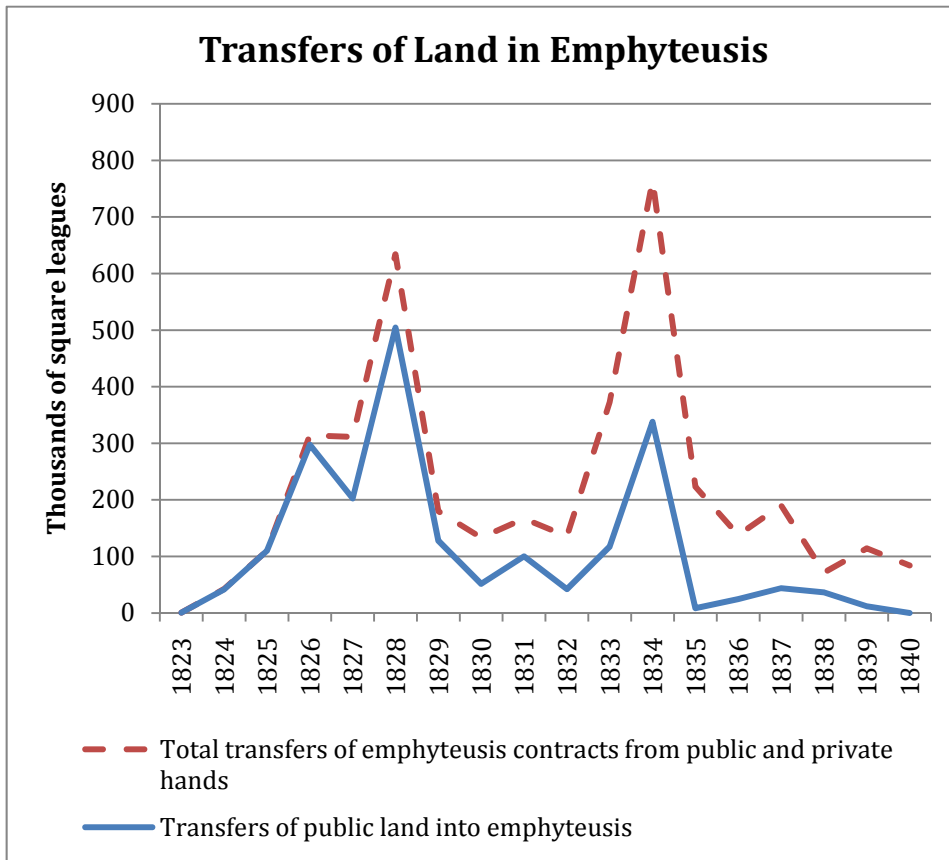
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Figure 5. Map of the Province of Buenos Aires, showing the frontier lines achieved and areas of occupation for various years from 1744 to 1833.



Source: Infesta, p. 16.

Figure 5. Transfers of Land in Emphyteusis, Buenos Aires, 1823-40



Source: Infesta, p. 52; compiled from the Escribanía General de Gobierno de la Provincia de Buenos Aires.

Note. The data in the figure include 83 percent of the transfers of public land into emphyteusis. The date of filing was not available for the remainder of claims records.

Table 3. Fiscal Revenues for the Province of Buenos Aires, 1822-1850

In thousands of Pesos (percent share in parentheses)

	1822	1824	1829	1831	1833	1834	1840	1843	1845	1850
Customs, port and stamp duties	2097 (87.1)	2189 (83.4)	6868 (86.8)	7817 (87.0)	11070 (90.4)	3970 (81.7)	6528 (82.9)	34064 (92.5)	29414 (93.5)	59727 (96.0)
Capital tax (contribucion directa)	23 (1.0)	21 (0.8)	229 (2.9)	360 (4.0)	383 (3.1)	132 (2.7)	996 (12.6)	2201 (6.0)	1439 (4.6)	1942 (3.1)
Saladeros y corrales tax	--	--	--	--	--	--	123 (1.6)	215 (0.6)	138 (0.4)	158 (0.3)
Sales, rentals, interest, etc.	0 (0.0)	275 (10.5)	578 (7.3)	798 (8.9)	660 (5.4)	707 (14.5)	232 (2.9)	358 (1.0)	473 (1.5)	401 (0.6)
Sales of land	0 (0.0)	79 (3.0)	0 (0.0)	141 (1.6)	18 (0.1)	553 (11.4)	--	--	--	--
Interest and rent	0 (0.0)	197 (7.5)	578 (7.3)	658 (7.3)	642 (5.2)	154 (3.2)	--	--	--	--
Other	288 (12.0)	140 (5.3)	240 (3.0)	14 (0.2)	127 (1.0)	49 (1.0)	--	--	--	--
Total	2408	2626	7915	8989	12240	4857	7879	36837	31463	62228

Source: Burgin, pp. 45, 167, 195-97.

Table 4. Transfers of Public Land, Buenos Aires, 1817-1852.

	Square leagues	Millions of acres	Percent of all transfers	Percent of public land transfers
1. Area in emphyteusis, 1823-40	2483	16.6	48.7	75.8
2. Area of land grants, 1817-40				
a. Grants to found frontier settlements, 1817, 1832-52	493	3.3	9.7	15.1
b. Land warrants for service against the Indians, 1834-40	194	1.3	3.8	1.5
c. Land warrants for loyalty, 1839	669	4.5	13.1	5.1
Total grants and boletos issued	1356	9.0	26.6	21.6
3. Area of land sales, 1836-43				
a. Sale of land in emphyteusis	1179	7.9	23.1	
b. Sale of land not in emphyteusis	84	0.6	1.7	2.6
Total sales	1263	8.4	24.8	2.6
Total transfers				
All transfers	5102	34.0	100.0	
Net transfer of land from the public domain into emphyteusis, grant, or sale	3276	21.9		100.0

Source: Infesta, pp. 52, 73-78, 90, 101.

Notes for Table 4: Grants. 2.a. From 1817 to 1852, land grants were awarded under three classes of provisions. The first class were conditional grants that were awarded to achieve the dual purposes of encouraging settlement on the frontier to fortify the line of defense and to compensate veterans for military service. The first grants for settlement were authorized in 1817 and issued from 1819 until the prohibition of the alienation of public land in 1822. Grants in this class obligated recipients to occupy and use the land, and to

maintain arms and assist the local militias in the defense of the settlement against the Indians. In 1829, the lands on the frontier around Arroyo Azul were given a special dispensation, exempted from the prohibition and precluded from emphyteusis, to be offered in conditional small grants of 5000 acres under similar conditions. Grants were issued under this program from 1832 until after 1852. About 300 sq. leagues of grants conditional on settlement were issued between 1819 and 1821, and other 194 from 1832 to 1852, accounting for almost 16 percent of all transfer of public land during the period.

2.b & c. The other two classes of grants were programs established by Rosas to reward supporters. Unlike the former grants with conditions for settlement, these were unconditional grants, awarded by the issue of land warrants (*boletos de premio*) redeemable for land either in the public domain or in emphyteusis. The warrants were negotiable and circulated as currency. The first class of unconditional grants was issued “for service against the Indians,” awarded to soldiers who had fought in the desert campaign of 1833. The second class of unconditional grants was issued “for loyalty,” awarded in 1839 to supporters distinguished for their service in suppressing a mutiny on the old south frontier provoked by Unitarian political opposition.

We estimate that grants of all classes accounted for 22 percent of all public land transfers. Few land warrants, we believe, would have been used to acquire land in the public domain. They were more likely to be used to acquire lands in emphyteusis or confiscated from Unitarians after the mutiny of 1839. First, it is known that most original grantees transferred their warrants to third parties. Whoever chose to redeem were more likely to claim more valuable existing properties (in emphyteusis or confiscated) instead of less valuable frontier land. If 25 percent of warrants were used to claim land on the frontier, land warrants account for 7 percent of total public land transfers, and land grants account for 19 percent. This probably overstates the share of grants in total public land transfers and understates the importance of emphyteusis. Infesta found 22 percent of the warrants issued had been filed with Notary General to claim land. She examines the locations of all claims from warrants and observes that all were well inside the existing frontier line – not one was on or near the existing frontier line. Second, she points out that their absence from the record could mean that a large number of warrants were never redeemed (Infesta, pp. XX).

Sales. 3.a &b. Infesta's figures include public land sales only on lands that were sold between 1836 and 1843. This does not account for sales realized between 1813 and 1822, when sales of land were prohibited, or any sales that may have occurred, exempted from the prohibition. The sales recorded beginning in 1836 are provisions implemented by Rosas trying to retire public debt by convincing or coercing holders of emphyteusis contracts to purchase their land. About half of all land ever in emphyteusis was purchased under these provisions. Some frontier land in the public domain was also purchased, but it amounted to only about 3 percent of total public land transfers over the 1817-52 period.

After 1839 until 1852 there is a large void in the historical record. The record of transfers after 1839 is, therefore, lost; Infesta observes that by this time, most of unclaimed public land (baldías) with the line of defense at that time had been given in emphyteusis or awarded in land grants. It would appear that the record of transfers from the public domain between 1817 and 1852 is fairly complete despite the obscurity of other transfers after 1839. In other words, most unrecorded transfers after 1839 were likely to be sales of land already held in emphyteusis or Unitarian properties that were confiscated or abandoned.