A Policy of Credit Disruption: The Punjab Land Alienation Act of 1900*

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Abstract

If land is titled and transferable, it can be used as collateral against which money can be borrowed. The resulting increase in access to credit is usually expected to foster economic growth. We study a policy in colonial India that made land *less* available as collateral for debt. Using a panel dataset for Punjab districts from 1890 to 1910, we find that this reduced the availability of mortgage-backed credit, but did not hurt proxies for economic development such as acreage and cattle, at least in the short run.

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We cannot draw an indictment against half the people of India; and we may be quite sure whether we can see it or not, that we and our institutions are in the wrong, and not they.

Denzil Ibbetson[1]

1. Introduction

In the late 19th century the British-Indian government (the Raj) became preoccupied with default on debt and the consequent transfer of land in rural India. In many regions Raj officials made the following chain of argument. British rule had created or clarified individual property rights in land, which had for the first time made land available as collateral for debt. Peasants could now borrow up to the full value of their land. The Raj had also replaced informal village-based forms of dispute resolution with a formal legal system operating outside the village, which favored the lender rather than the borrower. Peasants were spendthrift and naïve, and unable to negotiate the new formal courts created by British rule, whereas lenders were predatory and legally savvy.[2] Borrowers were frequently defaulting, and land was rapidly passing from long-standing resident peasants to professional moneylenders who were often either immigrant, of another religion or sometimes both. This would lead to social unrest and threaten British rule. To preserve British rule it was essential that one of the links in the chain be broken, even if this meant abandoning cherished notions of sanctity of property and contract.[3]

The first major legislation motivated by this thinking, the Deccan Agriculturists' Relief Act of 1879 (DARA), was a response to riots in which peasants attacked moneylenders in four districts

[1] Letter to local governments and administrations from Denzil Ibbetson, officiating secretary to the Government of India, October 26, 1895, in India, *Selection of Papers on Agricultural Indebtedness and the Restriction of the Power to Alienate Interests in Land*, vol. 1 (Simla: Government Press, 1898), 450. Ibbetson was quoting another official whom he identifies only as "a former Chief Commissioner of the Central Provinces."
[2] Colonial documents abound with unfavorable characterizations of moneylenders. For example, a former Deputy Commissioner referred to moneylenders as "alien exploiters" who were universally regarded as "odious" (Government of India 1898, Vol. 3, p. 303).
[3] In 1895 the Government of India wrote to the various provinces of British India asking if restrictions on land transfer were warranted. Its accompanying *Note on Land Transfer and Agricultural Indebtedness in India* pointed out that "proposals for the protection of the landed classes from the effects of debt" had been advanced in the North-Western Provinces in 1859 and 1872-73, in Punjab in 1870, in the Deccan in the mid-1870s, by the Famine Commission of 1879-80, by the Chief Commissioner of Central Provinces in 1874 and 1888, and in Burma, Bengal, Ajmer, Coorg, and Madras after 1890 (pp. 1-2). Thus in every major province of India proposals to reduce land transfers were being evaluated.

of the Bombay Deccan in 1875. DARA took aim at the legal system created by the Raj, believing that it left the unsophisticated borrower at the mercy of the lender. DARA favored judicial discretion over rules – the judge's hands were not tied by the written contractual agreement between borrower and lender, and he could order repayment in the amount he considered fair.[4] DARA was regarded as a success in the Bombay Deccan, but officials in the enormous northwestern province of Punjab eventually came to consider a measure like this too feeble, a "placebo".[5] They believed a more robust intervention was required. In 1900 the Punjab Land Alienation Act (PLAA) was passed.[6] PLAA targeted the transferability of land itself. Its primary goal was to prevent professional moneylenders from acquiring the property of traditional landowners.[7] To this end it banned, except under some conditions, permanent transfer of land from an owner belonging to an "agricultural tribe" to a buyer or creditor who was not from an agricultural tribe. Moreover, a lender who was not from an agricultural tribe could no longer seize the land of a defaulting debtor who was from an agricultural tribe.

PLAA has been described as "the greatest single piece of social engineering ever attempted in India.[8] Restrictions on the transferability of land were not entirely new, but they hitherto been enacted mainly in tribal areas which were often geographically and culturally distant from mainstream peasant society. In contrast, PLAA applied to a huge and politically important province. It made direct restrictions on the transfer of land a respectable part of the policy apparatus of the Raj and its influence persists to the present-day.[9] There is a substantial literature on the emergence of the PLAA, which we discuss, but there is no careful econometric work on two basic questions regarding its impact. First, did the PLAA reduce the availability of mortgage-backed credit? Or were borrowers

[4] See Chaudhary and Swamy (2017) for a more detailed discussion of DARA.
[5] *Selection of Papers on Agricultural Indebtedness* (1898), volume 2, p. 2.
[6] Punjab Alienation of Land Act (XIII of 1900).
[7] "Moneylenders" could also be shopkeepers or traders.
[8] See Barrier (1907), p. 355. While this claim may be too strong, PLAA was undoubtedly an important legislation.
[9] To address the problem of suicides by farmers in (Indian) Punjab, Iyer and Arora (2010, p. 284) suggest bringing back legislation similar to PLAA. We briefly discuss PLAA in Pakistan in the conclusion.

and lenders able to use various devices to evade the Act, thereby neutralizing it?[10] Second, if less credit was available, what were the effects on agricultural outcomes and hence productivity? We use panel data methods to address these questions, for the first time, so far as we know.

In addition to its contribution to research on South Asian history, our work provides evidence regarding an unusual policy experiment that is relevant to a hypothesis of broad interest. The Peruvian economist Hernando de Soto has argued that while poor people are entrepreneurial, they lack capital. Though they have assets, they do not have titles to them. Given titles they can borrow against these assets and become more productive. Informed by this hypothesis, many studies estimate the effects of titling on credit and other outcomes, but they usually pertain to making assets more usable as collateral.[11] PLAA went in the opposite direction – it reduced the "collateralizability" of land. Using de Soto's logic it should have made capital less available, reducing productivity. We investigate whether it did.

Our study of PLAA also contributes to the literature on the origins of developing-country legal systems.[12] As we will describe, the Raj first decided it would not import English law pertaining to property and contract into Punjab. Due to administrative exigencies however, English law did become influential over time. PLAA was a bold effort by the Raj itself to turn the clock back, to repudiate the importation.

To identify the effects of PLAA, we assembled a panel dataset on 25 districts in Punjab from 1890 to 1910. Our dataset contains information on mortgages and sales of land, as well as economic outcomes, such as acreage and ownership of cattle, and other relevant variables like rainfall and population. Because the PLAA targeted professional moneylenders, it should have reduced

[10] We discuss various ways of evading the Act in section 4, including falsification of caste (Cassan 2015).
[11] For theoretical discussion of the value of "collateralizability" of land see, for instance, Besley (1995). While papers such as Field (2007) find large positive effects of titling on labor supply in urban Peru, others show that titling of land is not a magic bullet and increases access to credit only when certain conditions are met. For instance, it should be possible for the lender to foreclose at moderate cost. Titling may not increase access to credit if low-income borrowers are unwilling to part with their most precious asset, land. For surveys of this literature see Deininger (2003) and Sanjak (2012).
[12] La Porta et al. (2008).

mortgage-backed credit more in places where they were bigger players in the credit market. Hence, we interact a measure of the importance of the professional, i.e., non-agricultural, moneylenders in the mortgage market with an indicator variable for the introduction of the PLAA, which takes the value 1 from 1900 onward. We find, as expected, that PLAA contracted credit more in places where professional moneylenders played a larger role— compared to a district with no professional moneylenders PLAA reduced mortgage-backed credit by 48 percentage points more at the 25th percentile of our measure of moneylender-importance and by 61 percentage points more at the 75th percentile.

However, this greater contraction of mortgage-backed credit in professional moneylender-dominated areas did not lead to lower acreage or less ownership of cattle. In short, PLAA affected credit markets as we might expect without undermining agricultural productivity. Because we have panel data, we are able to account for potential confounding factors such as time-invariant unobserved differences across districts (using district fixed effects), common district-specific shocks (using year effects) and the possibility that districts were trending differently independent of PLAA (using district-specific time trends). Such fixed effects and trends likely control for most omitted factors correlated with the interaction of the PLAA indicator variable and our measure of the importance of professional moneylenders.

That said, our econometric approach has one potential limitation. To the extent that PLAA had a common effect across Punjab districts, this is absorbed by the year fixed effects, and we cannot identify it. Suppose, for instance, PLAA made all lenders (non-agriculturist) or not, reluctant to lend, because the government was viewed as hostile to land transfer. The year effects would pick up this effect. We should note that as a substantive matter, we do not believe that PLAA discouraged all lenders (see below, section 4).

How do we account for non-responsiveness of real outcomes to a mortgage-backed credit contraction? In principle, one possibility is that mortgages did not really decline – they were merely disguised as sales. For instance, a 100-rupee loan at a 10% rate of interest could have been disguised as a sale of land for 100 rupees, followed by a repurchase for 110 rupees. This is not likely in our context, because the PLAA applied to all "permanent alienations", including sales. Moreover, we show that PLAA also reduced sales more in places where professional moneylenders were more active. British officials provided the following explanation for the non-impact of PLAA on agricultural production: lenders had merely become more judicious – they were still willing to lend for productive activity, but not for "extravagant" expenditures, such as social ceremonies. A more general explanation is that though credit was a potential constraint on development, it may not have been the binding constraint at the time. In a related paper, Chaudhary and Swamy (2017) studying the impact of DARA find similar results: DARA reduced the availability of mortgage-backed credit, but had no discernible impact on acreage and cattle ownership. In a similar vein, Cole (2009) finds the expansion of credit did not increase agricultural output in independent India.

The remainder of this paper is organized as follows. The next describes the origins of the PLAA. Section 3 describes the Act itself. We then discuss the qualitative evidence on how the Act affected credit and agricultural production in Section 4. We describe the data and our econometric analysis in Sections 5 and 6. The final section summarizes and concludes.

2. Leading up to the Punjab Alienation of Land Act, 1900

In the mid-19th century, at the point of British conquest of Punjab (1849), land was relatively abundant here. It was not of great value and not widely used as collateral. It was transferable, but members of the village community had the right of first refusal (pre-emption) and "strangers were jealously excluded."[13] Caste and village councils (Panchayats) played an important role in village governance, including adjudicating disputes. In regions that the British conquered early (such as Bengal and Bombay) they had welcomed the possibility that their rule might lead to socio-economic change, in particular that land might change hands from one social group to another. They considered this part of the healthy functioning of a market economy. This thinking had changed by 1849. Punjab was to be governed differently.

[13] From the *Punjab Administrative Report 1849-51*, quoted by Barrier (1966), p. 2.

The change in thinking occurred because, earlier in the 19^{th} century, peasants and tribes in various parts of India had, sometimes violently, protested exploitation by landlords and moneylenders.[14] British officials in Punjab also brought to bear their experience in the Northwestern Provinces, adjacent to eastern Punjab, and also in parts of Punjab that had been annexed earlier than 1849. They had come to the conclusion that the fundamental social unit of rural Punjab was the brotherhood of landowners in the village. Political and social stability required that this brotherhood be preserved. Therefore, they decided that Punjab would be governed not by rigid application of English property and contract law, but rather a paternalistic administration that would honor "custom."[15] Justice was dispensed by district officers that were given considerable discretion to exercise "common sense."[16] The right of pre-emption was recognized -- land could be transferred (for sale or for satisfaction of debt) to an outsider only if a suitable buyer could not be found within the landowning brotherhood.[17] Land taxes were the joint responsibility of the village landowners.

Despite these efforts to govern Punjab differently, it was not insulated from broader processes common to British India. Though land taxes were in principle a joint responsibility of the village landowners, they became de facto private obligations, as individuals received titles to specific plots with assigned taxes. The Raj collected land taxes in cash, whereas the last pre-colonial regime (the Sikhs) had mostly taken produce. This pushed the peasant into market transactions. The Raj was also less likely to forgive land taxes in bad times, which pushed peasants into debt. Railroads were constructed, and produce could now be sold far from the village. This further facilitated involvement in markets, with the accompanying benefits and risks. The Raj constructed canals, expanding cultivated area. Population increased. Land prices went up, and it became an attractive form of collateral for lenders.

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[14] One example was the Kol rebellion in Chota Nagpur in 1831-32. At one point in the conflict, the rebel army consisted of 3000 men.
[15] The administration would be *ma-baap*, meaning mother-and-father.
[16] Barrier (1966, p. 4) quoting the memoir of a British official.
[17] See Roy and Swamy (2016), p. 67.

Even the legal system in Punjab slowly became more formal, like that of the other British provinces. A Code of Civil Procedure, passed for the rest of British India in 1859, was extended with some modifications to the Punjab in 1866. A Chief Court was set up in Lahore (the capital) in 1866 and lawyers were now permitted in court. In 1875 the task of dispensing justice was taken away from the executive branch of government at the district level. Cases were often adjudicated by lower-level judicial officers (*munsifs*), often urban Indians without any particular sympathy for the Punjab peasant. The application of law now became more rule-bound, with less room for "equity and good conscience".[18] Lenders preferred this system to the village-level panchayats: as shown in table 1 the number and proportion of court cases to recover money due increased rapidly.

In this setting it was inevitable that some land would pass out of the village community to professional moneylenders, especially because in many regions rainfall was low and variable, leading to fluctuation in output. This became a worry for the Raj, especially after the Mutiny of 1857. Punjab had remained loyal to the Raj during the Mutiny and many officials believed this was because of the paternalistic and flexible form of governance, which had protected the peasantry. Moreover, the Indian army was highly dependent on Punjabi soldiers of peasant origin and the Raj wanted their loyalty. Also, Punjab was a border region, and there was always the threat from Russia. Finally, in western Punjab Muslim peasants were in debt mostly to Hindu lenders—this could add to existing religious tensions on issues like cow protection. All these factors led some officials to raise the alarm.

In the early 1870's, Justice Melville, a Chief Court judge, called upon the government to re-examine regulations regarding debt litigation, suggesting that a dispossessed peasant becomes "a disaffected and disloyal subject".[19] He suggested several measures including: "No transfer of land

[18] This was the rule-of-thumb for exercising discretion. Thorburn 1886, p. 75.
[19] Quoted by Barrier 1965, p. 147.

shall be permitted in payment of debt to a creditor."[20] Another officer, C.S. Steedman based in the district of Jhang wrote:

> The thrifty and unembarrassed [by debt] zemindars [landowners] of this district can be counted on one's fingers. So long as a zemindari has credit, so long will he borrow, and so long as he borrows shall we find our annual returns of land-transfers slowly, but surely and steadily, increasing.

Steedman blamed this on "the misplaced gift of full transferable property right in land to the cultivator."[21]

In 1886, S.S. Thorburn, an official with considerable experience in western Punjab, where borrowers tended to be Muslim and lenders Hindu, wrote a sensationalist book titled *Musalmans and Moneylenders*. His central hypothesis was as follows.

> The Punjab is an agricultural province, and land of peasant proprietors, a large and annually increasing proportion of whom are sinking into the position of serfs to the money-lenders. The gradual transfer of ownership of the soil from its natural lords – the cultivators – to astute but uninfluential Hindu traders and bankers, is directly due to a system of law and administration created by ourselves, which, unless remedied in time, must eventually imperil the stability of our hold on the country.[22]

As a solution he wrote: "I would make it illegal for any person deriving profits from a shop or from money-lending, to acquire any interest in pasture or arable land…"

Other officials opposed the position taken by Melville, Steedman, and Thorburn. Melville's suggestion restricting land transfer was opposed by Lieutenant-Governor Davies on the grounds that it would "disturb natural economic relations" and "destroy the habits of self-reliance and industry." His successor, R.E. Egerton was equally sanguine, believing that land transfers were "wholesome and necessary." [23]

The available evidence (see table 2) is ambiguous regarding whether land transfer to professional moneylenders was occurring on a massive scale. For instance, in the period 1879-1883, just before the publication of Thorburn's alarmist book, 1.2% of the total area was mortgaged to

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[20] Quoted by Banerjee (1982), p.98, footnote 37.
[21] Thorburn 1886, p. 159.
[22] Thorburn also deployed anti-Semitic stereotypes, arguing that "Shylock was a gentleman by the side of Nand Lal Bunniah [bania]." (p.37).
[23] Quoted by Barrier 1965, p. 147-148.

"nonagriculturists" and "new agriculturists." This is not a huge figure, but if it was sustained and a large fraction of mortgages led to foreclosure, it could have led to significant changes in the pattern of land ownership. The figures are imprecise, because of the ambiguities in the categories of "agriculturist" and "non-agriculturist." However in some specific regions of Punjab (see table 3), professional moneylenders were clearly acquiring a significant fraction of the land. In Gujranwala *tehsil* of Gujranwala district 14% of cultivated area was sold between 1868 and 1891, 60% of which was to non-agriculturists.[24]

Table 4 suggests that the importance of non-agriculturist lenders was large, but was decreasing even prior to the passing of the Act. This suggests PLAA was addressing a "problem" that was becoming less significant over time. However, our sense is that the Raj was interested in more than Punjab-wide trends. Even if a large amount of land was transferred from traditional landowners to professional moneylenders in only a few areas, and this led to only localized protest or discontent, this was not a risk the Raj was willing to take.

The debate regarding land transfer was never decisively settled within Punjab officialdom.[25] However, the Government of India, in the person of the formidable Viceroy, Lord Curzon, finally came down in favor of restrictions on land transfer. The Punjab Alienation of Land Act was passed in 1900, to become operational in June 1901.

3. The Punjab Land Alienation Act

As we have described, the purpose of PLAA was to preserve status quo with respect to landownership. In particular, the intent was to prevent transfer of land from traditional landowners to professional moneylenders, after they defaulted on debt repayment. Therefore, it identified a set of social groups as "agricultural tribes" and constrained the terms in which they could mortgage their land to someone who was not from an agricultural tribe. The reader should note that, in the context of colonial Punjab, the word tribe often effectively meant caste.

[24] A district consists of several tehsils.
[25] The discussion among officials has been described in detail by van den Dungen (1972).

Only three types of mortgages were permitted. In the first, the lender would take possession of the land and use it (usufructuary mortgage) for a maximum of 20 years. After that, the land would go back to the borrower and the loan would be extinguished. In the second kind, the borrower retained the right to occupy the land but he had to pay rent to the lender. This rent could be no more than twice the land tax, plus other dues owed to the government. A conventional mortgage, in which the land was used as collateral and remained in the possession of the debtor was also allowed, but if the borrower defaulted, the lender could not seize the collateral – he could only apply to the Deputy Commissioner, who would convert the agreement into a usufructuary mortgage for a term not exceeding twenty years.[26] The PLAA also banned, whether or not a member of an agricultural tribe was involved, the "conditional sale", in which the mortgaged land would automatically go to the lender if the borrower had not repaid by a specified date. Thus, whatever the form of the mortgage, the non-agriculturist lender could not get permanent possession of the agriculturist borrower's land.

As we have described earlier, for the law to have its intended effect, it also needed to ban sales from a member of an agricultural tribe to someone who was not a member. In the absence of such a ban it would have been easy to evade the restrictions on mortgages. Therefore, PLAA banned all "permanent alienation" from members of agricultural tribes to non-members, with some exceptions such as a gift to a religious institution or for charitable purpose.[27]

Did PLAA contract mortgage-backed credit and thereby reduce agricultural production? We now turn to qualitative evidence on these questions.

4. The Impact of PLAA on Credit and Agricultural Production: Qualitative Evidence

The consensus among British officials was that PLAA discouraged lending by professional moneylenders. According to an official report from 1903, there was "no doubt" that the Act had

[26] Douie (1931).
[27] Singh (1901), p. 14.

"contracted the credit of zemindars" except in some rich districts.[28] A judge in Ambala, a South-eastern district in present-day Haryana commented: "Every year brings it home more forcibly to the money-lender that he must seek new investment for his capital, and in this district there appears to be some advance towards industrial enterprise on the part of the capitalists."[29] Modern scholars like Norman Barrier have argued that the Government of India's objective of "checking of land transfer outside the agricultural community" was "instantly fulfilled."[30] Still, we cannot be certain that mortgage-backed credit declined in places where professional moneylenders were active, because, (a) the Act may have been evaded; and (b) if the professional moneylenders withdrew, other lenders may have stepped in. We discuss four possibilities, below.

First, a professional moneylender could pretend to belong to an agricultural caste. Cassan (2015) has shown, using census data, that after PLAA was passed, the population of self-reported agricultural castes began to grow faster. He estimates that as many as 7.5% of non-agricultural caste persons pretended to be from agricultural castes. To the extent professional moneylenders adopted this strategy, they could have continued to lend as before.

Second, it is possible that after the PLAA was passed richer members of agricultural castes started to lend more. The evidence in Table 4 is consistent with this claim, though the increase in the proportion of mortgage lending by agriculturists after 1900 is small. Moreover, given Cassan's findings, we must be particularly skeptical of the accuracy of the distinction between agriculturist and non-agriculturist lenders after 1900.

Third, it was possible for a lender from a non-agricultural caste to lend with the help of an associate who was a member of an agricultural caste. The latter would, only on paper, be the lender and mortgagee. Such transactions in another person's name, known as *benami,* were and are common in India and the government is still trying to stamp them out. Islam (1995) has argued that the professional moneylenders used *benami* extensively, allowing them to remain active in the

[28] *Annual Report on the Working of the Punjab Alienation of Land Act* for *the year ending 1902,* p. 14.
[29] Punjab, *Report on Civil Justice*, 1909, p. 2.
[30] Barrier (1965, p. 191).

mortgage market. Again, to the extent this argument applies, the figures in table 4 are misleading, because some of the mortgages reported as due to agriculturists were really from non-agriculturists.

A fourth response involved the use of the right of pre-emption. We have seen earlier that when a piece of land was transferred in a village, other landowners in the village had the right of first refusal. One way for a professional moneylender, who already owned some land in a village to acquire more, was to persuade a member of an agricultural caste to try to transfer the land to someone outside the village. The professional moneylender could then pre-empt.[31] The Punjab Pre-Emption Act was amended in 1905 to eliminate this possibility.

Given extensive efforts to evade the PLAA, as well as the potential for substitution of professional moneylenders by rich peasant moneylenders, its impact on mortgage-backed credit remains an open question. How did PLAA affect agricultural production? British officials were sanguine, believing that credit had contracted, but this had merely curbed peasant extravagance – credit was still available to support agricultural production. The official view, reiterated repeatedly, was laid out in the *Annual Report on the Working of the Alienation of Land Act, 1903*.[32]

> The general conclusions arrived at as to the working of the Act… agree with the Lieutenant-Governor's own enquiries during his tours of the province. Sir Charles Rivaz thinks that it may be safely asserted that the Act has achieved its main objective of placing material checks on alienation of land without unduly impairing agricultural credit….while it has had a highly beneficial effect in the direction of curbing the natural proneness of the Punjabi zamindar to habits of profuse extravagance.

We turn next to using district-level credit and economic data to evaluate the effects of PLAA.

5. Data and Estimation Strategy

5.1 Data

To estimate the effects of PLAA, we construct a panel dataset of colonial Punjab districts using multiple sources from 1890 to 1910.[33] Our dataset follows a panel of 25 districts for 21 years covering ten years before PLAA and eleven years after PLAA. Although PLAA was officially

[31] *Annual Report*, 1902, p. 14.
[32] *Annual Report* 1903 (published 1904), p. 3.
[33] 1890 = 1890/91.

implemented in 1901, we turn on our indicator for the law in 1900 when it was passed. That said, our results are similar if we use 1901 as the start-date. Colonial Punjab in this period undergoes a few boundary changes. First, a new province, the North-West Frontier Province (NWFP), was created in 1901. We focus on Punjab proper where PLAA was passed in 1900. Second, we construct two super districts with consistent boundaries in our period. The first is Jhang, which includes the district of Lyallpur carved out of Jhang in 1904. The second is an aggregation of Attock, Jhelum and Rawalpindi because Attock was carved from parts of Jhelum and Rawalpindi. We exclude the Punjab district of Mianwali because Bannu district was carved from Mianwali and included with NWFP after 1901.

Using the annual *Notes on the Registration Returns of the Punjab,* we construct the number and aggregate value of mortgages and sales over Rs. 100 for each district. For these transactions registration was compulsory. We do not use figures for transactions worth less then Rs. 100, because registration of these was optional. The series over Rs.100 is consistent and numerically dominant.. Mortgages over Rs. 100 represent 81% of the total number of mortgages across districts and 96% of the aggregate value of mortgages across districts. To measure economic outcomes, we use the annual *Agricultural Statistics of British India* series on total cropped acreage, cattle, ploughs, and carts for each district. Unlike the acreage data, the livestock, ploughs and carts series are only reported for 1896, 1897, 1898, 1903 and 1908.

Our control variables include the share of professional moneylenders, total rainfall and population. We rely on figures in the Registration Report for 1899-1900 to construct a measure of the importance of professional moneylenders, i.e., the share of non-agricultural moneylenders in mortgage and sale transactions in each district in 1899 just before the law is passed.[34] Since PLAA would likely affect the proportion of non-agricultural moneylenders after its passage, we construct

[34] Let A = Number of mortgages and sales of agricultural land from "old" to "new" agriculturists; B = Number of mortgages and sales of land from "old" agriculturists to "old" agriculturists. Our measure of the importance of the professional moneylender is: $\frac{A}{(A+B)}$.

this variable in the year before PLAA.

We use the Punjab Land Revenue reports to collect information on total rainfall from1890 to 1899. And, we use the Season and Crop reports for rainfall data in the 1900s. For two years, 1900 and 1910, our data are from Rainfall of India, an annual publication of the Meteorological Department of the Government of India. In the regressions, we average rainfall in years *t*, and *t-1* because rainfall affects sowing that often occurs early in the agricultural season.

To measure annual population we use the *Sanitary Reports* and census data. We begin with the 1891 census population in each district. Then, we add annual births and subtract annual deaths from the *Sanitary Reports* to arrive at annual population from 1891 to 1910. Some scholars have noted the general problem of under-enumeration in the *Sanitary Reports*. Despite this shortcoming, we believe population counts constructed from the *Sanitary Reports* are better than using an interpolated census series because we only have three census years (1891, 1901, and 1911).

Table 5 presents the summary statistics. On average, there are 1680 mortgages across districts compared to 933 sales. But, the difference in aggregate value of mortgages is smaller. The aggregate value of mortgages average 870,000 rupees compared to 648,000 rupees for sales. Total cropped acreage averages just over 2 million acres with large differences across districts. We also observe large differences in the case of cattle, ploughs and carts across Punjab districts. Total rainfall averages 29 inches per year, ranging from a low of 3 to a high of 179 inches. In 1899, professional moneylenders i.e., non-agricultural moneylenders account for an average of 54% of mortgage and sale transactions (see note 35) with substantial variation across districts, ranging from 36% to 74%. It is likely this proportion declined after the PLAA.

Figures 1 and 2 plot the average number and aggregate value of mortgages and sales over Rs. 100 from 1890 to 1910. There are steep declines in the number and aggregate value of mortgages following the passage of PLAA. While the value of mortgages recovers over time, the number of mortgages remains below their pre-1900 levels for the entire decade. Such patterns are especially striking because the 1900s was a period of growth for the Indian economy, especially in Punjab on account of more irrigation and the settling of the Canal Colonies (which we discuss below). Indeed, the summary picture likely underestimates the decline in mortgage credit caused by PLAA. Sales also decline but the aggregate value of sales increases after an initial decline immediately after the PLAA. To control for the effects of a growing economy, we turn next to the formal econometric analysis that allows us to control for temporal factors.

4.2 Empirical Strategy

To identify the effects of PLAA, we estimate the following model:

$$Y_{it} = \alpha_i + \delta_t + \beta PLAA_t * PropProfML_i + \lambda_i * Trend + \psi X_{it} + \varepsilon_{it}$$

Y_{it} is an outcome in district i in year t. $PLAA_t$ is an indicator, which turns to one when PLAA is passed in 1900 (and remains one thereafter) and is zero otherwise. $PropProfML_i$ is the proportion of land mortgage and sale transactions in which the mortgagee or buyer is a professional moneylender in a district as of 1899, just before the passage of PLAA. Since PLAA is passed in all districts of colonial Punjab, we cannot include the PLAA indicator variable along with year fixed effects.[35] Using the interaction term allows us to use year fixed effects and still identify the heterogeneous effects of PLAA. Districts in which professional moneylenders had a larger role should have experienced a greater decline in credit following PLAA. This is akin to a difference-in-difference estimation as we are comparing districts with more professional moneylenders to those with fewer professional moneylenders before and after the passage of PLAA.

The district fixed effects, α_i, control for unobservable time-invariant characteristics of districts and year fixed effects, δ_t, control for temporal changes, such as an improving macro-economy, that influence all districts in the same manner. In addition, we include district time trends to control for district-specific changes over time due to factors we cannot observe. In regressions where we have data for a smaller number of years such as for cattle and implements, we do not

[35] This would lead to perfect multicollinearity.

include the trends. The vector, X_{it}, includes as controls average rainfall, its square, population and its square. To address concerns regarding serial correlation, we cluster the standard errors at the district-level.

Most laws are passed with a few years or months of preceding discussion, which can affect outcomes even before formal legislation.. To assess the role of such dynamics, we present dynamic results including indicators for the 3-year window before PLAA, a 3-year window immediately after PLAA was passed and a long run window for years 4 and beyond. For example, if the law is passed in year 0, these indicators correspond to pre-PLAA (year -3, -2 and -1), short-run PLAA (year 0, 1 and 2), and long-run (year 3+).

6. Results

We begin with simple before and after regressions showing the effect of PLAA on mortgage credit and sales in Table 6. Here we include district fixed effects, a district-specific trend and the average rainfall and population controls. In specifications (1) and (2), the PLAA coefficient is large, negative and significant for both the number and aggregate value of mortgages. PLAA reduces the number of mortgages by 59% (exp(-0.902) – 1) and the aggregate value of mortgages by 60%. These are substantial effects. We observe declines in sales in specifications (3) and (4), but they are smaller in magnitudes. The number of sales declines by 19% and their aggregate value by 21%. Some British officials worried about PLAA leading to more loans disguised as sales. But these findings suggest if anything sales also declined (compared to trend) after PLAA.

In specifications (5) through (8), we study the dynamics of PLAA. Controlling for anticipation effects of the law does not change the picture. PLAA has a significant short-run effect of 59% and a long-run effect of 65% on the number of mortgages with larger effects on the value of mortgages. Similar to specifications (3) and (4), the decline in sales after PLAA are smaller. Overall, the coefficients on pre-PLAA are small and insignificant compared to the coefficients on post-PLAA.

Including district-specific trends controls for linear temporal changes in table 6, but it does not account for common year-specific shocks. So in table 7 we turn to our preferred specification, which tests for heterogeneous effects of PLAA in districts with more or less active professional moneylenders, while including district fixed effects, year fixed effects, and district-specific time trends. We focus on the interaction between PLAA and our measure of the role of professional, i.e., non-agricultural, moneylenders in specifications (1) to (4). We then explore the dynamic effects including interactions of non-agricultural moneylenders with pre-PLAA, short-run and long-run PLAA indicators in specifications (5) to (8).

We find significant differential declines in mortgage credit. At the 25th percentile of our professional moneylenders' importance measure (46%), the number of mortgages declines by 46 percentage points more than a district where there are no professional moneylenders. The corresponding figure at the 75th percentile of moneylender importance (61%) is 56 percentage points. Thus, moving from the 25th to the 75th percentile of professional moneylenders' share reduces mortgage credit by 10 percentage points. We find similar effects for the aggregate value of mortgages in specification (2). Unlike mortgages, we find small and insignificant coefficients on the interaction term for sales. We find similar results on the dynamics in specifications (5) to (8). Coefficients on the post-PLAA and proportion non-agricultural moneylender interactions are large, negative and significant compared to those on the pre-PLAA and proportion non-agricultural moneylender interactions for mortgage credit. And, we find no significant differential declines in sales after PLAA.[36]

It is possible that PLAA played out somewhat differently in Punjab's famous Canal Colonies. In the South-Western Punjab, only the river valleys were cultivated. Between the rivers there were uplands (*bar*), which were sparsely populated with largely nomadic population.

[36] In an additional robustness check, we interacted the PLAA dummy with the rural population share. Since the Act applied to transactions between agricultural and non-agricultural tribes, we would expect to observe more negative effects of PLAA in more rural districts. And, this is what we find with larger magnitudes for mortgages than sales. These results are available upon request.

Beginning in 1886, the Raj constructed a series of canals, bringing 2.5 million acres of *bar* under cultivation by 1914.[37] Settlers were brought in from densely populated areas such as central Punjab. Because of the special circumstances the Canal Colonies had an "anomalous place in the Punjab administrative structure".[38] The Colonization Officer had enormous power. Also, in the Lower Chenab Colony (1893), the largest of them all, a category of grantees known as "peasants" only received a tenancy right, not a transferable ownership right, precisely to avoid the problem of land loss to moneylenders.[39] So we need to check whether excluding the Canal Colonies changes our results.[40]

Table 8 estimates the same specifications as in Table 7, but excludes the canal colony districts. Similar to Table 7, we find large differential declines in mortgage credit and no significant differential declines in sales. Canal colonies are not driving the effects we observe on PLAA. If anything, the coefficients are very similar. Moving from the 25th percentile of the professional moneylenders' distribution to the 75th percentile, PLAA reduces the number of mortgages by 9.9 percentage points more.

We turn to agricultural outcomes in table 9. Here, we find no significant coefficients on the interaction term for most outcomes—acreage, cattle, cattle per acre and ploughs. If anything, we find a positive effect of PLAA on carts. However, it is marginally significant at the 10 percent level. For the other outcomes, the coefficient on PLAA and the interaction term are positive and insignificant. Thus, although we find large and negative effects of PLAA on mortgage-backed credit in districts with more professional moneylenders, we find no corresponding negative effects on real outcomes.

Our results show that mortgage credit declined substantially more in areas where professional moneylenders were a relatively large part of the mortgage market. Is it possible that our

[37] Douie 1914, p. 612.
[38] Barrier (1967), p. 359.
[39] The other two categories of land recipients, who got more land, were known as yeomen and capitalists.
[40] Ibid, p. 616.

results are misleading, and driven by the fact that mortgages were disguised as other types of transactions? We have ruled out loans disguised as sales, but another way to disguise the mortgage was as a land lease – the "tenant" was the lender and his "rent" was the loan. The PLAA tried to discourage this by allowing a lease for a maximum of 20 years if the landlord was a member of an agricultural tribe and the tenant was not.[41] A land transfer could also be passed off as a gift for charity or to a religious institution. Official reports commented on these subterfuges, but noted the small number of gifts and leases, and the absence of any significant increase in their number after PLAA was passed. They concluded that leases and gifts were not significantly affecting the operation of PLAA.

Table 10 provides support for this view. Between1899-1900, the last full fiscal year before the Act came into being, and the 1901-02, the first full fiscal year when the Act was in place, the number of mortgages of immoveable property fell from 53,754 to 23, 276 and sales from 29,552 to 19,098. The number of gifts barely changed, from 1,069 to 1,011, and the number of leases fell from 1,869 to 1,367. Subsequent figures are for calendar years. By 1910 gifts only increased to 1,220 and leases to 2,114. Meanwhile mortgages recovered to 39,934 and sales to 25, 5011.

A potential reason why the contraction of mortgage-backed credit did not affect production outcomes is that mortgages were a small fraction of the aggregate credit market. However, the available evidence does not support this hypothesis. In 1918-19, Malcolm Darling, a British administrator who authored a famous book on colonial Punjab, commissioned a survey of borrowing by 55,308 members of cooperative societies in Punjab. Darling provided figures for "net mortgage debt". This differed from gross mortgage debt in that if a person was both mortgager and mortgagee, the difference between the amounts involved in the former and the latter would be the net mortgage. Darling estimated that net mortgage debt was 40% of total debt. It was relatively high in Jullundur and Hoshiarpur (more than 60%), 37% in the northern districts of Rawalpindi, Jhelum, and Attock, and below 30% in the Southern districts of Rohtak, Karnal, and Hissar. These figures

[41] Singh 1901 p. 33.

are for a slightly later time period than our study, but since PLAA *reduced* mortgages we are confident that they were an important fraction of the total credit market during 1890-1910.[42]

This leaves us with the explanation offered by British officials: the primary impact of PLAA was to reduce expenditures on social ceremonies, hence there was no impact on production outcomes. For this conjecture to be plausible, there should be evidence of substantial expenditure on social ceremonies. In 1895 the Punjab government commissioned S.S. Thorburn, whose concerns regarding land alienation we have already discussed, to conduct a household survey of peasant indebtedness and land alienation in Rawalpindi division. His mandate was to pick areas where peasants were most indebted to non-agriculturists and had lost the most land. He picked 12 villages, three each in four "circles" (administrative units used land revenue assignment). Two of the circles were in Shahpur district and the other two in Sialkot and Gujranwala. He surveyed 742 households in detail. The percentage of debt due to expenditures on marriages and funerals in the four circles was 8, 8, 12 and 9. By way of comparison, the percentages of debt for the purchase of cattle were 10, 12, 15, and 8. Thus marriage and funeral expenses were substantial. The argument that productive expenditures were maintained by reducing these expenses is at least plausible.[43]

7. Conclusion

While much of the literature on India and other developing countries has focused on (lack of) access to credit as a constraint on development, another point of view has emphasized the need for appropriate allocation of capital. Anjini Kochar (2011) has shown that subsidized credit provided by the Government of India in 1980s, which was poorly allocated, had little impact on poverty. Also, as mentioned earlier, Cole (2009) found no evidence that subsidized agricultural credit had raised productivity, and Chaudhary and Swamy (2017) find that the Deccan Agriculturists' Relief Act produced outcomes similar to those we have discussed here: it reduced the availability of mortgage-backed credit, but had no discernible effect on cropped acreage or investment in cattle.

[42] Darling (1947), p. 6.
[43] Thorburn (1896), p. 17. Marriages accounted for the bulk of the "unproductive" expenditures – funerals were only 1% in all four circles.

Our findings are consistent with the claims of British officials, who claimed that PLAA had not reduced lending for production but moneylenders had cut back on loans for social ceremonies and the like. These officials were echoing present-day theoretical work which suggests that lenders allocate capital better when they have more "skin in the game" i.e. the collateral is not so good that they do not have to worry about default (Manove et al. 1999). A report on the operation of PLAA made exactly this point: "The village sahukar [moneylender] has now to exercise discrimination in selecting his clients and in fixing the amount of his advances. He can no longer lend with apparent recklessness confident that his advances will be more than repaid in land."[44] Another official did not doubt that "there will always be in the village banias [professional moneylenders] enough to finance the zamindars to the extent of their legitimate needs as peasants." However, the banias would now have available for other investment money the peasants had "previously frittered away in unproductive expenditure."[45]

Though our study of the PLAA has focused on its short-term impact on credit markets and productivity, we should, before concluding, note other potentially long-term consequences. Historians like Ian Talbot (1988) have argued that the PLAA had an important impact on the politics of pre-Partition Punjab. Though it provoked the predominantly Hindu moneylenders, it helped bring together Muslim and Hindu landowners in the Unionist Party, during a period in which Hindu-Muslim tension was growing.[46]

We should also recognize that while the PLAA presented itself as protective legislation, it also had an exclusionary aspect. While it may have prevented some landowners from becoming landless, it also prevented landless castes, who were not classified as agricultural tribes, from acquiring land. After the Partition, PLAA was declared unconstitutional in independent India.

[44] *Annual Report* 1905-06, p. 8.
[45] Ibid, p. 8.
[46] As a result, the Muslim League gained influence in Punjab much later than in United Provinces.

However it remained law in Pakistani Punjab, where some scholars have argued it has helped perpetuate caste-based hierarchy.[47]

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[47] Gazdar (2009) and http://www.researchcollective.org/Documents/Agricultural_tribes.pdf, accessed July 1, 2018.

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Figure 1: Mortages Over Rs. 100

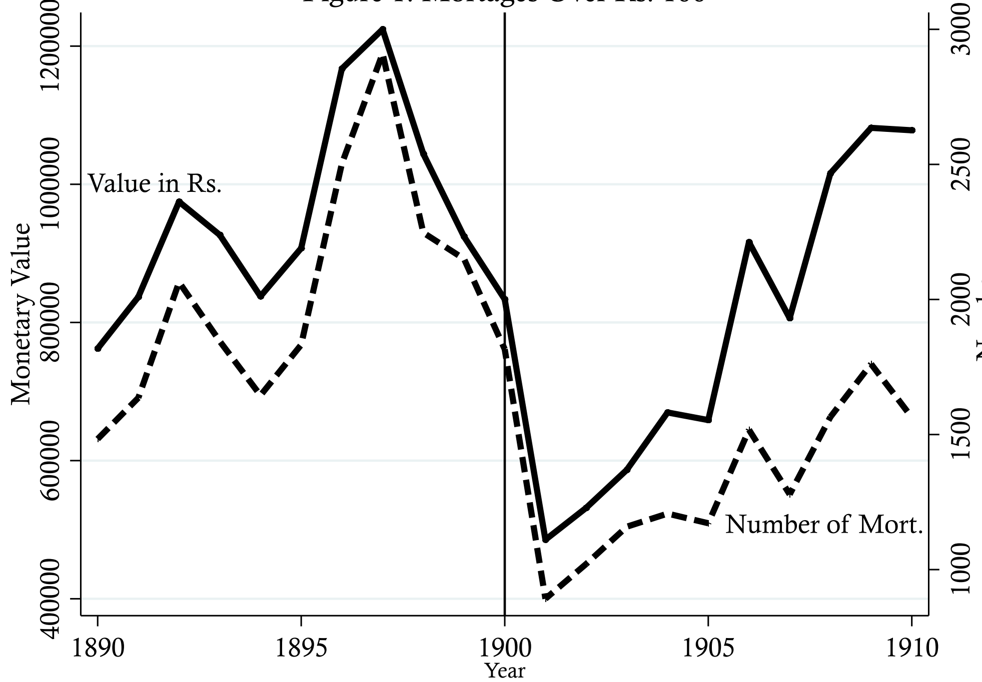

Figure 2: Sales Over Rs. 100

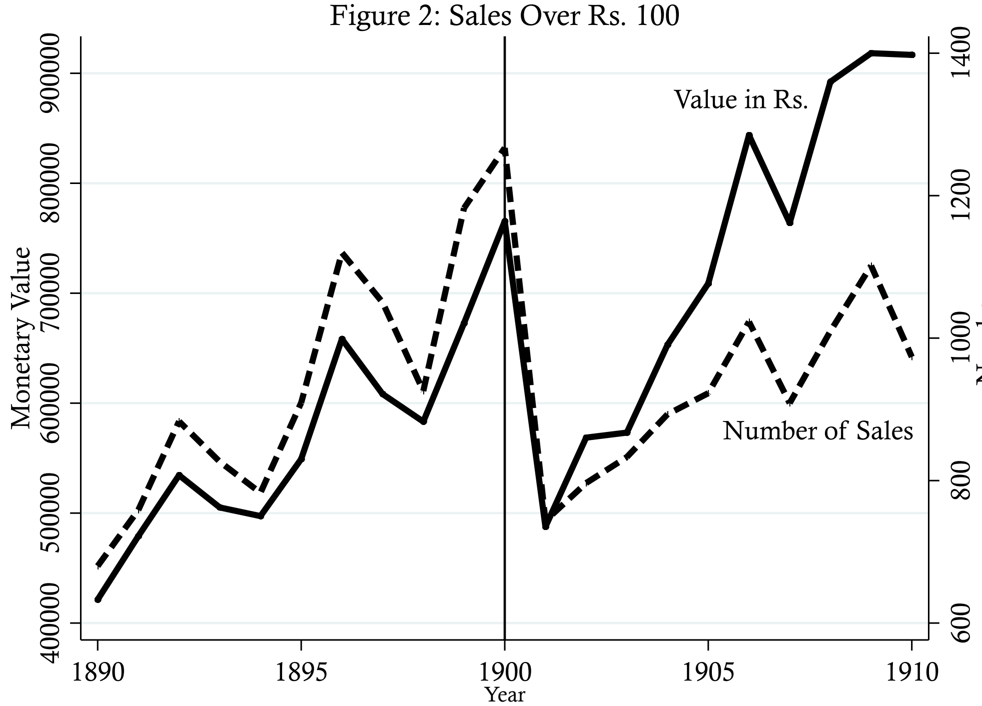

Table 1: Increase in Use of Courts for Recovery of Money

Year	Number of Civil Courts	Number of Cases Disposed of for Money Due	Other Cases	Proportion of Cases for Money Due
1866		96,222	70,336	0.58
1867		90,697	54,980	0.62
1868	405	105,506	46,321	0.69
1869	434	121,597	48,318	0.72
1870	433	144,958	58,856	0.71
1871	442	166,679	51,711	0.76
1872	505	168,209	50,134	0.77
1873	497	169,937	53,456	0.76
1874	501	177,279	57,561	0.75
1875	595	173,224	62,123	0.74
1876	596	187,895	59,341	0.76
1877	490	183,421	60,561	0.75
1878		191,635	59,221	0.76
1879	469	208,862	44,225	0.83
1880	450	213,987	49,890	0.81
1881	438	212,967	51,324	0.81
1882	444	209,462	60,281	0.78
1883	440	213,895	58,706	0.78
1884		213,297	58,078	0.79

Source: Thorburn (1886).

Table 2: Transfers to Non-agriculturists or New Agriculturists (NNA), Punjab

Year	% of Total Area Sold to NNA During the Period	% Transferred to NNA of Total Area Sold During the Period	% of Total Area Mortgaged to NNA During the Period	% Transferred to NNA of Total Area Mortgaged During the Period
1875-78	0.3	38.2	0.9	60.4
1879-83	0.5	31.5	1.2	42.9
1884-88	0.6	30.6	1.7	39
1889-93	0.6	20.5	1.6	32.3

Source: India, Note on Land Transfers, p. 48, from Roy and Swamy (2016).

Table 3: Transfers to Non-Agriculturists, 1868-91, Gujranwala District, Punjab

Tahsil (Sub-District Unit)	% Cultivated Area Sold	% of Sold Area Going to Non-Agriculturists	% of Cultivated Area Mortgaged	% of Mortgaged Cultivated Area Going to Non-Agriculturists
Gujranwala	14	60	13	75
Wazirabad	12	53	15	75
Hafizabad	10.5	50	6.5	60

Source: India, Note on Land Transfers, p. 50, from Roy and Swamy (2016).

Table 4: Mortgages of Land in Punjab, Type of Lender (%)

Year	To Agriculturists	To Non-Agriculturists
1875-79	46.2	53.8
1880-84	52.4	47.6
1885-89	63	37
1890-94	70.4	29.6
1901-05	70.2	29.8
1906-10	75.5	24.4

Source: Bhattacharya 1985, p. 210.

Table 5: Summary Statistics

	Obs.	Mean	Std. Dev.	Min	Max
Above Rs. 100					
Number of Mortgages	525	1,680	1,413	32	9,785
Agg. Value of Mortgages (Rs)	525	870,011	734,238	52,737	4,357,571
Number of Sales	525	933	662	40	5,720
Agg. Value of Sales (Rs.)	525	647,662	514,458	74,199	3,103,332
Total Cropped Area (acres)	525	2,128,138	1,347,448	48,952	6,366,327
Cattle	125	381,889	141,456	14,733	864,042
Cattle per area	120	0.66	0.29	0.16	1.88
Ploughs	123	80,827	35,406	2,599	197,496
Carts	125	9,693	9,022	4	31,411
Avg. Rainfall (year t and t-1)	525	29	25	3	179
Population	525	796,740	309,179	42,562	1,680,133
Prop. Non-Ag Moneylenders, 1899	504	0.54	0.11	0.36	0.74
Prop. Rural	525	0.87	0.09	0.54	0.98

Note: Data covers Punjab districts from 1890/1891 to 1909/10. Data on professional moneylenders is unreported for Simla district.

Table 6: Did PLAA Affect Outcomes? A Before and After Comparison

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Over Rs. 100 in Logs							
	# Mortgages	Value Mortgages	# Sales	Value Sales	# Mortgages	Value Mortgages	# Sales	Value Sales
PLAA (0/1)	-0.902***	-0.917***	-0.213***	-0.236***				
	(0.068)	(0.082)	(0.043)	(0.049)				
Pre-PLAA (year -3, -2, -1)					-0.021	-0.155***	-0.023	-0.073
					(0.049)	(0.050)	(0.043)	(0.050)
PLAA, Short Run					-0.912***	-1.043***	-0.227***	-0.293***
					(0.083)	(0.100)	(0.056)	(0.075)
PLAA, Long Run					-1.047***	-1.129***	-0.338***	-0.381***
					(0.112)	(0.126)	(0.072)	(0.086)
District FE, District Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Rainfall and Pop. Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	525	525	525	525	525	525	525	525

Robust standard errors clustered at the district-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

PLAA is an indicator for the Punjab Land Alienation Act that turns to 1 in 1900. All regressions include average rainfall and its squared, population and its squared, district fixed effects, and district specific trends.

Table 7: Differences-in-Differences, PLAA and Professional Moneylenders

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Over Rs. 100 in Logs							
	# Mortgages	Ag. Value Mortgages	# Sales	Ag.Value Sales	# Mortgages	Ag. Value Mortgages	# Sales	Ag. Value Sales
Prop. Non-Ag ML*PLAA	-1.346**	-1.728***	-0.321	-0.190				
	(0.532)	(0.587)	(0.469)	(0.513)				
Prop. Non-Ag ML*Pre-PLAA (year -3, -2, -1)					-0.309	-0.647*	0.490	0.339
					(0.286)	(0.322)	(0.391)	(0.326)
Prop. Non-Ag ML*PLAA, Short Run					-1.540**	-2.262***	0.151	0.184
					(0.604)	(0.597)	(0.504)	(0.611)
Prop. Non-Ag ML*PLAA, Long Run					-2.503***	-2.676***	-0.396	-0.790
					(0.887)	(0.886)	(0.686)	(0.696)
Observations	504	504	504	504	504	504	504	504

Robust standard errors clustered at the district-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

PLAA is an indicator for the Punjab Land Alienation Act that turns to 1 in 1900. Prop. Non-Ag ML is the proportion of non-agriculturist moneylenders, i.e. professional moneylenders. All regressions include average rainfall and its squared, population and its squared, district fixed effects, year fixed effects, and district specific trends.

Table 8: Differences-in-Differences, PLAA and Professional Moneylenders - NO CANAL COLONIES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Over Rs. 100 in Logs							
	# Mortgages	Ag. Value Mortgages	# Sales	Ag.Value Sales	# Mortgages	Ag. Value Mortgages	# Sales	Ag. Value Sales
Prop. Non-Ag ML*PLAA	-1.669**	-1.885**	-0.072	-0.204				
	(0.645)	(0.762)	(0.696)	(0.714)				
Prop. Non-Ag ML*Pre-PLAA (year -3, -2, -1)					-0.228	-0.159	0.532	0.476
					(0.291)	(0.343)	(0.354)	(0.346)
Prop. Non-Ag ML*PLAA, Short Run					-1.843**	-2.000**	0.399	0.243
					(0.716)	(0.877)	(0.762)	(0.776)
Prop. Non-Ag ML*PLAA, Long Run					-2.226*	-2.368*	0.285	-0.244
					(1.212)	(1.188)	(1.075)	(0.987)
Observations	378	378	378	378	378	378	378	378

Robust standard errors clustered at the district-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1
PLAA is an indicator for the Punjab Land Alienation Act that turns to 1 in 1900. Prop. Non-Ag ML is the proportion of non-agriculturist moneylenders, i.e. professional moneylenders. All regressions include average rainfall and its squared, population and its squared, district fixed effects, year fixed effects, and district specific trends.

Table 9: Differential Effect of PLAA on Real Outcomes

	(1)	(2)	(3)	(4)	(5)
			Log		
	Total Cropped Area	Cattle	Cattle/Area	Ploughs	Carts
Prop. Non-Ag ML*PLAA	0.048	0.380	-0.519	0.386	1.482*
	(0.134)	(0.284)	(0.382)	(0.256)	(0.815)
District-Trend	Yes	No	No	No	No
Observations	504	120	115	118	120

Robust standard errors clustered at the district-level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

PLAA is an indicator for the Punjab Land Alienation Act that turns to 1 in 1900. Prop. Non-Ag ML is the proportion of non-agriculturist moneylenders, i.e. professional moneylenders. All regressions include average rainfall and its squared, population and its squared, district fixed effects and year fixed effects.

Table 10: Number of Sales, Mortgages, Leases and Gifts of Immoveable Property, Punjab, 1899-1910

Year	Number of Gifts	Number of Leases	Number of Sales	Number of Mortgages
1899-1900	1,069	1,869	29,552	53,754
1900-01	1,071	1,405	31,675	45,398
1901-02	1,011	1,367	19,098	23,276
1902	1,044	1,533	20,436	25,872
1903	1,118	1,547	21,320	29,410
1904	1,206	1,711	22,807	30,667
1905	1,219	1,569	23,658	29,776
1906	1,279	1,682	26,294	38,442
1907	1,210	1,600	23,530	32,523
1908	1,216	1,716	26,139	40,034
1909	1,366	1,810	28,224	44,913
1910	1,220	2,114	25,011	39,934

Source: From Punjab Registration Report. These data pertain to transactions for which registration was compulsory. For sales and mortgages this was the case if the amount was greater than 100 rupees. Data for the first three years are for fiscal years 1899-1900, 1900-01, 1901-02.