PROTECTING THE BORROWER:

AN EXPERIMENT IN COLONIAL INDIA*

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Abstract

We study the background and impact of the Deccan Agriculturists' Relief Act (DARA), a legislation to protect debtors that was adopted in the Bombay Presidency in colonial India. Our analysis is relevant to two literatures. To the discussion of "legal origins" of developing-country legal systems we present DARA as an example of explicit repudiation of legal importation by a British colonial state. To developing country policy-makers DARA may be instructive as a credit-market intervention in which borrowers were protected from lenders (and maybe even themselves) without, apparently, hurting economic growth

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I. Introduction

The impact of "legal origins" on economic development has become an important topic for research following a series of papers by a group of authors (e.g. La Porta et al. 1997, 1998; Glaeser et al. 2003; Djankov et al. 2008). While the seminal work by La Porta et al. (1997, 1998) focused on the legal protection of outside investors, the subsequent literature has studied a wide range of related topics including procedural formalism in courts, bankruptcy procedures, labor laws, government ownership of banks and media, and the regulatory environment. The general approach taken is to (a) Identify the impact of legal origin (e.g English Common Law or a Civil Law tradition) on a feature of the institutional environment (formalism of courts, judicial independence, regulation, labor law), and (b) Link the institution to an outcome (expeditious justice, security of property, development of financial markets, corruption, employment). [1] The broad finding of this literature is that, compared to English Common-Law systems, Civil Law systems (especially French) create a worse institutional environment that then leads to worse outcomes.[2]

This work, which primarily uses cross-country evidence, paints with a broad brush. An important next step is to go beyond the cross-country evidence and examine legal origins, institutions, and outcomes in specific countries. In doing so several historical studies have questioned the links between legal origins and the performance of the

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[1] An important distinction highlighted is between one tradition (Civil Law, especially French) in which judges have limited discretion and are expected to rely on statutes that are fairly complete and another (English) in which law emerges substantially via the process of dispute-resolution in court. The French tradition is believed to have emerged from suspicion of the judiciary, whereas the English tradition came from a context in which the intention was to place checks on the executive (La Porta et al. 2008). Beck et al. (2003) suggest that the English tradition is superior because a system which gives jurisprudence a larger role is more flexible.

[2] In La Porta et al. (2008) the initiators of this literature look back at the extensive response to their work and report that while they have modified their view on some points, they stand by their central claims. Given the scope of their findings, they also provide a more expansive view of the term "legal origins", suggesting (p. 326) that they be "broadly interpreted as persistent systems of social control of economic life."

financial markets or the quality of the contracting environment.[3] The founders of the legal origins literature are sympathetic to this case-study approach-- indeed Balas, La Porta, Lopez de Silanes and Shleifer (2009) present six examples documenting a phenomenon they call legal "divergence" over the period 1950-2000. Berkowitz et al. (2003) also implicitly make the argument for case-studies by highlighting the importance of the circumstances in which a legal tradition was introduced. For instance, was it imposed by a colonial power, or chosen by an independent government? They make a useful distinction between "receptive" and "unreceptive" transplants of European legal tradition, the latter being the cases characterized by haste and external imposition, leading to worse outcomes.

The cross-country research as well as the country-specific studies implicitly take as their point of departure the fact that legal importation did occur, and then consider its impact. However, we can also ask a slightly different question: To what extent was the European tradition actually imported? Did political or administrative considerations or pre-existing arrangements limit the absorption of the European influence? To answer this question, even for a single country, we need detailed micro-studies of legislation and jurisprudence. In this paper we present one such. We discuss the Deccan Agriculturists' Relief Act (DARA) of 1879, a landmark legislation passed in colonial India, aimed at protecting borrowers. DARA is interesting in own right as a policy intervention, and we analyze its impact below. However DARA has a striking feature from the perspective of the

[3] In an interesting contribution on Roman Law Malmendier (2009) examines the history of an early form of shareholder company and argues that the political environment, rather than the development of formal law, was more important for its functioning. Lamoreaux and Rosenthal (2005) compare the U.S. and France in the 19th century and conclude that, its English background notwithstanding "the contracting environment in the U.S. was neither freer nor more flexible than France." Musacchio (2008) examines creditor rights and bond markets in Brazil, which had a French Civil Law inheritance, and argues that creditor rights varied too much for there to be a stable relationship with the legal origin, and also that there was not a stable relationship between creditor rights and development of the bond market.

Legal Origins literature: it was viewed by the British-Indian government as a repudiation of the legal innovations it had introduced, on the grounds that they were unsuitable for (western) India. While English Common Law is believed to confer strong rights to creditors, DARA was a deliberate effort to weaken those rights. Thus DARA provides a useful example of the ways in which the "transmission" (Roy 2011) of a European tradition might be obstructed.

The first part of this paper describes how DARA came to be. Early British rule led to a formalization of dispute-resolution, a clear move away from what Glaeser et al. (2003) have called the "neighbor" model, and a strengthening of creditors' rights. A combination of economic and political events then led to a reversal of trajectory. As the credit market expanded, defaulting peasants began to lose land to moneylenders, many of whom were immigrants. The social protests that followed alarmed British administrators in whose minds the "Mutiny" of 1857, believed to be the result of less-than-judicious interference in Indian society, loomed large. DARA was the consequence.

Having described the origins of DARA, we then study its impact along three dimensions: court procedures and decisions; credit transactions and "real" outcomes such as cropped area, ownership of agricultural capital such as cattle, and yields. Using annual reports on the working of courts, we find that DARA did have a legal impact. The incidence of *ex-parte* decisions (with an absent borrower) averaged only 6 percent under DARA compared to 36 percent for non-DARA cases. Borrowers were also protected in court. For instance, the courts lowered interest payments in larger amounts in DARA districts relative to districts where DARA was not enacted.

To analyze credit transactions and "real" outcomes, we construct a new panel dataset on eighteen districts for a variety of outcomes; the coverage varies depending on data availability, being 21 years (1896-1916) at the maximum. The panel data allows us to address potential endogeneity problems concerning the legislation by controlling for unobserved time-invariant district characteristics, year fixed effects, as well as pre-existing district-specific trends. Moreover, we can use a difference-in-difference approach because DARA was introduced in four districts in 1879 and extended to another fourteen in 1905.

On credit, we find DARA did reduce the number of transactions, in particular mortgages, and the available credit. However, we do not observe any negative effect on "real" outcomes. If anything, total cropped acreage increased after DARA, a result that is remarkably robust to a variety of checks. We find no evidence of a decline in livestock or other agricultural implements such as ploughs and carts. We find evidence of a change in the crop-mix after DARA, but again no find no negative effects on crop yields.

Our finding that weakening creditors' rights did no harm runs contrary to most common models of moral hazard and adverse selection in credit markets (Stiglitz and Weiss 1981). However, they are consistent with models in which capital is allocated better when lenders have "skin in the game" (Manove et al. 2001). In our case it appears that credit dried up for some consumption purposes (marriages, funerals), but not for production.

There is a parallel between the historical events we describe and the recent (2010) micro-finance crisis in the South Indian state of Andhra Pradesh: an influx of lenders, heavily indebted borrowers, harsh methods for loan recovery by lenders, social protests, and then reform. Most economists' reaction to the heavy-handed reform in Andhra Pradesh was summarized in the title of a newspaper article written by Abhijit Banerjee and a large set of distinguished co-authors (2010): "Help microfinance, don't kill it." DARA is of interest as a reform that regulated informal lending without "killing it"—indeed without any visible adverse effects on economic activity.

The remainder of this paper is organized as follows. Section 2 shows how early British rule formalized contract enforcement and increased the power of the lender. The third section describes the social changes and political unrest that led to questioning and reversal of policy via DARA. The fourth section describes the impact of DARA on the legal process. The fifth section provides a simple theoretical framework for thinking about the impact of DARA on credit and "real" outcomes. Section 6 provides suggestive evidence on the initial introduction of DARA in four districts in 1879. Section 7 provides econometric evidence exploiting the extension of DARA to an additional fourteen districts in 1905. The final section discusses our findings and concludes.

II. Historical Background

After the British conquest of the regions controlled by the Maratha Peshwa in 1818, it was faced with two familiar tasks: how would it collect land taxes, and how would it enforce civil and criminal justice? The instincts of the first commissioner of the Bombay Deccan, Mounstuart Elphinstone (1821) were to preserve "native" arrangements to the extent possible, but to make them work better, with less corruption. This "conservative" inclination was not easy to follow, for several reasons. First, it was not easy to pinpoint what the pre-existing arrangements had been. Second, British conquest had weakened the position of figures of authority such as landed aristocrats (*Deshmukhs*) as well as village heads (*Patils*), who were key to pre-colonial institutions. The locus of power had now changed; it was with British officials and the institutions they would create, and while old forms could be preserved, they no longer had the same social meaning.[4] Third, as we will see below, the urge towards systematization and rationalization was not innocuous; a rule-bound system favored some over others. Finally, many British officials wanted to pursue more radical change, especially those under the influence of the Utilitarians. Eventually, fundamental changes were introduced in the structure of landownership, taxation and the administration of justice.[5]

Pre-colonial legal arrangements were various, with a greater degree of formality in the urban areas. In the rural areas the Panchayat, or Council of Five, usually the village "elders", was key. The Panchayat could work quickly and informally, approximating what Glaeser et al. (2003) have called the "neighbor model." This had two disadvantages for the rural lender, especially if, as was common, he was an immigrant (often Marwari). First, the Panchayat might well favor the peasant, a member of the village community, over the immigrant lender (Kumar 1965, 1968). Consistent with this, Steele (1826/68), reports that the Panchayat gave awards "according to the debtor's circumstances", which in present-day parlance we might call limited liability. Second, the panchayat often did not actually enforce its decisions. Instead, it gave the lender considerable leeway in using private coercive methods.[6] These considerations made lenders cautious in their dealings and circumscribed the area in which they could operate effectively.

[4] The British had encountered a version of this problem before: after acquiring the Diwani of Bengal (1765) the East India Company sought to keep a light footprint by retaining existing arrangements in the areas of both revenue and justice. The attempt failed, because administrative structures needed to be congruent with political realities. The Company had to take over direct administration, and "stand forth as Diwan" in 1772.

[5] Our focus is entirely on civil law, not criminal law.

[6] A common method was called "dharna." The lender, or more likely his employee, would squat outside the borrower's house, thereby shaming him. In the period under study dharna also imposed an additional cost on the borrower: he has to pay for the meals of his tormentor!

Despite Elphinstone's enthusiasm for systematization of law, which Kumar (1968, p. 74) attributes to his "Benthamite inspiration" he believed that change needed to come slowly. He was in favor of retaining the Panchayats, writing in his famous report of 1821 (p. 69):"Our principal instrument must continue to be the Punchayet, and that must continue to be exempt from all new forms, interference, and regulation on our part." Consistent with this, the Regulations of 1827, which laid the foundation for British-Indian Law in the Bombay Presidency, envisaged a role for the Panchayat though by no means was it to be the "principal instrument". The Regulations created on the one hand, the Presidency-wide Sadar Diwani Adalat, and the District (Zillah) Court, as well as the "Native Commissioners" to whom the district judge could assign cases involving smaller sums of money. On the other hand Regulation VII of 1827 also allowed the parties to seek arbitration via Panchayats. This would allow "amicable adjustment of disputes of a civil nature" (p. 121), which would have the force of law. In practice, however, the Panchayats do not seem to have played a significant role. Perhaps this is because their use required "mutual consent" (Regulation VII, Chapter I, Section I, Clause 1). Lenders had little incentive to use the Panchayats where they were disadvantaged, not being members of the village community. They now had a superior option, the Civil Court, where they could better master formal procedure.

The 1827 Code had some protections for the borrower: his implements and cattle could not be seized for loan repayment; annual interest rates could not exceed 12%; compound interest was permitted, but the old Hindu law of *Damdupat*, restricting interest accumulation to the amount of the principal, was retained.

The new civil courts worked quickly. The lenders won their cases most of the time, with many of the decisions being *ex-parte*, i.e. with the defendant absent. Defaulters could be imprisoned, a frightening prospect that ensured repayment. In the early British period agricultural growth was slow, partly because land taxes were set at a very high level. However, after they were moderated agricultural growth picked up, and the decade of the 1850's, especially, was a good period. With the coming of the railways cotton began to be exported and cultivated area increased. Land was now a valuable commodity, and could be seized in lieu of repayment even if it had not been explicitly provided as collateral. Emboldened by the better options for loan recovery, immigrant lenders, especially Marwaris and Gujaratis, moved into the region in large numbers.

From early on, though, British officials worried that the changed financial environment was harming the peasants in three ways. First, the power balance in the legal system had changed in favor of the lender—the borrower no longer had the support of a potentially sympathetic Panchayat. Second, the peasants were unsophisticated and could be exploited by their lenders, who understood the new legal system better. Third, peasants did not handle credit well—given the opportunity they were likely to borrow "too much." The reader will no doubt notice that these three elements also feature in the discussion of present-day crises: legal innovations allowing new financial instruments, predatory lenders and ill-informed borrowers, and "over-borrowing."

The following (1852) comment by Captain Wingate, one of the architects of land revenue arrangement, and Revenue Commissioner of Bombay summarizes the official view that emerged by mid-century.

> The facilities which the law affords for the realization of debt have expanded credit to a most hurtful extent . . . In addition to ordinary village bankers, a class of low usurers is fast springing up . . . (Deccan Riots Commission, 1876, p. 31.)

These concerns did not receive much attention in the 1850's when times were good. Indeed in 1855 the interest rate ceiling was repealed. In 1859, the Code of Civil Procedure was implemented across British India as part of a broad effort to rationalize and generate uniformity. Under this Code, in addition to imprisonment, even cattle and implements could be attached. The Deccan Riots Commission (1876, p. 41) argued that, strictly interpreted, the Code of Civil Procedure would allow "the very clothes on the back of the unfortunate debtor" to be sold. The DRC described the environment created by the Code of Civil Procedure as follows:

> In order to recover a debt, it is obvious that resort can only be had to the property, present and future, of the debtor and to the labour of the debtor and his family. A law which allows an unlimited resort to all these means of recovery gives the greatest help to the creditor that it is physically possible to give. The law of India appears to be the only modern law which allows such unlimited resort, and we find that under it the debtor and his family are liable in person and property to an extent which is practically unlimited.

The pendulum, it appears, had swung a long way in a short while: beginning with a pre-colonial environment in which the lender was at a disadvantage in front of a Panchayat, he was now apparently all-powerful in a court.

It also appears that the sheer volume of cases had eventually got to the point where judges perfunctorily ruled in favor of lenders. A.D. Pollen, a judge in Poona, described the situation before DARA was passed as follows:

> …I have been in courts where the Judge has disposed of fifty or sixty suits on bonds in about an hour. The Judge merely asked the defendant if the signature on the bond was his, and this being admitted, the judge would at once pass a decree, whether there was a defence or not.[7]

[7] See Deccan Relief Commission (1892, p. 22).

The house of cards collapsed when the economic situation deteriorated. Cotton, which had received a boost from the American Civil War, slumped after the war ended. Land taxes were sharply increased in the late 1860s. Peasants had borrowed heavily in the good times and tensions grew, as they defaulted and their land went to moneylenders, many immigrant. By the early 1870's lenders were reluctant to lend to already heavily leveraged peasants.

The drying-up of credit, which peasants needed for payment of land revenue and other necessities, was the immediate provocation for "riots" which broke out in Poona and Ahmednagar districts in 1875. Peasants attacked moneylenders, mainly the immigrants, and tore up the records ("bonds") of their debt. Though the loss of life was quite small especially compared to present-day riots, British officialdom was greatly exercised.[8] The Raj was now in its conservative phase, after the rebellion of 1857, concerned that its rule would be threatened if it disrupted Indian society. The Deccan Riots Commission (DRC) was set up to investigate the causes of the riots and to suggest policy changes. Its famous and voluminous report laid the foundation for DARA.

III. Arriving at Legislation – The Deccan Agriculturists' Relief Act, 1879

As we discussed above, there were two main institutional reasons why credit had expanded: easier recovery via the courts, and the availability of land whose value was increasing with population and commercialization, as security. In principle reform could have targeted both these dimensions.

Some reform was already being proposed in the country as a whole. The Code of Civil Procedure was modified in 1877: necessities such as cattle and implements could not

[8] Some historians think the British over-reacted, and that the scale and scope of the Deccan Riots were exaggerated. In a provocative paper Charlesworth (1972) referred to them as a "minor grain riot."

be seized, and the land would go into receivership rather than to the lender. And it was now easier for the borrower to avoid arrest by declaring himself insolvent. Still, the Government of Bombay pushed for more legislation to protect the borrower but with a focus on reforming the legal process without obstructing the alienability of land as such. Drawing on the DRC's 1876 report, the Government of Bombay (GOB) approached the Government of India (GOI) to pass a bill to regulate the credit market. After some push back from the GOI, the Act itself, when finally enacted reflected the views of the GOB quite closely and was a comprehensive effort to protect the debtor.[9]

First, and most significant, it entitled the judge to go "behind the bond" in any circumstances, and insisted that he do so if the defendant challenged the claim:

> The Court shall, if the amount of the creditor's claim is disputed, enquire into the history and merits of the case, from the commencement of transactions between parties and the persons (if any) through whom they claim, out which the suit has arisen, first with a view to ascertaining whether there is any defence to the suit on the ground of fraud, mistake, accident, undue influence, or otherwise… (GOB 1882, p. 370).

The court was permitted to proceed as above even if the debtor admitted the claim, "if it thought fit."

Another important element of discretion pertained to the interest rate: if the Court thought the rate agreed on by the two parties was "unreasonable," it could lower it (p. 370, 13 (g)). Under some circumstances it also allowed payment in installments, with or without interest (371). If the court thought the defendant was unable to pay the full amount of a decree, it could "direct the payment of such portion of the same as it considers him able to pay, and grant a discharge from the balance."

[9] Some of this discussion has been reproduced in Papers and Proceedings Connected with the Passing of the Deccan Agriculturists Relief Act, XVII of 1879 (PP, henceforth). The provisions described here are summarized by GOI in a letter responding to GOB; PP, p. 40, letter 404, July 1, 1878.

Second, DARA placed explicit limits on the demands made on the debtor and the punishments that could be imposed on him: compound interest was banned and interest was not allowed to accumulate beyond the amount of the principal, the old Hindu rule of *damdupat* (p. 360, 13 (d)); attempts to evade it by combining interest and principal into a fresh loan were forbidden (369, 13 (d); the debtor could not be arrested or imprisoned (p. 372, 21); and immoveable property could not be seized unless it had been specifically mortgaged.[10] Up to that point, in the Deccan, land was being seized in the event of default even if it had not been explicitly pledged as collateral.

Third, while the existing code allowed the debtor to apply for insolvency only after a decree was passed against him, DARA permitted this at any time, if the debt was more than fifty rupees. Fourth, DARA tried to reduce the level of fraud by requiring more documentation: courts would only recognize agreements recorded with Village Registrars (p. 381, 56); agriculturists could ask for receipts for payments to their creditors, and could ask to have a passbook in which loans and repayments were recorded. Fifth, DARA appointed village-level judges (munsifs) who would handle cases for small amounts (less than 10 rupees) and conciliators who could be approached to resolve matters amicably. Sixth, to reduce the incidence of *ex-parte* decisions (with the defendant absent) the court was required to examine the defendant; if it did not, it needed to explain why, in writing. The scope of the bill was initially limited to four districts: Poona, Ahmednagar, Sholapur,

[10] In its initial form DARA also exempted crops in the field from attachment and sale. But this meant that poorer peasants with no moveable property could not get credit. This exemption was repealed by Act XXIII of 1886 (Deccan Relief Commission 1892, p. 26).

and Satara where riots had been most widespread.[11] It was later extended to the rest of Bombay Presidency in 1905.

The most striking feature of DARA as an episode in legal evolution is that it was motivated by the view, shared by British supporters as well as British critics, that imported British law and institutions were inappropriate for Indian society. In 1873, Raymond West, a judge of the Bombay High Court wrote an influential book called *Land and Law in India* in which he argued that "national virtues and defects" had to be considered in formulating policy:

> ...[W]hile we are striving to improve the moral and intellectual tone of the Hindus by the infusion of new and wholesome ideas, we ought in some things to wait patiently for their fruition. If our superciliousness prevents our doing this, we may often plume ourselves on some mechanical success we have in doing this when we have in truth been sowing the seeds of political disaster and of dissolution of society.

West was clear about where the British had erred: in allowing land to be transferable. This policy needed to be reversed. This proposal was not accepted, and hence, as we will see below, West was and remained very critical of DARA for ideological and practical reasons.

But supporters of DARA shared his basic presupposition that Indian society was not ready for British law and institutions; they even shared his desire to prevent land transfer—indeed that was the primary political concern of the Raj. They disagreed with West in wanting a different policy reversal—in the legal process for debt recovery. In a Minute dated August 30, 1878, the Governor of Bombay quoted what he called "pertinent observations" regarding DARA by an officer "well-versed in the actual working of the laws in the interior of the country":(PP, p. 52):

[11] Poona and Ahmednagar were the main locations of the Deccan riots, but some incidents occurred in Satara and Sholapur as well.

> The provision for the settlement of the amount due in cases of doubt upon equitable considerations and for reference to arbitration will, if adopted, simply lead to the matters in dispute being determined very much in the same way and by the same means they used to be settled before we introduced the complicated and unsuitable machinery of Civil Courts, and in the same way they would be settled now if no courts existed with this difference that the intervention of the courts will secure equal justice to rich and poor, and punctuality in the discharge of their functions by arbitrators.

Thus DARA's underlying premise was that British legal innovations had to be undone, and the "complicated and unsuitable machinery of the Civil Courts" changed. The next section of the paper explores the impact of DARA on the functioning of the courts.

IV. Impact of DARA on the Legal Process

For the typical dispute there were potentially three levels in the legal process: each of the 36 *talukas* (sub-districts) had a Subordinate Judge (the number had been raised in response to the complaints of over-work mentioned earlier). At the next level the munsif court, in or near the village, heard cases for amounts less than ten rupees. At the third level village conciliators were appointed to assist in dispute resolution without the parties going to court, but the decisions were then relayed to the Subordinate Judge's court.[12]

DARA was in its implementation a complex legislation: varying subsets of its provisions applied to different types of suits, with the strongest protections being for the "agriculturist" in the Subordinate Judge's court.[13] Annual reports on the working of DARA

[12] The top of the hierarchy within the Presidency was now the High Court set up in 1861, which replaced the Sadar Diwani Adalat.

[13] Chapter II of the legislation put five types of suits under the purview of the Subordinate Judges: Suits for "an account" (i.e. requiring the creditor to show records); "recovery of money"; movable property, rents, and damages; foreclosure of land owned by agriculturists; and redemption of mortgages given by agriculturists (PP. p. 366). The majority of suits heard by these courts were under Chapter II: for instance, of the 21,612 suits heard by the Subordinate Courts in 1885, 14,750 were under Chapter II of DARA (Annual Report 1885, p. 2). The provision requiring minimization of *ex-parte* rulings (for instance) applied to any Chapter II suit. A subset of the Chapter II cases (suits for "money recovery" by an agriculturist, foreclosure of land mortgaged by an agriculturist, and redemption of a mortgage by an agriculturist) were subject to the provisions of Chapter III, which sought to protect agriculturists by allowing examination of the history of their transactions

were produced from 1880 to 1907, which reveal several facts.[14] In the immediate aftermath of DARA, unsurprisingly, the courts were used less. The total number of suits of all kinds in the regular courts fell from 25,515 in 1879 to 11, 795 in 1880. This was compensated by increased activity in the munsif's courts and in conciliation (see below), and there was some recovery, back to 15, 413 suits in regular courts by 1890 (Deccan Relief Commission 1892, p. ci).

Table 1 shows that, while the courts of the Subordinate Judges were the lynchpin of the DARA system, the village munsifs were used to a large extent for small sums of money, reducing the burden on the regular courts. Conciliators were also used extensively, though they often failed.[15] Table 2 shows that, for cases pertaining to "money recovery" and suits for foreclosure and redemption in which the debtor was an agriculturist the judge examined the history of the transaction in roughly half of the cases when the defendant contested the claim. Table 3 shows that incidence of *ex-parte* decisions was much lower in the DARA court cases than in court cases in other parts of the Bombay Presidency. Indeed according to the 1885 Annual Report while the current rate was 5.5%, before DARA it had been 66% (p. 6). Table 4 shows that DARA judges significantly reduced the amounts paid by agriculturists to creditors, compared to their claims.

The contrast in court outcomes between DARA and non-DARA districts can be seen more explicitly in figures from the 1899 Annual Report, which compared the four DARA

and reduction of their payments. The provisions for examining history and reducing payments did not apply to the Munsif's court (PP., p. 368). And, as expected, the rules were most flexible for "conciliation."

[14] We have access to some of the individual reports. In addition, information from various reports for the period 1880-1890 was collated by a Commission of Inquiry (Deccan Relief Commission), which submitted its report in 1892.

[15] For instance in 1890 while there were 24,804 applications, in 9,799 cases the defendant failed to attend (Deccan Relief Commission 1892, p. cxxvii).

districts to a control group.[16] Figure 1 shows the percentage of cases disposed in a Subordinate Court in each interest rate category for cases involving simple bonds. In DARA districts, judges allowed more than 24% interest only in 4% of cases; in contrast judges allowed more than 24% interest in 33% of cases in the control districts. Figure 2 shows a similar pattern for cases involving mortgage bonds. In the DARA group the annual interest rate allowed was 12% or less in 81% of the cases, whereas this was true for only 35% of cases in the control group.

The changes described above were widely acknowledged—we do not see controversy on these points. The implications were, however, hotly debated as we show in our discussion of the qualitative evidence (section VI). We explore these questions using econometric methods in section VII. Before turning to this, it will be helpful to review what modern microeconomic theory might predict regarding an intervention such as DARA. This is the purpose of our next section.

V. Theoretical Framework

How did the supply of credit to investors and consumers change post-DARA? We focus on its central purpose, which was to make it harder to seize land in lieu of repayment. For simplicity, assume that land can be seized without cost pre-DARA, and land cannot be seized at all, post-DARA. Income can still be seized post-DARA (indeed, as mentioned in footnote 10, an amendment passed in 1886 explicitly permitted the seizure of standing crops, so as to facilitate borrowing). We consider the impact of DARA in two different scenarios.

[16] Ratnagiri, Nasik, Thana and Khandesh.

Case 1: This is the case most often discussed in theoretical work on credit markets. It is too costly for lenders to investigate the borrower's type or the reason for the borrowing. In this situation DARA has simply made it harder for lenders to recover loans. In particular, because of the emphasis on preventing land transfer, we can view DARA as reducing the available collateral. There is a vast literature on credit markets suggesting that the reduction of collateral will lead to higher interest rates or credit rationing, both of which would tend to reduce investment.[17]

Case 2: The lender can investigate borrowers' "types" or purposes at minimal cost. Now, the absence of assets to seize in lieu of repayment can change the distribution of credit across types of borrowers. This is the less-discussed case, so we sketch the argument, drawing on Manove et al. (2001) and Oak and Swamy (2010).[18]

1. There are two periods.
2. All borrowers own land worth much more than one unit. So pre-DARA all loans are sure to be repaid, because the lender can seize land in lieu of repayment.

3. There are two (non-overlapping) types of borrowers: investors and consumers. To simplify, each investors' return is certain, but the gross return λ_i varies across investors. An investor, i, wants to borrow so long as $\lambda_i > (1 + r)$.

Consumer j has willingness to pay an interest rate of δ_j for a loan. He does not have any income in period 2. Creditors recover only loans by seizing land in period 2. Equivalently, the consumer can sell the land and repay the debt.

[17] Stiglitz and Weiss (1981) is the seminal work. Visaria (2009) shows the benefits of a recent policy adopted in India, which allows quicker debt recovery via tribunals.
[18] Lilienfeld, Mookherjee, and Visaria (2012), studying the same policy intervention as Visaria (2009) show that easier loan recovery can affect borrowers differentially.

Before DARA

Before DARA, it is costless for lenders to recover money. So they are indifferent about whom they lend money and do not investigate the purpose of the loan. Let $D_i(r)$ be the demand function of investors and $D_c(r)$ be the demand function of consumers, where r is the rate of interest. $S(r)$ is the upward sloping supply curve of credit.

The interest rate r^* that clears the market is given by: $D_i(r^*) + D_c(r^*) = S(r^*)$ (1)

After DARA

Now land cannot be seized. So lenders will want to exclude consumer borrowers as well as investors with a return of less than r. If the cost of investigating the types is very small, the lenders' supply curve will barely change, and the market equilibrium can be approximated by:

$D_i(r^{**}) = S(r^{**})$ (2)

If we compare (1) and (2) we can see that the impact of DARA will be to reduce the interest rate faced by the investor-borrower because of the elimination of the consumer-borrower's demand. In practice, of course, investigating types may be costly, so it is not clear how DARA will affect the interest rate facing investor-borrowers.

Thus, the impact of DARA will depend on how costly it is to investigate types. If the cost is so high that we are in Case 1, investor-borrowers will be worse off and agricultural outcomes will deteriorate. If costs are low enough for Case 2 to apply, the outcome is ambiguous. If costs are minimal, equation 2 will (approximately) apply: consumer-borrowers will be excluded, interest rates for investor-borrowers will fall, and agricultural outcomes will improve. However, if costs of investigating types are significant, we cannot rule out a situation in which, though Case 2 applies and consumer-borrowers are excluded, the interest rate rises for the investor-borrower and agricultural outcomes deteriorate. The impact of DARA on credit for investors therefore needs to be investigated empirically, which is our next task.

VI. Historical evidence on the impact of DARA

In 1888, the GOB appointed a "special officer," A.F. Woodburn, to investigate the working of DARA in the four districts where it was first introduced in 1879. He was also asked to assess whether it was desirable to extend the Act or certain provisions of it to other districts. To assist with his analysis, he was given a "comparison group" of neighboring districts.[19] Table 5 summarizes the relevant findings from his report.

Woodburn argued that DARA had conferred numerous benefits on the 'treatment' districts in terms of restricting land transfers between peasants and moneylenders, and slowing down land transfers. The percentage of land held by Sahukars (moneylenders) had risen only in one of the four DARA districts, whereas it had risen in all of the districts in the comparison group. To show that mortgages and sales were rising at a slower rate in the DARA districts Woodburn divided the value of transactions by the land tax revenue of the district. He then computed (a) the average value of sales divided by land tax revenue in 1874-75 and 1875-76; (b) the same number for 1887-87[20]; (c) the percentage increase of

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[19] Thana, Ratnagiri, Bijapur, Khandesh and Nasik. An interesting aspect of this report is Woodburn's practice of reporting not just comparisons between treatment and control, but also a "difference-in-difference."
[20] The choice of 1887-88 was not arbitrary. Districts under DARA had different loan registration requirements compared to other districts; therefore the numbers were not comparable. However, a modification of the DARA in 1886 required that all instruments that required registration under the Indian

(a) compared to (b). The figure (c) is reported in column 3 of Table 5. Column 4 reports the similar figure for mortgages. For sales the average percentage increase is greater in the comparison group compared to DARA: 135 versus 70. For mortgages the average increase in the comparison group is 61, compared to -17 for the DARA districts.

Woodburn also looked at cattle investments arguing that cattle are the "most valuable evidence of the condition of the peasantry" (p. 26).[21] He compared the percentage increase in agricultural stock between 1873-74 to 1875-76 and 1883-84 to 1885-86 across the DARA (treatment) and comparison districts. He found no clear difference in outcomes between the two. While bullocks and cows increased by a larger percentage in the comparison districts, buffaloes, sheep and goats, and riding carts increased by a larger percentage in the DARA districts.[22]

Overall, Woodburn's report found no obvious negative effects of DARA on land transactions and credit markets. In fact land transfers between peasants and moneylenders were lower in the DARA districts compared to the control districts. Reducing the power of the moneylender did not come at the expense of lower investment in agricultural capital. Peasants in need of livestock it would appear were able to borrow to the same extent in DARA districts compared to the comparison districts.

Woodburn's sanguine view of the impact of DARA was strongly contested. For example, the Famine Commission's analysis (1901) was that the fundamental problem was in giving unrestricted right to transfer land to a peasantry that was "ignorant" and

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Registration Act of 1877 follow the same procedure as elsewhere. Hence, for a subset of transactions DARA districts and the others could be compared from 1887-88 onwards (p. 28).

[21] He did express trepidation about the quality of the livestock data.

[22] In DARA districts bullocks increased by 1.2%, cows by 3.9%, sheep and goats by 17.3%, riding carts by 30.2% and load carrying carts by 20.7%. In the comparison districts, bullocks increased by 12.2%, cows by 18.3%, sheep and goats by 13.7%, riding carts by 16.5% and load carrying carts by 28.4%.

"improvident", arguing that "transfers of property, both by sale and mortgage, have become more frequent in the districts to which the Relief Acts apply" (Ray 1915,p. 36).

Raymond West, who we have encountered before, argued that judges had been given too much discretion to go "behind the bond." West argued that with judges inclined to pick a mid-point between the claims of lender and debtor, both parties were more inclined to lie (West 1893, p. 711). West also disagreed with DARA on fundamental philosophical grounds: "It is manifest that all freedom of contract is annulled by these provisions…. If rate of interest is to be arbitrarily readjusted, why also not the prices of goods sold? Why not rents, and salaries, and rates of insurance?" Given the risks, he argued, lenders had become very cautious and had to "refuse credit in innumerable cases in which it could otherwise have been granted" (p. 711). The "weaker money-lenders" had gone out of business, making credit markets less competitive. The stronger moneylenders were evading the law, presenting a loan with land as collateral as sale with repurchase of land.[23]

Judges were also criticized for allowing payment in installments, without interest payments to compensate for the delay. This, it was argued, undermined lenders who had themselves borrowed (at interest) the money they had lent. The provision that land could be seized only if specifically pledged also came in for criticism: lenders, it was argued, now insisted on mortgages with possession, which made borrowers apprehensive.

In contrast with West and other critics, many government officials, including the "Special Judges" who oversaw the courts, shared Woodburn's more favorable view of DARA. They argued that DARA had attained its objectives of restraining opportunistic

[23] DARA was later amended to address this problem, by allowing courts to investigate "spurious sales" (see text of act as amended up to 1911, Lalbhai 1991, p. 385). In any case, our evaluations of DARA (see below) look at mortgages as well as sales.

lenders and reckless borrowers. The Commission of 1892 (p. 24) argued that the Act had reduced “unsound credit” but it had found no evidence of credit scarcity—had there been any, it argued, the government would have found it difficult to collect land taxes, which was not the case.

The Act had, as we have noted, several different dimensions: court procedure, appointment of conciliators, etc. Over time some minor provisions were extended to the rest of Bombay Presidency.[24] The provisions of greatest practical import were in chapter 3, pertaining to discretion available to the judge to investigate the history of the transactions (go “behind the bond”), adjust payments, allow payment in installments, allow early mortgage redemption, etc. These critical sections, as well as those pertaining to Munsif courts and conciliation were extended to the rest of Bombay Presidency in August 1905.[25]

Given the debates described above, it is unsurprising that important sections of British officialdom criticized the extension. The Deccan Agriculturists' Relief Commission (1912) appointed to investigate the working of DARA argued that there was a short-term benefit for some peasants because they had effectively received forgiveness on their outstanding loans (p. 4), but that the long-term effect would be harmful. Record keeping was poor, and judges were in no position to really investigate the history of the transaction. Consequently, they were inclined to split the difference, that is, settle for a repayment amount halfway between the sums claimed by the two parties. This, the Commission argued, along the lines of Raymond West, gave both parties the incentive to lie (p. 5).

[24] Shingne and Phadke (1906, p. 8) provide the details.
[25] One important exception was the rule exempting attachment of land unless it was specifically pledged as collateral, which remained applicable only to the original four DARA districts.

The terms of repayment, with interest rate ceilings and low installment payments without interest discouraged lending altogether (p. 6): "The evidence before us shows that a large number of saokars, including of course the best, have wound up, or are winding up, their business with agriculturists…" Moreover, lenders were resorting to disguised sales as a means of avoiding the Act, even though there was now a provision for scrutinizing such transactions. The Commission (p. 7) quotes a moneylender as saying: "My money is not safe and I *cannot* lend without a sale deed." The Commission conceded, however, that, faced with the prospect of getting money only by signing a sales-deed had made peasants thrifty, and they were not spending as much on marriages and funerals.

Despite its indictment of DARA, the Deccan Agriculturists' Relief Commission noted that land had not fallen out of cultivation and that times were good. However, the Commission was reluctant to assign any of the prosperity to DARA, and instead attributed this to generally improved economic conditions, especially the increased demand for labor in Bombay. Given these different qualitative accounts, a systematic econometric analysis of the impact of DARA is particularly necessary because it can account for changes in the macroeconomic conditions (among other factors). This is our next section

VII. Econometric Assessment of DARA 1905 Extension

VII-A. Data

We exploit the extension of DARA to the rest of Bombay presidency in 1905 to conduct a difference-in-difference estimation similar in spirit to Woodburn's analysis reported in Table 5. Since many of the official data series are unavailable for the earlier period (1870s and 1880s), we focus our analysis on the 1905 DARA extension. Using different historical sources, we construct a new district-level dataset of the 18 districts in

Bombay Presidency from 1896 to 1916, a twenty-one year period covering ten years before the extension of DARA to the rest of Bombay Presidency and eleven years after.[26]

The Registration Reports provide a district-level count of the number of sales and mortgages, which we use to gauge the activity in credit markets from 1896 to 1916. These Reports began recording the total monetary value of sales and mortgages in 1903, which we only use as suggestive evidence since we have few pre-treatment years for the series. The correlation between the number and value of sales and mortgages is very high in the years the data are jointly reported (0.9 for sales and 0.8 for mortgages).

These series recorded both documents that had to be registered (compulsory registration), and those that did not (optional registration). In the case of the latter, it was up to the parties involved to register their documents. During our period of study, there were changes to what documents had to be registered, for example, mortgage deeds under Rs. 100 came under compulsory registration only in 1904. Sale and mortgage deeds over Rs. 100 were under compulsory registration for our entire period. That said, we may expect some under-enumeration of these series in all districts given the low level of literacy in the agricultural community. To complement the Registration data, we also use the 1901 and 1911 Census of India to construct measures of the proportion of moneylenders per capita and per urban population in each district.[27]

[26] The data are recorded for financial years and not calendar years. In the ensuing discussion, we always refer to the concluding year. For example, 1905-1906 is referred to as 1906.

[27] The occupation chapter of the Census of India reports the number of people supported in many occupations, but unfortunately the individual series are not always consistent from one census to the next. To be consistent with the 1911 series, in 1901 we use the sum of bankers, moneylenders (reported as one single category) plus insurance agents and under-writers plus money changers and testers plus bank clerks, cashiers, bill-collectors and accountants to capture moneylenders broadly defined. This closely matches the 1911 series where moneylenders are reported as one category under bank managers, moneylenders, exchange and insurance agents, money changers, and brokers and their employees. We have experimented with other definitions and the results are unchanged.

To measure agricultural outcomes, we rely on the annual Agricultural Statistics of British India that report total cropped area, acreage under individual crops, livestock, ploughs and carts for each district. The livestock, ploughs and carts series are only reported every quinquennium. Some economic historians (for example, Heston 1973, 1978) have questioned the accuracy of the agricultural statistics, but the general consensus is that the crop acreage and livestock data are more reliable compared to the information on yields (Heston 1978). Nonetheless, we also extract data on yields for each district from annual Season and Crop Reports.

Finally, we use McAlpin's (1983) data for annual district rainfall and the Census for district population. Both rainfall and population serve as controls in many of our regressions. Since population is only reported in the decennial census, we linearly interpolate the series for the years in between using the 1891 through 1921 Censuses.

Table 6 presents summary statistics of the main variables. The average district population of Bombay Presidency was just under one million with substantial variation across districts.[28] Similarly, rainfall averaged 45 inches in our period of study with some districts receiving as low as 4.8 inches and others as high as 153 inches per year. Although the number of sales and mortages were not very different across districts, the total value of mortgage deeds registered was only 50 percent of the value of the sale deeds.

The total area cropped averaged 1.4 million acres with food grains accounting for three-quarters of the acreage. Jawar (sorghum) accounted for a large proportion of the total cropped area at 29% followed by bajra (millet) at 20% and rice at 7%, but again there

[28] There are 18 districts in Bombay Presidency excluding the regions of Sind and Aden. Rainfall data is missing for the district of Panch Mahals so we focus on the 17 districts with complete data for the analysis on cropped area and land transfers.

were significant differences across districts as evidenced by the standard deviation. Bullocks accounted for a quarter of the livestock, and sheep and goats another 33%.

VII-B. Empirical Strategy

To identify the effects of DARA, we estimate the following regressions:

$$Y_{it} = \alpha_i + \delta_t + \beta DARA_{it} + \lambda_i * trend + \psi X_{it} + \varepsilon_{it}$$

Y_{it} is an outcome in district i in year t. $DARA$ is a dummy, which turns to one in 1906 (1905/1906) for districts where the Act was extended namely, the remaining fourteen districts of Bombay Presidency (excluding the four districts where the Act was introduced in 1879). The vector, X_{it}, includes controls such as rainfall, rainfall-squared, population and population-squared.

We include district fixed effects, α_i, to control for unobservable time-invariant characteristics of districts and year fixed effects, δ_t, to control for temporal events that influence all districts in the same manner. In addition, we usually include district-specific time trends to control for district-specific changes over time due to factors we cannot observe. In some regressions, where we have data for a smaller number of years, we replace district-specific trends with separate trends for early and late-DARA districts. To address concerns of serial correlation within districts, we cluster the standard errors at the district-level. Thus, we are identifying the effects of the Act by comparing the post-1905 deviation from trend in districts where DARA was introduced with the same in districts where it was already in place.

Clearly, DARA was not randomly introduced in the four districts in 1879 and circumstances unique to those districts led to the introduction of the Act in those areas first. By including the extensive set of fixed effects and individual district trends, we hope to isolate the effect of DARA from any other factors correlated with the extension of DARA to the rest of the Bombay districts in 1905.

Finally, an important concern with accurately identifying the effects of such law changes is that legislation is normally preceded by a few years of 'discussion' before it is implemented. Thus, there could be anticipation effects to the legislation even before it is passed. To test for such anticipation effects, we include a pre-DARA dummy for the 1902-1905 period in some specifications. We also account for potential differences between the immediate and lasting effects of DARA by including a dummy for the early DARA period from 1906 to 1908 and late DARA period from 1909 till 1916, the last year in our panel.

VII-C. Impact of DARA on Credit Markets

The qualitative accounts suggest DARA led to a decline in overall credit and moneylending. These same accounts also point to a decrease in consumption spending on funerals and marriages, which were often financed through loans. We have quantitative evidence on the former. For the latter we have only anecdotal accounts, but this was a point of consensus between critics and proponents of DARA. In fact the Arthur Commission that was very critical of DARA had this to say: "The evidence placed before us in Guzerat [sic] leaves no doubt that the expenditure of the cultivating classes on marriages and funerals, especially the latter which are the heavier of the two in that province, have greatly decreased (p.8)."

In evaluating the impact of DARA on credit transactions we need to keep in mind persistent commentary that it led to loans being disguised as sales. Therefore, in the analysis below, we consider the impact of DARA on numbers and magnitudes of land sales and mortgages, separately as well as taken together. The evidence suggests considerable substitution of sales for loans, as well as some decline in total credit.

Table 7 presents the results on the total number and value of sales and mortgages that were recorded in the annual Registration Reports. Sales over Rs. 100 increased by more than 10 percent after DARA both in numbers and value (specifications 1 and 2). We find no significant effect of DARA on sales under Rs. 100.

On the mortgage side, we find a significant decrease ranging from 55 to 75 percent in the total value and number of mortgages registered after DARA. To assess whether the increase in sale deeds compensates for the decline in mortgages observed after DARA, we add the two categories in specifications 7 and 8. While the number of sales and mortgages, taken together, decline by 24 percent after DARA, the effect is significantly smaller when looked at in terms of values, a decline of 10 percent.[29] We also observe strong anticipation effects of the legislation on both sales and mortgages that substantially increase in the immediate years before DARA. These results suggest there was some decline in credit, because the increase in sales does not fully compensate for the decline in mortgages.

DARA could, in principle, have led to a decline in credit availability because immigrant moneylenders moved out of the districts. However, we observe no significant negative effects of DARA on the number of moneylenders between 1901 and 1911 (table 8). We do not find a decline in the absolute number of moneylenders or moneylenders as a proportion of the total population (or urban population) in late DARA districts where the act was extended in 1905. The result is robust to alternate definitions of moneylenders.

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[29] We find similar effects of DARA on the order of 13% for the number of sales and mortgages when we restrict the analysis to 1903-1916, the years for which we observe the information on values.

The absolute number of moneylenders and moneylenders as a proportion of the population declined between 1901 and 1911, but these declines are of a much larger magnitude in the early DARA districts compared to the late DARA. For example the category including moneylenders declined by 42% in the early DARA districts between 1901 and 1911 compared to 11% in the late DARA districts. The regressions in table 8 confirm these mean differences. Our sample size is particularly small because we only observe the data for 1901 and 1911. This analysis is also unable to speak to the change in the mix of moneylenders, for example immigrant moneylenders versus local moneylenders. A possible explanation for our findings is that the Bombay Presidency is a huge area, and it may have been difficult for lenders to move quickly to other regions with different languages and even agrarian structures. Lenders may have stayed in their locations and changed their capital allocation decisions.

Our theoretical discussion suggested that a decline in credit in the aggregate would not necessarily lead to a reduction in credit for productive activity. Our next section examines how DARA affected real outcomes.

VII-D. Impact of DARA on Agricultural Outcomes

The most obvious approach to estimating the impact of DARA on agriculture would be to see how it affected the total value of agricultural output. Unfortunately, the different pieces of our data do not match each other precisely—the yields and individual acreage data do not cover the same group of crops, although there is some overlap. We would need to make heroic assumptions on acreage, yields and prices to construct a value-of-agricultural output measure. Instead, we have chosen to present results for individual components that would go into an income measure. We also present evidence on important inputs whose use might be reduced by a credit squeeze.

If DARA had led to a decline in credit for investment, we would expect to see declines in cropped acreage, livestock and other agricultural implements. However, we do not observe such declines in any of these outcomes. Table 9 begins by reporting our findings on total cropped acreage. Our baseline specification (1) includes the district and year fixed effects and the district specific trends. We find DARA increased total cropped area increased by 10 percent.

Because the data are noisy, we are especially careful about outliers. Figure 3 plots the residuals from a regression including the fixed effects, trends and controls, which shows an increase in cropped acreage for the late DARA districts and a huge decline in cropped acreage for the early DARA districts in 1906. The graph points to significant year-to-year variations that we suspect may be due to measurement error in some cases; indeed the Agricultural Statistics themselves give some cause for worry due to factors such as changes in area surveyed. To ensure these outliers are not driving our results, we drop any observations that correspond to a 20 percent change from both the year before and after. While 20 percent may appear arbitrary, our results are robust to alternate cut-offs such as 10 percent. As seen in specification (2), the results on DARA are not sensitive to dropping outliers and we still find cropped acreage increased by 9 percent after DARA.

We subject the findings on total cropped area to more robustness checks in specifications (3) and (4) retaining the sample that drops the outliers.[30] The 1900s were a period of active Government of India involvement in irrigation schemes. While Bombay

[30] The results are unchanged for the full sample that includes the outliers.

was not a recipient of such schemes, there may be concern that some irrigation projects were introduced in the late DARA districts after 1905, but not in the early DARA districts. To test for this possibility, we include the proportion of irrigated area to total area as an additional control in specification (3). In specification (4), we test for differential price effects. For example, if the late DARA districts grew different food and non-food crops compared to early DARA districts, then a differential price increase in these crops after 1905 could drive the results. To address this concern, we include an interaction of the proportion of acreage under food crops in 1896 with the ratio of an index of food prices relative to an index of weighted non-agricultural prices plus another interaction of the proportion of non-food crop acreage in 1896 with a ratio of an index of non-food crop prices relative to an index of weighted non-agricultural prices. The estimates on DARA are remarkably robust to the inclusion of these controls.[31]

Specifications (5) to (8) test for dynamics and here we find no anticipation effects of the legislation on total cropped area. The coefficients on pre-DARA are small and statistically insignificant across all four specifications. We do observe some differential effects of DARA in the short run versus the long run. In the immediate years post-DARA, total cropped acreage increases by 10 to 16 percent on average depending on the specification. But, after 1909, the effects of DARA are less precisely estimated though they continue to be positive and large.

A key capital input in agriculture in our region is the bullock, used in ploughing operations. Rosenzweig and Wolpin (1993), using more recent data from India, have argued that credit constraints lead to underinvestment in bullocks, because the sale of

[31] In results not reported here, we ran regressions where we dropped one district at a time from the sample to ensure again that outliers are not driving our results. The findings on DARA were essentially unchanged.

durables is one way to smooth consumption. Using this intuition, DARA could have led to decline in bullock ownership. In Table 10 we explore if DARA had this effect. We also look at evidence on other farm animals and on carts.

The livestock data were not collected annually and we have data on these series for six years with three years of pre-1905 data and three years of post-1905 data. On account of fewer observations, we are unable to include district specific trends or perform rigorous tests of pre- and post-DARA dynamics. We still include district and year FE along with separate trends for the early and late DARA districts in our most robust specifications (5 to 8). We follow Woodburn's classification of the livestock and do not present results for camels, horses and donkeys, which account for less than 1% of the total livestock.

We find that the average number of bullocks increased by 9 percent following DARA, an effect of roughly the same magnitude as the increase in acreage. This suggests the finding with respect to acreage is not spurious. We also find, in regressions not reported here, that bullocks per acre cultivated do not decline post-DARA. At the least these findings suggest the absence of a squeeze on resources for farming. We also find no adverse effects of DARA on total livestock or other agricultural investment such as ploughs and carts. The coefficients on these variables are small in magnitude and statistically insignificant.

In table 11, we study the effect of DARA on individual crops. It appears that most of the increase in total area cropped comes from an increase in area under rice production (a 58 percent increase). We also observe a decline in the area under non-food production of oilseeds (a 27 percent decrease). The findings on the dynamics also suggest anticipation effects are not significant and most of the effects are driven by changes in the post-DARA world.

Finally, it is possible that the impact of a credit squeeze due to DARA is reflected not in acreage but in yields. The data on yields are notoriously suspect in the Bombay Presidency and elsewhere.[32] Output per acre by crop was reported for each district as a proportion of a "standard yield" which was defined in 1897. The "standard yield" was a misnomer, because output rarely reached that level, and it is better thought of as the yield under ideal conditions. In our final set of regressions (table 12), we study the effect of DARA on the ratio of the current year's yield to the standard yield.[33] We find no negative effects of DARA on these yield ratios. The coefficients are almost always positive except for Bajra and Cotton that are negative but small in magnitude. In a few cases such as Paddy, Kodra and Ragi, types of millets, we also find large and significant positive effects of DARA. Some of these coefficients, for example those on Kodra, are very big. We hesitate to attribute such large effects to DARA, given our concerns about the measurement of yields. But, the general picture is one where we find no negative effects of DARA on yields.

We began this section by noting that, due to data concerns, we would not construct a measure of agricultural output, but would examine data on individual components that would be used to construct a value-of-output measure, and on assets. Our findings suggest DARA had no negative impact on agricultural investments or outcomes. To the contrary there is evidence of a positive impact on total area cropped and some livestock. So, even exercising an abundance of caution, it seems reasonable to conclude that strengthening the hand of borrowers in the colonial Deccan did not reduce agricultural output.

[32] See Heston (1973, 1978), Desai (1973) and Misra (1983) for competing views.
[33] For a few crops, the yield ratios were reported separated for the kharif (fall) and rabi (winter) sowing so we averaged the yield ratio for the two to construct the annual yield ratio.

VIII. Conclusion

We can now return to the two themes with which we motivated our study of DARA: its relationship to colonial India's "legal origins" and its performance as a development-policy intervention. Regarding the former, we have argued that DARA was viewed by the Raj's officials, both critics and supporters, as a change of course, as an acknowledgement that British law and institutions were not necessarily suitable for India. It is worth noting, as we conclude this paper, that after the "Mutiny" this altered perspective emphasizing "difference" influenced British policy in a range of other dimensions as well, from military recruiting (more Europeans) to living spaces (the construction of "bungalows" and "cantonements") that literally distanced Europeans from Indians (Metcalfe 1995). Later years were to see further deviations from British notions of property and contract. The (in)famous Punjab Land Alienation Act (1900), motivated by similar concerns as DARA, should have pleased Raymond West because it substantially restricted land transfers: members of "agricultural tribes" (defined district-wise) could only transfer land to each other, and not to "non-agricultural" tribes.

As an intervention in development policy, DARA can be read as representing a move away from one extreme, where the legal system moved too swiftly to enforce written contracts in a world where borrowers were often illiterate, to one where some borrower protections were provided.[34] DARA's restrictions were not so extreme as to drive out lenders on a large scale, dry up credit, and hurt agricultural production, though they may have reduced some types of consumption expenditure. Having said this, the evidence of subterfuge wherein loans were disguised as sales is not a positive sign.

[34] Many readers will be aware that in present-day India the judiciary moves far too slowly. See Chemin (2009) for evidence on the benefits of more speedy adjudication.

The finding that credit contraction did not hurt agricultural outcomes is consistent with Cole (2009), who found that an increase in election-related rural lending by government banks in India did not raise agricultural output. And the claim that the passage of DARA reduced spending on marriages and funerals reminds us of recent findings by Banerjee et al. (2009) that the expansion of micro-finance availability in Hyderabad settlements led some households to invest, but led others to simply expand their consumption of "temptation goods", potentially putting them in long-term debt. In Banerjee et al.'s example the micro-finance institution did <u>not</u> investigate the purpose of the loan. In contrast, the Bombay Presidency's post-DARA informal lender seems to have distinguished between types of borrowers. The Collector of Broach (Baruch) told the Deccan Agriculturists' Relief Commission (1912, p. 75): "The Act has restricted [the] agriculturist's borrowing power, but not so that a good agriculturist cannot get what he wants for cultivation." It is also possible that lenders' insistence on land sale-deeds to disguise loans alerted borrowers to the risks of borrowing. The Commission, again (p. 8): "The cultivator thinks twice before he passes a sale-deed of land and the terms extracted undoubtedly do tend to make him less reckless in borrowing." Perhaps the lesson of DARA, paternalistic as this may sound, is that forcing both borrower and lender to pause before transacting can increase welfare.

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Table 1: Allocation of Cases Instituted Across Judicial Structure

Year	DARA Suits Under Subordinate Judges in Civil Courts (2)	Suits< 10 rupees in Munsif's Court (3)	Suits < 10 rupees in Civil Courts (4)	Applications to Conciliators (5)
1880	8,249	3,257		48,588
1881	11,607	2,757	988	57,477
1882	11,362	1,929	660	61,386
1883	11,226	1,554	636	49,911
1884	13,244	2,504	786	49,657
1885	14,750	5,030	621	40,641
1886	13,121	5,386	718	32,183
1887	11,520	5,039	734	30,628
1888	10,363	6,058	801	27,381
1889	9,417	7,150	726	24,166
1890	9,694	7,207	851	24,804

Source: Deccan Relief Commission 1892. Col. 2: civ; Col. 3, 4: cxxii; Col. 5: cxxiv

Columns 2 and 4 refer to cases under Chapter II of DARA. See footnote 13 for details.

Table 2: Eligible Cases Disposed Of in Which Past History Was Examined

Year	Total number of Eligible cases	Number contested	Number in which history was Examined	Ratio of Cases in Which History was Examined to All Eligible Cases (in %)	Ratio of Cases in Which History Was Examined to All Eligible Cases Contested (in %)
1881	3,096	1,278	618	19.9	48.2
1882	5,781	2,766	1,404	24.4	50.3
1883	6,677	3,136	1,763	26.4	56.2
1884	7,835	3,412	1,823	23.2	53.4
1885	9,220	3,833	2,134	23.1	55.6
1886	8,412	3,327	1,867	22.1	56.1
1887	5,228	2,038	1,052	20.1	51.1
1888	4,395	1,831	852	19.3	46.4
1889	3,344	1,348	508	15.1	37.6
1890	3,280	1,335	547	16.9	40.9

Source: Deccan Relief Commission (1892, p. cxiii). Only cases involving "agriculturists" were eligible. The cases had to involve "money recovery" or mortgages. Suits for movable property, for instance, were excluded.

Table 3: Ex-Parte Decisions in DARA Courts and Rest of Bombay Presidency

Year	Cases Disposed of by Subordinate Judges Under DARA (1)	Percentage of (1) decided Ex-Parte	Cases Disposed in Other Sub-divisional Courts Outside the Presidency Town (2)	Percentage of (2) decided Ex-Parte
1881	10060	5.9	119,486	38.5
1882	10833	5.2	119878	36.2
1883	11030	5.1	114087	35.1
1884	12960	4.7	118355	35.3
1885	14831	5.5	119535	34.1
1886	14909	6.7	124576	37.7
1887	11548	6.7	129462	37.6
1888	10513	6.3	122139	34.9
1889	9503	6.2	122709	34.7
1890	9761	6.5	128841	34.07

Source: Deccan Relief Commission (1892, p. cix).

Columns 1 and 3 refer to cases under Chapter II of DARA. See footnote 13 for details.

Table 4: Percentage of Reduction in Repayment in Eligible Cases by Type of Suit

Year	# Suits for Money Recovery (1a)	Percentage Reduction in Repayment (1b)	Suits for transfer of mortgaged property to lender (2a)	Percentage Reduction in Repayment (2b)
1884			364	30
1885			355	30
1886	1,310	32	407	33
1887	678	27	272	28.5
1888	489	28	262	25
1889	272	30	168	24
1890	284	26	196	19

Source: Deccan Relief Commission (1892, p. cxv). Only cases involving "agriculturists" were eligible. The cases had to involve "money recovery" or mortgages. Suits for movable property, for instance, were excluded.

Table 5: Woodburn's Difference-in-Difference, 1888

DARA	District	Percentage of Land held by Moneylenders 1876-77	1887-88	% Inc in Sales (value) over Rs. 100/Land Revenue from 1874/75 to 1875/76 average to 1887/88 total	% Inc in Mortgages (value) over Rs. 100/Land Revenue from 1874/75 to 1875/76 average to 1887/88 total
Yes	Poona	13.7	13.7	82	3
Yes	Ahmednagar	13.8	12.9	79	-7
Yes	Satara	5.2	6.4	60	-32
Yes	Sholapur	10.3	10	53	-29
DARA Average		10.75	10.75	70	-17
No	Khandesh	8	10	198	97
No	Nasik	8.2	10.5	98	17
No	Ratnagiri	12.2	14.6	106	67
No	Thana	12.9	18.3	134	48
No	Bijapur	.	.	88	27
Comparison Average		10.325	13.35	135	61

Source: Government of India. 1897. Papers Relating to the Deccan Agriculturists' Relief Act, 1875-94, Volumes I and II. Calcutta, Office of the Superintendent of Government Printing, India. Appendix E, form #4, p. 30,78 and 126.

Table 6: Summary Statistics

	N	Mean	Std Dev	Min	Max
Population	357	855,479	282,958	291,763	1,666,647
Rainfall	357	45.1	31.2	4.8	152.7
No. Sales (over Rs. 100)	323	3,410	2,407	423	15,640
Value Sales (over Rs. 100)	204	1,895,019	1,446,087	449,347	10,100,000
No. Sales (under Rs. 100)	323	1,169	672	144	3,702
Value Sales (under Rs. 100)	204	77,224	40,186	8,700	236,829
No. Mortgages (over Rs. 100)	323	2,888	1,909	584	10,971
Value Mortgages (over Rs. 100)	204	991,787	656,012	197,186	4,088,559
(in acres)					
Total Area Cropped	357	1,406,114	945,250	104,005	3,928,472
Food Grains	357	1,083,678	704,910	36,916	2,487,348
Jawar (29%)	357	404,058	422,251	0	1,655,197
Bajra (20%)	357	278,098	323,653	0	1,160,802
Rice (7%)	357	94,348	90,578	909	338,180
Wheat (6%)	357	78,278	82,815	0	301,892
Ragi (2%)	357	32,753	34,401	4	179,444
Oilseeds (6%)	357	77,325	74,362	379	327,457
Cotton (14%)	357	194,478	315,292	0	1,572,549
Livestock	108	633,277	330,047	109,155	1,453,757
Bullocks	108	156,378	79,576	44,746	394,982
Cows	108	87,175	48,842	5,118	213,900
Male Buffaloes	108	12,510	12,841	149	45,602
Female Buffaloes	108	48,331	29,715	9,113	121,513
Sheep & Goats	108	205,605	170,840	2,233	628,259
Ploughs	108	57,177	23,331	12,615	128,021
Carts	108	29,040	24,925	1,059	135,437

Sources: The population data are from the Census of India 1891-1921 linearly interpolated for the years in between. The rainfall data are from McAlpin (1983). Rainfall data are missing for the district of Panch Mahals. The data on sales and mortgages are from the Registration Reports. These data range from 1896/97 to 1916 and are unreported for 1912 and 1914. The series on total value of sales and mortgages was first reported in 1903. The data on cropped area, livestock, ploughs and carts are from the Agricultural Statistics of India. The cropped area data cover years 1895/96 to 1915/16, the livestock and implements data cover cross-sections 1893/94, 1897/98, 1901/02, 1905/06, 1909/10 and 1915/16.

Table 7: Effect of DARA on Log of Compulsory Registration Documents, 1896-1916

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No. Sales over Rs. 100	Total Value Sales over Rs. 100	No. Sales under Rs. 10	Total Value Sales under Rs. 100	No. Mortgages over Rs. 100	Value Mortgages over Rs. 100	No. Sales and Mortgages over Rs. 100	Value Sales and Mortgages over Rs. 100
Panel A: District FE, Year FE and District Specific Trend								
DARA	0.147*	0.125*	-0.127	0.154	-0.745***	-0.557***	-0.239***	-0.106*
	[0.080]	[0.067]	[0.154]	[0.160]	[0.125]	[0.117]	[0.063]	[0.059]
Panel B: Dynamics of DARA with District FE, Year FE and District Specific Trends								
Pre-DARA	0.239**		0.372**		0.234**		0.236**	
(1902-1905)	[0.105]		[0.151]		[0.091]		[0.085]	
DARA Early	0.376**		0.253		-0.501***		-0.005	
(1906-1908)	[0.158]		[0.267]		[0.162]		[0.116]	
DARA Late	0.212		-0.358		-0.969***		-0.295*	
(1909-)	[0.205]		[0.343]		[0.183]		[0.157]	
Obs	323	204	323	204	323	204	323	204

Notes: Robust standard errors clustered at the district level in brackets. *** p<0.01, ** p<0.05, * p<0.1
We include controls for rainfall, rainfall squared, population and population squared. The data cover years 1896-1916. The data are missing for 1912 & 1914.
The data for volumes are only reported from 1903 so we do not show any dynamic specifications for those variables.

Table 8: Impact of DARA on Money Lenders

	Money Lenders					
	Log of Total Number	per Capita	per Urban Pop	Log of Total Number	per Capita	per Urban Pop
	(1)	(2)	(3)	(4)	(5)	(6)
DARA	0.383	0.000	0.005	0.387	0.000	0.005
	[0.444]	[0.001]	[0.005]	[0.254]	[0.001]	[0.005]
Observations	36	36	36	36	36	36
District FE	No	No	No	Yes	Yes	Yes

	Money Lenders (alternate narrow definition)					
	Log of Total Number	per Capita	per Urban Pop	Log of Total Number	per Capita	per Urban Pop
	(1)	(2)	(3)	(4)	(5)	(6)
DARA	0.544	0.001	0.007	0.541**	0.001	0.007
	[0.426]	[0.001]	[0.005]	[0.238]	[0.001]	[0.005]
Observations	36	36	36	36	36	36
District FE	No	No	No	Yes	Yes	Yes

Notes: Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1

The data includes years 1901 and 1911. We include a dummy for the 1911 cross-section and a dummy for late DARA districts in all the regressions. We also include total population in regressions 1 and 4.

Table 9: EFFECT OF DARA ON TOTAL CROPPED AREA, 1896-1916

	Log (Total Cropped Area)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DARA	0.1014*	0.0891*	0.0910*	0.1052*				
	[0.0560]	[0.0472]	[0.0472]	[0.0594]				
Pre-DARA (1902-1905)					0.0750	0.0282	0.0202	0.0285
					[0.0500]	[0.0300]	[0.0303]	[0.0289]
DARA Early (1906-108)					0.1650*	0.1119*	0.1064*	0.1305*
					[0.0847]	[0.0596]	[0.0591]	[0.0692]
DARA Late (1909-)					0.2239	0.1708	0.1738*	0.2096
					[0.1327]	[0.0990]	[0.0980]	[0.1246]
Obs	357	341	341	327	357	341	341	327
Adjusted R-2	0.964	0.989	0.989	0.989	0.964	0.989	0.989	0.989
District & Year FE, District Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dropping Outliers	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Control Irrigated Area	No	No	Yes	No	No	No	Yes	No
Control Rel. Price Changes	No	No	No	Yes	No	No	No	Yes

Notes: Robust standard errors clustered at the district level in brackets. *** p<0.01, ** p<0.05, * p<0.1

The data cover years 1895/96 to 1915/1916. We drop outliers corresponding to a 20% change from the year before and after. Controlling for irrigated area refers to adding the proportion of irrigated area to gross area as an additional independent variable. In controlling for relative price changes, we add the proportion of food crop acreage in 1896 interacted with the ratio of an index of food prices relative to an index of weighted non-agricultural prices along with the proportion of non-food crop acreage interacted with a ratio of an index of non-food crop prices relative to an index of weighted non-agricultural prices as additional controls.

Table 10: EFFECT OF DARA ON LIVESTOCK AND AGRICULTURAL INVESTMENTS, 1894-1916

	Log							
	Livestock	Bullocks	Ploughs	Carts	Livestock	Bullocks	Ploughs	Carts
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DARA	0.0878	0.0923**	0.0507	0.0274	0.0769	0.0816*	0.0409	0.0222
	[0.0653]	[0.0416]	[0.0585]	[0.0357]	[0.0634]	[0.0405]	[0.0603]	[0.0360]
Obs	108	108	108	108	108	108	108	108
Adjusted R-2	0.929	0.911	0.890	0.985	0.959	0.953	0.923	0.988
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Early & Late Dara Trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	No	No	Yes	Yes	Yes	Yes

Notes: Robust standard errors clustered at the district level in brackets. *** p<0.01, ** p<0.05, * p<0.1

We use the following years of data when the livestock information was reported in the Agricultural Statistics of India: 1893/94, 1897/98, 1901/02, 1905/06, 1909/10 and 1915/16. All the regressions include a control for population. Regressions 1 to 4 also include a dummy for post-1906 and a dummy for late DARA districts (extended in 1905).

Table 11: EFFECT OF DARA ON CROP MIX, 1896-1916

	Log of							
		Food Grains					Non Food	Non Food
	Food-Grains	Jawar	Bajra	Rice	Wheat	Ragi	Oilseeds	Cotton
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DARA	0.0912	0.0631	-0.1296	0.5789**	0.4254	0.4945	-0.2702***	-0.2503
	[0.0598]	[0.1074]	[0.1566]	[0.2571]	[0.2717]	[0.2946]	[0.0685]	[0.2350]
Observations	357	357	357	357	357	357	357	357
Adjusted R-2	0.961	0.996	0.995	0.890	0.990	0.945	0.946	0.989
DYNAMICS								
Pre-DARA (1902-1905)	0.0550	-0.0550	0.1992	0.1737	0.0443	0.4728	-0.1903	-0.3633
	[0.0541]	[0.1726]	[0.1734]	[0.1022]	[0.2003]	[0.3315]	[0.1654]	[0.2396]
DARA Early (1906-108)	0.1343	0.0248	0.0616	0.7176**	0.4670	0.9000	-0.4166**	-0.6350*
	[0.0917]	[0.1775]	[0.2535]	[0.3106]	[0.3487]	[0.5241]	[0.1673]	[0.3176]
DARA Late (1909-)	0.2370	-0.1525	-0.1359	0.9961**	0.4364	1.2094	-0.8111***	0.3041
	[0.1506]	[0.2153]	[0.3758]	[0.4496]	[0.4319]	[0.6945]	[0.1791]	[0.5246]
Obs	357	357	357	357	357	357	357	357
Adjusted R-2	0.961	0.996	0.890	0.995	0.990	0.945	0.946	0.990
District & Year FE, District Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors clustered at the district level in brackets. *** p<0.01, ** p<0.05, * p<0.1

All regressions include controls for rainfall, rainfall squared, population and population squared. The data cover years 1895/96 to 1915/1916.

Table 12: EFFECT OF DARA ON YIELD RATIO, 1897-1916

	Jawar	Wheat	Bajra	Paddy	Kodra	Ragi	Vari	Tur	Gram	Cotton
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
DARA	0.1210	0.3140	-0.0225	0.3928**	0.8558**	0.5223**	0.2539	0.3711	0.3483	-0.0600
	[0.2074]	[0.2000]	[0.1867]	[0.1758]	[0.3290]	[0.2195]	[0.2253]	[0.2759]	[0.2011]	[0.2814]
Observations	271	276	258	313	273	307	293	307	305	238
Adjusted R-2	0.507	0.536	0.620	0.501	0.501	0.550	0.446	0.538	0.500	0.559
Mean	0.64	0.64	0.61	0.69	0.56	0.64	0.61	0.55	0.61	0.61
SD	(0.24)	(0.24)	(0.23)	(0.26)	(0.27)	(0.26)	(0.24)	(0.25)	(0.22)	(0.24)
DYNAMICS										
Pre-DARA (1902-1905)	0.0561	0.3243	0.2893**	-0.0585	0.0830	0.2701	0.1704	0.1539	-0.0567	0.2209
	[0.1722]	[0.2212]	[0.1089]	[0.2924]	[0.2059]	[0.2051]	[0.1534]	[0.2622]	[0.2406]	[0.2969]
DARA Early (1906-108)	0.2128	0.6049*	0.2357	0.3588	0.9717**	0.7766*	0.4852	0.4824	0.3000	0.1286
	[0.2313]	[0.3256]	[0.1699]	[0.4000]	[0.3842]	[0.3741]	[0.2812]	[0.3725]	[0.2700]	[0.3983]
DARA Late (1909-)	0.0626	0.6687*	0.4407*	0.2212	0.9325*	0.8295	0.1785	0.7235	0.0178	0.3466
	[0.3854]	[0.3565]	[0.2194]	[0.5512]	[0.5312]	[0.4968]	[0.5107]	[0.4782]	[0.3199]	[0.4564]
Obs	271	276	258	313	273	307	293	307	305	238
Adjusted R-2	0.505	0.540	0.623	0.498	0.497	0.550	0.449	0.536	0.501	0.558
District & Year FE, District Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors clustered at the district level in brackets. *** p<0.01, ** p<0.05, * p<0.1

All regressions include controls for rainfall, rainfall squared, population and population squared. The data cover years 1896/97 to 1915/1916.

We begin in 1896/97 because the standard yield was defined for 1896/97.

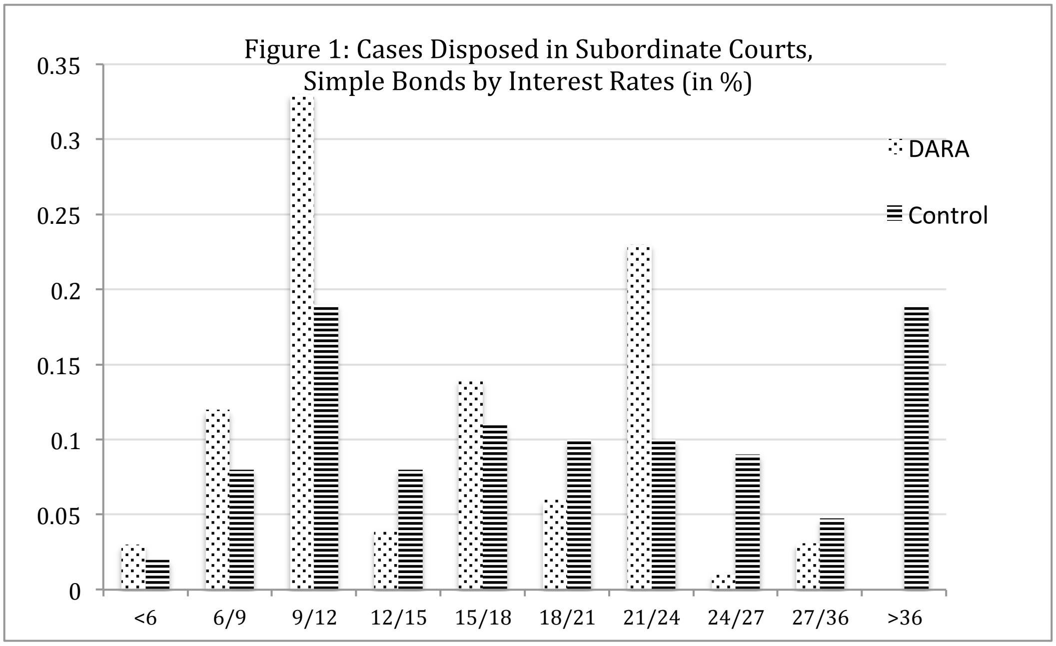
Figure 1: Cases Disposed in Subordinate Courts,
Simple Bonds by Interest Rates (in %)
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
<6
6/9
9/12
12/15
15/18
18/21
21/24
24/27
27/36
>36
DARA
Control

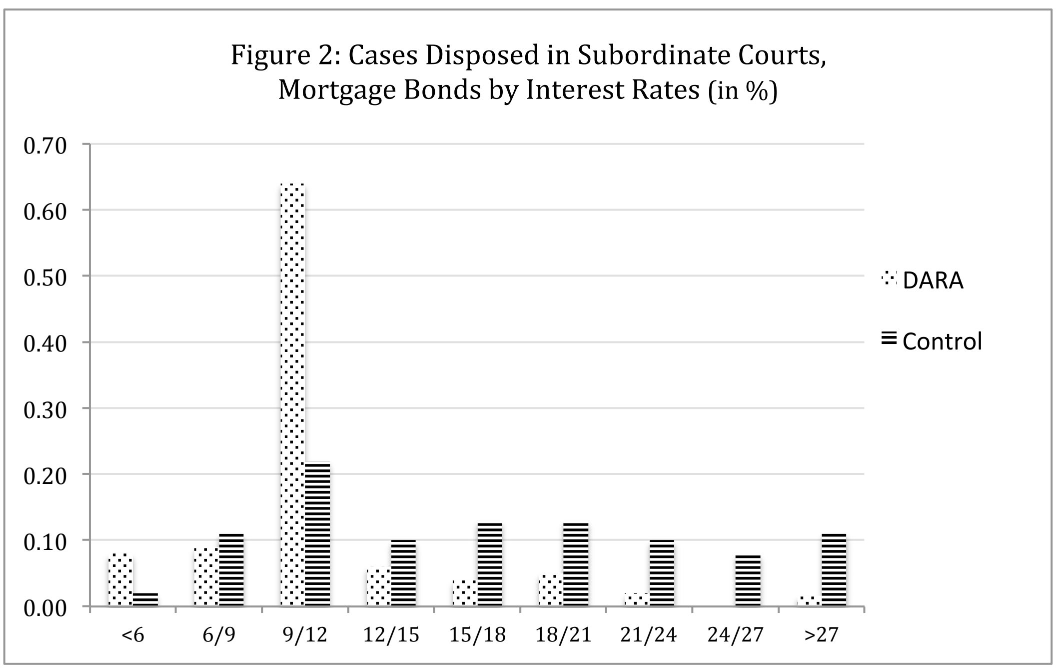
Figure 2: Cases Disposed in Subordinate Courts,
Mortgage Bonds by Interest Rates (in %)
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
<6
6/9
9/12
12/15
15/18
18/21
21/24
24/27
>27
DARA
Control

Figure 3: Total Area Cropped