

# Bureaucratic Discretion in Policy Implementation: Evidence from the Allotment Era\*

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October 17, 2022

## Abstract

From 1887 to 1934, the federal government broke up millions of acres of tribally owned reservation lands and allotted them to individual Native American households. The BIA's local "Indian Agents" oversaw this highly contingent conveyance of property rights. They initially managed the allotted land held in trust, and then later decided when and if to re-title it to fee simple. Building on and going beyond a literature showing that bureaucratic incentives matter greatly for policy implementation, our paper studies empirically to what extent individual agents' idiosyncratic preferences and discretion shaped this process. We find that individual agents were statistically important drivers of policy implementation, introducing an element of historical randomness into the legacy of allotment, which continues to shape the distribution of land titles on reservations to the present day.

*Keywords:* Bureaucrats, Property Rights, Land Tenure, Indigenous Economic Development  
JEL Codes: J15, Q15, N51

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\*We thank Terry Anderson, Donn. Feir, Maggie Jones, Pasha Mahdavi, Melinda C. Miller, Ilia Murtazashvili, Dominic Parker, and the seminar participants at the Hoover Institution for constructive comments and helpful conversations.

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# 1 Introduction

In the half-century that passed between the 1887 General Allotment Act (the Dawes Act) and the 1934 Indian Reorganization Act (IRA), the federal government allotted millions of acres of previously tribe-owned land to individual Native American households. The ownership rights conveyed through allotment were highly contingent. Allotments were initially held in trust status where it could be neither transferred nor alienated. Local BIA agents oversaw the allotted trust land, and it was only after they declared an allottee “competent,” that the land could be re-titled as fee simple land, giving its owner full property rights (Taylor, 1980; Carlson, 1981).

These local BIA agents were federally appointed citizens tasked with overseeing the government’s assimilation campaign. The Dawes period coincided with a transition phase in the U.S. federal bureaucracy. At its beginning, the patronage system was still prevalent, but by the end the bureaucracy had become professionalized in the modern sense (Johnson and Libecap, 1994).<sup>1</sup> In addition to handling allotted trust land, local Indian Agents’ duties included supervising the education of children, encouraging work among adults, managing finances, and reporting to the BIA in Washington D.C. (Office of Indian Affairs, 1877). Regarding land allotment, agents were directed to assess “competency” by evaluating the patentees’ English-speaking ability, literacy, self-sufficiency, and other perceived characteristics of assimilation. Through their decisions, the agents were responsible for the ground-level implementation of federal policy.

The standard economic view of bureaucracy is that career concerns motivate even imperfectly accountable bureaucrats to largely implement the policies that politicians task them with, and that they may do so more effectively because they are shielded from time-inconsistencies between election cycles and policy implementation (Johnson and Libecap, 1994; Alesina and Tabellini, 2007). In contrast, McChesney (1990) assigned a more central role to the incentives of the bureaucracy as a stand-alone organization with its own collective incentives. McChesney (1990) takes his cue from Peltzman (1976) in positioning the BIA bureaucracy as an independent actor, arguing that the half-privatization of Indian land into trusteeship expanded both the BIA’s control and budget, which the 1934 prohibition of further fee-conversion<sup>2</sup> then helped maintain into perpetuity.<sup>2</sup>

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<sup>1</sup>This transition occurred in Europe at the same time, as explored in Xu (2018).

<sup>2</sup>In this, McChesney’s analysis resonates with Pournelle’s Iron Law of Bureaucracy, as well as with Scott’s (2008) seminal analysis in *Seeing like a State*.

The conclusion from [McChesney \(1990\)](#) is that the process of converting allotments into fee likely worked slower than would have otherwise been the case, because BIA agents faced agency-driven incentives to keep more land under BIA control. This is consistent with the fact that in 1913, the Secretary of Interior appointed additional special agents outside of the control of the BIA under the newly formed *Competency Commission* to travel across reservations and conduct interviews with the goal of accelerating the fee-patenting process.

In this paper, we ask whether the motivations and actions of *individual* BIA bureaucrats were also influential in the overall process. [Aghion and Tirole \(1997\)](#) argue that when a principal (i.e., a government agency) faces a large share of agent subordinates who hold views and priorities that diverge from those at the top of the organization, the principal's ability to enforce consistent policy implementation can be severely limited. One practical reason that subordinates' (BIA agents') priorities may have diverged is the ability to extract rents. The Dawes era still contained strong elements of a patronage appointment system, with relatively little local supervision. At the same time, there were various local economic interests that stood to benefit from the conversion of allotted trust land to fee simple.

Allotment, like perhaps most policies, was supported by a coalition of proverbial "bootleggers and baptists" ([Yandle, 1983](#)). Some of the bootleggers (notably local politicians and land speculators) saw reservations as obstacles to local development, and viewed conversion to fee simple as a convenient way of separating Native Americans from their land and making it available for white settlement. Some agents may have been more receptive than others to letting their fee-conversion decisions be influenced by these local interests. Another motivation could have been bureaucrats' own ideology, a pattern that appears to be a stylized fact in the U.S. bureaucracy today ([Spenkuch, Teso, and Xu, 2021](#)). Some agents may have held strong views of their own about whether conversion to fee simple was in the interest of Native Americans or contrary to that interest, and we do find strong indications that this was the case in the qualitative records, which we discuss in [Section 2](#).

To investigate whether the motivations and actions of *individual* BIA bureaucrats were influential, we turn to the RIFLE ("randomization inference for leader effects") method proposed by [Berry and Fowler \(2021\)](#). Applying this method to our data implies bloc-randomizing BIA agents' tenures within their given reservation in a way that holds constant the number of agents and

the length of their tenure, i.e. only the order of tenure is permuted. RIFLE then compares the goodness-of-fit (GoF) of the true data to the distribution of GoFs from the permuted data. The further in the tail of this distribution of GoFs the true data falls, the more confident one can be that the agent fixed effects truly matter for explaining the observed outcome.<sup>3</sup> Figure 1 illustrates this, with the top row depicting the true data, and the three rows below depicting three data permutations.

Figure 1: RIFLE Permutations Illustrated



Notes: This figure shows the principle behind RIFLE's permutation tests. While 3 permutations are shown,  $4! = 24$  are possible with 4 tenure-spells.

Using this method, we find that the assignment of individual agents was important, in the sense that using the true rotation of agents to explain the fraction of land converted to fee simple on a reservation delivers a much better GoF than permuted data does. As an important check on the logic of our approach, we test what happens when we incorporate the Competency Commission in our analysis (with the commission being treated as an agent while it is assigned to a reservation, instead of the resident BIA agent). Consistent with its stated purpose of speeding up fee-conversion (and the McChesnian view of the BIA), we find that the GoF goes up when we include it, and—more importantly—that the difference in GoF between permuted and true data increases when the commission is included in both.

We also hypothesize that discretion should have mattered less when there was clearer policy guidance provided from federal government. To answer this question, we compare the beginning and the end of the allotment period, when there was no clear and cohesive policy guidelines about

<sup>3</sup>While only  $4! = 24$  different permutations of the data exist in the example in Figure 1, the average reservation in our data has nearly 9 agents over the period considered, implying close to  $362,880 (= 9!)$  in which tenures can be bloc-randomized.

conversion to fee, to the middle period, when the federal government created a much clearer policy guideline. (we provide more information in Section 2.) The contrast we find is striking in its starkness: we find that agent fixed effects were very important during the beginning and the end of the allotment period when there was a lack clear policy guidance, and that they did not matter at all during the middle period, when there was very clear federal policy guidance.

We note that our results cannot speak directly to whether the statistical importance on bureaucratic discretion was driven more by differences in agents' receptiveness to rents from local "bootleggers," or more by differences in agents' own preferences and viewpoints on fee conversion. While the second channel may well have been more important and is something emphasized in the literature on today's U.S. bureaucracy (Spenkuch et al., 2021), we do provide evidence that the former channel existed, in the sense that we find fee conversions were higher during negative shocks to agents' real wages, when income effects would have made them more receptive to rent-seeking behavior aimed toward accelerating fee conversion.

Our results add to a growing social science literature on the importance of individuals and individual discretion in shaping policy-making and policy implementation. A variety of statistical approaches have been used by researchers interested in whether leaders affect aggregate outcomes in large organizations: for example, Bertrand and Schoar (2003) study the effect of CEOs on firm-level outcomes, Jones and Olken (2005) investigate the effect of national leaders on country-level outcomes, Yao and Zhang (2015) study the effect of mayors on cities, and Dippel and Hebllich (2021) study the effect of activists and agitators on changes in aggregate social attitudes. Each of these papers uses distinct approaches for statistical identification. In the realm of public choice, the importance of individual discretion for public policy has been demonstrated for judges and politicians.<sup>4</sup> Our analysis shows this importance also extends to bureaucrats.

Our paper also speaks to a body of literature on economic development in indigenous communities, and its relationship to property rights over land (Trosper, 1978; Johnson and Libecap, 1980; Libecap and Johnson, 1980; Anderson, 1995; Alcantara, 2007; Anderson and Parker, 2008; Dippel, 2014; Russ and Stratmann, 2014; Carlos, Dippel, Frye, Johnsen, Le Dressay, Leonard, Lewis, Miller, Nickerson, Parker, et al., 2016; Leonard, Parker, and Anderson, 2020; Dippel, Frye, and Leonard,

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<sup>4</sup>This literature is related to, but distinct from the "judge fixed effect" literature that uses the random assignment of bureaucrats, judges, or case workers to individual cases as a source of *individual*-level exogenous shocks. See, for example, Kling (2006); Di Tella and Schargrodsky (2013) and Dippel and Poyker (2021) for applications.

2020; Alston, Crepelle, Law, and Murtazashvili, 2021; Dippel, Feir, Leonard, and Roark, 2021; Carlos, Feir, and Redish, 2021; Frye and Parker, 2021, 2022; Miller and Gregg, 2022). Had the policy of Indian allotment run its full course, then the considerable discretion of BIA agents that we document would have ultimately not have mattered in that all land would ultimately been allotted and then converted to fee. However, since the policy did not run its full course, and the spatial distribution of land titles on reservations has remained essentially frozen in place since 1934, it follows that the idiosyncratic preferences of local BIA agents a century ago have lasting effects on reservations even today.

## 2 Background

### 2.1 History

The U.S. reservation system was a result of military conflict between Indian nations and the U.S. government fueled by Westward Expansion and increasing land dispossession in the Nineteenth century. The pace of reservation formation was slow while military power was balanced, but it accelerated rapidly once the invention of the Hotchkiss gun tipped military technology irrevocably in the U.S. government's favor, culminating in the tragic 1890 Wounded Knee Massacre (Anderson and Mc Chesney, 1994). By that point, the "Indian problem" had fundamentally changed in nature, from a military one to an administrative one centered on what to do with the reservation system then in place.

Three sets of actors were concerned with the reservations, as they emerged from the Indian Wars. To the federal government, reservations were a thorny problem because they legally constituted foreign nations located inside the U.S. territorial boundaries (Carlos et al., 2021). Local governments and land speculators west of the Mississippi saw reservations as a political obstacle because they occupied a huge share of the land base of many of Western states. Finally, "Friends of the Indian" social reformers—motivated by the causes and concerns that would soon give rise to the Progressive Era—viewed reservations as hindrance to the cultural assimilation of Native Americans because they fostered a communal social organization that was inherently steeped in

tribal traditions.<sup>5</sup> “Kill the Indian to save the man” was the mantra of many reformers.<sup>6</sup>

All three groups favored the break-up of reservations and their division into individually owned land allotments as the solution to their various concerns. They formed a powerful coalition of Yandle’s proverbial “bootleggers and baptists.” The reformers were the baptists, who viewed private land ownership as the best way of achieving cultural assimilation and economic development (Carlson 1981, p80, Otis 2014). State and local politicians and land speculators were the bootleggers who wanted to free up surplus lands for white settlement. The federal government combined a bit of bootlegging with a bit of baptism. It was sympathetic to local pressures for freeing up land, but also required that the proceeds from the sales of the surplus land were to be held in trust and appropriated at the discretion of Congress for “education and civilization” (Banner, 2009). Ultimately, the federal government’s primary concern was resolving the “Indian question,” as reflected in Theodore Roosevelt’s first annual message to Congress in December 1901, which included the following passage: “*The General Allotment Act is a mighty pulverizing engine to break up the tribal mass. It acts directly upon the family and the individual.*”

Backed by this powerful coalition, Henry Dawes introduced an allotment bill to the Senate in 1886. On February 8, 1887, President Grover Cleveland signed the *General Allotment Act* into law, which authorized the president, through the *Office of Indian Affairs* (the BIA’s precursor), to survey and allot reservation lands (Banner, 2009). Lands allotted to Native Americans were initially to be held in trust by the federal government for a period of 25 years or until the local Indian Agent declared a landholder to be “competent” to hold full fee-simple property rights. During this trust period, lands could not be sold, used for collateral, or written into wills. Major leasing activity or changes to land use also required approval of the local Indian Agent.

Initially, the federal government wanted to speed up allotment, and it amended the Dawes Act accordingly with the 1906 Burke Act, which facilitated the issuing of allotments to accelerate the allotment process. Figure 2 shows that allotment sped up considerably after 1906, but that fee conversion did not. When Franklin Lane was appointed as Secretary of Interior by Woodrow Wilson in 1913, he was tasked with accelerated fee-conversion. (In fact, it is more accurate to say he was tasked with faster cultural assimilation, and conversion of land to private ownership was

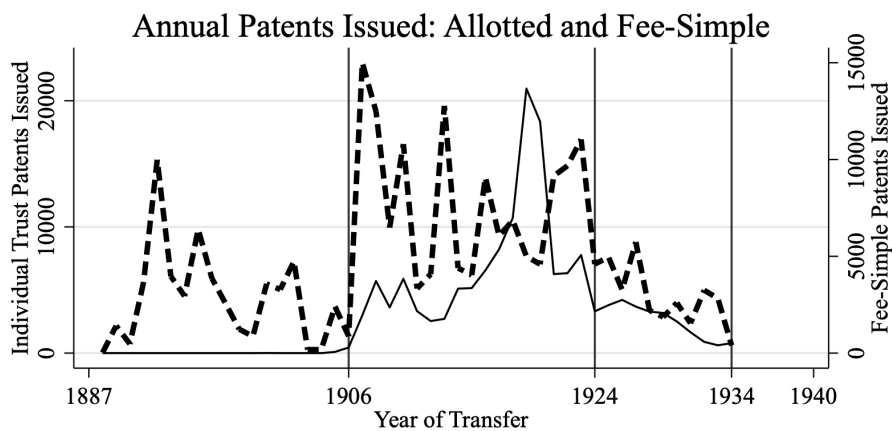
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<sup>5</sup>The two main reformist groups were the *Indian Rights Association* and the *National Indian Defense Association*, respectively formed in 1882 and 1885.

<sup>6</sup>Quote from an 1892 speech by Capt. Richard Pratt, founder of the first Indian boarding school in Carlisle, PA.

viewed as the vehicle to achieving this.) He immediately established a special commission with the sole purpose of expediting the evaluation process and determining which allottees were ready to receive fee patents. These special agents were given full autonomy to determine competency on the grounds of literacy and “self sufficiency” (McDonnell, 1980). They directed most of their efforts toward visiting reservations in the Great Plains and were instructed to interview every allottee once they arrived at a reservation.

Figure 2: Aggregate Flow of Allotments and Transfers into Fee Simple



Notes: This figure tracks the flow of trust patents issued (dashed line) and the flow of patents subsequently transferred into fee simple in the BLM data (solid line), described in Section 3. The Dawes Act officially began in 1887, the Burke Act was introduced in 1906, and the IRA passed in 1934.

Had the Dawes Act run its full course as it was originally intended, all reservations would have *eventually* been fully allotted, and all allottees would have *eventually* seen their land rights converted to fee simple. The Act’s natural end result would have been for reservations to become no more than spatial clusters of Native American individuals, and tribes themselves would have become landless political units with no territory to govern, rendering them powerless. However, the Wilson administration marked the peak in the federal government’s efforts at assimilation through land allotment. This effort began losing momentum when the disproportionate Native American enlistment contributions to the war effort in World War I led many white Americans to reconsider their hostile views towards Native Americans. Mounting stories of allottees being tricked into selling their fee-simple land under its market value also contributed.

The Harding administration that succeeded the Wilson one viewed allotment as a lower prior-



ity, and its Secretary of Interior John Payne terminated the Competency Commission. In total, the commission issued over 20,000 patents covering roughly 1 million acres. Under the subsequent Coolidge administration, the 1924 Indian Citizenship Act abolished the previous rule of making fee-simple land ownership a pre-requisite for U.S. citizenship, and the 1928 Meriam report greatly contributed to a public perception that allotment was not in the best interest of Native Americans. Figure 2 shows that the conversion of allotments slowed considerably after 1920, and the creation of new allotments slowed considerably after 1924.

By the 1930s, sentiment within the federal government began decisively turning against allotment, partly because of the failures of allotment reported in the Meriam report, and, if McChesney (1990) is correct, because the BIA tried to protect its own relevance. In 1934, Commissioner of Indian Affairs John Collier introduced the Indian Reorganization Act (IRA) and ended allotment. Reservations that had not yet been surveyed by the BIA at that point would never become allotted at all (unallotted reservations play no role in our empirical analysis); the IRA kept allotted-trust land in trusteeship status indefinitely; already-converted fee-simple land remained fee simple; and unallotted lands remained under tribal ownership (held in trust with the federal government) to the present day. The IRA's legacy was to freeze into perpetuity whatever patchwork of individually owned allotted-trust plots, individually owned fee-simple plots, tribally owned plots, and surplus lands existed in 1934.

## 2.2 The BIA Agents and the Process of Allotment and Fee-Conversion

The partial completion of allotment raises a number of questions about how lands were selected for allotment and subsequent conversion to fee simple. Allotments were mandatory on an allotted reservation, and that there was no explicit policy about selecting land for allotment. Allottees could select a plot, but often did not, in which case the *allotting agents* determined the assignment of allotments (Banner, 2009; Otis, 2014; Carlson, 1981). It is unclear whether *allotting agents* knew much about differences in land quality across parcels they were allotting (Bureau of Indian Affairs, 1887–1926). The 1928 Meriam report, characterized the process as follows: “*The original allotments of land to the Indians were generally made more or less mechanically. Some Indians exercise their privilege of making their own selections [...]; others failing to exercise this right where assigned land. Often Indians who exercise the privilege made selections on the basis of the utility of the land as a means of continuing their*

*primitive mode of existence. Nearness to the customary domestic water supply, availability of firewood, or the presence of some native wild food were common motives” (Meriam, 1928, p470).<sup>7</sup>*

In terms of the conversion of trust lands to fee simple, the competency rules suggest that conversion was in large part a function of the age of an allotment (time passed since initial allotment). However, [Dippel and Frye \(2021\)](#) also find evidence that some allottees responded to the incentives of the allotment policy by *signaling* their competency (read “cultural assimilation”) to the BIA agents through acts like going to church and wearing “civilized dress.”

How much influence did individual bureaucrats exert in this process? The historical and institutional narrative surrounding allotment makes it clear that agents possessed considerable discretion over the assignment of allotments ([Banner, 2009](#); [Otis, 2014](#); [Carlson, 1981](#)).<sup>8</sup> This discretion appears to have been paired with fairly idiosyncratic views on allotment itself. Some primary accounts of the era suggest *allotting agents* might have attempted to sway allottees away from better lands, or lands that may be more valuable for sale as surplus.<sup>9</sup> While some primary accounts suggest that *Indian agents* may have accelerated the transfer to fee simple for pernicious reasons, knowing that first-time landowners inexperienced with property right may be conned into selling their land under value, other accounts suggest *Indian agents* may have slowed down the transfer to fee simple based on the exact opposite motivation.

We find statements about the importance that individual BIA agents’s preferences had for implementation in the [Bureau of Indian Affairs](#) Annual Reports, and one particular passage characterizes three preference-types among agents “ *Those who believe in the wisdom of tribal ownership and in the policy of continuing the Indian in his aboriginal customs, habits, and independence, opposite because it will eventually dissolve the tribal relationships and calls his absorption into the body politic. On the other hand, those who expected that the severalty act would immediately open to public settlement long coveted Indian lands, oppose it because they have learned that these expectations will not be realized. There is a third class of persons who are heartily in favor of allotting Indian lands, but who are apprehensive that, under the flexible terms of the allotment act, allotments may be forced upon Indians before they are ready*

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<sup>7</sup>Meriam’s report was written for the Institute of Governmental Research, a precursor of Brookings Institution. The report was concerned with the socio-economic conditions on reservations, with special attention to allotment.

<sup>8</sup>Agents’ other responsibilities included preventing conflicts with settlers, licensing purchases or sales of Indian lands, distributing annuities from the federal government, and coordinating with the US Army.

<sup>9</sup>Excess lands that remained after making allotments to all households on a reservation were declared “surplus” and sold directly to settlers.

to receive, use, and hold them.” These idiosyncratic views coupled with their considerable discretion suggest that the identity of the local agents may have been an important part of the process of allotment.

We use a novel data set developed in [Dippel et al. \(2020\)](#) to shed new light on the importance of bureaucratic discretion in the conversion of lands from allotted trust to fee simple. This data set maps the universe of historic land re-titling (including allotments) from the *Bureau of Land Management* (BLM) onto the *Public Land Survey System* (PLSS). This mapping creates for each 160-acre quarter-section a full history of legal titles it was held under, including the corresponding transaction dates.<sup>10</sup> One clear stylized fact in these data is that there are substantial differences in the process of *initial allotment* across reservations. Whereas individual Indian Agents had discretion over which landholders were “competent” to receive fee simple title early, the timing and nature of allotment at the reservation level was more complex.

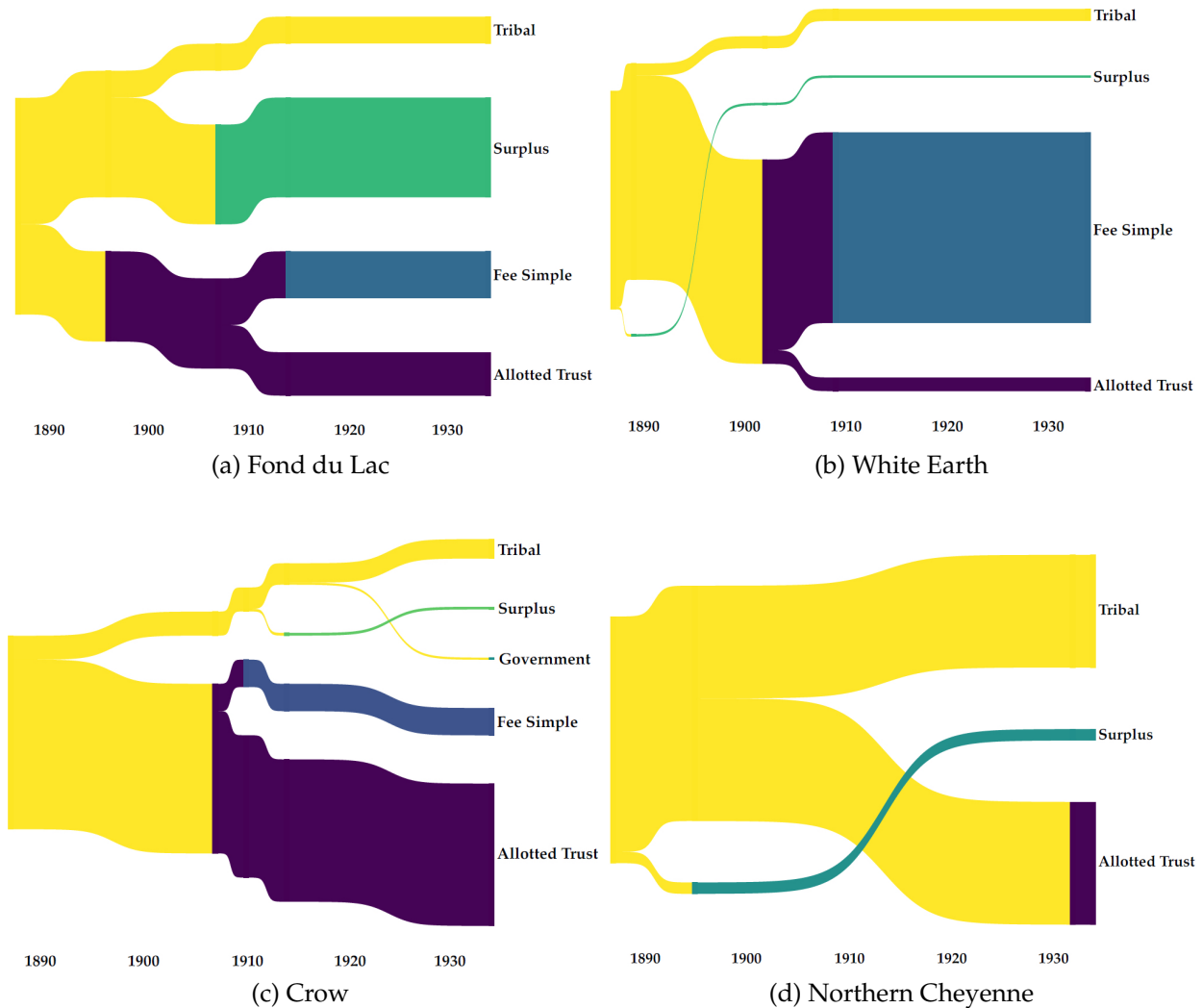
Figure 3 provides a stylized depiction of the flow of land out of tribal ownership for four example reservations that are representative of how the process played out more broadly. The thickness of each bar represents the share of land in a given land tenure class, while the shifts in color denote the dates of major changes to land tenure (e.g., allotment, conversion to fee, or declaration of surplus land).<sup>11</sup> Panel (a) depicts the Fond du Lac reservation in Minnesota, where about 44% of the land was allotted to individuals with another 48% declared surplus and opened for white settlement, and the remainder retained by the tribe. Of the land that was allotted, roughly half was converted to fee simple. Panel (b) of Figure 3 depicts allotment on the White Earth Reservation (also in Minnesota), and provides an interesting contrast to Fond du Lac. On White Earth, nearly the entire reservation was allotted, moreover nearly all allotted land was converted to fee simple. The share of tribal and surplus land is negligible in this case. Panel (c) depicts still another example on the Crow Reservation, where most land was allotted, but very little allotted land was converted to fee. In addition, some land on the Crow Reservation was allocated to the State of Montana. Finally, Panel (d) depicts the Northern Cheyenne Reservation, where only about half the reservation was allotted, with a small amount of surplus. Interestingly, Northern Cheyenne

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<sup>10</sup>Once land becomes fee-simple its legal status enters an absorbing state, and subsequent private sector transactions and sales of land are not reported in the BLM data.

<sup>11</sup>We approximate these dates with reservation-level averages here for simplicity of exposition). In reality, there may have been multiple waves of allotment on a given reservation, as well as a more continuous flow of land from allotted trust to fee simple.

Figure 3: Variation in the Allotment Process Across Reservations



Notes: This figure depicts flow of land out of tribal ownership into allotted trust, fee simple, surplus, or government ownership. The width of each bar represents the share of land in a given category. Nodes (points where changes in color occur) represent reservation-level averages for the date of transition from one type of land ownership to another. In reality, there may be a more continuous flow of land from one category to another (especially for conversion to fee).

was allotted so late that none of the land converted to fee-simple ownership before 1934.

The upshot of Figure 3 is that the allotment process played out very differently on different reservations. These differences in the patterns of *initial allotment* were not a function of the identity of the local BIA agents. Instead, they were a function of broader reservation-level factors that shaped the overall approach that the BIA took to a reservation's allotment process. These factors included land quality, distance to mining activity, population pressure, amount of available land for surplus, and proximity to railroads (Leonard et al., 2020). We investigate the decision over

which reservations to allot and how to allot them in a separate paper, while our focus here is exclusively on the conversion of allotted land to fee-simple land.

### 3 Data

#### 3.1 Allotment data

Following approval from the President, each land patent issued on a reservation was filed with the General Land Office (GLO). These patents—subsequently digitized by the Bureau of Land Management (BLM)—record the transfer of land titles from the federal government to individuals. Each patent contains information regarding the patentee’s name, the specific location of the parcel(s), the official signature date, total acreage, and the type of patent issued. These patents include—among other things—cash sales, all homestead entries, grants to railroads and states, and Indian allotments. An important feature of the GLO data is that we can see the date on which each allotment was issued and the date on which it was converted into fee simple, if ever. This ability to follow the individual allotments and when they were converted to fee simple allows us to identify them as either allotted-trust or fee-simple lands in any given year. For the purposes of the present paper, we aggregate these into a reservation-year panel dataset, where each observation gives the aggregate cumulative number of allotments issued and converted to fee simple. (Figure 2 depicts the nationwide non-cumulative flow-aggregates of the same data from 1887–1934.)

#### 3.2 The Indian Agents

To quantify the effects of local agents on the conversion of allotted trust patents to fee simple, we construct a complete reservation-year panel of Indian Agents from 1879–1940. Our primary source of agent information is from the Department of Interior employment rosters recorded in the [Official Register of the United States \(1934\)](#).<sup>12</sup> The records provide agent name, birthplace, position title, and annual pay. Each agent is listed by agency and city. We supplement these records with agent narratives included in the annual Bureau of Indian Affairs Reports. Each agent was required to produce a summary of agency events, which were included in the annual reports

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<sup>12</sup>The Official Registers were published biennially over the entire period of interest.

until 1907. We recorded each agents name from the end of the summary. We are also able to compare these records with the agent names listed in the *Indian Census Rolls* (ICR). The ICR were annual censuses collected by the BIA on reservations; and have been digitized by [Dippel and Frye \(2021\)](#). These three sources give us an agency-year panel that specifies the local Bureau of Indian Affairs agent.

Over the 60 years of interest, responsibility over reservations is often transferred across agencies. Additionally, agencies are often consolidated, split, created, and terminated. Records from the prior data sources are associated with agency names at the time. To match agent names to agencies and reservations requires creating multiple crosswalks.

- Crosswalk 1: Reservation to Master Agency List - This crosswalk relies on creating an agency history that tracks the reservations under each agency at each point in time. To create this history, we relied on National Archives records that outlined the transfer of agencies over time and information from [familysearch.org](http://familysearch.org), a genealogy website that has additional information on each agency over time. Using these records we assigned each modern reservation to the appropriate historic agency at each point in time.
- Crosswalk 2: Master Agency to Agent Names - These crosswalks rely on connecting the agency names in the Master Agency List to the recorded agencies in the three data sources described above. The Master Agency list corresponds to the official agency in charge of reservations, but often the records used old agency names or modified agency names. For each data source, we hand-matched the Master Agency with the recorded agency in the source.

The combination of these crosswalks with the agency-year panel results in a reservation-year panel that specifies the identity of each agent that oversaw the conversion of patents to fee simple in every year.

### **3.3 The Process of Converting Allotments to Fee Simple**

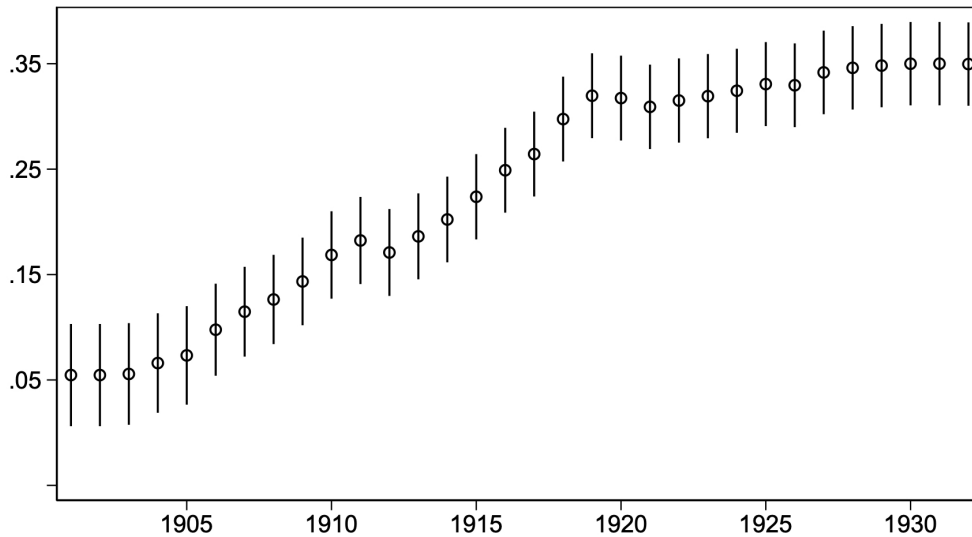
Figure 2 shows the aggregate flow of initial allotments and conversions to fee. This picture con-  
founds the conversion of existing allotments into fee simple with the creation of new allotments

as well as with new reservations being brought into the allotment process. To get a clearer view of the aggregate process of converting allotments into fee simple, we create a panel dataset in which one observation is a reservation  $r$  in year  $t$ , each  $r$ 's time-series begins when allotment begins and runs to 1934 (i.e. the panel is unbalanced with different start dates but it has shared end dates). In this dataset, we regress  $r$ 's share of allotments that have been converted to fee simple on only a set of reservation and year fixed effects, as in

$$y_{rt} = \mu_r + \mu_t + \epsilon_{rt} \tag{1}$$

Figure 4 displays the resulting coefficients on the year fixed effects  $\mu_t$ . The figure shows that in 1900, only about five percent of allotments had been converted to fee simple on the average reservation. The process visibly accelerated after 1907 with the passage of the Burke Act, and by 1915 about 20 percent of allotments had been converted. The conversion process continued to accelerate for a few more years, but began plateauing in the early 1920s with an average of about thirty percent of allotments having been converted. In the next section, we turn to the focus of our paper, investigating the role that individual agents played in shaping this aggregate pattern.

Figure 4: Regression of Share Allotments Converted to Fee



Notes: This figure plots the year fixed effects from a regression of reservation  $r$ 's share of allotments that have been converted to fee simple on only reservation and year fixed effects.

## 4 Results

### 4.1 Core Results

In this section, we investigate the role of the BIA’s individual Indian agents in the allotment process. More precisely, we ask whether two otherwise identical allotments would have had different prospects of being converted to fee simple if the conversion process had been administered by different agents on the ground. To answer this question we employ the “randomization inference for leader effects” (RIFLE) methodology advanced by [Berry and Fowler \(2021\)](#).

Other methods that have been employed in the empirical literature asking whether certain individuals matter for aggregate outcomes include methodologies that test for statistical trend breaks around personnel-changes (see, e.g. [Jones and Olken 2005](#)), and methodologies that test simply for the statistical significance of personnel fixed-effects estimated in panel regressions (see, e.g. [Bertrand and Schoar 2003](#) and [Yao and Zhang 2015](#)).<sup>13</sup> The first of these two alternative methodologies relies heavily on structural breaks in the outcome variable. This is not a major concern when studying normally distributed outcomes like economic growth, but it is not suitable for settings where the outcome changes slowly over “spells of years,” or where the outcome is a “ratchet,” i.e. the share of allotments converted increases monotonically over time. The second of these alternative methodologies relies heavily on the rotation of personnel across units of observation. For instance, [Bertrand and Schoar \(2003\)](#) rely on observing individuals as the CEOs of multiple companies, and [Yao and Zhang \(2015\)](#) rely on observing individuals as the managers of multiple cities. [Berry and Fowler \(2021\)](#) point out that there is a general danger of assigning *spurious* statistical significance to fixed effects in such settings, and this danger increases the less personnel-rotation there is across units, because a unit fixed effect (e.g. a fixed effect for a company, city, or in our case a reservation) becomes harder to statistically distinguish from a series of personnel fixed effects.

Using RIFLE, a reservation’s time-series is conceptualized as a series of BIA agent spells, and

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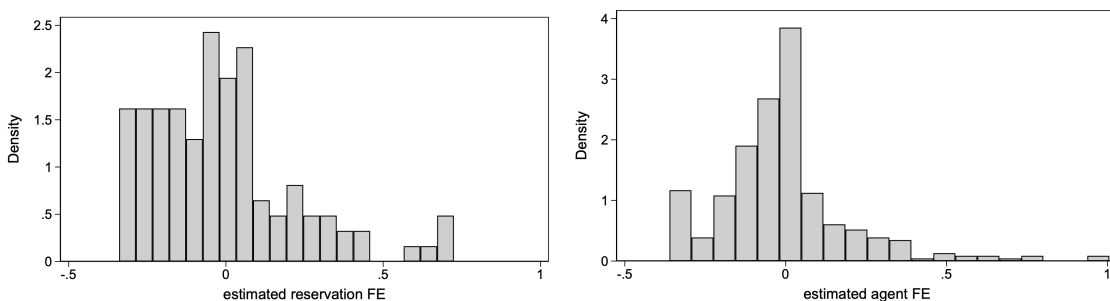
<sup>13</sup>Another related literature uses the random assignment of personnel to individual cases. This literature is quite distinct in that the importance of personnel assignments is the identification strategy for identifying the effect of the personnel’s decisions (e.g. guilty verdicts by a judge) on *individual*-level outcomes (e.g. individuals’ earnings trajectories). See, for example, [Kling \(2006\)](#); [Di Tella and Schargrodsky \(2013\)](#); [Galasso and Schankerman \(2014\)](#); [Aizer and Doyle Jr \(2015\)](#); [Melero, Palomeras, and Wehrheim \(2017\)](#); [Dobbie, Goldin, and Yang \(2018\)](#); [Frandsen, Lefgren, and Leslie \(2019\)](#); [Berry and Fowler \(2021\)](#).



these spells are then bloc-randomized within the reservation, holding constant the distribution of different spell lengths within its history. Suppose agent A was assigned to a reservation from 1900–1906, and agent B from 1907–1910. Under the hypothesis that agents mattered to the allotment process, a model that assigns these agent-spells correctly should provide a better goodness of fit (GoF) to the outcome than a permuted model in which agent B was assigned to a reservation from 1900–1903, and agent A was assigned from 1904–1910. Importantly, RIFLE recognizes the likelihood of assigning spurious significance to agent fixed effects in such settings and the tests do not ask whether agents are significant. Instead, they ask whether a model with correctly assigned agent spells has a significantly better GoF than a model with counter-factually permuted agent spells.

We begin with a simple characterization of variation in the raw data using reservation fixed effects and agent fixed effects. The left panel of Figure 5 displays the distribution of reservation fixed effects estimated in equation (1). Clearly, the conversion of allotments to fee simple varied substantially across reservations, suggesting that there is indeed scope for individual discretion to play a roll (e.g., the policy was not applied uniformly by the federal government).

Figure 5: Comparing Reservation and Agent Fixed Effects



Notes: This figure’s left panel displays the distribution of 116 reservation fixed effects, the right panel displays a (separately estimated) distribution of 369 agent fixed effects

The right panel of Figure 5 displays the distribution of agent fixed effects estimated in equation (1), when we replace 116 reservation fixed effects  $\mu_r$  with 369 agent fixed effects  $\mu_i$ . The dispersion in the distribution of  $\mu_i$  provides clear evidence that some agents were outliers in their propensity to convert allotments. The upshot of Figure 5 is that the raw data support the idea that agents may have played an important role in conversion to fee simple, as the process of conver-

sion was not applied uniformly, and agents themselves differed their propensity for converting allotments to fee simple.

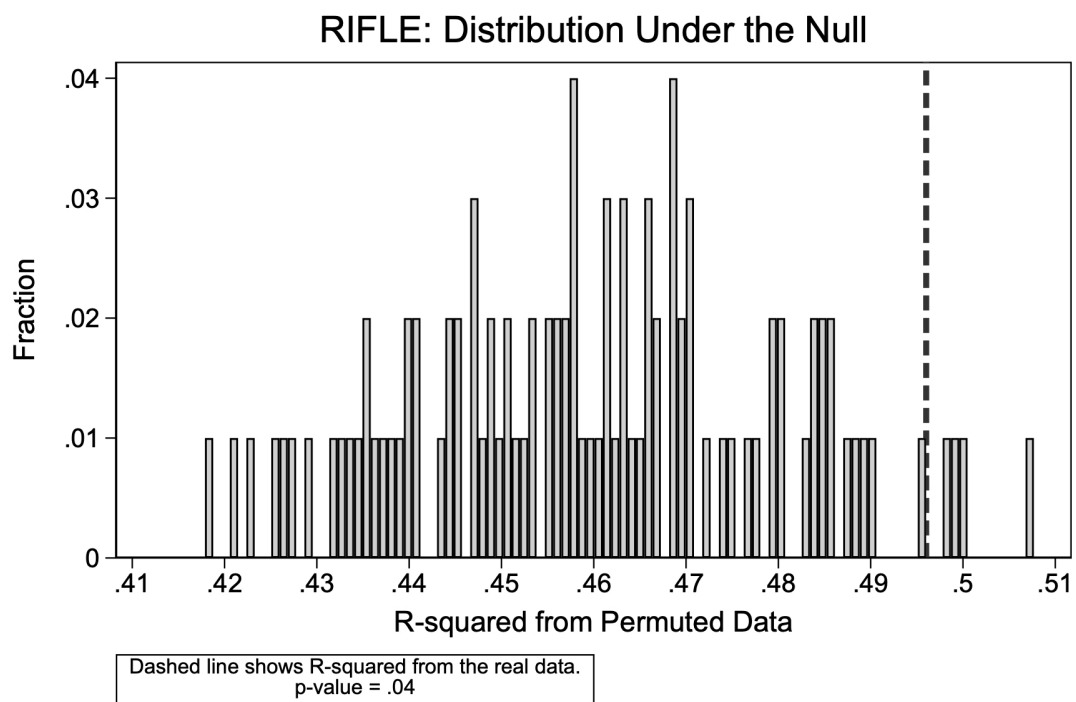
The evidence in Figure 5 can of course only be viewed as suggestive as it does not deliver a formal metric for gauging the importance of agents. Furthermore, the fixed effect estimates could be potentially confounded by a number of factors; some agents may, for example, have entered the fray at a period of time particularly conducive or (non-conductive) to fee-conversion.

To get a more concrete and unbiased gauge of the importance of agent discretion in the allotment process, we now turn to the RIFLE analysis proposed in [Berry and Fowler \(2021\)](#), where we hold as fixed all agent spells associated with reservation  $r$ , but bloc-randomize these spells over  $r$ 's time-series of data (without ever breaking blocs). Figure 6 displays the distribution of adjusted R-squareds that arises from permuting the agent fixed effects a large number of times. Under the hypothesis that agent discretion mattered for allotments' conversion to fee, the R-squared resulting from the permuted data should be smaller than the R-squared using the true data. If, on the other hand, agents had no discretionary power, then the R-squared resulting from the real data (dashed vertical line) should be centered on the distribution of R-squareds. Figure 6 shows that only four percent of data-permutations generate an adjusted R-squared that is higher than the one that results from using the true data. This strongly suggests that whether an allotment was converted to fee simple before the 1934 IRA did indeed depend critically on the discretion of the BIA agents that happened to be in charge of a reservation during the period of Indian allotment.

**RIFLE Results with the Competency Commission** The RIFLE methodology also allows us to expand the baseline analysis displayed in Figure 6 in a number of interesting directions. One question of particular historical interest is how important the 1913–1916 Competency Commission (discussed in Section 2) was in the historical process of allotment.

The RIFLE methodology allows us to get at the commission's importance in a straightforward manner, by simply replacing the local BIA agents's fixed effects with a competency-commission fixed effect when the commission was on a reservation in a given year. We then re-run RIFLE. If the competency commission was as important as the historical record suggests, then we should see even stronger RIFLE results when we update the identity of agents with a commission fixed effect. Indeed, Figure 7 reports a p-value of three percent instead of the four percent in Figure 6.

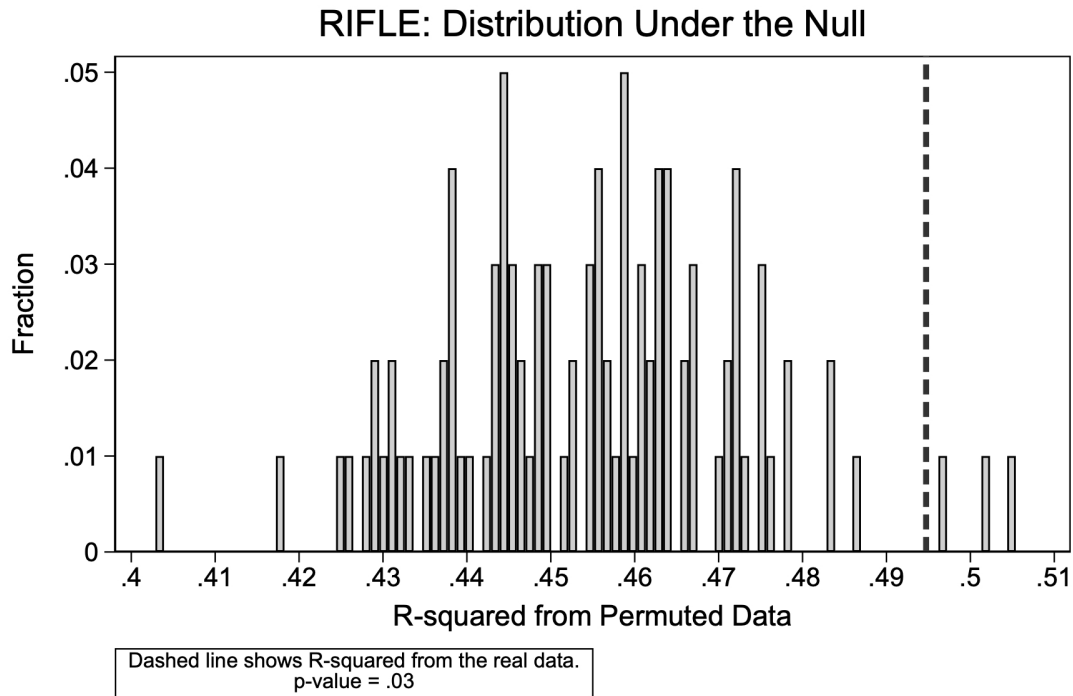
Figure 6: Baseline RIFLE Results



*Notes:* This table displays the distribution of adjusted R-squareds that arises from permuting the agent fixed effects a large number of times. Under the hypothesis that agents mattered, the R-squared resulting from the permuted data should be smaller than the R-squared using the true data. If agents had no discretionary power, on the other hand, the R-squared resulting from the real data (dashed vertical line) should be centered on the distribution of R-squareds.

This means that the true data's GoF outperforms the permuted data even more strongly when we include the competency commission, which in turn suggests that the competency commission's influence mattered for the process of conversion over and above what was determined by the local BIA agents.

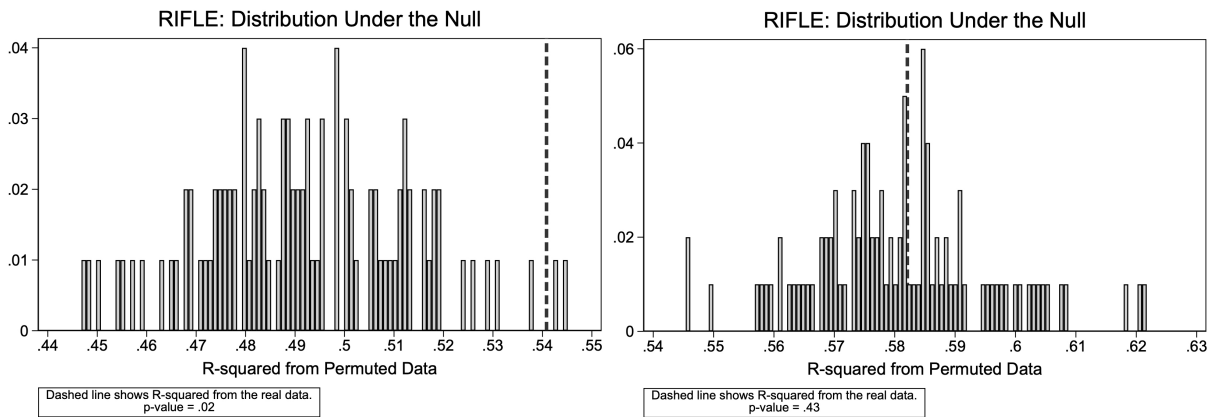
Figure 7: RIFLE Results with the Competency Commission



**Bureaucratic Discretion with and without Clear Policy Guidance** Our investigation into the competency commission can be viewed as a broader question in the study of organizational economics and organizational behavior: to what extent is bureaucratic discretion a function of clear policy guidance provided from the top of a bureaucracy. The statistical importance of the Competency Commission may be better interpreted as evidence for the importance of clear policy guidance than as evidence for agent discretion, in the sense that the Commission's responsibilities had been quite clearly defined in Washington. A broader way of asking how the importance of bureaucratic discretion depended on policy guidance is to compare the beginning and the end of the allotment period, when there was no clear and cohesive policy guidelines about conversion to fee, to the middle period, when the Burke Act had created a very clear and cohesive policy guideline. For this purpose, we cut the data into two sub-samples of equal size, one covering the time win-

dow 1887–1906 plus 1925–1935, the other covering the time window 1907–1924. Figure 8 contrasts the results of performing RIFLE estimations in the two samples. The contrast is directionally intuitive but nonetheless striking in its starkness: The left panel shows that agent fixed effects were very important during the beginning and the end of the allotment period, when there was a lack of clear policy guidance. In contrast, the right panel shows that agent fixed effects did not matter at all during the middle period, when there was very clear federal policy guidance. Specifically, in the right panel the adjusted R-squared from the real data falls squarely in the middle of the distribution of permuted-data R-squareds.

Figure 8: The Importance of Bureaucratic Discretion With and Without Clear Policy Guidance



Notes: This figure’s left panel displays the RIFLE results for the time window 1887–1906 plus 1925–1935, i.e. excluding the era from the Burke Act to the Indian Citizenship Act during which federal guidance on Indian allotment was the clearest and most cohesive. The right panel displays the RIFLE results for the time window 1907–1924.

## 4.2 Discussion and Additional Results

Note that the RIFLE results cannot tell us anything about the preferences of agents in the aggregate. RIFLE is really a test of whether there is significant variation in estimated agent fixed effects, but because agent fixed effects will always be centered around the omitted fixed effect at a zero value (see e.g. Figure 5), those fixed effects won’t be systematically positive or negative.

Furthermore, the RIFLE results cannot tell us whether these significant differences in estimated agent fixed effects reflect differences in agents’ preferences or points of view on the merits of converting land to fee simple, or whether they may instead reflect in larger part differences in

agents' willingness to engage in rent-seeking or in letting local pressures guide their decisions.

The possibility of the rent-seeking being an important driver of agent behavior would be consistent with the historical narrative. For example, according to [Banner \(2005, p283-284\)](#) *"there was considerable room for fraud in these transactions, partly because of the ignorance of many of the sellers, but largely because government officials and land purchasers could find it easy and profitable to work together. This was another very old story, going back to the colonial era. Government salaries were always low enough to make additional income welcome, and on the frontier, government officials and land purchasers were always part of the same small social circle, having much more in common with each other than with the Indians. Tams Bixby, for example, was chairman of the Dawes Commission, the government body responsible for allotting the land of the Oklahoma tribes. At the same time, he was also president of the Canadian Valley Trust Company, a major purchaser of Indian land, whose offices happened to be in the same building as those of the Dawes Commission. Other members and employees of the Dawes Commission were also associated with the Canadian Valley Trust Company"*

Figure 9: BIA Agents Real Wages and the CPI



Notes: This figure shows the decline in agents' real wages as a result of the sharp increase in the consumer price index in the wake of World War 1. Income data from [United States Government Printing Office \(1934\)](#).

While we cannot directly test these competing mechanisms, we can at least ask if there is evidence that is consistent with rent-seeking. What allows us to ask the question is the fact that sizable variation in the consumer price index during the Dawes era interacted with nominally rigid wages to generate sizable variation in real agent wages not driven by any factors endogenous

to the agents themselves or the BIA more broadly. This is shown in Figure 9. If rent-seeking by BIA agents was real, it likely would have increased during periods of negative real-wage growth as this would have generated income effects for agents, to the extent that various parties—settlers, land speculators, and local business interests—stood to gain from increasing the supply of land available for white settlement.

This hypothesis is consistent with the 1916-1920 negative real-wage shock in Figure 9 exactly coinciding with the highest-conversion window in Figure 2. Of course, a regression would offer more convincing evidence for there being a causal connection, and in Table 1 we report the results of estimating equation (1), with the real wage  $w_{rt}$  of the agent in charge of reservation  $r$  at time  $t$  added to the regression. The table displays a robust and significant effect whereby a one-percent real-wage drops raises the rate of allotment conversion to fee simple by between four and seven percent. The statistical significance of this pattern is robust even when we add agent fixed effects and year fixed effects to the reservation fixed effects.

Table 1: Agents’ Real Wages and Conversion to Fee

	(1)	(2)	(3)	(4)	(5)
Year	0.210*** (0.077)	0.442*** (0.148)	0.112 (0.087)	0.224 (0.165)	
Year*Year	-0.000*** (0.000)	-0.000*** (0.000)	-0.000 (0.000)	-0.000 (0.000)	
log (real wage)			-0.040*** (0.010)	-0.059*** (0.014)	-0.071*** (0.026)
Observations	3,835	3,804	3,383	3,358	3,358
R-squared	0.668	0.838	0.679	0.841	0.846
fixed effects	reservation	reservation +agent	reservation	reservation +agent	reservation +agent + year

Notes: Results from estimating equation (1), where the share of allotments converted to fee simple is the outcome of interest. Each column introduces a new set of fixed effects. Agent wage data from [United States Government Printing Office \(1934\)](#).

## 5 Conclusion

This paper is concerned with the empirical question of how much the discretionary choices of BIA bureaucrats mattered to the process of Indian land allotment, particularly to the rate at which

land allotments were converted from trust status to fee simple status. Using the randomization inference for leader effects (RIFLE) methodology, we find strong support for the hypothesis that the “fate” of an allotment being converted to fee simple before the IRA indeed depended critically on the BIA agents that happened to be in charge of a reservation during the period of Indian allotment.

A sample split of the data into periods when there was clear policy guidance from Washington and periods when there was not suggest that the importance of bureaucratic discretion was a function of clear policy guidance. Specifically, agent fixed effects were very important when there was no clear guidance, and not very important when there was. Moreover, changes in presidential administrations also display a strong influence on the process of conversion to fee simple. Together, these results provide new empirical evidence on the scope for presidential administrations to shape the actual implementation of policies that were initially crafted and approved by the legislative branch. Hence, our results speak to growing social science literature on the individual discretion of bureaucrats, judges, administrators and politicians in shaping aggregate outcomes, including government policies.



## References

- Aghion, P. and J. Tirole (1997). Formal and real authority in organizations. *Journal of political economy* 105(1), 1–29.
- Aizer, A. and J. J. Doyle Jr (2015). Juvenile incarceration, human capital, and future crime: Evidence from randomly assigned judges. *The Quarterly Journal of Economics* 130(2), 759–803.
- Alcantara, C. (2007). Reduce Transaction Costs? Yes. Strengthen Property Rights? Maybe: The First Nations Land Management Act and Economic Development on Canadian Indian Reserves. *Public Choice* 132(3-4), 421–432.
- Alesina, A. and G. Tabellini (2007). Bureaucrats or politicians? part i: a single policy task. *American Economic Review* 97(1), 169–179.
- Alston, E., A. Creppelle, W. Law, and I. Murtazashvili (2021). The chronic uncertainty of american indian property rights. *Journal of Institutional Economics* 17(3), 473–488.
- Anderson, T. L. (1995). *Sovereign Nations Or Reservations? An Economic History of American Indians*. Pacific Research Institute.
- Anderson, T. L. and F. S. Mc Chesney (1994). Raid or Trade? An Economic Model of Indian-White Relations. *The journal of Law and Economics* 37(1), 39–74.
- Anderson, T. L. and D. P. Parker (2008). Sovereignty, Credible Commitments, and Economic Prosperity on American Indian Reservations. *The Journal of Law and Economics* 51(4), 641–666.
- Banner, S. (2005). *How the Indians lost their land: Law and power on the frontier*. Harvard University Press.
- Banner, S. (2009). *How the Indians Lost their Land: Law and Power on the Frontier*. Harvard University Press.
- Berry, C. R. and A. Fowler (2021). Leadership or luck? randomization inference for leader effects in politics, business, and sports. *Science advances* 7(4), eabe3404.
- Bertrand, M. and A. Schoar (2003). Managing with style: The effect of managers on firm policies. *The Quarterly journal of economics* 118(4), 1169–1208.
- Bureau of Indian Affairs (1887-1926). Annual Reports of the Commissioner of Indian Affairs .
- Carlos, A. M., C. Dippel, D. Frye, D. B. Johnsen, A. Le Dressay, B. Leonard, F. D. Lewis, R. J. Miller, P. H. Nickerson, D. P. Parker, et al. (2016). *Unlocking the Wealth of Indian Nations*. Lexington Books.
- Carlos, A. M., D. Feir, and A. Redish (2021). Indigenous nations and the development of the us economy: Land, resources, and dispossession. Technical report, QUCEH Working Paper Series.
- Carlson, L. A. (1981). *Indians, Bureaucrats, and Land: the Dawes Act and the Decline of Indian Farming*. Number 36. Praeger Pub Text.
- Di Tella, R. and E. Schargrotsky (2013). Criminal recidivism after prison and electronic monitoring. *Journal of Political Economy* 121(1), 28–73.

- Dippel, C. (2014). Forced Coexistence and Economic Development: Evidence from Native American Reservations. *Econometrica* 82(6), 2131–2165.
- Dippel, C., D. Feir, B. Leonard, and M. Roark (2021). Secured Transactions Laws and Economic Development on American Indian Reservations. In *AEA Papers and Proceedings*, Volume 111, pp. 248–52.
- Dippel, C. and D. Frye (2021). The Effect of Land Allotment on Native American Households During the Assimilation Era. *mimeo*.
- Dippel, C., D. Frye, and B. Leonard (2020). Property Rights without Transfer Rights: A Study of Indian Land Allotment. *NBER working paper 27479*.
- Dippel, C. and S. Hebllich (2021). Leadership in Social Movements: Evidence from the “Forty-Eighters” in the Civil War. *The American Economic Review* 111(2), 1–35.
- Dippel, C. and M. Poyker (2021). Rules versus norms: How formal and informal institutions shape judicial sentencing cycles. *Journal of Comparative Economics* 49(3), 645–659.
- Dobbie, W., J. Goldin, and C. S. Yang (2018). The Effects of Pretrial Detention on Conviction, Future Crime, and Employment: Evidence from Randomly Assigned Judges. *American Economic Review* 108(2), 201–40.
- Frandsen, B. R., L. J. Lefgren, and E. C. Leslie (2019). Judging Judge Fixed Effects. Technical report, National Bureau of Economic Research.
- Frye, D. and D. Parker (2022). Colonial Definitions of Indigenous Identify and Modern Inequality on American Indian Reservations. *Vassar College mimeo*.
- Frye, D. and D. P. Parker (2021). Indigenous self-governance and development on american indian reservations. In *AEA Papers and Proceedings*, Volume 111, pp. 233–37.
- Galasso, A. and M. Schankerman (2014). Patents and Cumulative Innovation: Causal Evidence from the Courts. *The Quarterly Journal of Economics* 130(1), 317–369.
- Johnson, R. N. and G. D. Libecap (1980). Agency Costs and the Assignment of Property Rights: The Case of Southwestern Indian Reservations. *Southern Economic Journal*, 332–347.
- Johnson, R. N. and G. D. Libecap (1994). *The Problem of Bureaucracy: The federal civil service system and the problem of bureaucracy*. University of Chicago Press.
- Jones, B. F. and B. A. Olken (2005). Do leaders matter? national leadership and growth since world war ii. *The Quarterly Journal of Economics* 120(3), 835–864.
- Kling, J. R. (2006). Incarceration Length, Employment, and Earnings. *American Economic Review* 96(3), 863–876.
- Leonard, B., D. P. Parker, and T. L. Anderson (2020). Land quality, land rights, and indigenous poverty. *Journal of Development Economics* 143.
- Libecap, G. D. and R. N. Johnson (1980). Legislating Commons: The Navajo Tribal Council and the Navajo Range. *Economic Inquiry* 18(1), 69–86.
- McChesney, F. S. (1990). Government as Definer of Property Rights: Indian Lands, Ethnic Externalities, and Bureaucratic Budgets. *The Journal of Legal Studies* 19(2), 297–335.

- McDonnell, J. (1980). Competency commissions and indian land policy, 1913-1920. *South Dakota History* 11(1), 21–34.
- Melero, E., N. Palomeras, and D. Wehrheim (2017). The Effect of Patent Protection on Inventor Mobility.
- Meriam, L. (1928). *The Problem of Indian Administration: Report of a Survey Made at the Request of Honorable Hubert Work, Secretary of the Interior*. Number 17. Johns Hopkins Press.
- Miller, M. and M. Gregg (2022). A new institutional history of allotment: Evidence from the pine ridge reservation, 1904-1934. Technical report.
- Office of Indian Affairs (1877). *Instructions to Superintendents and Indian Agents*.
- Otis, D. S. (2014). *The Dawes Act and the Allotment of Indian Lands*, Volume 123. University of Oklahoma Press.
- Peltzman, S. (1976). Toward a More General Theory of Regulation. *The Journal of Law and Economics* 19(2), 211–240.
- Russ, J. and T. Stratmann (2014). Creeping Normalcy: Fractionation of Indian Land Ownership. *CESifo Working Paper No. 4607*.
- Scott, J. C. (2008). *Seeing like a state*. yale university Press.
- Spenkuch, J. L., E. Teso, and G. Xu (2021). Ideology and performance in public organizations. Technical report, National Bureau of Economic Research.
- Taylor, G. D. (1980). *The New Deal and American Indian Tribalism: The Administration of the Indian Reorganization Act, 1934-45*. U of Nebraska Press.
- Trosper, R. L. (1978). American Indian Relative Ranching Efficiency. *The American Economic Review* 68(4), 503–516.
- United States Government Printing Office (1879-1934). *Official Register of the United States, Executive, Legislative, Judicial*. Department of State.
- Xu, G. (2018). The costs of patronage: Evidence from the british empire. *American Economic Review* 108(11), 3170–98.
- Yandle, B. (1983). Bootleggers and Baptists-the Education of a Regulatory Economists. *Regulation* 7, 12.
- Yao, Y. and M. Zhang (2015). Subnational leaders and economic growth: evidence from chinese cities. *Journal of Economic Growth* 20(4), 405–436.