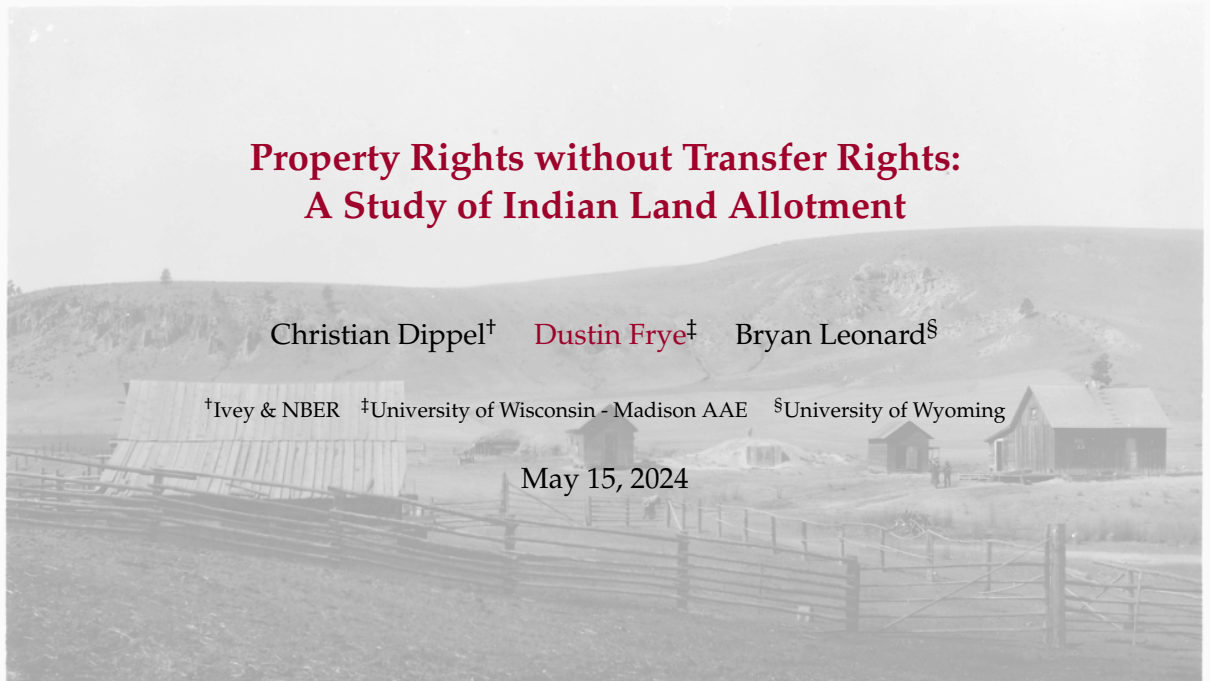
Property Rights without Transfer Rights: A Study of Indian Land Allotment

Christian Dippel[†] Dustin Frye[‡] Bryan Leonard[§]

[†]Ivey & NBER [‡]University of Wisconsin - Madison AAE [§]University of Wyoming

May 15, 2024



Motivation: Defining Property Rights

- Land rights are a cornerstone of economic development
- Typically think of three dimensions:
  1. Exclusion $\rightarrow$ avoid common-pool problems
  2. Definition/demarcation $\rightarrow \downarrow$ transaction costs
  3. Security $\rightarrow$ investment
- Even in environments with all three dimensions, many "landowners" hold only *usufruct* rights
  - Land can be used, but limits on transferability or alienability
  - Flavors of paternalism/colonialism
- Not being able to transfer/alienate land is more prevalent among marginalized groups
  - Indigenous groups in Latin America, sub-Saharan Africa
  - American Indian reservations

Motivation: Understanding the Role of Transferability in Property Rights

- Large literature on land tenure and economic development
- Focus has been more on *security* dimension of property rights than *transferability* as the source of:

  Assurance, Collateralizability and Realizability

- In many settings it is difficult to disentangle *security* from *transferability*
  - De Soto (2000); Goldstein and Udry (2008); Besley et al. (2012)
- We leverage a natural experiment that resulted from "Indian allotment" in the early 20th century
  - Able to isolate *transferability* dimension

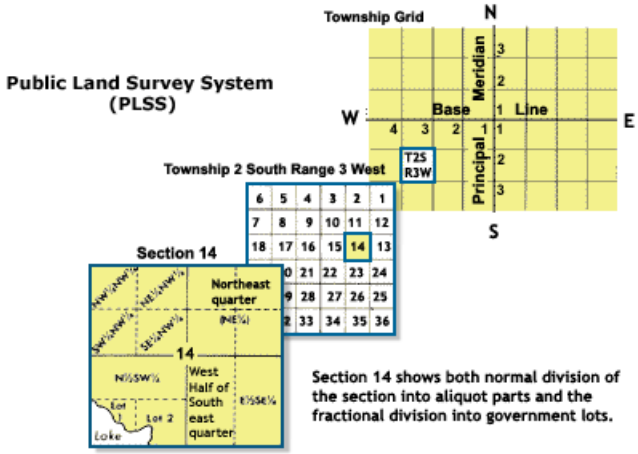
Background: Indian Land Allotment

- 1887—1934 "Dawes Era": subdivision into $\approx$ 160-acre allotments, granted to individual Indians & held in trust
  - Cannot be sold outright
  - Cannot be used as collateral
  - Could not be willed initially
  - Leasing, change of use, etc. requires BIA approval
- Gain fee simple title after 25 years or declared "competent" by local Indian Agent
- 1934: Indian Reorganization Act ends privatization era & freezes land ownership status
- Three types of ownership: tribal, fee simple, allotted trust* Map

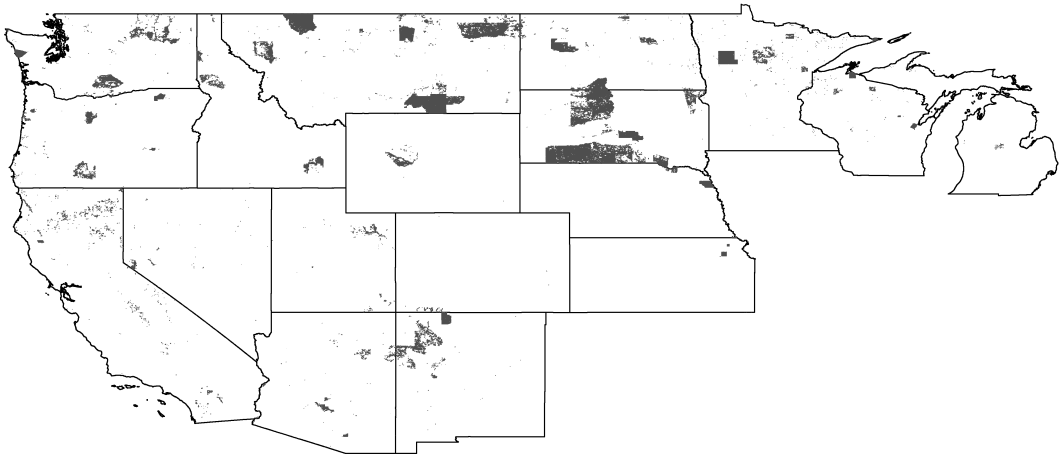
Data Components

- General Land Office Records digitized by the BLM
  - Name of allottee
  - Date of each original allotment & fee simple (if ever)
  - Location in the Public Land Survey System
- NWALT Satellite Data
  - 60×60-meter resolution satellite-based land use
  - 1974, 1982, 1992, 2002, 2012
- Land Quality
  - NED: elevation and ruggedness (30m resolution)
  - Soil productivity index
  - Distances to resources and infrastructure
  - Weather
  - Longitude/Latitude

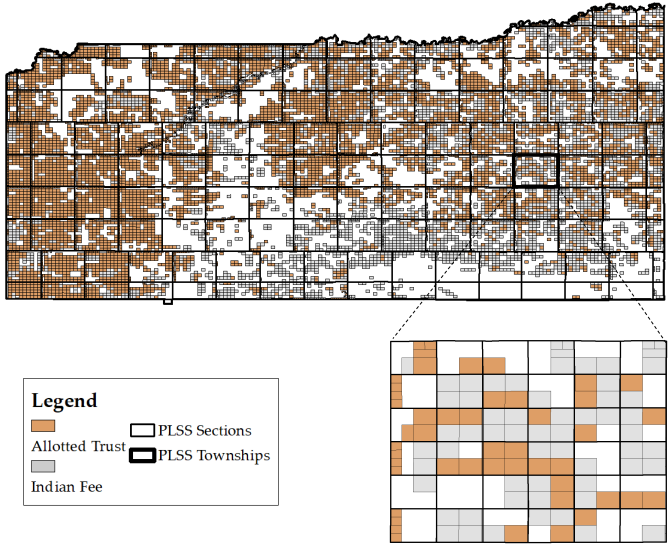
Land Patents and the PLSS



Allotted Quarter Sections



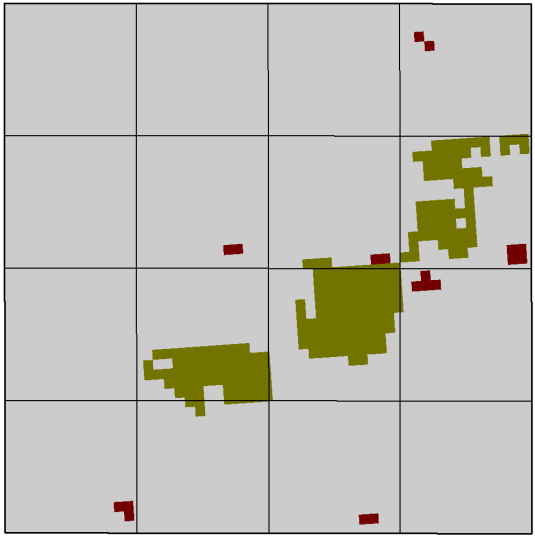
Checkerboarded Ownership on the Pine Ridge Reservation



Data Components

- General Land Office Records digitized by the BLM
  - Name of allottee
  - Date of each original allotment & fee simple (if ever)
  - Location in the Public Land Survey System
- NWALT Satellite Data
  - 60×60-meter resolution satellite-based land use
  - 1974, 1982, 1992, 2002, 2012
- Land Quality
  - NED: elevation and ruggedness (30m resolution)
  - Soil productivity index
  - Distances to resources and infrastructure
  - Weather
  - Longitude/Latitude

National Wall to Wall Land Use Trends Database



Identification

Threats

1. Selection on land quality
2. Selection on individuals

Solutions

1.1 High-resolution spatial fixed effects
1.2 Detail granular controls with Variable Selection Model
1.3 Randomized Inference Test

2.1 Family Fixed Effects
2.2 Oster δ

- (Altonji et al. (2005); Oster (2019))

Estimating Equation

$$y_{ij} = \theta \times \text{FeeSimple}_i + \kappa_j + \lambda' X_i + \delta_f + \varepsilon_{ij}$$

- y_{ij} is outcome of interest in plot i in spatial region j
- $FeeSimple_i$ is an indicator if the plot has fee-simple ownership
- κ_j denotes the spatial fixed effect, which is PLSS Section
- δ_f denotes allottees' family name fixed effects
  - (Deininger and Ali (2008))
- X_i includes parcel level traits selected using a Variable Selection Model
  - (Lindsey et al. (2010))
- Standard errors are clustered by reservation
  - Robust to alternative spatial correlation (Conley (1999, 2008))

Transfer Restrictions and Land Use Estimates

	Any Development				Share Cultivated			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FeeSimple	0.018**	0.014**	0.015**	0.019**	4.558***	4.389***	4.515***	4.174***
	(0.007)	(0.007)	(0.008)	(0.009)	(1.053)	(1.037)	(1.263)	(1.232)
Oster δ		13.022	14.741	27.814		23.830	29.929	71.258
HAC SEs (25 kms)	(0.005)	(0.005)	(0.006)	(0.008)	(0.585)	(0.581)	(0.666)	(0.842)
HAC SEs (100 kms)	(0.006)	(0.005)	(0.006)	(0.007)	(0.782)	(0.774)	(0.903)	(1.013)
Adj. R^2	0.3539	0.3594	0.3928	0.4072	0.7697	0.7717	0.7933	0.8117
Observations	85,488	85,488	77,834	67,309	85,488	85,488	77,834	67,309
FE Type	Section	Section	Section	Section	Section	Section	Section	Section
# Spatial FEs	21,553	21,553	19,917	17,415	21,553	21,553	19,917	17,415
# Name FEs	0	0	9,509	17,209	0	0	9,509	17,209
Covariates	None	VSelect	VSelect	VSelect	None	VSelect	VSelect	VSelect

Mechanisms

- Two channels:
  - H_1: credit access primarily affects development and works at *extensive margin* (affects all trust plots)
    - Corollary: fractionation unlikely to affect development
  - H_2: *intensive margin* effect of fractionation on agriculture
    - Access to credit is less crucial
    - Ag decisions are recurring.
    - More owners $\rightarrow$ higher transaction costs

Credit Access and Development

Empirical Setup

- Leverage full NWALT panel (1974–2012) and plot fixed-effects
- Exploit exogenous change in credit supply through state-level bank deregulation

Findings

- Access to credit explains a significant fraction of the development differences
- No significant differences for agricultural cultivation

The Fractionation Problem

Empirical Setup

- Fractionation due to accumulation of multiple heirs through inheritance
- Indicator of *latent fractionation* from archival data: whether allottee was enumerated in mid-1930s ICR
- This proxies for (unmeasured) age of original allottees; validate that allotments were *sequential* by age, i.e. older allottees had died before mid-1930s

Findings

- *Latent fractionation* only impacts allotted-trust land, $\widehat{\theta^{A}_{\text{frac}}} < 0$, and not fee-simple plots, $\widehat{\theta^{F}_{\text{frac}}} = 0$; and for agriculture, *not* development
- These impacts are larger with earlier allotted plots (more opportunities for fractionation)

Summary

Core Findings:

- Fee simple $\rightarrow$ 13% more likely to be developed and 35% more land in cultivation

Connection to Transferability:

- Cannot use land as collateral
- Probate issues $\rightarrow$ fractionation
  - Credit access affects development over time
  - Fractionation frustrates agricultural land use

Punchline:

- Cautionary tale for contemporary land titling efforts
- Incomplete land rights can be worse than communal property

Solutions

- Tribes could be given the option to
  - (1) return their land to tribal control (under the Cobell law-suit)
  - (2) complete the conversion to fee simple (under the ULC's template for dissolving heir's property)
- Choice should be decentralized to tribes
- Choice of (1) vs (2) can be intermediate, such as e.g. Mexico's *Procede* second land reform (De Janvry et al. 2015)
  - Indigenous farmers were given full title to the land that they had usufruct rights to since the 1930s.
  - Communities (*ejido*) separately decided whether rights would be transferable only within the ejido

Thank you!

dustin.frye@wisc.edu