

FIG WORKING WEEK 2019

22-26 April, Hanoi, Vietnam

Presented by the FIG Working Week 2019,
April 22-26, 2019 in Hanoi, Vietnam

"Geospatial Information for a Smarter Life
and Environmental Resilience"



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Mapping the State: Measuring State Capacity through Cadastral Records

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Overview

- We document the development of state-administered cadastral projects
 - 159 countries
 - 1000 AD – 2015
- Create Cadaster Index - a measure that captures
 - The quality of cadastral records
 - The degree of implementation of cadaster project
- Problems
 - Lack of reliable information for some countries/world regions
 - Poor documentation of the projects performed by donors
- Aim: to bring this project to the attention of the professional community of surveyors to improve the quality of data

The Concept of State Capacity

- Growing interest in state capacity – the ability of states to implement political decisions
- Recent quantitative research: state capacity impacts levels of economic development, peace and public service provision
- However, the research is hampered by poor measurement of the concept

Dimensions of State Capacity

- Quality of bureaucracy
- State reach: territorial penetration of the state
- Legibility:
 - how well states see their citizens
 - see economic assets (land, property, etc.)
 - understands social relationships (family, tenural, etc.)

Cadaster Records as a Measure of State Capacity

- Cadaster - methodically arranged inventory of land assets and rights to these assets
- Cadasters shows landed assets of people (**what?**) and also who owns/rents them (**who?**) – the **legibility** dimension of the concept
- The extent of cadastral records (how much territory is registered) shows the extent of the state's territorial penetration – the **territorial reach** dimension of the concept

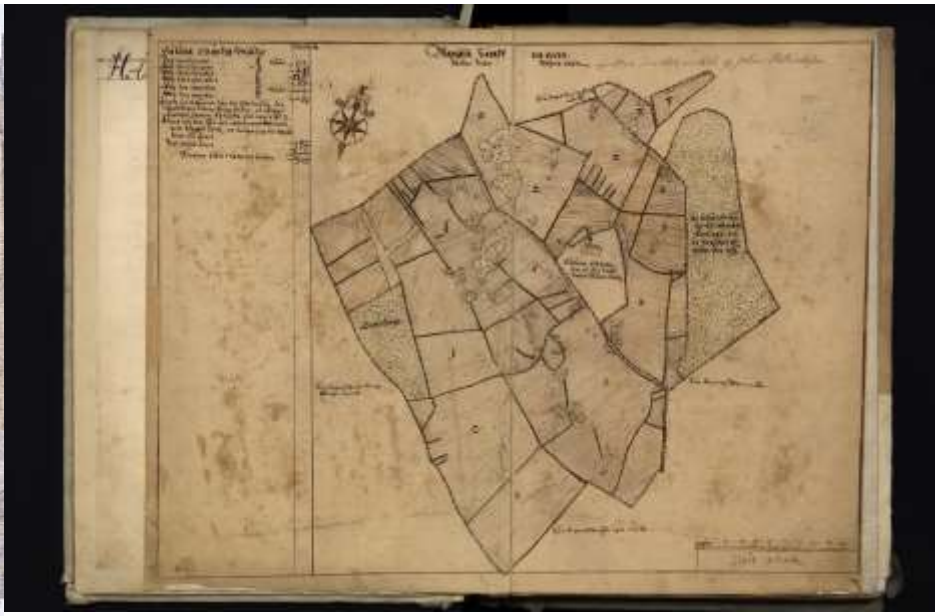
Cadaster Index

- For each country in contemporary borders for each year between 1000 AD 2015 we ask
 - “Was there a state-administered cadaster?”
 - “Was it a narrative or cartographic cadaster”?

Nogovorod (1571) and Swedish (1628) Cadasters

2566
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д и н с в о d e c i o n o t o t e a s t a c i o d o c i o l o g o
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r o k i r i o i c i o n o a d a c o t o o i n o d a m i t
г о р о п о т и а д и н и t y a n a j c a n a d a c t o a
y c e d p e c i t e t e d e o t e a f a n i s o c e i t
c i n i n i c a i y i n d o t e t c k n o a n i k . r a d e n i
a i o n o t a n a m a d o c a n a a r o t k o n a n a
н а t r e t e b a n a . r a n i n a . t o t a t e l o g e .
A o p d i . c t a p o t y t a r i l y c e i c n o l i a m i y
н а . r a c o u i t a n o t a p o c a n a . f a i t e
д и a t r e t e b a n a t i c a) c a . a c u i t

д е р с в а н а в r o a k r a y c o b d e l a n i n . r o m e
с в а f a n i s o r o a n o c a n a p o n e a . r a t y d e a
t o n a c d i n a a a t a p i o a n i k a c o d o c a
д e c i m e n t r i n o c e a t e c i k . r a d o t y r a d e t
e a n a r a n i c o a n a r a c a n o c n a . r a t p o i
K a t p i o a n a d a x a i n a . r a t c i o a i c o t o r o d
t e t p o r o t o b e a t a p o t e d i y u t a r i n o v a
и o d a z e o n i p o t e a i m e k y d e t a a n a
r a b o t n a c a n a . A p o c o n a r a t e l a c o e
a i n d a x a i n a d i n a c a n a c y x o c o m i n a .
r a i c a c o a c o m e n o a n i t p o t a r o b e . T o a r a t
c i n a o a d e t a n i c a n o . a n o t o r o d i n d
d e o t o n a d e i r e n i t p r i n c i p i c o i r o b e
o f e c a r a x i n a t a t e t o . t y m i n
и p e t e t o t a i z a t n a c a i d o n i n a d i
d y n i c o d e i r e n a t e n a d o c o d .



Assigning Scores

- Basic score: narrative = 0.75 (see Libecap and Lueck 2011), cartographic – 1
- Weigh the basic score by implementation

Sources

- Cadastral Template (supported by FIG):
 - 61 countries
 - standardized questionnaire (total number of parcels and % of parcels properly surveyed and registered)
- Academic literature
 - Cain and Baigent (1992) - historical European cadasters
 - Research papers and books

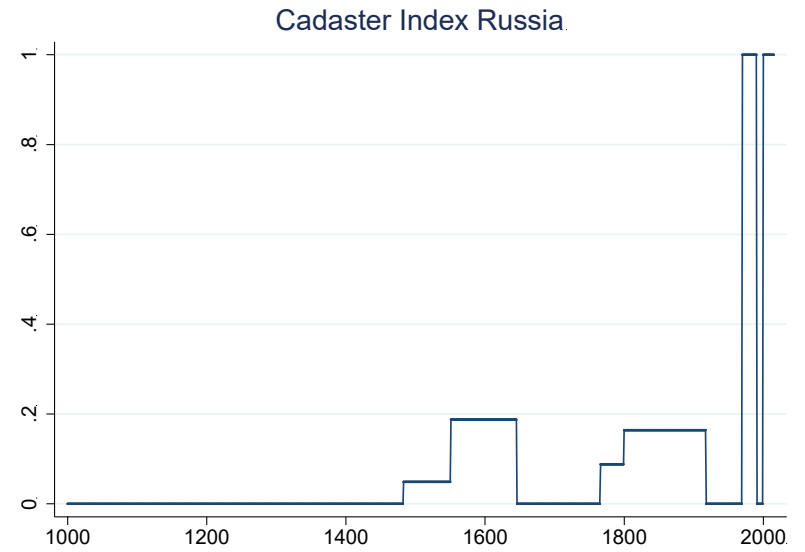
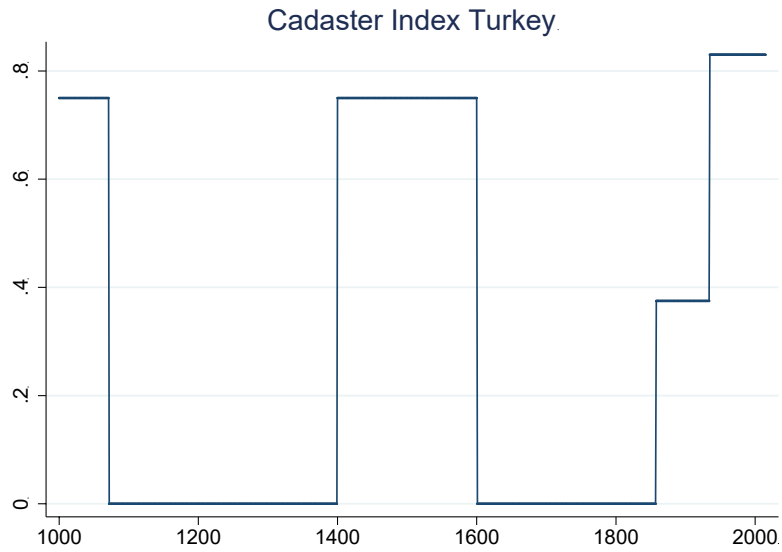
Implementation

- Pre-1900 (historical cadasters): % of the territory covered by the cadaster
- Modern cadasters: Parcel-based weight from *Cadastral Template*
 - Caveat 1: often "properly surveyed and registered" is given in ha – convergence is based anchored on "economically active land"
 - Caveat 2: "properly surveyed and registered" given separately for rural and urban - convergence is anchored in the share of urban and rural population

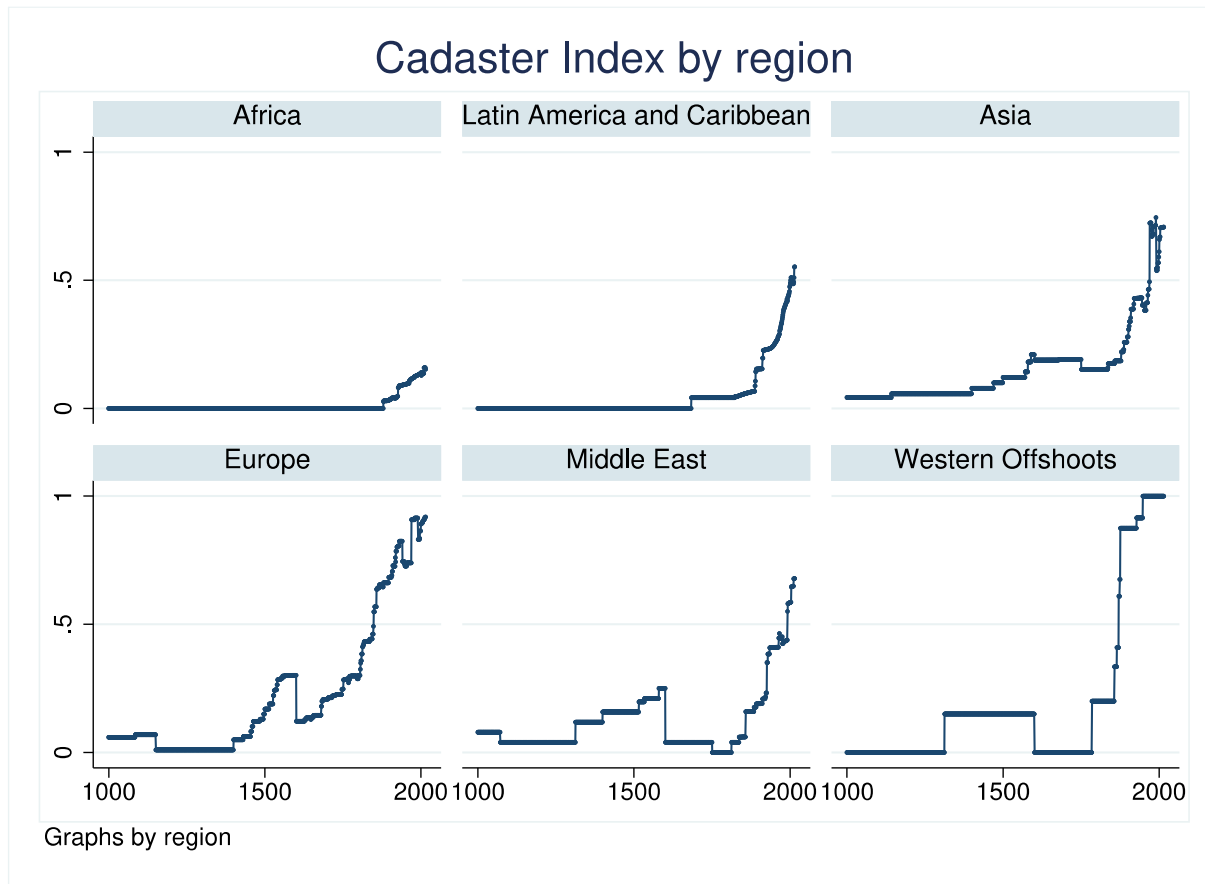
Deterioration and Discontinuation

- Deterioration is factored in only when we have evidence from reputable sources
 - Example: British cadaster in Myanmar (1879, fully implemented), but currently outdated in about 25% (USAIAD 2013, 14). Score: 1897-1952 = 1, 1953 - 2015 = 0.25
- Discountination is not frequent
 - The Ottoman empire c. 1600
 - Cambodia 1975-1979
 - Soviet cadaster
 - Timor-Leste (after Indonesian withdrawal 1999)

Evolution over Time



Evolution over Time by World Regions



Data is Accepted by the Scholarly Community

- D'Arcy, Michelle and Marina Nistotskaya. 2018. The Early Modern Origins of Contemporary European Tax Outcomes. [*European Journal of Political Research* 57\(1\): 47-67](#)
- D'Arcy, Michelle and Marina Nistotskaya. 2017. State First, then Democracy: Using Cadastral Records to Explain Governmental Performance in Public Goods Provision. [*Governance* 30\(2\): 193-209.](#)

Outstanding Issues and Solutions

- Issues

- Lack of reliable information for some countries/world regions
- Poor reporting of the projects by donors
- Technical issues
 - Is there an average speed at which cadaster information deteriorates or is this context specific?
 - All territory or economically active land?

Outstanding Issues and Solutions

- Solutions

- Begin an interdisciplinary dialog

- Please fill in the Cadaster Template questionnaire
 - Signpost us to the right sources
 - Share your knowledge with us



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