

Fiscal Legibility and State Development: Theory and Evidence from Colonial Mexico

Emily Sellars, PIPE Workshop, October 12, 2021

Transcript

Jeffery Jenkins>>

12:02:44 >>:

We will get started.

Welcome to the political economy PIPE workshop at the Bedrosian Center at Price School in Southern California.

I am Jeff, director of the Bedrosian Center and PIPE elaborative.

The speaker today is Dr. Emily Sellars, assistant professor in Political Science at Yale University.

Before coming to Yale she was assistant professor in public service at Texas A&M and postdoctoral scholar at University of Chicago Harris school public policy.

Emily's research interest is political economy and development economics and currently exam is political economy of immigration and population. She is also leading scholar of the

new interdisciplinary field historical political economy and editor on Broad Street which focuses on HPD research.

Emily's presentation today is entitled fiscal legibility in-state development theory and evidence from colonial Mexico. That is based on joint work with Francisco at the University of California San Diego.

Following Emily's presentation, we will have formal discussant, Sean from capital UC Berkeley to provide comments during Emily's talk if you have questions, type in the chat or Q&A box. I will monitor as the check goes on. Without further ado I give you Emily sellers.

Emily Sellars>>

12:04:35 >>:

Thank you for the invitation and Sean to discuss the paper.

12:04:49

I will share screen.

12:04:52

This is joint work with Francisco at

12:04:55

UST and work in progress the we are

12:04:57

looking forward to comments and questions.

12:05:00

This paper you present today is part

12:05:04

of larger research agenda that

12:05:06

Francisco and I have asking how to stay

12:05:06

capacity develop?

12:05:10

I think a lot of us in the room are

12:05:11

probably aware, there is this large

12:05:13

literature in the economy associated

12:05:17

state capacity -- high levels of state

12:05:18

capacity with economic development,

12:05:22

clinical development over the long term

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12:05:25 and argued states that had central
12:05:25 institutions are better able to provide
12:05:30 the infrastructure necessary to sustain
12:05:30 economic development.
12:05:32 We know from large literature that
12:05:39 states vary a lot in the degree to
12:05:39 which they have centralized authority
12:05:40 and degree to which state have presence
12:05:40 on the ground.
12:05:40

12:05:44 It difficult for state capacity to
12:05:44 develop for number of reasons.
12:05:49 We are interested in asking what
12:05:49 drives differences in-state development across space and time?
12:05:51 We are far from the first people to
12:05:53 ask this.
12:05:57 Tilly has the most arguable
12:05:58 explanation looking at the theory of
12:06:04 conflict in-state development in
12:06:04 Western Europe.
12:06:06 There are a number of explanations.
12:06:07 Internal public conflict, political
12:06:14 geography, difference in demography.
12:06:15 What we talk about today is focusing
12:06:15 on how the economic production
12:06:16 influences state ability and
12:06:21 centralized authority using drawing on
12:06:21 colonial Mexico.
12:06:21

12:06:26 What we sketch out today focuses on the
12:06:28 role of fiscal legibility in-state
12:06:28 development.
12:06:32 By fiscal legibility we mean the
12:06:33 central authorities ability to
12:06:34 independently observe local economic
12:06:37 conditions for the purposes of taxation
12:06:37 and control.
12:06:43 Logic we link into is in order to
12:06:44 properly monitor intermediaries you
12:06:46 need independent information about the
12:06:46 environment.
12:06:52 If rulers cannot observe what's going

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12:06:52 on in the district, they have to resort
12:06:54 to other means of intermediaries to
12:06:58 perform through bonuses, carrots, more
12:06:58 revenue.
12:07:02 As the ruler gets more information
12:07:03 about the environment, it opens
12:07:07 opportunity to exert more direct
12:07:13 control and monitoring agents
12:07:13 performance, dismissing or threatening
12:07:14 to dismiss if they underperform which
12:07:18 enables them to retain revenue for the
12:07:18 central government.

12:07:18

12:07:21 What we sketch out today argues greater
12:07:24 legibility will increase state
12:07:29 centralization and as I talk about in a
12:07:30 few minutes, increase incentives to
12:07:33 invest increasing legibility in the future.
12:07:41 Just to give you the heads up of
12:07:41 where we are going come up with this
12:07:42 paper does is look in particular
12:07:42 empirically at the transition to
12:07:43 colonial Mexico.
12:07:47 The political institutions in Mexico
12:07:49 under colonial rule differ across space
12:07:51 and time degree which central
12:07:52 government had authority over
12:08:01 intermediaries in charge of tax
12:08:01 collection and mobile political control.

12:08:02

12:08:02 What we focus on today is typical shock
12:08:02 that happens in the 1550s.
12:08:04 In early colonial period that changes
12:08:08 technology used in silver mining
12:08:08 production.
12:08:13 In particular, we look at innovation
12:08:17 that enabled the crown to observe
12:08:17 economic conditions for regions I will
12:08:17 talk about in a few minutes.
12:08:22 We will be focusing on differences
12:08:24 approach looking at the trajectory of
12:08:26 areas affected by the shock and those

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12:08:28 aren't that before and after technology
12:08:31 provided by the introduction of the
12:08:32 process in the 1550s.
12:08:39 There is increase in centralization
12:08:40 in mining areas and those affected by
12:08:40 the shock.
12:08:44 After the process in the 1550s
12:08:46 relatively to before and non-mining
12:08:49 zones.
12:08:49 Will also show evidence looking at
12:08:50 how this has led to persistent
12:08:53 consequences in investment and
12:08:57 increasing production of state capacity
12:08:58 going forward.
12:08:58

12:09:00 The presentation I will sketch out the
12:09:03 theory we are looking at an framework
12:09:05 we are using to think about this and
12:09:07 provide information on the context of
12:09:13 how colonial rule worked in Mexico, how
12:09:14 the process was implemented, how
12:09:18 increased production.
12:09:21 I will describe the data, provide
12:09:22 this shock and how that led to
12:09:25 political centralization.
12:09:26 Then information on endogenous
12:09:26 legibility moving forward.
12:09:27

12:09:27

12:09:31 What we are thinking about in this
12:09:35 framework is two ideal types of
12:09:41 institutional arrangements and the way
12:09:41 in which central authorities can
12:09:42 administer and monitor territory.
12:09:43 We will think of one as indirect rule
12:09:47 in arrangement in which encomiendas
12:09:51 contain political and fiscal autonomy
12:09:55 meaning they generally cannot be easily
12:09:55 dismissed by central authority.
12:09:58 They are allowed to keep revenue for
12:10:02 themselves, and given these rights and
12:10:04 privileges in exchange for their own

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12:10:07 use and activity in administering the
12:10:11 territory where they live and control.
12:10:11

12:10:11

12:10:17 We will compare to another institution
12:10:18 which we will call direct rule
12:10:18 institutions where in modern state
12:10:20 framework, the central government will
12:10:22 rely on agents to the state hired by
12:10:24 the center paid wage by the central
12:10:26 government in order to administer
12:10:26 territory.
12:10:29 This makes it easy for them to be
12:10:32 dismissed by the central government in
12:10:33 the case of underperformance.
12:10:35 It lowers revenue that the central
12:10:40 government has for the intermediaries
12:10:40 to perform.
12:10:42 It requires them to invest in
12:10:42 physical bureaucracy that allows them
12:10:46 to exert this form of control.
12:10:46

12:10:47 In particular, we will focus on the
12:10:51 role of fiscal legibility and
12:10:51 production.
12:10:55 We will do this by looking at
12:10:56 sketching at principal agent type model
12:11:01 building on APS are from 2017.
12:11:02 We will think about the situation
12:11:03 where there is central ruler maximizing
12:11:05 revenue.
12:11:12 Revenue in this model depends on two
12:11:12 things; state the world which can be
12:11:13 good or bad, and intermediary level of
12:11:17 effort of high or low.
12:11:20 We see revenue is high only if the
12:11:20 world is stable and high effort.
12:11:24 Crucially and standard in this
12:11:32 framework, it's not directly observed
12:11:33 either effort or state of the world.
12:11:33 Instead, observed how much revenue is
12:11:38 coming in and has signal of precision.

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12:11:39 We will talk about that precision is
12:11:41 what we think of as legibility.
12:11:45 Likely it is the state of the world
12:11:45 was good in your signal was accurate.
12:11:45

12:11:52 The ruler gets low revenue and that is
12:11:52 good, how easy is it for him to infer
12:11:54 intermediary is exerting low effort?
12:11:59 In the model we think about the ruler
12:12:00 having two types of choices.
12:12:04 Type of contract he will offer the
12:12:08 intermediary the start of each period?
12:12:09 And whether or not to invest in
12:12:10 future capacity to make investment
12:12:11 today in order to improve the accuracy
12:12:11 of the signal tomorrow?
12:12:17 The intermediary for his part decides
12:12:17 whether to accept the contract and
12:12:18 exert high effort.
12:12:20 Participation and constrain in the
12:12:23 typical principal agent type framework.

12:12:23

12:12:31 Possible contracts will map onto these
12:12:31 types I just mentioned.
12:12:32 Think of indirect contract as the
12:12:33 status quo.
12:12:35 Under this contract you offer wage
12:12:39 and bonus, but no easy way to dismiss
12:12:40 if he is underperforming.
12:12:45 Under direct rule by contrast, you
12:12:45 have to pay to transition to this more
12:12:49 direct form which you think of as
12:12:51 investing bureaucracy or displacing
12:12:54 powerful agents who have autonomy once
12:12:55 you are under direct rule you can
12:12:58 dismiss agents relatively easily.
12:13:02 Once it's dismissed you get no
12:13:02 further payment.
12:13:05 It's not just the ruler wants to
12:13:11 dismiss whatever agent he suspects is
12:13:12 underperforming, there is replacement
12:13:15 cost that will put restriction on

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12:13:21 desire to fire the agent if there's no
12:13:21 evidence.
12:13:21

12:13:24 The other decision the ruler faces is
12:13:25 whether and how much to invest in
12:13:25 future legibility?
12:13:29 There is technology through which
12:13:33 today you can invest money into
12:13:33 improving the accuracy tomorrow.
12:13:34 Think of this as the ruler can build
12:13:39 tax offices or create records that will
12:13:40 make it easier for him to observe
12:13:41 what's going on in the periphery.
12:13:44 The trade-off he faces in this
12:13:48 framework is giving some amount of
12:13:49 revenue today in order for more revenue
12:13:49 for tomorrow.
12:13:50

12:13:51

12:13:54 In the paper we construct equilibrium
12:13:56 in which the intermediate exerts each
12:13:57 period.
12:14:00 In the analysis for the presentation
12:14:02 I will focus on two big questions we
12:14:02 ask.
12:14:11 One, when will the ruler seek to
12:14:11 centralize authority?
12:14:12 Under what conditions will the ruler
12:14:12 want to centralize and move to direct
12:14:13 rule type of contract?
12:14:14 Under what conditions or when will
12:14:16 the ruler benefit from investing in
12:14:18 legibility going forward in the long
12:14:18 term?
12:14:20

12:14:20

12:14:28 I will discuss the empirics in the talk
12:14:29 and happy to talk more about the model
12:14:29 in the Q&A if people are interested.
12:14:32 What we are looking onto here is

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12:14:34 under indirect rule, you need to see
12:14:36 revenue to the agent.
12:14:41 One way of thinking about this is you
12:14:41 have no stick to use and cannot fire
12:14:44 them so you need to give enough bonus
12:14:45 that they want to exert high effort
12:14:45 anyway.
12:14:50 The more you can observe
12:14:51 independently what's going on, the
12:14:52 relative benefit between this authority
12:14:58 to the intermediary in exchange for
12:15:02 performance and moving toward rural
12:15:04 ships because as you get more
12:15:07 information, have better idea if the
12:15:10 intermediary is shrinking.
12:15:11 You can dismiss intermediaries that
12:15:11 will underperform.
12:15:14 This allows you to grab more surplus
12:15:21 and intermediary see you can have less
12:15:22 bonus because you have the stick at
12:15:22 your disposal if you are central ruler.
12:15:24 The shift the rule off of dismissal
12:15:29 and benefit of lower revenue.
12:15:30

12:15:30 In particular, we show on the paper the
12:15:33 rulers that prefer the contract or
12:15:35 direct rule contract only if he has
12:15:37 sufficiently high level of eligibility
12:15:41 or enough independent ability to
12:15:43 observe the district that he can
12:15:45 monitor the agent, credibly threaten to
12:15:53 dismiss and replace the agent if
12:15:53 underperforming.
12:15:54 As transparency or legibility
12:15:55 increases relative benefit of using
12:15:55 direct role.
12:16:03 The implication we take from this is
12:16:04 if you have exogenous increase in
12:16:05 fiscal legibility for some reason, you
12:16:07 are better able to discern whether the
12:16:07 intermediary is shrinking or the state
12:16:08 of the world is good or bad.
12:16:11 That will increase incentive to
12:16:12 direct rule to centralize authority.

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12:16:16 In particular, this effect should be
12:16:17 greatest for the cost of transition to
12:16:19 direct rule is low and there is less
12:16:26 need to worry about displacing
12:16:27 politically powerful elites or where
12:16:27 there is less cost required to set up
12:16:28 physical apparatus.
12:16:30 It's also areas most affected are
12:16:34 those where earlier eligibility is low.
12:16:37 If you have no information about
12:16:38 environment, getting information may
12:16:41 provide the impetus to centralized
12:16:41 authority.
12:16:41

12:16:45 Second set of question is when is it
12:16:47 worthwhile for the ruler to invest in
12:16:50 the encomienda itself?
12:16:56 Building post offices to understand
12:16:56 what's going on in the district.
12:17:03 The logic we are working to is under
12:17:04 indirect rule if you are not in the
12:17:05 business of monitoring and sanctioning
12:17:06 intermediaries, there's not much
12:17:07 benefit to having additional
12:17:07 information.
12:17:13 The benefit comes only if you start
12:17:14 to get in the world where you can use
12:17:14 the information to monitor the agent.
12:17:16 As you are in the world, you can use
12:17:19 that information and helps identify
12:17:21 when agents are shrinking or not to get
12:17:22 more surplus.
12:17:29

12:17:29

12:17:30 Investment is only worthwhile if there
12:17:31 will be within some time horizon,
12:17:32 transitioning to direct rule.
12:17:33 There might not be incentive to
12:17:35 request eligibility if it's longer term
12:17:41 and staying in the indirect contract.
12:17:41 From this, we get the.
12:17:44 Application that an increase in

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12:17:48 eligibility can lead to capacity and
12:17:49 that leads to persistence argument that
12:17:52 comes out of the model which is sudden
12:17:57 increase in fiscal legibility can have
12:17:58 effects over the long-term.
12:17:59 That pushes you from the world in
12:18:04 which you are better off relying on
12:18:04 indirect forms of rural to want to
12:18:05 which you are better off centralizing
12:18:06 authority and that can lead to
12:18:08 secondary effects where you are
12:18:12 incentivized to monitor in order to get
12:18:13 more surplus.
12:18:13

12:18:13

12:18:17 What we are going to do is think about
12:18:20 these implications looking at important
12:18:23 technological silver mining in colonial
12:18:23 Mexico.
12:18:26 Colonial Mexico is interesting to
12:18:30 look at these transition to direct rule
12:18:33 for a lot of reasons.
12:18:36 One of which is at the time of the
12:18:38 conquest, Mexico had a decentralized
12:18:40 form of power.
12:18:46 The government and Madrid
12:18:48 decentralizes or outsources the
12:18:52 conquest to freelance who are then
12:18:59 given the right for labor in areas they
12:19:00 control in exchange for converting the
12:19:01 local population of Christianity in
12:19:02 providing local defense.
12:19:03

12:19:03

12:19:05 This is useful institutional form for
12:19:09 the government in Madrid.
12:19:10 It allows them to extend territorial
12:19:12 control over this distant and difficult
12:19:21 to observe colony and have the state
12:19:22 extend over places it would not have be
12:19:22 able to extend otherwise.
12:19:24 This decentralized institutional form

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12:19:27 came with political and economic costs.
12:19:32 In particular, (**Indiscernible**) the
12:19:33 leads given the right to extract labor
12:19:36 became very politically powerful.
12:19:40 They were not easy to replace if they
12:19:40 were underperforming.
12:19:45 It became seen as political threat to
12:19:45 the crown.
12:19:47 Require the crown to forgo direct
12:19:49 sources of revenue that it can get
12:19:51 centralizing authority and having
12:19:52 agents directly paid by the center.
12:19:56 Within the generation of the
12:19:57 conquest, they begin to centralize
12:20:00 authority transitioning (**Indiscernible**)
12:20:05 under the contract or direct rule
12:20:15 contract, the intermediaries are
12:20:15 directly paid by the state.
12:20:16 They are hired every year on year to
12:20:17 year contracts.
12:20:18 It's easy to dismiss authority if
12:20:19 they are underperforming.
12:20:20 They are paid a lot less.
12:20:22 The best paid RP worse than the
12:20:25 smallest and most impoverished
12:20:25 (**Indiscernible**).
12:20:25
12:20:25
12:20:30 This allows the crown to benefit; it
12:20:34 allows to increase directly increase
12:20:34 control, and extract more revenue.
12:20:39 An idea on the left is institution
12:20:42 forms of the (**Indiscernible**).
12:20:46 On the left we have the standard
12:20:50 direct rule contract where the money is
12:20:52 going from the authority to the ground.
12:20:59 The local elite retains great deal of
12:21:00 autonomy.
12:21:05 It's important for the empirics we
12:21:06 talk about today and for the story, the
12:21:08 extent to which political
12:21:09 centralization happened in colonial
12:21:13 Mexico varied across time and space.
12:21:14 In some areas we saw generation of

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12:21:18 the ball of the Aztec empire and the
12:21:19 power was centralized and there is
12:21:20 physical administration set up.
12:21:25 Until the end of the period, 300
12:21:25 years later we have indirect former.
12:21:30 What we are interested in today's
12:21:31 thinking about how particular
12:21:33 innovation and technological change in
12:21:34 silver production facilitated the
12:21:35 centralization of power.
12:21:37

12:21:37

12:21:38 Silver mining was one of the most
12:21:41 important resources extracted for the
12:21:41 crown.
12:21:46 It was very important in Mexico's
12:21:47 economic development.
12:21:52 In the early period of colonization,
12:21:55 the standard technology for refining
12:21:59 silver was smelting which was costly
12:22:04 method.
12:22:05 In the 1550s, there is this invention
12:22:08 that is important where silver is
12:22:10 refined from using Mercury.
12:22:13 It's much more efficient way of
12:22:16 extracting silver for the marginal
12:22:17 silver coming to the Americas.
12:22:20 It requires Mercury which is not easy
12:22:24 to obtain.
12:22:24 Importantly for the story, Mercury is
12:22:27 mined in a handful of places worldwide.
12:22:31 Virtually all Mercury coming from
12:22:33 colonial Mexico had to come from Spain.
12:22:36 The crown establish monopoly very
12:22:37 early on.
12:22:41 As result, the crown knew how much
12:22:47 Mercury was sent to Mexico.
12:22:48 It knew how much Mercury different
12:22:49 places in the country were getting.
12:22:51 Because there is no ratio of
12:22:54 extracting silver from how much Mercury
12:22:57 needed to be used, that gave them
12:22:58 insight into how much silver is
12:22:59 produced locally.

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12:23:08 Importantly, by using the monopoly
12:23:09 over Mercury distribution of sale, they
12:23:10 knew how much silver was produced in
12:23:11 the Regents.
12:23:12 From this, they could better monitor
12:23:13 intermediaries.
12:23:14 If they knew particular region was
12:23:17 having booming production, they saw
12:23:21 Mercury going into district X and new
12:23:22 they were probably doing well and other
12:23:25 ways it made more demand for labor,
12:23:32 input, and in Mexico unlike Peru, it's
12:23:33 compensated even when provided by the
12:23:34 labor draft.
12:23:35 There will be spillover effect in
12:23:36 local communities and products will be
12:23:37 in more demand.
12:23:39

12:23:39

12:23:41 They should accept more tax revenue and
12:23:44 places that have this silver boom.
12:23:46 This will increase benefits of
12:23:47 political centralization.
12:23:48 It's easier to ascertain because they
12:23:54 know when there are good or bad years
12:23:55 and how much Mercury is coming in.
12:23:57 It's easy to ascertain the revenue
12:23:58 receipt is because of bad luck or
12:24:02 effort by the intermediaries.
12:24:03 What we are going to do to
12:24:05 systematically examine how the
12:24:10 introduction of the process led the
12:24:11 transition to direct role in colonial
12:24:11 Mexico.

12:24:11

12:24:11

12:24:18 We use the district level the 1786
12:24:19 administration level and look at the
12:24:25 Cato panel from the first century of
12:24:25 colonial rule.
12:24:30 The data we have is data on the
12:24:31 Encomienda holdings by region so all these

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12:24:38 different towns whether under direct or
12:24:39 direct rule.
12:24:40 We will look at percent of holdings
12:24:41 transitioning to direct rule in each
12:24:41 region.
12:24:44 The explanatory variable or treatment
12:24:45 are places where there are silver mines
12:24:51 Amalgamation We have silver and
12:24:52 gold mines across Mexico from discovery.
12:24:55 Producing early colonial period.
12:24:59 We will use the standard difference
12:25:00 type of approach.
12:25:04 The left the outcome variable is
12:25:05 Fraction of encomiendas brought under direct rule.
12:25:10 The perimeter of interest is the data.
12:25:11 The interaction between whether there
12:25:13 is mining districts or silver Goldmine
12:25:19 and this post 1515 in Decatur which is
12:25:22 this before or after Amalgamation
12:25:23 which will give the crown this insight
12:25:28 into economic activity.
12:25:28

12:25:30 One thing I want to say and I can talk
12:25:31 about this in the Q&A this week are
12:25:32 quoting both mines here.
12:25:35 Geologically, silver and gold tend to
12:25:40 coexist in Mexico.
12:25:41 A lot of the places that have silver
12:25:43 mines will have gold mines and vice
12:25:43 versa.
12:25:44 Rather than rely on the places
12:25:48 reported, we will use this is the place
12:25:49 that could be benefiting from this.
12:25:54 The difference framework we will use
12:25:56 diff and diff -- decade takes
12:26:00 effect and time controls with each
12:26:00 decade.
12:26:04 The level of direct rule to varied
12:26:06 across space and time evenly.
12:26:10 We will allow trajectory by elevation
12:26:13 surface area whether it's malarial zone
12:26:15 in Spanish contact.
12:26:23 We also have control and in part
12:26:25 because we have another paper looking

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12:26:28 at demographic collapse and
12:26:29 centralization of power and wanted to
12:26:30 control that alternative mechanism.
12:26:30

12:26:31

12:26:35 Here is the graphical evidence and the
12:26:41 baseline result in graphic form.
12:26:42 On the left we have trends over time
12:26:43 indirect rule adoption.
12:26:44 In mining versus non-mining areas.
12:26:51 Are in red in nonmining are in black.
12:26:52 Shortly after the conquest in 1521,
12:26:54 there is intermediate mood to
12:26:55 centralize authority over time.
12:26:59 The first few years there is no
12:27:03 difference introductory between mining
12:27:04 in nonmining areas.
12:27:07 The gray line represents the
12:27:09 instruction of the patio process 1954.
12:27:11 After that process we see diversions
12:27:12 in mining versus nonmining areas.
12:27:15 Mining have (Indiscernible) and
12:27:19 nonmining areas have increased of
12:27:20 adoption over time but not to the same
12:27:20 extent.
12:27:24 The patio process we see the trends
12:27:25 between the two groups.
12:27:25

12:27:26

12:27:27 On the right-hand side we see another
12:27:29 way of looking at the data at panel
12:27:30 estimates.
12:27:35 We will use year zero before it was
12:27:36 introduced and the relative effect of
12:27:38 being in the mining district on direct
12:27:39 rule adoption in each decade relative
12:27:42 to the baseline decade which is 1540.
12:27:46 There is no evidence of difference
12:27:49 introductory up until 1560.
12:28:00 Suddenly for the duration of the rest
12:28:02 of the panel there is disproportionate
12:28:03 acceleration indirect rule adoption in

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12:28:04 mining relative to nonmining periods.
12:28:05 This is the standard difference
12:28:05 result.
12:28:11 Interaction between which variable?
12:28:16 This payment cannot estimate is
12:28:19 interaction between each decade in
12:28:21 Decatur in mining in Decatur.
12:28:23 That's what the dynamic panel is
12:28:23 looking at.
12:28:24

12:28:24

12:28:26 This one doesn't include any additional
12:28:27 covariant.
12:28:30 It makes little difference if we
12:28:31 include covariance.
12:28:35 This is the standard results which is
12:28:38 looking at the interaction between indicators
12:28:41 whether there is mines in the
12:28:44 district and post 1554 such as turning
12:28:48 on at some point in the 1550s.
12:28:50 The first two columns we are looking
12:28:52 at direct rule -- Spain around Mexico
12:28:57 City, the central governorship of
12:28:57 colonial Mexico.
12:29:01 The left column we look at the very
12:29:06 sparse differences estimator unfixed
12:29:07 effects.
12:29:11 We will include full battery of time
12:29:15 varying controls and interacting with
12:29:16 each year indicator.
12:29:21 There are positive indicating direct
12:29:23 rule adoption in mining areas after.
12:29:31 Feel right two columns look at
12:29:32 extending the sample beyond Spain
12:29:33 looking at (Indiscernible) the central
12:29:37 North governorship which you might
12:29:38 think would have different trajectory
12:29:43 conquered somewhat later than general,
12:29:44 but we see if anything else, larger
12:29:49 coefficient and (Indiscernible).
12:29:49

12:29:55 You might ask what is the meaning of

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12:29:56 these coefficients?
12:30:02 One way is the introduction of the
12:30:04 patio process raises direct rule
12:30:08 adoption relative to nonmining areas
12:30:10 like 8 to 13 percentage points
12:30:14 depending on (Indiscernible) after 1554.
12:30:17 It's relatively sizable results about
12:30:20 one third to half stick standard
12:30:22 deviation of direct rule adoption
12:30:23 within each district.
12:30:28 This result is robust whether we use
12:30:29 or don't use battery of controls.
12:30:33 We deal with spatial correlation in
12:30:36 various ways and attention to mines
12:30:39 that are operational prior to the
12:30:40 introduction of the patio process.
12:30:42 I can talk more about that in a few
12:30:47 minutes but we use all the mines
12:30:49 operating in early colonial period and
12:30:50 in part because there is evidence mines
12:30:52 that were recording prior to might have
12:30:54 been produced illicitly and brought out
12:30:56 of the shadow to access Mercury and
12:31:01 become more physical -- there is
12:31:04 divergent in mining versus nonmining
12:31:08 around the patio process.
12:31:08

12:31:08

12:31:10 One question you might ask is this
12:31:11 about disco legibility?
12:31:15 We have this major change in
12:31:16 technological production and technology
12:31:17 of production.
12:31:20 Our preferred estimation is how this
12:31:23 gave the crown insight into local
12:31:23 conditions.
12:31:27 Another explanation might be this is
12:31:28 just about revenue potential.
12:31:30 You have this change in profitability
12:31:35 and why it's adopted is because it
12:31:40 helps process the marginal
12:31:41 (Indiscernible) inefficient manner.
12:31:44 You say are these places that have
12:31:47 this profitability shock end up being

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12:31:49 centralize more quickly.
12:31:51 We don't have direct evidence on
12:31:54 mining production for this period.
12:31:59 Instead, we do other things to rule
12:31:59 out this explanation.
12:32:05 We look at booms and other commodity
12:32:06 in the second important commodity which
12:32:13 is (Indiscernible) which is grown
12:32:18 predominantly an insect grown on cactus
12:32:22 in the central and southern part of the
12:32:22 country.
12:32:26 Around the same time in the late 16th
12:32:28 century, there are huge booms in the
12:32:31 price of (Indiscernible) and
12:32:36 predominantly demand driven in Europe.
12:32:38 Among other things, the red dye used
12:32:40 in the military uniforms for the
12:32:40 British.
12:32:43 If there is huge boost in demand for
12:32:45 (Indiscernible), what is pictured on
12:32:47 the left is the world price by various
12:32:47 metrics.
12:32:53 And the mid-1500s up until the
12:32:54 mid-1600s.
12:32:56 There is more than threefold increase
12:33:00 in the price offered in world market in
12:33:02 huge jump in profitability.
12:33:05 Yet, we don't see the same change
12:33:06 centralization here.
12:33:13 (Indiscernible) Has dramatic increase
12:33:14 in profitability.
12:33:16 There is no increase in
12:33:16 centralization.
12:33:18 If we do the same set up of the model
12:33:20 looking at differences around the time
12:33:24 of this price shock, there is no real
12:33:24 difference.
12:33:26 Coefficients close to zero and not
12:33:27 different from zero.
12:33:30 We are looking at what is graft here,
12:33:35 trends in (Indiscernible) areas.
12:33:37 There is no diversions that happens
12:33:39 around the height -- time of price
12:33:39 increase.
12:33:41 There is some doubt on the mechanisms.
12:33:44 If it's going to centralize authority

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12:33:50 for places that are economically
12:33:51 productive, we expect to see
12:33:53 centralization effort or special
12:33:54 centralization effort in these areas
12:33:56 were profitability increase threefold
12:33:58 within a couple decades because of this
12:33:59 demand increase.
12:34:00

12:34:00

John Matsusaka>>

12:34:03 >>: Did you say the value of the silver
12:34:07 production was around the same as the
12:34:09 value of the (Indiscernible) stuff?
12:34:09

12:34:09

Sellars>>

12:34:19 >>: It's hard -- at the peak of the
12:34:21 price increase, the profitability shock
12:34:23 of patio process should have been lower
12:34:24 based on the world price of silver.
12:34:26 This depends on -- what's tricky to
12:34:31 say is silver is bigger commodity, but
12:34:38 also the degree to which the patio
12:34:42 process impacts profitability differs a
12:34:43 lot by something we don't observe which
12:34:46 is the quality of the ore.
12:34:51

12:34:51

Matsusaka>>

12:34:54 >>: Your answer is good but it's more
12:35:00 complicated than what I asked.
12:35:02 I was asking more simpleminded
12:35:02 question.
12:35:05 I just wonder do we know P times Q is
12:35:05 that --

12:35:05

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Sellars>>

12:35:06 >>: I'm sorry.

12:35:06

12:35:06

Matsusaka>>

12:35:08 >>: Sorry, I didn't ask the right
12:35:09 question.

12:35:14

12:35:14

Sellars>>

12:35:15 >>: That's easier.
12:35:16 Silver changes in price over time.
12:35:18 Generally speaking, silver is bigger
12:35:19 commodity overall.
12:35:21 During the peak of this boom they are
12:35:23 comparable in terms of profitability.
12:35:26 The relative price changes a lot over
12:35:27 this period.
12:35:30 There is this boom and bust but we
12:35:33 what we don't trace later is in the
12:35:34 1800s there's another bus.

12:35:35

12:35:35

Matsusaka>>

12:35:36 >>: What about revenue?
12:35:40 We note the total revenue?

12:35:40

12:35:40

Sellars>>

12:35:41 >>: It's bigger and more silver.

12:35:44

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12:35:44

Matsusaka>>

12:35:45 >>: Thank you.

12:35:45

12:35:45

Sellars>>

12:35:46

12:35:49 >>

12:35:50

12:35:57

12:35:57

12:36:02

12:36:04

12:36:06

12:36:08

12:36:14

12:36:15

12:36:21

12:36:23

12:36:24

12:36:27

12:36:28

12:36:34

12:36:36

12:36:37

12:36:41

12:36:44

12:36:48

12:36:51

12:36:54

12:36:56

12:37:01

12:37:01

12:37:01

12:37:02

12:37:07

12:37:09

12:37:10

There is more silver production in North country has silver.

We don't see increase in centralization.

That is the imperfect evidence and placebo test.

The other thing we do in the appendix which I'm happy to talk about in the Q&A is looking at some sort of additional hypothesis generated by the model the probably would not hold if the mechanism here was profitability.

In particular, the model indicates we should have higher adoption where centralization is risky.

Sorry, the director role should be smaller if there is higher cost of transition.

You are looking at how local production or economic on the ground my increase the role of the importance of this legibility shock in places where there is high risk of conflict and we see lower transition direct rule or effect of the patio process in areas in the conquest.

We also see differences by baseline which would be indicated if this was profitability mechanism.

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12:37:15 We see the bigger effect of the patio
12:37:17 process in areas where there is less
12:37:24 information possibly available prior to
12:37:25 the innovation.
12:37:27 Places that are further rather than
12:37:28 closer to Mexico City.
12:37:30 If it's profitability expect places
12:37:32 in your trading centers to have bigger
12:37:33 effect.
12:37:34 We see the opposite the data.
12:37:38 We see places that had less frequent
12:37:41 conquest history available places not
12:37:43 paying tribute to the Empire had bigger
12:37:46 effect of the process and possibly less
12:37:49 information on production ahead of time.
12:37:50

12:37:50

12:37:57 The next part we say there is exogenous
12:38:00 shock that increases centralization.
12:38:05 What else might be going on?
12:38:07 What are longer-term consequences of
12:38:08 this transition?
12:38:10 There is literature about how
12:38:12 authority is all these costs and
12:38:13 benefits.
12:38:15 We are interested in is this
12:38:16 implication where will the crown want
12:38:18 to spend on economic production?
12:38:21 The model says big increase in
12:38:26 legibility can increase incentive for
12:38:28 greater investment because you can move
12:38:30 to situations where you can centralize
12:38:33 authority and each marginal increase in
12:38:35 your ability to monitor agents will be
12:38:38 delivered and paid dividends in your
12:38:41 revenue each month.
12:38:44 What we do is think about the
12:38:47 placement of treasuries.
12:38:49 Institutions that collect local taxes
12:38:53 and allows the crown to have more
12:38:57 direct evidence of what's going on
12:38:59 within the different districts and
12:39:01 allows them to monitor local production
12:39:03 As is often the case for

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12:39:05 bureaucratic institutions, is costly to
12:39:06 set up this apparatus.
12:39:12 You need to hire workers to work in
12:39:13 the treasury.
12:39:13

12:39:13

12:39:17 We will look at the over time roll out
12:39:21 of treasuries across space and least
12:39:22 walking time to treasury.
12:39:26 What is mapped on the left ear is
12:39:29 Mexico, the mining districts are in
12:39:31 dark great in the know mining districts
12:39:32 are in flight great.
12:39:34 The dots are locations of different
12:39:37 treasuries.
12:39:39 There is huge difference which I will
12:39:42 talk about where and when these are
12:39:42 created.
12:39:45 The least cost walking time metric we
12:39:53 use here, the cost of traversing each
12:39:54 cell.
12:40:02 Two is also jungle and least cost
12:40:05 walking measured using information on
12:40:07 topography and land cover in the 16th
12:40:07 century.
12:40:11 I should say all results are robust
12:40:14 to using simple distance metric or
12:40:17 various assumptions about the trade-off
12:40:20 between topography and land cover.
12:40:23 I can talk about that in more detail
12:40:23 if interested.
12:40:24

12:40:24

12:40:27 This is the same difference set up.
12:40:30 We will look at the interaction
12:40:32 between mining and this post 50-50
12:40:33 indicator.
12:40:34 The outcome variable will be the
12:40:37 least cost walking our to the nearest
12:40:37 treasury.
12:40:40 The average hour from each district
12:40:42 to the nearest treasury which will

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12:40:45 change over time because there is
12:40:46 rollout the treasury over time.

12:40:46

12:40:46

12:40:49 This difference specification we will
12:40:52 look at places that have Spain and the
12:40:57 entire direct rural area.
12:41:00 The first and third, we will look at
12:41:01 the difference.
12:41:04 This is looking at district and fixed
12:41:08 effect and we will add the same battery
12:41:10 of time varying interactive controls.
12:41:16 We see suggested evidence that we
12:41:18 will talk about in one second and
12:41:20 places that were affected by the shock
12:41:23 and proportionate decline to the
12:41:26 nearest treasury relative to areas not
12:41:29 effective to areas before the 1550s.
12:41:33 Want to say a couple things which is
12:41:37 clearly the metric we are using, the
12:41:39 outcome variable we are looking at is
12:41:41 explicitly about safe -- space.
12:41:45 There are issues you should probably
12:41:46 worry about here.
12:41:49 I should specify the standard areas
12:41:51 we have we report two types.
12:41:55 Look at clusters and common areas by
12:41:56 correlation.
12:42:00 There are spillovers if you build the
12:42:06 district -- sorry, treasury in one
12:42:08 district and across other districts.
12:42:11 Think of this is more suggestive
12:42:11 evidence.

12:42:12

12:42:12

12:42:14 Leverage more general qualitative
12:42:16 trends about these treasury
12:42:20 constructions to think about the models.
12:42:23 What is pictured on the right is
12:42:26 longer-term regional trends in
12:42:29 investment in walking distance to the
12:42:29 nearest treasury.

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12:42:34 Broken out here are different regions
12:42:36 of what is now Mexico under colonial
12:42:36 rule.
12:42:39 There are things that are interesting
12:42:42 to note about the general trends of how
12:42:45 walking time evolves at the regional
12:42:46 level over colonial period.
12:42:49 One is after this initial wave of
12:42:51 investment, there is period in which
12:42:54 there is little treasury investment in
12:42:57 the legibility that happens during the
12:42:58 17th century.
12:42:58

12:42:58

12:43:04 In terms of how this is theorized it
12:43:06 suggests we should see left investment
12:43:09 in future legibility as the ground
12:43:10 level of patients goes down.
12:43:13 We think that is possible in this
12:43:15 scenario is this was time of high
12:43:16 warfare in Europe.
12:43:19 There's a lot of work talking about
12:43:22 this loss century of colonial
12:43:24 development in the 17th century.
12:43:27 We see that with treasury placement.
12:43:37 For the other thing you might want to
12:43:39 notice is there are differences over
12:43:42 time in the distance to the treasury
12:43:44 across different regions.
12:43:46 There are cross references that don't
12:43:48 change much over time.
12:43:54 Frontier areas the little investment.
12:43:56 It's not that the crown is building
12:43:59 treasury in order to bring areas under
12:44:01 control but in areas already in the
12:44:04 process of centralization and marginal
12:44:06 increase and ability to view what's
12:44:07 going on.
12:44:10 Even profitable areas you think about
12:44:13 like (Indiscernible) and areas that
12:44:15 have economic production for from the
12:44:18 Metropolitan and direct forms of rule
12:44:20 that don't see the same investment in
12:44:22 treasury production.

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12:44:22

12:44:22

12:44:24

What to be taken from this exercise?

12:44:27

We think the paper illustrates how increase in eligibility can encourage

12:44:29

centralization of power.

12:44:31

12:44:33

The model suggests in low information

12:44:36

areas when you have high cost of

12:44:40

monitoring intermediaries, you might be

12:44:43

better off if you are central ruler to

12:44:45

rely on direct rules where revenue and

12:44:47

autonomy to local intermediaries.

12:44:50

To get more information, the benefits

12:44:53

of low monitoring versus high cost

12:44:55

flipped.

12:44:57

As you get more information, you are

12:45:00

better off exerting direct form of

12:45:03

control and monitoring agents more

12:45:03

directly.

12:45:05

In addition, the framework thinks

12:45:09

about how there are broad implications

12:45:12

for state development over the

12:45:12

long-term.

12:45:14

Centralization encourages future

12:45:17

eligibility because once you are in the

12:45:19

world where you monitor agents, each

12:45:22

increase in ability to view what's

12:45:24

going on you can make fewer mistakes

12:45:27

and more -- tighten control over the

12:45:30

agent and retain more revenue.

12:45:30

12:45:30

12:45:33

The evidence we have shows and looks at

12:45:36

patio process showing increase in

12:45:38

direct rural adoption in areas that are

12:45:41

affected by the shock that suddenly

12:45:44

increase the ability to observe local

12:45:44

production.

12:45:47

We show also areas of state

12:45:49

investment through treasury later on.

12:45:53

In terms of where we think about

12:45:56

going with this project, we think this

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12:45:59 framework can help us think about the
12:46:01 relationship between legibility state
12:46:04 development and contributions of this
12:46:07 project is leveraging evidence on the
12:46:09 big question on how information would
12:46:12 affect long and short-term political
12:46:12 institutions.
12:46:13 Thank you.
12:46:16 Look forward to your questions and
12:46:16 comments.
12:46:16

12:46:17

Jenkins>>

12:46:18 >>: Thank you, Emily.
12:46:21 As mentioned before, we have formal
12:46:23 discussant which is Sean from UC
12:46:23 Berkeley.
12:46:26 Sean has a few slides as well.
12:46:26

12:46:27

Sean Gailmard>>

12:46:27 >>: I do.
12:46:29 I will share my screen.
12:46:40 Or we live?
12:46:40 Great.
12:46:45 I am Sean from UC Berkeley.
12:46:56 (Indiscernible) And I loved every one
12:46:57 of them.
12:47:02 This is another terrific paper and
12:47:04 very insightful as to the subject
12:47:06 matter and very clear theoretical
12:47:08 development.
12:47:13 Clever, thoughtful, compelling
12:47:18 identification strategy in which
12:47:20 implications for contemporary
12:47:21 institutions.
12:47:22 It's really towards force.
12:47:28 I look forward to the book which I
12:47:31 hope you and Francisco write if you

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12:47:32 plan to write one.

12:47:32

12:47:32

12:47:36 Let me give you comments that tell you
12:47:39 how I read this and what I took from it
12:47:42 and some questions that I had or
12:47:43 suggestions.

12:47:45 About the theory and empirics.

12:47:50 The issue here is what the legibility
12:47:52 on the clonal institution imposed by
12:47:55 crown or state capacity, or state
12:47:59 capacity success?

12:48:01 We have a lot of work on state
12:48:04 capacity and resource extraction and
12:48:06 clever things about the paper is
12:48:08 appearing periphery side of the story
12:48:10 by talking out legibility.

12:48:12

12:48:12

12:48:14 This puts the paper in the stream of
12:48:20 thought on the endowment on effects of
12:48:22 colonial endowments on clonal
12:48:23 institutions.

12:48:27 It is local endowments that determine
12:48:32 combined with existing typology that
12:48:34 determine what observability problems
12:48:38 and agency problems the state faces and
12:48:38 institutions.

12:48:44 There are two important conceptual
12:48:45 contributions here.

12:48:50 One of them is to show the theory and
12:48:53 data that legibility affected Spanish
12:48:54 centralization.

12:49:01 Spanish centralization within the
12:49:04 colonial empire as one would expect
12:49:06 consistent with the principal agent
12:49:07 object developed in the model.

12:49:08

12:49:08

12:49:11 Principal agent framing is useful and

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12:49:15 compelling in general in terms of
12:49:17 understanding what was going on here.
12:49:20 Two, this is one I thought was most
12:49:23 original on the theory side and worth
12:49:26 bringing out his legibility generates
12:49:29 self reinforcement dynamics the state
12:49:30 capacity investment.
12:49:36 Such that two districts or areas
12:49:40 fairly close together in initial
12:49:42 conditions of legibility can see
12:49:47 long-term convergence of endogenous
12:49:49 state capacity investment that lead to
12:49:50 long-term institutions.
12:49:52 This is super interesting.
12:49:55 Not very common in models or
12:49:56 empirical work in this area.
12:50:02 It tells us there is long-term
12:50:05 convergence across areas in terms of
12:50:07 initial conditions seem similar.
12:50:07

12:50:07

12:50:10 The difference is close to arbitrary as
12:50:13 one would expect at the time of initial
12:50:15 That's interesting.
12:50:22 That's on the theory I found nice
12:50:24 development that have worked on several
12:50:28 years on Imperial governance on the New
12:50:28 World.
12:50:34 So many themes although
12:50:35 implementation by the English, so many
12:50:43 are identical in the problems they
12:50:45 grapple with our identical and it's
12:50:47 fascinating to see how Emily and
12:50:50 Francisco lay out the logic in these
12:50:50 cases.
12:50:50

12:50:50

12:50:54 Emily explained this well and in the
12:50:57 interest of time I will not belabor.
12:50:59 The question is how the agent can be
12:51:02 reduced for high effort in this poor
12:51:03 observability.

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12:51:05 The printable has two choices.
12:51:07 Direct or indirect role.
12:51:10 Indirect rule which is the initial
12:51:13 condition of the colony because that's
12:51:16 how settlement happens, what it means
12:51:18 in this context is the only incentives
12:51:21 from the agent King from shares of
12:51:21 output.
12:51:24 Direct rural means the agent is
12:51:26 essentially now something like state or
12:51:29 credit in the sense -- bureaucrat.
12:51:32 Formally speaking, this was the form
12:51:35 of rule state variable in the Markoff
12:51:35 game.

12:51:35

12:51:41 The initial state of the game is the
12:51:44 principal can endogenously change in
12:51:46 the one-time cost which reflects they
12:51:49 have to overcome interest to change
12:51:50 institutions.
12:51:53 That is state variable in the game,
12:51:56 which matters and I mention this
12:51:58 because it matters in terms of how I
12:51:59 understanding.
12:52:00 Strategy.
12:52:02 One key point is the principal does
12:52:05 induce high effort under institutional
12:52:05 form.
12:52:08 What they need to do is different.
12:52:11 In particular, it's less desirable
12:52:14 for the crown under indirect rule.
12:52:17 Under indirect rule, the principal
12:52:20 has high effort only by offering the
12:52:22 agent large share of the output.
12:52:25 Need to share or grant a lot to get
12:52:27 them to put in effort.
12:52:29 Direct rule introduces threat as
12:52:31 incentive for the agent that allows the
12:52:34 principal to take larger share for
12:52:37 itself and still maintain incentive.
12:52:39 Direct rule is only worth it and
12:52:46 costly in any given period and costing
12:52:47 switch to direct role.

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12:52:50 It's only worth it if the colony is
12:52:50 legible.
12:52:53 That's where the key contribution of
12:52:56 the paper comes in which is to say that
12:52:59 legibility means the principal has good
12:53:02 information about whether the agent
12:53:02 worked hard.
12:53:03

12:53:03

12:53:06 Legibility is also the state variable
12:53:08 in this dynamic gain determined by
12:53:11 colonial conditions and principles
12:53:13 sequence of investment and legibility.
12:53:16 State capacity matters and there has
12:53:19 to be implicit assumption that the
12:53:21 state has the ability to process the
12:53:24 information it gets from the colony.
12:53:27 There is nothing profound about this
12:53:30 as far as the theory is this lurking
12:53:33 condition that might be relevant in
12:53:33 other cases.
12:53:37 There is assumption that the
12:53:39 principal has high state capacity and
12:53:40 can use the information.
12:53:43 At any rate, making legibility state
12:53:47 variable which creates dynamic linkage
12:53:50 across periods, that leads to really
12:53:53 interesting results of self-reinforcing
12:53:54 capacity investment.
12:53:54

12:53:55

12:53:58 In particular, legibility only benefits
12:54:00 the principal as under direct rule.
12:54:03 The principal will invest in
12:54:06 legibility if direct rule is in place
12:54:09 or expects it to be in place relatively
12:54:10 soon.
12:54:13 Both of these are only the baseline
12:54:15 of eligibility's high enough.
12:54:20 This generates vicious cycles in
12:54:24 capacity investment in high legibility
12:54:27 get state investment in the legibility

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12:54:28 places get none.
12:54:31 There is this threshold of baseline
12:54:34 eligibility and at this threshold we
12:54:37 talk about two places within
12:54:39 measurement accuracy are identical and
12:54:42 wind up in different development paths.
12:54:42

12:54:42

12:54:45 There is a lot in this paper is
12:54:46 jampacked.
12:54:47 It's not over packed.
12:54:50 Everything in it is doing its job and
12:54:54 contributing to argument.
12:54:55 I don't know if there is room to
12:54:58 bring out this point, but may be
12:55:01 paragraph or introduction of this
12:55:03 aspect because that to me is a new
12:55:06 element of how we understand New World
12:55:08 development for these models.
12:55:11 The bottom line is low legibility
12:55:15 creates both indirect rule investment
12:55:18 by the state colonial state capacity in
12:55:21 high legibility creates direct rural
12:55:24 anti-investment colonial state capacity.
12:55:27 You are very much in the stream, but
12:55:30 the endogenous emergence of identical
12:55:33 places or nearly identical places is an
12:55:35 interesting twist.
12:55:39 It still determinism but it means we
12:55:42 can no longer assume similar places end
12:55:45 up in similar conditions in the long
12:55:45 run.
12:55:48

12:55:48

12:55:51 We want to know how it works in need
12:55:53 exogenous change to do that.
12:55:56 Before I get to the empirics, let me
12:55:59 make two side notes of the theory.
12:56:02 One of which relates to the issue
12:56:05 about whether this is legibility or
12:56:06 value of output.
12:56:09 As far as empirical demonstration,

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12:56:12 it's clear why this paper needs to rule
12:56:15 out value of the output as driving this
12:56:18 because that is the most compelling
12:56:20 alternative explanation considering
12:56:23 introducing the patio process did two
12:56:26 things at once and change the value and
12:56:27 legibility.
12:56:30 We want to make sure it's not change
12:56:31 in value.
12:56:33 I get and appreciate that.
12:56:36 At the conceptual level, it seems to
12:56:39 me natural extension and free extension
12:56:42 would allow you to say in addition to
12:56:45 that, the value of the output and
12:56:48 colony in the district has to matter
12:56:51 for the centralization decisions of the
12:56:51 center.
12:56:52

12:56:52

12:56:55 The model assumes the districts have
12:56:58 same potential output given effort of
12:56:59 local conditions.
12:57:00 Reality it varies.
12:57:04 Some districts in time produce very
12:57:06 high value output and some produce very
12:57:07 low value.
12:57:11 Places that could grow corn and
12:57:13 tobacco and cash crops and silver and
12:57:17 gold precious metal, the value is
12:57:18 different.
12:57:21 The reason this matters is the
12:57:24 transition from direct rule to direct
12:57:25 rule is costly.
12:57:29 If the district potential is low, the
12:57:32 output is low this will never be worth
12:57:32 it.
12:57:35 If high, it may be.
12:57:37 That depends on legibility.
12:57:40 District value needs to matter.
12:57:46 As written it has legibility but not
12:57:49 just value at theoretical level and
12:57:51 hold legibility matters.
12:57:51

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12:57:58 In the book would be a good place to
12:58:00 explore this theme.
12:58:03 Here is an augmented theory which
12:58:05 says we have two dimensions.
12:58:10 We have two dimensions one being
12:58:11 legibility in colonial value.
12:58:14 This just say for complicity could be
12:58:15 high or low.
12:58:18 The paper deals with this column.
12:58:22 Semicolonial value is high enough
12:58:29 that it can matter, we can see
12:58:29 repeating the application as presented,
12:58:30 legibility is high, the crown one
12:58:33 strike rule and when it's slow it wants
12:58:34 direct rule.
12:58:39 There is this other column were
12:58:44 colony value is low.
12:58:44 It doesn't matter how much legibility
12:58:45 there is.
12:58:46 I don't care how much I can see your
12:58:52 corn production in the far land.
12:58:55 It's not worth controlling you are
12:59:01 paying the cost of get rid of the
12:59:01 (Indiscernible) so don't bother.
12:59:02

12:59:02 In other words, colonial value high
12:59:03 enough is necessary condition for the
12:59:05 dynamics in this paper to play out.
12:59:11 In our understanding of contemporary
12:59:11 institutions, there must be correlation
12:59:14 between the initial value of the colony
12:59:19 and transition to direct rule or
12:59:23 retention of local autonomy in the form
12:59:28 of (Indiscernible) which probably has
12:59:28 implications to empirical studies of
12:59:30 development.
12:59:34 Cite no, are Markov contracts optimal?
12:59:39 I'm going to skip this in the
12:59:40 interest of time but will send notes.
12:59:45 I'm not sure.
12:59:45 It might matter but I'm not positive.
12:59:48 It just needs more thought.
12:59:54 By the contract I mean the contract

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12:59:55 saying today's retention decision
12:59:58 depends on today's output and cannot
12:59:58 depend on sequence you observe over
13:00:00 time in which they might want to do.
13:00:05

13:00:05

13:00:05 Emily described as well and I just want
13:00:06 to say this is very clever.
13:00:12 This is exactly what we want from the
13:00:13 subject matter expertise combined with
13:00:13 statistical expertise.
13:00:18 This is well grounded argument for
13:00:25 why this would change legibility and
13:00:25 why that matters in the difference is
13:00:25 natural.
13:00:29 Very clear results.
13:00:34 Here is my question; I have maybe
13:00:38 others, they are less central so in the
13:00:39 interest of time, I will skip because I
13:00:41 was told to stick to 15 minutes.
13:00:42

13:00:42

13:00:46 I could use more explanation about the
13:00:48 match between the theory and estimator.
13:00:53 I don't necessarily know this is a
13:00:57 problem, but it calls out for more
13:00:57 discussion.
13:00:58 The model is dynamic.
13:01:05 There are dynamic linkages over time.
13:01:05 In particular, the formal rule
13:01:07 follows this Markov process in the
13:01:08 model.
13:01:11 Once you reach direct rule in the
13:01:13 model, you stay there forever.
13:01:18 That is the dynamic.
13:01:20 There is stickiness over time.
13:01:23 The estimator is not dynamic.
13:01:28 My question basically comes down
13:01:31 simply to this; can the clustered
13:01:31 standard errors that you use in the
13:01:37 model, the result had clustered by
13:01:44 district.

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13:01:44 Can the clustering handle dynamic
13:01:45 aspect of institutions within districts?
13:01:49 I don't know the answer to that.
13:01:49 You might know off the top of your
13:01:49 head.
13:01:51 It might require looking into the
13:01:55 nuts and bolts of exactly what do we
13:01:59 mean by cluster and how is that
13:02:04 covariance made constructed?
13:02:05 The concern is simply this; the
13:02:07 empirical model assumes much more
13:02:12 independent information than the theory
13:02:13 implies.
13:02:15 That is present in the data.
13:02:20 This is a problem because we have
13:02:27 invented power for the purposes of
13:02:27 estimation by acting as though we have
13:02:29 more independent variation than we do.
13:02:29

13:02:33 We have 14 per district, but once I
13:02:37 know when the dependent variable
13:02:39 changes from 0 to 1, I know the other
13:02:42 12 observations nearly with certainty.
13:02:51 That makes me think I need to be
13:02:53 brought along a little bit and given
13:02:55 scaffolding as to how this estimator
13:03:00 deals with this problem or if you think
13:03:04 it is a problem, is it time to start
13:03:06 thinking about dynamic panelists or
13:03:06 something like that?
13:03:11 I don't know if I'm prepared to think
13:03:12 about that or not?
13:03:17 That was the main question in this
13:03:18 empirical model.
13:03:23 I accept the defecation strategy and
13:03:27 DND does seem to be an appropriate way
13:03:31 to handle this and not the dynamic
13:03:33 persistence in the data.
13:03:43 The issues in this paper are relevant
13:03:43 to things I'm working on right now for
13:03:45 this book I'm writing on English
13:03:46 government.
13:03:48 Many issues come up and I will cite
13:03:56 this paper lavishly in completing my

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13:03:56 own work.
13:03:56 I enjoyed reading it and thank you
13:03:56 for the opportunity to comment.
13:03:59

13:04:00

Jenkins>>

13:04:00 >>: Thank you.
13:04:04 Emily, do you want to respond to
13:04:05 anything mentioned before we open it
13:04:05 more?
13:04:06

13:04:06

Sellars>>

13:04:10 >>: I will just say thank you for this
13:04:10 thoughtful and interesting comments.
13:04:19 One thing we are at this crossroads
13:04:20 to think about is the degree to which
13:04:20 you want to live on the model or
13:04:24 empirics or relationship between these?
13:04:25 I think you flagged some of the big
13:04:29 issues that we are trying to figure out
13:04:32 how to package this as standalone and
13:04:34 the broader project and looking forward
13:04:38 to seeing your book on this issue of
13:04:39 the dynamics.
13:04:41 This is good points to think about.
13:04:46 The movement is not from 0 to 1 but
13:04:49 at the district level there is not many
13:05:00 districts that have a one after a few
13:05:00 decades.
13:05:05 There is variation in the middle.
13:05:05 Places going from 50% direct rule to
13:05:06 70% direct rule.
13:05:11 That doesn't get to this question
13:05:12 which I agree, there is much --
13:05:14 mismatch between the argument.
13:05:19 It's dynamic is he point out in this
13:05:23 statistical approach which assumes
13:05:24 independence of observation.

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13:05:24 This is something we will think about
13:05:28 Thank you for the great comments.
13:05:31 Do you want me to take the Mercury
13:05:31 question?
13:05:31

Jenkins>>

13:05:33 >>: If you want to.
13:05:34 The first might be fun.
13:05:37 Sean is pushing to write a book.
13:05:44 Are you writing a book?
13:05:44

Sellars>>

13:05:44 >>: We have been talking about it.
13:05:45 I'm finishing a different book once I
13:05:46 get that off the desk I think that is
13:05:47 the next step.
13:05:51 Francisco and I are talking about
13:05:51 book projects.
13:05:54 We are talking about the general
13:05:58 framing, but centralization in domestic
13:06:02 conflict in clonal Mexico.
13:06:03 It's exciting to see Sean's book
13:06:05 which sounds like it's further along we
13:06:06 can engage with that.
13:06:13 We are engaging the same ideas and
13:06:13 it's exciting.
13:06:13

13:06:13 >>: If you want to enter the Mercury
13:06:13 question?
13:06:14

13:06:15

13:06:18 >>: Is there any black market for
13:06:19 Mercury going on?
13:06:22 Can locals get Mercury that rely?
13:06:26 The answer is mostly now.
13:06:26 That's important for the strategy.
13:06:30 Mercury is only handful of places

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13:06:30 worldwide.
13:06:34 One is in Peru and oriented to
13:06:36 Peruvian mines.
13:06:36 The other is in Spain and central
13:06:39 Europe.
13:06:39 Virtually, all Mercury coming over
13:06:43 from Europe was under control of the
13:06:44 crown.
13:06:48 It wasn't like there is an easy way
13:06:52 to obtain not through the crown either
13:06:52 directly or indirectly.
13:06:54 This is in contrast to smelting.
13:06:56 Technology of the effect prior to the
13:06:58 shock which relies on lead and hardwood
13:07:01 Particularly in areas that have
13:07:02 firewood.
13:07:08 It's relatively easy to have
13:07:09 underground smelting operations.
13:07:13 The interesting thing about Mercury
13:07:17 is it's hard to get except through
13:07:18 these channels and that something we
13:07:18 are trying to leverage theoretically.
13:07:18

Jenkins>>

13:07:22 >>: Leticia is here from Queens College
13:07:22 and she has questions.
13:07:26 She is now a panelist and can ask
13:07:27 directly.

13:07:27

Leticia Arroyo Abad>>

13:07:27 >>: Hello.
13:07:31 I have a few questions about the
13:07:32 identification strategy.
13:07:36 I am an economist and I think it
13:07:38 comes with your diploma or something.
13:07:43 I also won the Nobel Prize.
13:07:46 It seems relevant.
13:07:51 When I'm thinking about the timing of
13:07:55 new technology for mining and
13:07:58 processing silver, it almost coincides
13:08:03 with push for many sectors in the

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13:08:10 society and in Spain with relaxing and
13:08:10 treating indigenous people better.
13:08:11 We have the new laws that happened
13:08:11 around this time.
13:08:15 Also, there is huge concentration of
13:08:20 power in Mexico and Peru in the main
13:08:23 parts of the Empire.
13:08:27

13:08:28

13:08:32 This is like (Indiscernible) issue.
13:08:33 Are you observing effects of
13:08:39 technology or actually just something
13:08:39 that has nothing to do with technology
13:08:40 but actually some kind of structural
13:08:43 change in the way the crown is trying
13:08:49 to push back on the power on
13:08:49 (Indiscernible) and on the other hand,
13:08:50 the Catholic Church saying you are
13:08:52 really mistreating indigenous people
13:08:56 and (Indiscernible) and the new laws
13:08:58 happened in 1540.
13:09:08 There is also an 1608, the crown says
13:09:12 any kind of (Indiscernible) within
13:09:13 radius of (Indiscernible) have to
13:09:13 revert to the crown.
13:09:19 From the research I've done in Peru,
13:09:21 that is not truly implied but this is
13:09:23 another thing incredibly important
13:09:25 happening during this period of time.
13:09:29 That is where I am not convinced that
13:09:34 it is technological issue versus social
13:09:34 structure.
13:09:34

13:09:37 The other thing is my memory serves me
13:09:39 right which it may not, 1525 there were
13:09:44 around 500 (Indiscernible) in Spain and
13:09:45 more like 120.
13:09:52 We go from 500 something in 1525, to
13:09:52 1800 something like 120.
13:09:57 Share direct rule we have numerator
13:09:58 and denominator.
13:10:01 It decreases dramatically during the

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13:10:03 period of time you have this research.
13:10:07 I'm not sure what you are observing?
13:10:14 You are measuring direct control by
13:10:16 an institution that is disappearing.
13:10:22 That is something I'm not sure how to
13:10:22 deal with.
13:10:30 The other thing and as you know
13:10:30 because you are an expert in history is
13:10:34 during this time you have this
13:10:36 (Indiscernible) of economy that is
13:10:37 increasing.
13:10:43 This idea of extracting resources
13:10:45 from one particular place and sector,
13:10:46 that was important initially.
13:10:49 It's not really the main source.
13:10:53 Where the crown could extract
13:10:55 resources or if you think of the lease,
13:10:58 they diversified activities to go away
13:11:04 for mining to other kind of -- there
13:11:05 are also important things happening
13:11:06 during this period of time which is
13:11:07 important.
13:11:08

13:11:08

13:11:15 The other thing which I'm curious, one
13:11:15 of my favorite phrases and Latin
13:11:16 America is (Indiscernible) which is I
13:11:18 obey but do not comply.
13:11:25 That saying nice you send me this
13:11:25 regulation but I'm not going to do it.
13:11:29 Your paper is saying you know what?
13:11:32 The crown has much more power.
13:11:35 It tried to centralize it which goes
13:11:37 against large is geography by
13:11:39 historians if you have heard of
13:11:43 (Indiscernible) that actually claimed
13:11:45 the decentralization was done de facto
13:11:49 and design for the crown because it was
13:11:49 ways to rule.
13:11:53 Show this by looking at the treasury
13:12:00 transfers that leads within Latin
13:12:01 America inventing each other money as
13:12:06 ways to compensate and engage in
13:12:10 activities that the crown might be not

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13:12:11 interested in.
13:12:12 I was curious how your paper speaks
13:12:17 to this and it's talking to it.
13:12:18 Thank you.
13:12:18

13:12:18

Sellars>>

13:12:27 >>: Thank you for the great comments
13:12:28 and I will start with the first which
13:12:28 is on the defecation strategy.
13:12:30 I agree.
13:12:33 There are lots of things happening
13:12:35 Empire wide moving into the direction
13:12:37 of centralization.
13:12:41 Besides the things he mentioned, the
13:12:46 church or crackdown on indigenous
13:12:46 populations, the move to trying to move
13:12:51 on the new laws and various things.
13:12:53 Would also add our work on academic
13:12:57 collapse and in clonal Mexico, which
13:12:57 factor.
13:13:04 The approach we are looking at will
13:13:08 say lots of things are going on.
13:13:09 You can see this in the general
13:13:10 trends.
13:13:11 There is trend toward centralization.
13:13:13

13:13:13

13:13:16 The question is what can explain the
13:13:22 trend in diversions around the shock in
13:13:22 non-mining areas?
13:13:27 In order for this to be explained by
13:13:27 other things, something we cannot
13:13:31 directly address both affecting
13:13:35 nonmining areas and disproportionately
13:13:35 around the time of the shock.
13:13:38 I don't have any reason to think for
13:13:41 example one thing we can control is
13:13:46 this demographic collapse variable and
13:13:47 something I looked at and other work.
13:13:53 You cannot observe some of these

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13:13:53 broader social political things but we
13:13:57 don't have any reason to believe they
13:13:59 are disproportionately affecting mining
13:14:04 areas and especially areas people were
13:14:05 not producing much silver prior to this
13:14:05 event.
13:14:09 Most of this stuff looking at this
13:14:11 question of indigenous exploitation,
13:14:14 there is evidence that it might be bad
13:14:16 for indigenous communities around the
13:14:18 minds at least in terms of increasing
13:14:22 labor demands placed on them.
13:14:22

13:14:22

13:14:26 The identification strategy requires
13:14:29 not just other things or not depending
13:14:32 on the fact there's nothing going on in
13:14:34 the economy, but is there anything else
13:14:39 going on to disproportionate mining
13:14:42 areas and at the time of the shock?
13:14:47 We cannot think of good reasons why
13:14:49 this mechanism on indigenous
13:14:53 exploitation may be amplified in areas
13:14:55 that have minds relative to nonmining
13:14:55 areas.
13:14:58 We agree very much that there is
13:15:04 general trend away from (Indiscernible)
13:15:05 happening and we are looking at the
13:15:05 speed of which this happens.
13:15:07 On the question of looking at the
13:15:09 institution disappearing, we kind of
13:15:11 our.
13:15:14 This gets back to the last question
13:15:23 on implementation from Madrid, it
13:15:24 persists in certain parts of what's now
13:15:25 Mexico for a long time.
13:15:29 It's well into the 18th century and
13:15:33 same is true many areas in new Spain
13:15:35 and in the region.
13:15:39 Areas that tend to be frontier zones
13:15:40 but not entirely.
13:15:42 Data is derived by looking at when it
13:15:44 (Indiscernible).
13:15:49 That's what the outcome variable is.

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13:15:50 What we do at the district level is
13:15:55 we have our data set and record the
13:15:58 year in which that reverts to crown control.
13:16:01

13:16:01

13:16:04 Over time, there are fewer
13:16:06 (Indiscernible) but we look at
13:16:10 baselevel and how many have it by date?
13:16:12 It's the clarifying of what you are
13:16:14 looking at in the outcome variable.
13:16:19 With this question of variables, it
13:16:21 would have to be something time varying
13:16:23 that changes around the patio process
13:16:25 that this affects nonmining areas.
13:16:30 Is there something there?
13:16:31 If there is a story, we would like to
13:16:34 know more and if there is anything in
13:16:36 particular we worry about affecting
13:16:38 areas and look at that more carefully.
13:16:42

13:16:42

13:16:43 This last question which is interesting
13:16:47 on implementation which is part of the
13:16:49 colonial culture is listening to what
13:16:53 comes into saying I hear you but will
13:16:57 not go forward and carry out this law.
13:17:02 It's true, the question is as follows
13:17:07 we do see the crown taking things
13:17:11 away from (Indiscernible) and the crown
13:17:14 implementing and moving in on elites in
13:17:14 certain areas.
13:17:18 Elites get mad in the 16th century
13:17:20 and again in the 18th century.
13:17:25 They don't do that in certain areas.
13:17:29 Even with this culture, what we are
13:17:31 interested in is variation across space
13:17:31 and time.
13:17:41 May be the crown cannot move in
13:17:42 everywhere I don't have the capacity to
13:17:43 do so, but they choose to move in on
13:17:43 elites in some regions and not others.
13:17:44 We are interested in what determines

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13:17:45 that process?
13:17:47 Under what conditions are they able
13:17:52 to -- in some ways, it's interesting
13:17:54 how much rupture there was in this
13:17:56 period.
13:17:58 There is huge change in political and
13:18:01 economic institutions in the late 16th
13:18:01 century.
13:18:04 Interests is looking at this
13:18:06 variation or colony variation and how
13:18:08 that plays out.
13:18:09

13:18:09

13:18:13 >>: One, and, I do understand the
13:18:17 question was between mining, but I
13:18:19 think it's endogenous the number that
13:18:22 exist during mining regions.
13:18:27 Because the (Indiscernible) report to
13:18:28 the crown supposedly higher in the
13:18:31 mining sector because there are more
13:18:32 (Indiscernible) and that is where there
13:18:33 will be differential impact.
13:18:37 Is my concern.
13:18:38 It was very particular.
13:18:44 I would identify and exclusions
13:18:46 because you have it encoded.
13:18:47

13:18:47

13:18:51 >>: Have them geocoded.
13:18:52 It's not true they are more in mining
13:18:55 areas, but partly because there are so
13:18:59 many places and (Indiscernible) because
13:19:00 there are so many around Mexico city
13:19:05 and dense zones that are not mining
13:19:05 areas.
13:19:12 The average difference is because
13:19:13 some are in the northern part they had
13:19:14 fewer populations prior to the conquest.
13:19:15 The (Indiscernible) are not created
13:19:16 until later.
13:19:24 It's not huge difference.
13:19:25 We need to look at the numbers but

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13:19:26 it's not empirically true that there
13:19:27 are more in mining areas.
13:19:27

Arroyo Abad>>

13:19:30 >>: I would compare.
13:19:34 Regulation by the crown was around
13:19:38 (Indiscernible) transferred around that
13:19:38 pivotal time.
13:19:45 Whether they do or not, it can be
13:19:46 (Indiscernible).
13:19:52 In that sense, direct control is
13:19:56 being initiated with the elite in that
13:19:56 sense.
13:19:58

13:19:58

Sellars>>

13:20:00 >>: Great suggestion is something to
13:20:00 look at with the data.
13:20:05 We have to know what districts they
13:20:08 are in and some information using the
13:20:08 specific locations.
13:20:11

13:20:11

Arroyo Abad>>

13:20:12 >>: You can do labor matching or
13:20:13 something like that.
13:20:15

13:20:15

Jenkins>>

13:20:20 >>: John, any questions at all?
13:20:20 No?
13:20:21 Sean, anything to follow up on?

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13:20:23 We have a few minutes.

13:20:26

13:20:26

Gailmard>>

13:20:29 >>: sure.

13:20:32 Let me get back to the slides that I

13:20:32 have.

13:20:39 Let me ask you about this Markovian

13:20:40 contract or put it in front of you for

13:20:41 your thought.

13:20:43 This sounds like one of those things

13:20:46 where it's going to be really obscure.

13:20:49 If you think that you are very, it

13:20:49 will be.

13:20:52 I actually think it matters.

13:21:05 In the model you have today's

13:21:10 contracts and retention decision and

13:21:11 bonus depends on today's variables.

13:21:18 If you observe an agent taking action

13:21:22 over sequence, you are going to obtain

13:21:23 in the long run legibility.

13:21:27 You would know if you tell me you

13:21:33 have 10 bad years in the row and the

13:21:34 reason your output is low, I know this

13:21:35 is not the case and you are shrinking.

13:21:38

13:21:38

13:21:39 You can imagine the contract like fire

13:21:45 after 10 years in the potential benefit

13:21:47 is it gives the incentives in the

13:21:53 earlier segments of multiyear contracts

13:21:58 because they would say I need to work

13:21:59 hard today when conditions are good

13:22:03 because I cannot let up in case they

13:22:04 turn bad later.

13:22:09 I first thought was the principal

13:22:10 would have incentive to use

13:22:11 non-Markovian contracts.

13:22:14 My second thought was they probably

13:22:17 wouldn't be able to commit to that

13:22:18 because they know once they get to year

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13:22:25 nine of this 10 year contract, or 10
13:22:27 year reference period, they would say
13:22:29 it really is statistically independent
13:22:31 at this time.
13:22:35 Should let bygones be bygones and
13:22:36 based on today's output.
13:22:41 Those are my two thoughts and
13:22:41 theoretical.
13:22:45 I thought it was too late to work
13:22:45 through it.
13:22:47 I'm not positive non-Markovian
13:22:49 contracts would be improvement and not
13:22:50 positive there would be commitment
13:22:53 problem by the principal.
13:22:54 I think it's worth thinking about
13:22:57 because if non-Markovian contracts are
13:23:02 optimal, it could affect results on
13:23:03 state capacity investment.
13:23:04 It will certainly affect the
13:23:05 thresholds.
13:23:12 Legibility in which the state is
13:23:13 willing to centralize in the state is
13:23:13 willing to invest.
13:23:17 The reason is non-Markovian contracts
13:23:21 would make even the place with noisy
13:23:26 signals anyone given period, it would
13:23:27 make it legible over periods of time
13:23:31 that could be used as reference period
13:23:32 for contracts.
13:23:32

13:23:34 This is problem of signal extraction.
13:23:38 When you say the principal has to
13:23:43 make one decision based on one period
13:23:44 of information, you make that problem
13:23:44 hard.
13:23:46 These problems of extraction become
13:23:50 trivial if you have large enough period
13:23:51 of data to draw on.
13:23:54 The problem is always easy.
13:23:58 It's always easy in the long run.
13:24:03 Along reference period would allow
13:24:03 that.
13:24:06 I don't know if you have given
13:24:06 thought to it?

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13:24:11 I note paper also uses the same
13:24:12 structure and this comes from there.
13:24:15 That was my question.
13:24:16

13:24:16

Sellars>>

13:24:20 >>: The short answer is we haven't gone
13:24:22 into this really interesting question
13:24:27 of by restricting ourselves to
13:24:31 Markovian contracts, we are making
13:24:31 strong assumptions.
13:24:36 One, there is single period of
13:24:39 information generation or information
13:24:43 acquisition that you have to make your
13:24:44 decision based on what you see in
13:24:47 period one and decide period one.
13:24:54 If he said I'm going to let the agent
13:24:56 work for 12 periods and see how often I
13:24:59 get this high revenue based on what I
13:25:02 should be saying from that district,
13:25:04 you can get more information.
13:25:05 I think there is probably some
13:25:07 benefit to the principal.
13:25:10 I haven't done the work to know
13:25:15 whether or not he will commit to this
13:25:15 complicated contract.
13:25:19 I will have to think about that.
13:25:22 More generally, I think where we are
13:25:24 with this paper and trying to figure
13:25:28 out to submit this to 12,000 word
13:25:30 Journal somewhere.
13:25:31

13:25:32

13:25:36 It is jam-packed now.
13:25:41 That's the trade-off that we are
13:25:45 grappling with now; do we want to
13:25:46 invest more in theory and use the
13:25:48 periods of the theory, or more on
13:25:49 empirics and have this brief
13:25:54 theoretical (Indiscernible) to say
13:25:55 about the setting.

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13:26:00 That something we will think about.
13:26:01 It would be fun to think about these
13:26:02 contracts.
13:26:04 One of my colleagues is always
13:26:06 getting me to write economic papers
13:26:10 with him

13:26:10

Gailmard>>

13:26:11 >>: This would be one.
13:26:12 I think your inclination is
13:26:13 absolutely right.
13:26:16 This would probably be one to leave
13:26:18 aside as far as this development is
13:26:18 concerned.
13:26:21 I think the number of people
13:26:21 interested in.
13:26:24 Governance and contracts are very
13:26:26 s mall subset of the meeting.
13:26:29

13:26:30 (Laughter)

13:26:32 Singleton.
13:26:38 These things keep me up at night and
13:26:40 trying to develop my own models of
13:26:43 similar processes of English in the
13:26:43 world.
13:26:46 I think I cannot possibly use that
13:26:46 model.
13:26:56 I have really strong taste of these
13:26:57 things and less so for empirics.
13:27:01 That's out of fashion.
13:27:03 I think your inclination is right.
13:27:05

13:27:05

Jenkins>>

13:27:08 >>: Anything else?
13:27:09 We are almost at time.
13:27:20 Thank you to Dr.
13:27:22 Emily Sellars forgiving great

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13:27:22 presentation.
13:27:23 Thank you to Sean from Berkeley and
13:27:25 his three comments.
13:27:28 Thank you to the attendees and
13:27:29 participants in the workshop today.
13:27:39

13:27:39

Sellars>>

13:27:40 >>: Thank you for the opportunity.
13:27:40

13:27:40

Gailmard>>

13:27:41 >>: Thank you very much.
13:27:42 It was great.

13:27:42

13:27:42

Jenkins>>

13:27:43 >>: Thank you for taking time out of
13:27:44 your day today.
13:27:46 We will see you again soon, hopefully.

13:27:46

13:27:46

13:27:47

13:27:48 (End Of transcript)