Taxes, Lawyers, and the Decline of Witch Trials in France

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10 October, 2011
Introduction: Smith vs. Hobbes
“... the greatest pressure of Soveraign Governours, proceedeth not from any delight, of profit they can expect in the dammage or weakening of their Subjects, in whose vigor, consisteth their own strength and glory...”

Introduction: Smith vs. Hobbes
Introduction: Smith vs. Hobbes

A big gun... The “Dardenelles” gun. Was cast in 1564 and based on the “Orban” bombard...

Which was used by Mehmed II during the successful siege of Constantinople (1453).
Introduction: Smith vs. Hobbes

A typical design for a castle during the middle ages. These were expensive…
Introduction: Smith vs. Hobbes

But not nearly as expensive as these…

The “trace italienne” was designed to withstand bombardment from massive cannon.

This one is in Kinsale, Scotland, built in 1670's.
Introduction: Smith vs. Hobbes

As war became more expensive, Royal budgets took the hit...

Figure 1: Budget Surplus and Deficit in France, 1523–1698 (100,000's of setiers of wheat)
Introduction: Smith vs. Hobbes

Figure 2
Budget Surplus and Deficit in the Ottoman Empire, 1523–1698
(100,000's of kile of wheat flour)
Introduction: Smith vs. Hobbes
Introduction: Smith vs. Hobbes
Introduction: Smith vs. Hobbes
Introduction: Smith vs. Hobbes
Introduction: Smith vs. Hobbes

- State capacity is an important determinant of economic performance:
- However, we know little about the process through which increases in fiscal capacity affects broader outcomes, like legal capacity.
- Besley and Persson (2009, 2011) theorize that fiscal and legal capacity are complements.
Introduction: Smith vs. Hobbes

We focus on early modern France

- Fiscal and Legal fragmentation were closely related and costly
- There were multiple tax authorities. Rouen to Nantes thirty tolls. (Heckscher, 1955; Johnson, 2006)
- “...we have more laws in France than in the rest of the world put together... so much is left to the opinion and decision of our judges that never was their liberty more unshackled....”
  -Montaigne (d. 1592)
Within region fragmentation is prodigious: Haute-Auvergne (Greenshields, 1994)

- Between 1587 and 1664 one royal présidial court, five local baillage courts and 15 maréchaux for about 175,000 inhabitants.
- As a result, many crimes handled by local nobility who also manipulated the laws to their advantage.
- For example, many seigneuries had their own weights and measures within their territory (Greenshields, 1994; Hamscher, 1976).
“Prolonged witch hunting is as good a barometer as any for measuring weakness in a state” (Soman, 1989)

• Little consistent data on deviation of locally enforced rule of law from ‘modern’ standards of procedure.

• We use witch trials as a proxy of legal capacity in the early modern period.

• A simple theoretical model and historical evidence suggest that the rise of the fiscal state led to the decline in witch trials.

• We find that witch trials and fiscal capacity are strongly correlated in panel data set.
Introduction: Smith vs. Hobbes
Introduction: Smith vs. Hobbes

French witch trials decline before trials elsewhere. Why?
Witch Trials

European Witch Hunt peaked during the age of Shakespeare, Descartes and Newton

• 20,000–40,000 executions between 1450–1750.

• No consensus as to why it began or why it ended.

• Witch hunt was fiercest in “border lands”. Organized states put an end to uncontrolled witch-hunting (Levack, 2006; Soman, 1978).

We claim that the witch trials can be used as a proxy for lack of legal development
European Witch Hunt peaked during the age of Shakespeare, Descartes and Newton

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- No consensus as to why it began or why it ended.
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Witch Trials

Two components of the early-modern definition of witchcraft

Maleficia

Diabolism
Witch Trials

- Witchcraft (especially diabolism) left no physical evidence.

- Most legal codes restricted use of torture (e.g. Ordinance of Villiers Cotterets (1539)).

- Circumstantial evidence, at least, required for implementation of torture (Langbein, 1976, 2006).
Demonologists argued that judges and magistrates should relax legal standards in witchcraft cases.

For example, Jean Bodin (1579), Nicolas Rémy (1595), Martin Del Rio (1599), Henri Boguet (1602), and Pierre de Lancre (1612 and 1622).

According to Jean Bodin:

\[\ldots\text{proof of such evil is so obscure and difficult that not one of a million witches would be accused and punished if regular legal procedure were followed. (quoted in Midelfort, 1972, 19)\]}\]
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...proof of such evil is so obscure and difficult that not one of a million witches would be accused and punished if regular legal procedure were followed. (quoted in Midelfort, 1972, 19)
• Witch-fears sparked trials but fear of witches was endogenous:
  \[\text{\ldots successful witch-trials confirmed to potential accusers the presence of witches, encouraging them to act. Rather than allaying local fears, witch-hunts spread them (Gaskill, 2010, 80).}\]

• Trials begat more trials:
  \[\text{The news of witch-hunts and executions in other parts of a country could easily fan popular and elite fears and create a mood that was conducive to witch-hunting in a village or town (Levack, 2006, 53).}\]

Hence a trial in one area could cascade causing more trials in nearby regions.
Witch Trials

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  \]

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Hence a trial in one area could cascade causing more trials in nearby regions.
Model

- Not really interested in explaining why the central authority asserts control over legal system when attempting to increase fiscal capacity.

- We are interested in why the central authority might impose a stricter interpretation of legal procedure than local authority.
Model

Want the model to capture the following...

- Witch trials required a deviation from “official” legal procedure
- Witch accusations often came from below (or at least had popular support)
- Belief in witches was reinforced by nearby trials
- Magistrates faced trade-off when deciding whether to prosecute: Accommodate popular belief vs. Disorder
Model

Intuition and results...

- When a witch is prosecuted in Region A, this reinforces belief in witches in neighboring Region B and increases the probability of a trial in B (and feeds back to trials in A).
- Local magistrates are unable to coordinate their actions so as to internalize this “belief externality” and prosecute more witches than is optimal for them.
- The centralized authority (Crown) is able to coordinate the prosecuting behavior across regions, thereby internalizing the externality.
- Main result: Centralized authority is less likely to accommodate local demand for deviations in judicial procedure than the local authority. This results in fewer witch trials.
The case of the apprentice weaver Bacqué

- In Gascony two local judges took young Bacqué to over thirty villages.
- Villagers would line up while Bacqué declared each a witch or not.
- He “identified” about 6,210 witches in this way.
- Henri Pussort, uncle of J.B. Colbert intervened.
Model

The case of the apprentice weaver Bacqué

- Pussort’s efforts to stop the trial were blocked by nobles at Versailles.
- Took the intervention of Colbert himself to have Bacqué transferred to Bastille and witch trials stopped.
Colbert ultimately stopped the affair by annulling all previous prosecution through a royal edict which...

\[\ldots \textit{prevents the courts and averts the disorders that would be caused by a procedure so irregular that it would envelop the majority of inhabitants of the aforementioned province, trouble the repose of families, and violate the rules of justice} \ldots\]
Model

This model consistent with other types of criminal behavior. Any crime whose legitimacy is increased by others’ beliefs and in which evidence is difficult to evaluate. For example . . .

- Arson
- Tax Evasion
- Infanticide
Amanda Knox is an enchanting witch, lawyer says

Italian court hears 24-year-old is a 'double soul' as she appeals against conviction for murdering British student Meredith Kercher.

John Hooper in Perugia
guardian.co.uk, Monday 26 September 2011 07.59 EDT
Article history
Data

- We would like to identify whether fiscal capacity and legal capacity were correlated across time and space in 16th and 17th century France.

- We proxy fiscal capacity with real per capita tax receipts from the most important direct tax, the Taille.

- We proxy legal capacity by the number of witch trials in a given region.
Data

Witch Trial Data

- Base data on 2,261 witch trials in France between 1550-1700 was collected from various primary and secondary sources by Marc Carlson.

- We also create a “maximal” data set with an additional 572 trials from various sources (Not in paper)

- We recoded these data to correspond to the appropriate tax region (généralités).
Data

Witch Trial Data

- We omit the Swiss territories (Geneva, Neuchâtel, and Belfort) and Lorraine despite their close links to French institutions.

- Also omit North Eastern trials listed as Nord since it was vague what tax region (if any, they belong too).

- Finally, dropped 530 trials from Gascony in 1607 that were falsely attributed to Pierre de Lancre.
Data
<table>
<thead>
<tr>
<th>Region</th>
<th>Witch Trials (Base)</th>
<th>Witch Trials (Max)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paris</td>
<td>124</td>
<td>124</td>
</tr>
<tr>
<td>Soissons</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Orleans</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>Amiens</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Chalons</td>
<td>0</td>
<td>167</td>
</tr>
<tr>
<td>Bourges</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Normandy</td>
<td>13</td>
<td>202</td>
</tr>
<tr>
<td>Tours</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Bourgogne</td>
<td>81</td>
<td>81</td>
</tr>
<tr>
<td>Moulins</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Poitiers</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Bretagne</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Franche-Comte</td>
<td>4</td>
<td>203</td>
</tr>
<tr>
<td>Riom</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Limoges</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Metz-Alsace</td>
<td>1043</td>
<td>1043</td>
</tr>
<tr>
<td>Lyon</td>
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<td>0</td>
</tr>
<tr>
<td>Grenoble</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Gascony</td>
<td>272</td>
<td>272</td>
</tr>
<tr>
<td>Montpellier</td>
<td>679</td>
<td>679</td>
</tr>
<tr>
<td>Provence</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
Data

**Tax Revenue Data**

- The Tailles constituted between 1/3 and 2/3 of ordinary revenues between 1550 and 1700.
- Collected at the Généralité level. There were 33 Généralités over the course of the 16th and 17th centuries. We aggregate these into 21 consistent regions.
- Missing tax data for 1657-1660 and 1550-1599.
Regional tax data missing for 1550-1599. We adopt two strategies:
Data

- Convert tax data into silver equivalents
- Use population data from Dupâquier around 1700 to make per capita
Witch Trials

- Base Malet data set has 21 regions and 3 periods: 1550-1609, 1610-1649, 1650-1699.

- Begin by creating a dichotomous variables =1 if there was at least one witch trial, =0 otherwise.

...it is putting a very high price on one's conjecture to roast a man alive for them... (Montaigne, 1580, 1910)
Witch Trials

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- Begin by creating a dichotomous variables = 1 if there was at least one witch trial, = 0 otherwise.

...it is putting a very high price on one’s conjecture to roast a man alive for them... (Montaigne, 1580, 1910)
Data

- **1550-1609**
  - No Witch Trials: n=9
  - At Least One Witch Trial: n=12 (1,270)

- **1610-1649**
  - No Witch Trials: n=14
  - At Least One Witch Trial: n=7 (842)

- **1650-1700**
  - No Witch Trials: n=18
  - At Least One Witch Trial: n=3 (149)
Data

- Regions with greater fiscal capacity were less likely to prosecute witches.

- The number of regions where trials were recorded declined from 12 in the 1550–1609 period to 3 in the 1660–1700 period.

- Average tax receipts in ‘witchcraft’ regions remained constant. Regions which were abandoning witch trials were doing so at the same time as their fiscal capacity was increasing.
We would like to control for time-variant unobservables common to all regions (e.g. changing mentalités, weather, etc...) and region-specific time invariant factors (e.g. cultures, geography, etc...).

Begin by running logits on the dichotomous witch trial variable.

Numbers in brackets are odds-ratios
**Econometrics**

Panel A: **Malet Sample**: Dep. Var: Witchcraft Trials = 1, No Witchcraft Trials = 0

<table>
<thead>
<tr>
<th></th>
<th>Logit</th>
<th>Logit FE</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Log Taxes Per Capita</td>
<td>-0.93***</td>
<td>-0.84**</td>
</tr>
<tr>
<td></td>
<td>(0.32)</td>
<td>(0.35)</td>
</tr>
<tr>
<td></td>
<td>[0.39]</td>
<td>[0.43]</td>
</tr>
<tr>
<td>1609-1649 (dummy)</td>
<td></td>
<td>-1.07</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.69)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[0.34]</td>
</tr>
<tr>
<td>1650-1699 (dummy)</td>
<td>-1.69**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.80)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.19]</td>
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<tr>
<td>Obs</td>
<td>63</td>
<td>63</td>
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<tr>
<td>Groups</td>
<td>21</td>
<td>21</td>
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<tr>
<td>LR X²</td>
<td>10.06</td>
<td>15.42</td>
</tr>
</tbody>
</table>
Econometrics

coeff = -0.18606112, se = 0.11415604, t = -1.63
Econometrics

- The count data on trials are over-dispersed (variance greater than mean).

- We estimate a series of Negative Binomial Regressions using both the Malet and Forbonnais data sets.

- Numbers in brackets are Incident Rate Ratios.
### Econometrics

**Panel B: Malet Sample**

<table>
<thead>
<tr>
<th></th>
<th>Dep. Var.: Sum Trials = Count of Witchcraft Trials</th>
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<tbody>
<tr>
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<td>Negative Binomial</td>
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<td>(1)</td>
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<tr>
<td>Log Taxes Per Capita</td>
<td>-1.33***</td>
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<tr>
<td></td>
<td>(0.46)</td>
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<tr>
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<td>[0.26]</td>
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<tr>
<td>1609-1649 (dummy)</td>
<td>0.70</td>
</tr>
<tr>
<td></td>
<td>(1.07)</td>
</tr>
<tr>
<td></td>
<td>[2.02]</td>
</tr>
<tr>
<td>1650-1699 (dummy)</td>
<td>1.54</td>
</tr>
<tr>
<td></td>
<td>(1.41)</td>
</tr>
<tr>
<td></td>
<td>[4.67]</td>
</tr>
</tbody>
</table>

| Obs | 63  | 63  | 42  | 42  |
| Groups | 21  | 21  | 14  | 14  |
| LR $X^2$ | 8.03 | 9.10 | 5.20 | 10.37 |
| $X^2$ of $H_0$: $\alpha=0$ (p-value) | 0.00 | 0.00 | 0.00 | 0.00 |
Edicts

- Econometric results suggest increases in fiscal capacity were accompanied by improvements in legal capacity.

- Were there actual changes in laws that accompanied this trend?

- Yes. 1604 Parlement of Paris requires all witch trials to be automatically appealed. 1629 Code Michau. 1682 Louis XIV issues edict banning witch trials.

- Can we look more generally at whether the central authority was imposing itself on surrounding regions?

- Under the direction of Colbert, all laws and edicts issued by the Crown since 1115 were compiled at the end of the seventeenth century. We use this source to identify how legislatively active the crown was and what kind of legislation was being created.
Edicts
Edicts

Figure 5: Royal Edicts, 1550-1679
• The period from 1550-1580 is just as active as 1630-1680.

• What about the composition of laws being promulgated?

• For 1576 and 1664 (two years with similar amounts of legislation) we count the number of laws falling into each of 8 categories.
Difference between 1576 and 1664 is the amount of legislation aimed at suppressing local rights and privileges.
Difference between 1576 and 1664 is the amount of legislation aimed at suppressing local rights and privileges.
Conclusions

• In the middle of the seventeenth century the centralized state played an increasingly prominent role in coordinating the behavior of local legal jurisdictions.

• This is consistent with the work of Wallis and North (2011) and Olson (2000)

• Also provides support for the claims of Besley and Persson (2009, 2011) that fiscal and legal capacity are complements.
Conclusions

**Figure:** Brookings Institution Weak States Index
Conclusions

- The decline of witch trials in early modern France was driven less by changes in preferences (mentalités) than by a process of legal and fiscal centralization.

Conclusions

Reason vs. Law
Conclusions

• In contrast to the traditional emphasis by economists on the importance of constraints on the centralized state (Brennan and Buchanan, 1980; North, 1981; North and Weingast, 1989; Acemoglu et al., 2005, 2001), our findings highlight the importance of increased state capacity for the development of a favorable institutional environment for economic growth.

• Democracy is almost certainly desirable but, at least in France, we agree with Tocqueville (1998) that the centralizing policies of the Absolute Monarchy laid the foundations in the seventeenth century for what would eventually come to pass by the end of the eighteenth century (Johnson, 2006; Balla and Johnson, 2009).
Conclusions
### Panel A: Malet Sample

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
<th>Observations</th>
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</thead>
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<td><strong>Log Taxes Per Capita</strong></td>
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<td></td>
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<tr>
<td>overall</td>
<td>2.15</td>
<td>0.96</td>
<td>0.00</td>
<td>3.57</td>
<td>N = 63</td>
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<tr>
<td>between</td>
<td>0.81</td>
<td>0.83</td>
<td>0.54</td>
<td>3.17</td>
<td>n = 21</td>
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<td>within</td>
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<td>0.73</td>
<td></td>
<td>3.94</td>
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<td><strong>Witch Trials (dummy)</strong></td>
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<tr>
<td>overall</td>
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<td><strong>Sum Trials (count)</strong></td>
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<td>overall</td>
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<td>between</td>
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<tr>
<td>within</td>
<td>123.55</td>
<td>-311.78</td>
<td>720.22</td>
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## Support

### Panel B: Forbonnais Sample

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<td>Sum Trials (count)</td>
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<td>121.37</td>
<td>311.78</td>
<td></td>
<td>689.22</td>
<td>T = 3</td>
</tr>
</tbody>
</table>
Introduction  
Witch Trials  
Model  
Data  
Econometrics  
Edicts  
Conclusions  
Support  
References

Support

1. Plante or Dénonciation A complaint or accusation by the injured party or his representative, received by a judge.
2. Information Depositions of witnesses, usually against the accused, gathered by a judge.
3. Rapport du Chirurgien A report of the medical examination undertaken in cases of physical abuse, carried out by a surgeon.
4. Lettres Monitoires A summons to the general public to reveal information, published when the number of witnesses was insufficient.
5. Décrets de prise de corps or ajournement personelle Decrees demanding the arrest or appearance of the accused.
6. Interrogatoire or interrogation The examination of the accused by a judge.
7. Conclusions du Procureur Procureur recommends either:
   (a) Conclusions préparatoires and  or  (b) Conclusions définitives

PROCÈS EXTRAORDINAIRE

8. Récolement Confirmation or Alteration by witnesses of depositions in Information
9. Confrontation The accused meets witnesses to test their credibility.
10. Conclusions du Procureur Either:
    (a) Conclusions préparatoires  or  (b) Conclusions définitives

PROCÈS ORDINAIRE

11. Faits Justificatifs Torture evidence or witness to produce in favor of the accused confession
12. Conclusions Définitives du Procureur
13. Sentence by Judge,

END OF CASE 1

END OF CASE 2

END OF CASE 3
Support

![Graph showing data on charges on Taille Receipts over years 1660 to 1700 for Pays d'Elections and Pays d'Etats.](image-url)
Introduction: Smith vs. Hobbes

• Large literature uses Britain as a benchmark as it was the first industrial nation (Brewer, 1988; O’Brien, 2005).

• However, the British path to modern economic growth was unique.

• Specifically, Britain, or at least, England had a highly centralized elite from the middle ages onwards (Dincecco, 2009; Bogart and Richardson, Forthcoming).

• Rest of Europe was highly fragmented.
Model

- Two regions $i \in \{1, 2\}$, each under the authority of a local court: $l_i$.
- Popular demand for witch trials is denoted by $d_i^* \in \mathbb{R}^+$.
- Each local authority chooses the extent to which it will accommodate popular belief by allowing a deviation from formal legal procedure so as to try witches $s_i^l \in \mathbb{R}^+$.
- Deviation from formal procedures comes with a cost of $\gamma$.

The local authority minimizes the following quadratic loss function:

$$\min_{s_i^l} u_i^l = \frac{(s_i^l - d^*)^2}{2} + \frac{\gamma(s_i^l)^2}{2}.$$  \(1\)
A Model

• Bottom-up demand for witch trials depends on local belief in witches, $\theta$, which in turn depends on a parameter, $\omega$, which reflects bad weather and other exogenous shocks and another term, $\beta s_j$, reflecting the externality created by trials in neighboring jurisdictions.

$$d_i^*(\theta_i) = \omega + \beta s_j,$$

• The symmetric Nash equilibrium when the central court does not intervene is:

$$\hat{s}_i = \hat{s}_j = \frac{\omega}{(1 + \gamma - \beta)}. \quad (2)$$

Which is increasing in $\beta$ for $\beta \in (0, 1)$. 
A Model

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\[
d_i^*(\theta_i) = \omega + \beta s_j,
\]

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\]

Which is increasing in $\beta$ for $\beta \in (0, 1)$. 
A Model

If the central authority intervenes in both territories, then it internalizes the “belief externality” by solving

$$\min_{s^c_i, s^c_j} u^l_i = \left[ \frac{(s^l_i - d^*)^2}{2} + \frac{\gamma(s^l_i)^2}{2} \right] + \left[ \frac{(s^c_j - d^*)^2}{2} + \frac{\gamma(s^c_j)^2}{2} \right]$$

The optimal number of sentences is given by

$$\hat{s}^c = (1 - \beta) \left[ \frac{\omega}{1 + \gamma - \beta} \right] = (1 - \beta) \hat{s}^l_i. \quad (3)$$

Result: The central authority permits (weakly) fewer deviations from formal legal procedure and, thus, fewer witchcraft trials than does that local court: \( s^l_i \geq s^c_i \) for \( i \in \{1, 2\} \).
If the central authority intervenes in both territories, then it internalizes the “belief externality” by solving

$$\min_{s^c_i, s^c_j} u^l_i = \left[ \frac{(s^l_i - d^*)^2}{2} + \frac{\gamma (s^l_i)^2}{2} \right] + \left[ \frac{(s^c_j - d^*)^2}{2} + \frac{\gamma (s^c_j)^2}{2} \right]$$

The optimal number of sentences is given by

$$\hat{s}^c = (1 - \beta) \left[ \frac{\omega}{1 + \gamma - \beta} \right] = (1 - \beta) \hat{s}^l_1. \quad (3)$$

Result: The central authority permits (weakly) fewer deviations from formal legal procedure and, thus, fewer witchcraft trials than does that local court: $s^l_i \geq s^c_i$ for $i \in \{1, 2\}$. 
Data

![Graph showing the number of witch trials in France and the rest of Europe over the 17th century. The graph highlights significant peaks in the 1630s and 1660s.](image-url)
Data
## Econometrics

### Panel C: Forbonnais Sample: Dep. Var.: Sum Trials = Count of Witchcraft Trials

<table>
<thead>
<tr>
<th></th>
<th>Negative Binomial</th>
<th>Neg. Binomial FE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td><strong>Log Taxes Per Capita</strong></td>
<td>-1.39***</td>
<td>-1.53***</td>
</tr>
<tr>
<td></td>
<td>(0.45)</td>
<td>(0.60)</td>
</tr>
<tr>
<td></td>
<td>[0.25]</td>
<td>[0.22]</td>
</tr>
<tr>
<td>1609-1649 (dummy)</td>
<td>0.22</td>
<td>-0.92*</td>
</tr>
<tr>
<td></td>
<td>(1.12)</td>
<td>(0.51)</td>
</tr>
<tr>
<td></td>
<td>[1.25]</td>
<td>[0.40]</td>
</tr>
<tr>
<td>1650-1699 (dummy)</td>
<td>0.66</td>
<td>-1.68**</td>
</tr>
<tr>
<td></td>
<td>(1.14)</td>
<td>(0.65)</td>
</tr>
<tr>
<td></td>
<td>[1.93]</td>
<td>[0.19]</td>
</tr>
<tr>
<td><strong>Obs</strong></td>
<td>63</td>
<td>42</td>
</tr>
<tr>
<td><strong>Groups</strong></td>
<td>21</td>
<td>14</td>
</tr>
<tr>
<td><strong>LR Test (p-value)</strong></td>
<td>9.59</td>
<td>5.03</td>
</tr>
<tr>
<td></td>
<td>9.90</td>
<td>10.21</td>
</tr>
<tr>
<td><strong>X² of H₀: α=0 (p-value)</strong></td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Note:**
- *****,** **** indicate statistical significance at the 1%, 5%, and 10% levels, respectively.
Econometrics

As robustness checks...

- Run count regressions on the “Maximal” data.
- Run count regressions dropping the Alsace outlier.
- Run count regressions using witch trials per capita.
## Econometrics

<table>
<thead>
<tr>
<th></th>
<th>Maximal Count</th>
<th>No Alsace</th>
<th>Per Capita Trials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Log Taxes Per Capita</td>
<td>-0.51*</td>
<td>-0.61*</td>
<td>-0.013**</td>
</tr>
<tr>
<td></td>
<td>(0.31)</td>
<td>(0.36)</td>
<td>(0.006)</td>
</tr>
<tr>
<td></td>
<td>[0.60]</td>
<td>[0.54]</td>
<td>[0.37]</td>
</tr>
<tr>
<td>1609-1649 (dummy)</td>
<td>-0.66</td>
<td>-0.44</td>
<td>-2.53*</td>
</tr>
<tr>
<td></td>
<td>(0.42)</td>
<td>(0.44)</td>
<td>(1.38)</td>
</tr>
<tr>
<td>1650-1699 (dummy)</td>
<td>-1.23**</td>
<td>-1.04*</td>
<td>-1.76</td>
</tr>
<tr>
<td></td>
<td>(0.56)</td>
<td>(0.56)</td>
<td>(1.35)</td>
</tr>
<tr>
<td>Obs</td>
<td>45</td>
<td>42</td>
<td>63</td>
</tr>
<tr>
<td>Groups</td>
<td>15</td>
<td>14</td>
<td>21</td>
</tr>
<tr>
<td>Region Dummies</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>
Econometrics

Instrumental Variables

• Pays d’état had much more bargaining power over taxes than did Pays d’élèction.
• Pays d’état were later additions to Monarchy and retained their representative bodies.
• Our instrument is dichotomous variable =1 if Pays d’état and =0 if Pays d’élèction.
Econometrics

Figure 4: Pays d'Etat, Pays d'Elect, and Fiscal Capacity, 1550-1699

<table>
<thead>
<tr>
<th>Tax Revenues and Height</th>
<th>Pays d'Elect</th>
<th>Pays d'Etat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Taille Revenue p.c. (g silver)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height (1000 cm's)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Econometrics

Table 4: IV Analysis of Fiscal Capacity on Witchcraft Trials, 1550-1699

### Panel A: Malet Sample

<table>
<thead>
<tr>
<th>Regression Model</th>
<th>1st Stage Log Taxes p.c.</th>
<th>2nd Stage Count of Witch Trials</th>
<th>2nd Stage Count of Witch Trials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Pays d'Election = 0</td>
<td>-1.25***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pays d'Etat = 1</td>
<td>(0.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[-1.56]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log Taxes per capita</td>
<td></td>
<td>-171.75**</td>
<td>-1.71***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(81.05)</td>
<td>(0.49)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[-0.53]</td>
<td>[0.18]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years</th>
<th>1550-1699</th>
<th>1550-1699</th>
<th>1550-1699</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimation Method</td>
<td>2SLS</td>
<td>2SLS</td>
<td>GMM Poisson (IV)</td>
</tr>
<tr>
<td>Observations</td>
<td>21</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>R Square</td>
<td>0.57</td>
<td>0.26</td>
<td>-</td>
</tr>
<tr>
<td>F Statistic</td>
<td>25.40</td>
<td>4.06</td>
<td>-</td>
</tr>
</tbody>
</table>


Bogart, Daniel and Gary Richardson (Forthcoming), ‘Property rights and parliament in industrializing Britain’, *Journal of Law & Economics* .


