

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

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Abstract

How is rule of law established? We address this question by exploring the effect of increases in fiscal capacity on the establishment of well-enforced, formal, legal standards in a preindustrial economy. Between 1550 and 1700, there were over 2,000 witch trials in France. Prosecuting a witch required local judges to significantly deviate from formal rules of evidence. Hence, we exploit the significant variation across time and space in witch trials and fiscal capacity across French regions between 1550 and 1700 to show that increases in fiscal capacity were associated with increased adherence to the formal rule of law. As fiscal capacity increased, local judges increasingly upheld *de jure* rules, and the frequency of witch trials declined.

Prolonged witch hunting is as good a barometer as any for measuring weakness in a state. (Soman 1989, p. 17)

1. Introduction

State capacity comprises fiscal capacity—the ability of a state to raise tax revenues and provide public goods—and legal capacity—the ability of a state to enforce *de jure* laws. There is a growing consensus among scholars in development

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economics and political economy that state capacity is an important determinant of economic growth.¹ However, the process through which a country acquires state capacity and the relationship between fiscal and legal capacity remain poorly understood. In this paper, we study the effect of increases in fiscal capacity on legal capacity and the rule of law.

There is an extensive literature examining the rise of fiscal capacity.² Less has been written about the emergence of legal capacity. Economists agree that the rule of law is an important correlate of economic growth (Rodrik, Subramanian, and Trebbi 2004). However, relatively little has been written about how the rule of law emerged and about how investments in fiscal capacity affected legal capacity. One reason for this is that historical measures of legal capacity are extremely hard to find. We overcome this obstacle by arguing that the relatively ample data on witch trials in preindustrial France can be used to study the emergence of legal capacity there. We are not the first economists to look at witch trials. Oster (2004) finds that particularly severe weather was associated with spikes in the number of witch trials in early modern Europe. Miguel (2005) examines the impact of negative income shocks on witch killings in rural Tanzania since the mid-1990s. Unlike these authors, we are not concerned with the effect of supply shocks on the frequency of witch trials per se but rather with what the frequency of witch trials reveals about legal institutions in preindustrial Europe.

Witchcraft was a very difficult crime to prosecute in early modern France if judges adhered to the letter of the law. As such, witches were most likely to be tried and convicted in regions where magistrates departed from established legal statutes. We argue that collecting taxes required standardized and properly enforced judicial procedures. Hence, as the fiscal demands on the state increased, central governments had an incentive to reorganize and coordinate the enforcement of judicial rules. Our hypothesis is that as governments did so, the frequency of witch trials decreased. Witch trials were, as the opening quote from Soman (1989) indicates, symptomatic of weak legal institutions.

We develop a model to formalize the logic behind the argument that witchcraft trials can be used as a measure of legal weakness. To investigate the relationship between the rise of the fiscal state and the enforcement of *de jure* legal standards, we exploit the significant variation in witch trials across time and space in France between 1550 and 1700. This is a particularly informative period because it also saw a rapid increase in the size of the French fiscal state. The French economy remained Malthusian during this period. We can therefore control for increases in per capita income by using a new database on European cities compiled by Bosker, Buringh, and van Zanden (2013). Combined with our difference-in-

¹ For recent work in political economy, see Besley and Persson (2011); for recent work in economic history, see Dincecco (2009, 2012), Sng (2011), and Johnson and Koyama (2014). For research in development economics, see Gennaioli and Rainer (2007), Collier (2009), and Moore (2008).

² For important references in economic history and sociology, see Mann (1986), Brewer (1988), Tilly (1985, 1990), Ertman (1997), and Fukuyama (2011).

differences identification strategy, these data allow us to identify the relationship between increases in fiscal capacity and the willingness of local judges to enforce formal legal procedures. Our preferred estimate implies a correlation between a 1-standard-deviation increase in taxes collected per capita in a region and the frequency of witch trials decreasing by one-half.

Our results have implications for literatures in political economy, new institutional economics, and law and economics. France in the early 17th century was a weak state, and it lacked a consistent or standardized legal system. We show how the increase in fiscal capacity that occurred largely as a result of involvement in external wars was associated with the French state investing in greater legal capacity. The historical approach adopted in this paper consequently informs both theoretical work on the conditions under which rulers invest in better legal institutions (North, Wallis, and Weingast 2009; Besley and Persson 2011; Acemoglu and Robinson 2012) and empirical cross-country work that investigates the consequences of investment in fiscal capacity (Bockstette, Chanda, and Puttermann 2002; Chanda and Puttermann 2007; Sng and Moriguchi 2013).

The structure of the rest of the paper is as follows. Section 2 details the fragmented nature of the French legal system in 1600, and Section 3 develops a model based on historical evidence to argue that witch trials can be used as a proxy for this legal fragmentation. We introduce data on taxes, witch trials, urban populations, and our empirical strategy in Section 4. Section 5 provides further historical evidence in support of our argument, and Section 6 concludes.

2. Witch Trials as a Proxy for Legal Fragmentation

2.1. Fiscal and Legal Fragmentation in Early Modern France

At the end of the 16th century, France did not possess a centralized legal or tax system. This reflected the legacy of feudalism. As French monarchs gradually added territories to the kingdom, they were forced to concede privileges to new regions so as to ensure their loyalty. According to one economic historian, the complexities of the resulting fiscal and legal system almost “defy description” (Hoffman 1994, pp. 227–30). Consequently, the legal authority of the Crown was weak in many parts of the country. In some regions, the provincial nobility still reigned as semi-independent rulers (Johnson and Koyama 2014).³ Even in those areas where the authority of the monarchy was strong, local families dominated the regional *parlements* and elections (Beik 1985 p. 81).⁴ As a result, there

³ Legal and fiscal fragmentation reflected the underlying political equilibrium of the French monarchy. This was based on a time-tested and simple quid pro quo: the ruler used his military power to protect local privileges, and in exchange local elites gave the king their political and fiscal support. France was a natural state (North, Wallis, and Weingast 2009). Control over local courts was a source of rents for the provincial nobility.

⁴ The *parlements* were judicial bodies, akin to courts of appeal, but with an added legislative component.

was “a lack of a coherent and common set of laws” and an “absence of unified laws even within each governmental region” (Moote 1971, p. 8). Rampant venality and the growing number of offices resulted in “perennial jurisdictional conflicts among the courts and in great expense to litigants who faced a vast judicial hierarchy if they were entitled to appeal a decision from a lower court” (Hamscher 1976, p. 160).

The existence of competing and overlapping jurisdictions resulted in impediments to market integration such as numerous internal tariff barriers and different systems of weights and measures across regions (Heckscher 1955, pp. 55–56). Disputes over contested property rights could go on for years, and litigants often ran up high legal bills (Collins 1995).⁵ While there are ample qualitative examples of the costs of legal fragmentation, quantifiable evidence is generally lacking. Few data survive from old-regime trials, and none of it on a countrywide scale. Hence, it is difficult to measure legal fragmentation and centralization. Witch trials provide a way around this problem because data on them exist and because the fact that a region was willing to try someone as a witch tells us something substantive about local legal procedure and its effect on the lives of ordinary people.

2.2. Witch Trials and the Legal Centralization Hypothesis

The underlying causes of the witch craze of the early modern period remain a puzzle that continues to defy explanation (Briggs 1996a, pp. 51–53).⁶ We do not attempt to solve this puzzle but simply note that across much of Europe rulers and courts tried witches because there was a demand for them to do so and that there was a large amount of between- and within-country variation in the number of witches tried.

There were several channels through which witchcraft trials were affected by the level of legal capacity. First, witchcraft was a difficult crime to prosecute under Roman canon law. Legal standards had to be relaxed with regard to both standards of evidence and the employment of judicial torture for a witch hunt

⁵ Johnson (2006, pp. 12–13) discusses how the fragmented system of collecting indirect taxes contributed to high marginal tax rates and corruption. Legal fragmentation also impeded the formation of coalitions capable of holding the king to account (Balla and Johnson 2009).

⁶ There are many theories. Jenson (2007) advocates a theory of scapegoating and observes that by 1560, groups that had been singled out as scapegoats during medieval times, principally Jews and lepers, were no longer present in large numbers in Western Europe. MacCulloch (2003) stresses the importance that confessional divisions played in legitimizing large-scale judicial executions for religious deviants. Kamen (1971) emphasizes growing Malthusian tensions as a rising population began to push against diminishing returns in agriculture, resulting in traditional forms of social security and collective insurance coming under pressure across Europe. At the same time, temperatures decreased and weather conditions worsened during the early modern Little Ice Age. Behringer (1995) argues that the upsurge in witchcraft persecutions in the second part of the 16th century was partly a response to unnatural weather conditions. Oster (2004) finds quantitative support for Behringer’s hypothesis. This correlation between bad weather and witch trials, however, does not explain why many parts of Europe that experienced bad weather in this period did not go on to try large numbers of witches.

to take place. De jure laws in continental Europe limited the use of judicial torture, but local authorities often had an incentive to ignore these restrictions so as to coerce confessions from suspects.

Second, local authorities were more responsive to popular demand for witch trials. Central governments were often wary of trials, in part because of the cost involved but also because they were worried about witch panics getting out of control. Local authorities therefore had a stronger incentive to give way to popular pressure. Third, a large number of trials were the result of witch panics. Such panics generated a positive-feedback loop and could result in a large number of individuals being tried and executed in regions where there was no central authority capable of reigning in local excesses.

The crime of witchcraft had two components: maleficia, or harm through supernatural means, and diabolism, or crimes relating to the devil. Maleficia could range from harming cattle or causing a blight on grain to committing homicide. For example, in 1611, Jacques Jean Thiébaud in Montbéliard was accused of killing the livestock of neighbors and making the neighbors sick.⁷ Diabolism involved having dealings with the Devil or his agents. This involved the use of magic powders or unguents, attendance at a “Devil’s Sabbath,” or flying through the air (Cohn 1975; Roper 2004).⁸

Witchcraft was difficult to prosecute under conventional legal procedures and standards of proof. Maleficia may have sometimes occurred and, in rare cases, may even have left evidence. However, diabolism was, by its nature, beyond the pale of rational legal procedure since dealings with the devil existed only in the fantasies of accusers and (sometimes) the accused. To get around the difficulty of prosecuting a suspected witch according to traditional standards of legal proof and to convict individuals of diabolism, local judges turned to the theories of the demonologists.⁹ These writers claimed that witchcraft was an exceptional crime (*crimen exceptum*) (Larner 1980). As the demonologist Henri Boguet put it, “Witchcraft is a crime apart. . . . Therefore the trial of this crime must be conducted in an extraordinary manner; and the usual legalities and ordinary procedures cannot be strictly observed” (Boguet 1929, pp. 211–12). The Devil was seen as extremely cunning and endowed with the ability to enable witches to resist interrogation. The demonologist Jean Bodin argued that the “proof of

⁷ “[Il fait mourir] par sorcelerie et predice pouldre ung cheval jument rouge appartenant à Huguenin Martin, . . . une vache appartenant à Jean Paris de Bian, ung velot aux Belotz, une vache et deux velots à Claude Caburret, et plusieurs besteaux à Jean Perrenot, ensorcelé et donné malladie à Marguerite Fillon” (Tuetey 1886, p. 9).

⁸ In the condemnation of Thiébaud, there were also accusations of diabolism: “[il sa] donné au diable, prins icelluy pour son maistre et promis destre son valet, recue sa marcque, et retenu et approuvé le nom de Grappin, faict pact et convention avec lui, reçu de ses pouldres diabolicques affin de nuyre aux créatures rainsonnables et leurs biens soubz le signal et entremise dudit Grappin, son maistre par imprécations des dictes pouldres et accouchements, occultes, assistez aux ensembles nocturnes des sorciers, appellé sabat” (Tuetey 1886, p. 9).

⁹ In France, the most well known demonologists (and the dates of their tracts) were Jean Bodin (1579), Nicolas Rémy (1595), Martin Del Rio (1599), Henri Boguet (1602), and Pierre de Lancre (1612, 1622).

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" (Bodin 1586, p. 372). As Soman writes, "In order to prosecute witches cheaply and efficiently the crime needed to be redefined and the rules of evidence relaxed. . . . Learned demonological theory came to the rescue and found ready acceptance within the ranks of subalternate magistrates" (Soman 1992, p. 13).

Because of the influence of the ideas of men such Bodin, suspected witches were tried using evidence that was poor in both quantity and quality.¹⁰ To break the hold of Satan, it was also often deemed necessary to resort to torture since the application of standard rules of evidence would result in the vast majority of accused witches being acquitted. The dangers associated with using torture to extract confessions were recognized both in legal codes and in the attitudes of centralized states (Langbein 1977). The Lex Carolina (*La Constitutio Criminalis Carolina*) of 1532 in Germany and the Ordinance of Villers-Cotterêts of 1539 in France limited the use of the judicial torture (see Roper 2004, p. 46; Levack 1996, pp. 82–88). Torture was intended to be used to obtain information that could be externally verified, information that "no innocent person can know" (*Constitutio Criminalis Carolina*, art. 54). The magistrates conducting the interrogation were to refrain from suggestive questioning, and torture could be repeated only a certain number of times. Had these rules been adhered to, witchcraft cases would have been infrequent.¹¹ However, legal restrictions and limits on the use of torture were often ignored in witchcraft cases, especially when judges and magistrates were influenced by popular opinion.

Although traditional accounts of the European witch trials emphasize the role of the Catholic Church, the Roman Inquisition, or the state as the initiators of the witch hunts, modern research emphasizes that the Church did not play an important role in trying witches and that central governments were, in general, a moderating influence on witch persecutions; instead, the witch hunts were largely driven by pressures from below (Levack 1996, p. 14).¹² According to Behringer, "Villagers demanded that their superiors should follow the example of their neighbors and burn witches" (Behringer 1997, p. 157).¹³ But fear of

¹⁰ As with torture, evidence taken from children was not admissible in normal criminal cases, but judges such as Pierre de Lancré in Labourt justified relying on statements from children as young as 6 because doing otherwise would be "very dangerous for the republic, and especially for a country as infected as Labourt" (Lancré [1612] 1982, p. 522).

¹¹ Torture was not generally used in England, and the number of witches tried in England was comparatively small (Sharpe 1996). The exception that proves the rule is the East Anglian witch hunt of the 1640s in which witch hunters exploited the breakdown in central authority and generated a witch panic (Gaskill 1996).

¹² The traditional view is reflected by Russell (1972), Cohn (1975), and Larner (1981). See Henningsen (1980), Seitz (2009), and Bever (2009) for examples of central authorities restricting trials on the grounds that established legal standards were being undermined.

¹³ The mass trials in Würzburg were preceded by rumors about witches eating a child, and witchcraft was mentioned in a general petition by the townsfolk to the bishop (Roper 2004, p. 28). Local officials responded "to popular demands for action against witches, both because they sincerely believed in the reality of the crime and because such action did advance their own prestige" (Briggs 2007, p. 21).

witchcraft could get out of control and result in lynchings, murders, and social disorder or in devastating mass trials in which large numbers of individuals who would not usually be suspected of witchcraft came under suspicion.¹⁴ Hence, both local and central authorities had an incentive to treat witchcraft accusations with a degree of skepticism. This judicial skepticism, however, had to be weighed against a genuine fear that witchcraft posed an existential threat to society and that popular demands for trials might get out of hand if not assuaged. These last factors weighed more heavily on local legal authorities than they did on the king or his ministers and judges. Thus, where local authorities had discretionary power, they were more likely to employ extraordinary legal procedures such as torture, ordeals, circumstantial evidence, or the testimony of child witnesses.

Local discretion led to more trials. The trials themselves in turn helped stoke fear of witchcraft and hence increased the demand for trials further. In this respect, the effect of a trial in one region on the belief in witchcraft in other regions resembles a negative externality. One channel for this externality was the way in which accounts of sorcery and satanic pacts were publicized by court transcripts. “The news of witch-hunts and executions in other parts of a country could easily fan popular fears and create a mood that was conducive to witch-hunting in a village or town. It was because of such communications that many hunts spread from village to village, even when confessing witches did not implicate accomplices outside their communities or when witch-hunters did not move from place to place” (Levack 2006, pp. 178–79).

Local authorities either ignored or were unable to internalize the effect of trials in their region on reinforcing the belief in witchcraft in other regions. Central authorities, however, faced stronger incentives to internalize this externality. Hence, central authorities and higher courts often upheld stricter legal standards than did lower or local courts, and well-organized states did not “tolerate genuine witch-hunting for very long” (Briggs 1996b, pp. 190–91).¹⁵

3. A Model of the Legal Centralization Hypothesis

To clarify our logic, we can formalize this argument using the following simple framework. Consider two regions $i \in \{1, 2\}$. Each region is under the authority of a local court, denoted l_i . There is also a central court C .

Bottom-up demand for witchcraft trials is denoted $d_i^* \in \mathbb{R}^+$. This is a function of the level of superstitious belief in region i , θ_i . Fear of witchcraft θ is determined

¹⁴ Lea (1957, p. 1206) provides extensive evidence that the cost of these trials was large. He notes that the trial of “Catherine Jeannot (1652) amounted to 480 fr. 3 gros. Those of Pierre Tournier-Faucillier and his wife (1655), 437 fr. 1 gros 1 blanc each, and they were rarely much less than 500 fr. This consisted chiefly in the large fees paid to everyone concerned, from the arrest to the execution, for every act and service performed.”

¹⁵ Here we use the term “stricter” as meaning that central authorities were less likely to allow a deviation in legal procedure because of the influence of superstitious belief reinforced by popular opinion.

by a parameter ω that reflects factors such as bad weather and ideology. The strength of local belief is also influenced by the degree to which courts in nearby regions implicitly acknowledge superstitious belief by either prosecuting related crimes or failing to prevent locals from prosecuting such crimes themselves. The strength of this effect is captured by $\beta \in (0, 1)$.

Courts can respond to these demands by adapting their standards of evidence so as to try more witches. We denote these departures from established legal practices $s \in \mathbb{R}^+$. A court that completely accommodates local demands for trials sets $s_i = d_i^*$. However, there is a cost to doing so, γ , which reflects the fact that witch trials were expensive and often led to other episodes of disorder. Thus, the local authority in region i minimizes the following quadratic loss function:

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

Equation (1) illustrates the trade-off facing any authority in allowing legal procedure to be influenced by local superstitious belief. The first term states that there is a cost for not allowing legal procedure to conform to local belief. Failure to prosecute a witch when there is significant local support for this may result in the formal courts losing legitimacy or in a more serious loss of social control. The second term indicates that there is also a direct cost to local authorities of allowing local fears of witchcraft to influence the law.

The objective function for the central authority is identical to that for the local authorities, with the important difference that it is concerned with the deviation of legal procedure from official judicial norms in both regions. Hence it minimizes

$$\min_{s_i^c, s_j^c} u^c = \frac{(s_i^c - d_i^*)^2}{2} + \frac{\gamma(s_i^c)^2}{2} + \frac{(s_j^c - d_j^*)^2}{2} + \frac{\gamma(s_j^c)^2}{2}. \quad (2)$$

We can now explicitly introduce the feedback process that captures the argument that attempts to accommodate popular fear of witchcraft led to these fears being validated. If a court was willing to hear evidence that had been coerced through torture, this was interpreted by ordinary people as validating their belief in the existence of malevolent witches. For convenience, consider the following linear function:

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

for all $i \in \{1, 2\}$. If the central court does not overrule any decisions made in the local court, the best response of the local court in region i is given by the first-order conditions to equation (1):

$$\hat{s}_i^l = \frac{\omega + \beta s_i}{1 + \gamma}.$$

This is bounded at zero and increasing in s_i . Since the local court in region j

faces the same problem, the symmetric Nash equilibrium sentence is given by

$$\hat{s}_1^l = \hat{s}_2^l = \frac{(1 + \gamma + \beta)\omega}{(1 + \gamma)^2 - \beta^2} = \frac{\omega}{1 + \gamma - \beta}. \quad (3)$$

The equilibrium departure from standard procedure in the local region \hat{s} is increasing in ω and β for $\beta \in (0, 1)$.

Now let us consider the problem facing the central court. The central court can intervene in local jurisdictions at a cost. If the central court intervenes, it does so in both regions. From the first-order conditions to equation (2), we obtain

$$\hat{s}_i^c = \frac{(1 - \beta)\omega + 2\beta s_i}{1 + \gamma + \beta}$$

and

$$\hat{s}_j^c = \frac{(1 - \beta)\omega + 2\beta s_i}{1 + \gamma + \beta}.$$

The central authority permits the following departures from official procedure in response to local demands:

$$\hat{s}^c = \frac{(1 + \gamma + 3\beta)(1 - \beta)\omega}{(1 + \gamma + \beta)^2 - 4\beta^2} = (1 - \beta) \left(\frac{\omega}{1 + \gamma - \beta} \right) = (1 - \beta) \hat{s}_i^l. \quad (4)$$

As with the local court solution, the central court also allows for greater influence of superstitious belief as ω increases and as γ decreases. However, since the central court cares about deviation from official procedure in both regions, it internalizes the externality represented by β , and it imposes greater discipline on the local courts than do the local authorities. Hence, we should expect to observe fewer witchcraft trials in regions where the central authority has a strong presence.

Result 1. The central authority always permits (weakly) fewer witchcraft trials than does the local authority: $s_i^l \geq s_i^c$ for $i \in \{1, 2\}$.

An outstanding example of how concern with public order led higher legal authorities to attempt to dampen popular fears of witchcraft and other manifestations of superstitious belief comes from a report by the lieutenant of the Paris police, René Voyer, comte d'Argenson. He was concerned with judicial abuses involving "false soothsayers, fake witches . . . all people who distribute powders, talismans, or pantacles" (authors' translation of Mandrou [1979, p. 279]).¹⁶ After mentioning the slippery nature of these crimes due to the lack of evidence, he argued that the true cost to society is the publicity created by the

¹⁶ "[L]es faux devins, les prétendus sorciers . . . toutes les personnes qui distribuent des poudres, des talismans ou des pantacles" (Mandrou 1979, p. 279).

trials themselves. He wrote, “It seems that the shock that one makes among the public by introducing a formal trial of this type creates a type of scandal which dishonors religion and makes the protestants more rebellious; I believe, therefore, that all of the leaders of these groups of abominations must be by the authority of the King dispersed and secured at the asylum . . . where they can be fed as paupers and forgotten about forever” (authors’ translation of Mandrou [1979, pp. 280–81]).¹⁷

In Section 4, we investigate the relationship between fiscal centralization and the enforcement of strict legal procedure, which we proxy using data on witch trials. As our discussion in Section 2 implies, having more trials should be correlated with lax judicial procedure. If this argument is accepted, then by investigating the relationship between tax receipts and witch trials, we should be able to identify whether increases in fiscal capacity were associated with legal standardization and better rule of law in early modern France.

4. Empirical Analysis: Did Fiscal Consolidation Lead to a Decline in Witch Trials?

4.1. The Data

Our theoretical model suggests that witch trials are associated with less legal capacity. We use this insight to draw conclusions about the relationship between increases in fiscal capacity and investment in legal capacity. The 17th century was a period of fiscal consolidation in France. The political equilibrium of the late medieval monarchy came under strain as higher costs of war, associated with the military revolution, obliged the French Crown, first during the ministries of Cardinals Richelieu (1624–42) and Mazarin (1642–61) and then under Louis XIV’s finance minister Jean-Baptiste Colbert (1665–83), to establish a centralized fiscal system. Our hypothesis is that as the central government increased fiscal capacity across France, it also imposed greater discipline on the courts. This increased discipline by the central government should show up as a negative correlation between fiscal capacity and witchcraft trials. It is important to emphasize that the central government did not link higher tax revenues with suppressing witch trials. Rather, collecting taxes required standardized and properly enforced judicial procedures, and the central government was in a better position than local authorities to reorganize and coordinate the enforcement of judicial rules. The model in Section 3 illustrates one aspect of the coordinating role of the central government, that of internalizing the negative externality on legal procedure of local superstitious belief. A side effect of this process of substituting

¹⁷ “Il semble mesme que l’esclat qu’on fait dans le public en intruisant les procez de cette qualité form une espèce de scandale qui deshonore la religion et rend les protestants plus indociles; je croyais donc que tous les chefs de ces caballes d’abominations doivent estre par l’autorité du Roy dispersez et renfermez à l’hospital . . . pour y estre nourris en pauvres et oubliez pendant longtemps” (Mandrou 1979, pp. 280–81).

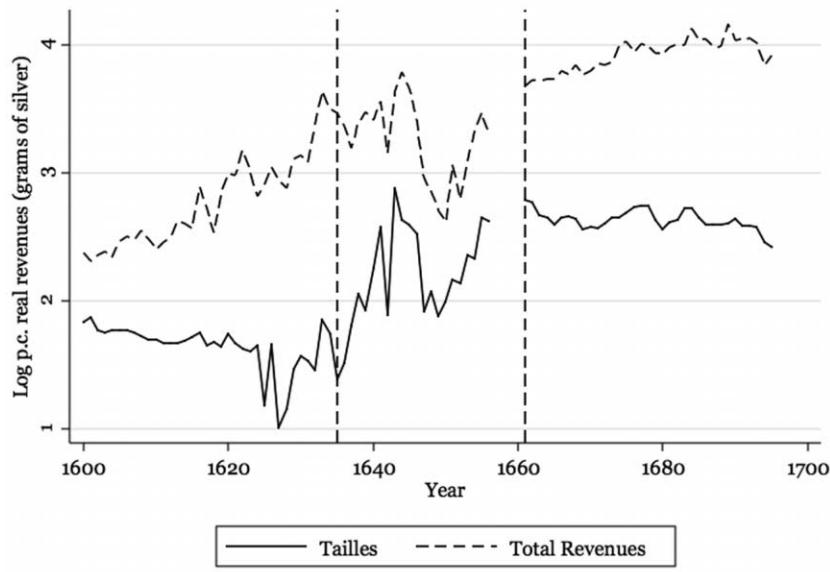


Figure 1. Taille revenues and total tax revenues, 1600–95

central for local authority was the decline in the number of witch trials. Centralized legal institutions led to less judicial discretion, improved standards of evidence, and increasingly standardized law enforcement and thus had the inadvertent effect of reducing the number of witches tried, as we have outlined above.

Figure 1 shows the increase in the fiscal capacity of the centralized French state during the 17th century.¹⁸ Total revenues, shown as silver per capita, include ordinary tax revenues and loans and temporary financial expedients. The remaining revenues shown come directly from the primary direct tax collected by the Crown (the taille). As is clear from Figure 1, while revenues were increasing throughout the century, there is a marked jump in the regime's capacity to collect

¹⁸ The data for Figure 1 are from Malet's Figures for Receipts from the Pays d'Élections (for 1600–1695) and Malet's Figures for Receipts from the Pays d'Etat (for 1600–1695), in Data on Seventeenth-Century French Revenues and Expenditure Supplied by the Project Director, Professor Richard Bonney, Drawing upon Malet (1789) and the Extant Malet MSS (<http://esfdb.websites.bta.com/Database.aspx>). Vertical lines indicate the dates France entered the Thirty Years' War (1635) and the beginning of Louis XIV's personal rule (1661). Total revenues are equal to the sum of extraordinary revenues and ordinary revenues. Taille revenues are simply the value of the tailles, which are a subset of ordinary revenues (usually about two-thirds of ordinary revenues). All series are converted into silver equivalents. We use *généralité*-level taille receipt data from Malet and population data from around 1700 from Dupâquier (1988) to create per capita values. We then convert these numbers into real values using data on the silver content (in grams) of the livre *tournois* provided by Wailly (1857).

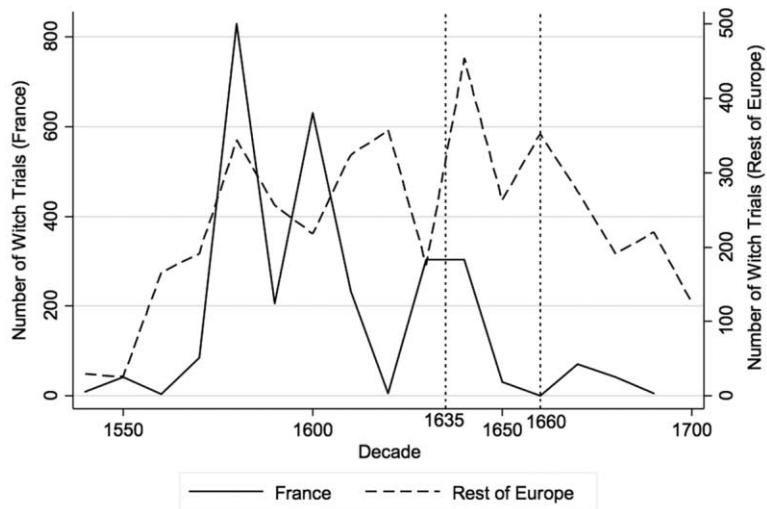


Figure 2. Witch trials in France and the rest of Europe, 1540–1700

taxes through the tailles starting around 1635 when France entered the Thirty Years' War (1618–48). Moreover, whereas increases in revenues between 1600 and 1635 tended to come from so-called extraordinary sources, such as loans (voluntary and forced) and temporary taxes, after 1635 there was a dramatic increase in revenues coming from ordinary sources, such as the taille. This shift from extraordinary toward ordinary sources of revenue around the middle of the 17th century represented a dramatic increase in the fiscal capacity of the state.

Figure 2 presents the overall numbers of witch trials between 1500 and 1720 in France compared with the rest of Europe.¹⁹ Witchcraft prosecutions began around 1550 across all of Europe, and courts in French regions were active in persecuting witches between 1550 and 1650.²⁰

Indeed, at the same time that witch trials were disappearing in France, the fiscal capacity of the centralized state, as measured by per capita receipts through the tailles, was increasing dramatically. Between 1635 and 1660, taille revenues per capita increased by a factor of four. This evidence of a positive correlation between aggregate tax receipts and the aggregate number of witch trials in France is suggestive, but it would be better if we could exploit the regional variation

¹⁹ In Figure 2, the data on the rest of Europe are from Oster (2004) and include numbers on trials in the Bishopric of Basel, Essex, Estonia, Finland, Geneva, the Home Circuit (England), Hungary, Neuchâtel, and Scotland.

²⁰ In our sample, there are 2,274 trials in France and 4,435 in the rest of Europe, but these data omit the German states, where some of the most severe witch hunts occurred during the period (Midelfort 1972).

Table 1
Descriptive Statistics for Malet and Forbonnais Tax Data Sets

	Mean	SD	Min	Max
Base Malet sample:				
Log Taxes per Capita:				
Overall sample	2.15	.96	.00	3.57
Between regions		.81	.83	3.17
Within regions		.54	.73	3.94
Sum Trials (count):				
Overall sample	35.89	151.00	.00	1,032.00
Between regions		88.26	.00	347.67
Within regions		123.55	-311.78	720.22
Log per Capita Trials:				
Overall sample	.01	.02	.00	.16
Between regions		.02	.00	.07
Within regions		.02	-.06	.10
Urban Population				
Overall sample	13.79	16.65	.00	95.93
Between regions		16.32	.70	77.00
Within regions		4.43	-4.04	32.72
Base Forbonnais sample:				
Log Taxes per Capita:				
Overall sample	2.30	1.00	.01	3.65
Between regions		.85	.84	3.36
Within regions		.54	1.03	4.08
Sum Trials (count):				
Overall sample	35.89	149.23	.00	1,001.00
Between regions		88.26	.00	347.67
Within regions		121.37	-311.78	689.22
Log per Capita Trials:				
Overall sample	.01	.03	.00	.16
Between regions		.02	.00	.08
Within regions		.02	-.07	.09
Urban Population:				
Overall sample	13.63	16.44	.00	95.93
Between regions		16.05	.83	75.77
Within regions		4.57	-4.18	33.78

Note. For the overall sample, $N = 63$; between regions, $n = 21$; and within regions, $T = 3$.

in taxes and trials over time to test two propositions: At a given moment in time, were trials more likely to occur in regions with lower fiscal capacity? In a given region, as tax revenues per capita increased over time, was this correlated with a lower likelihood of a trial?

To answer these two questions, we create a panel spanning the years 1550–1700 for witchcraft trials and tax (taille) revenues across 21 regions in France. We construct two data sets for French tax revenues from two sources: the Malet data set and the Forbonnais data set. Details concerning the construction of these data sets are confined to the Appendix. Table 1 provides descriptive statistics. The data cover 21 regions over three periods. The periods included in the Malet data set are 1550–1609, 1610–49, and 1650–99. For the Forbonnais

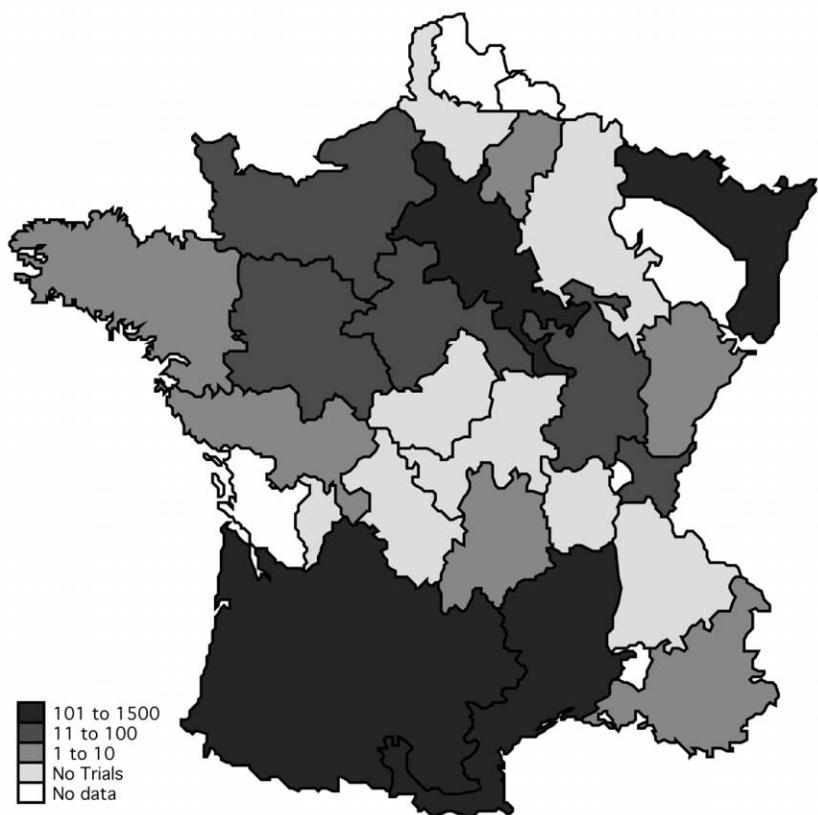


Figure 3. Distribution of witchcraft trials across French *généralités*

data set, the periods are 1550–99, 1600–49, and 1650–99. Log Taxes per Capita measures revenue from the tailles adjusted for regional population in 1700. Sum Trials is the witch trial count. Log per Capita Trials is created by adjusting Sum Trials for regional populations in 1700. Urban Population is created using data on 84 cities in Bosker, Buringh, and van Zanden (2013) and is equal to the average population of cities with at least 5,000 inhabitants in each region in each period.

The fragmented nature of the tax system in early modern France means that variation in fiscal capacity between regions at any given time is significantly higher than the variation within a given region over time. Figure 3 plots the total distribution of witchcraft trials in our data sets for the entire period. Figure 4 plots average taille revenue for the entire period. Together they suggest that in the cross section higher taxes were associated with fewer trials.

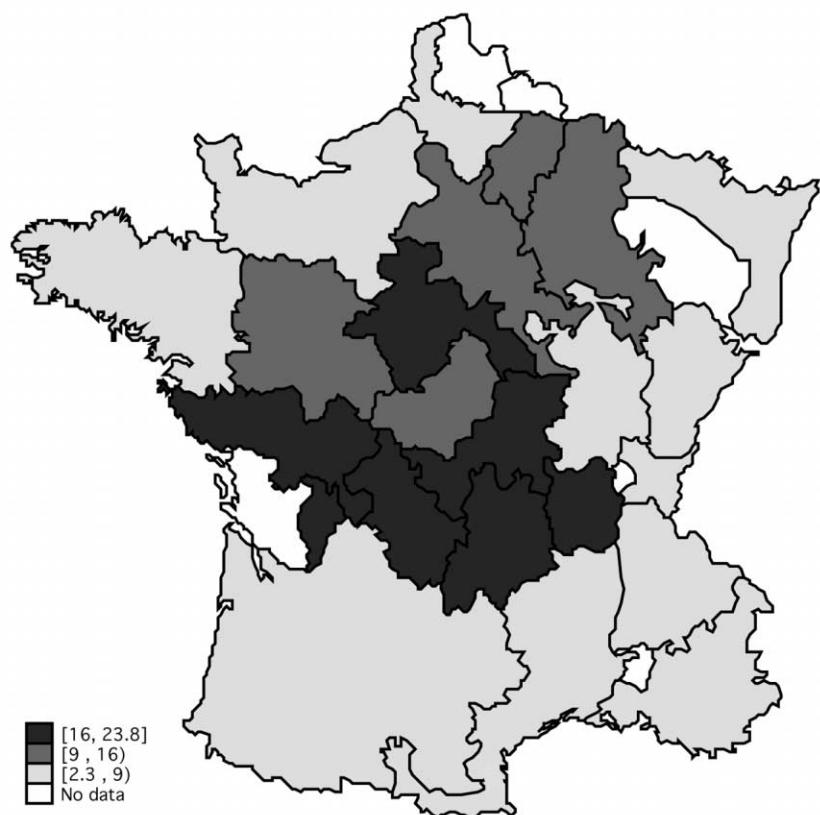


Figure 4. Taille receipts per capita across French généralités

The means and standard deviations reported in Table 1 also indicate that there is significant overdispersion in the witch trial count. The standard deviation of Sum Trials is four times greater than its mean. Five or six regions account for most of the raw numbers of trials, even though over half of the regions in France experienced at least one trial between 1550 and 1700. This is a shortcoming of the witch trial data, and it prevents us from presenting a more nuanced picture of legal capacity across regions.²¹ We defend its use on three grounds. First, assuming the use of appropriate econometric techniques, there are no technical reasons to reject the data simply for being overdispersed.²² Second, there are

²¹ It is also consistent with other examples of count data measuring persecution such as the witch data used by Miguel (2005) or the data on Jewish expulsions in Anderson, Johnson, and Koyoma (2013).

²² For example, Krueger and Malecková (2003) investigate the relationship between education and income on terrorist activity across countries using similarly overdispersed data.

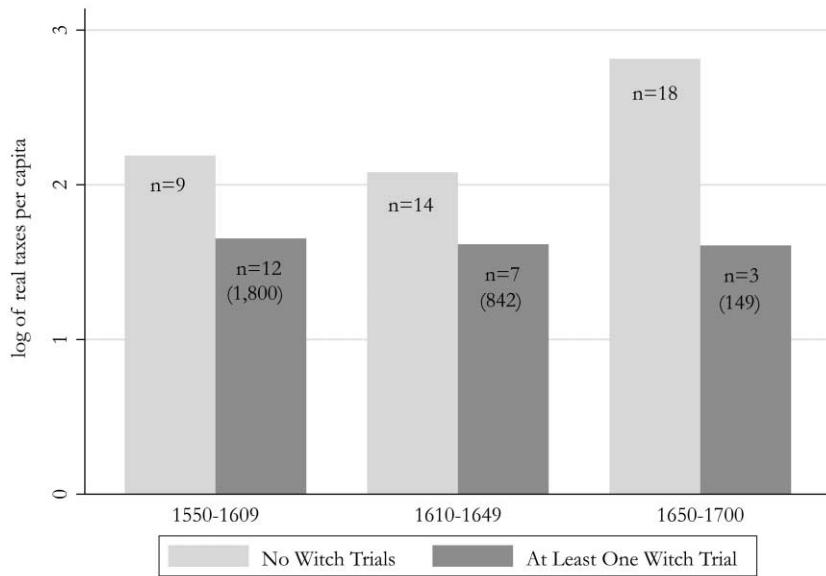


Figure 5. Fiscal capacity and witch trials across French regions, 1550–1700

simply no other consistent measures of legal outcomes across French regions for this period. Finally, even relatively small numbers of trials in a region are consistent with lax legal standards of the type described in our theory. As Michel de Montaigne wrote in *Essais*, "It is to put a very high value on your surmises to roast a man alive for them" (Montaigne [1580] 1993, p. 1169). Even one witch prosecution says quite a bit about a region's dedication to the law.

As a first cut for looking at the effect of fiscal capacity on witch trials, we create the dichotomous variable Witch Trials, which is equal to zero if a region experienced no witchcraft prosecutions during the period and one if at least one witch was prosecuted. This variable should also be more robust to outliers, thereby providing a check on our results. Figure 5 depicts the relationship between real taxes per capita across French regions and the likelihood that the region had at least one witch trial during the period. The n values represent the number of regions with or without witch trials, and the values in parentheses are the total number of trials. Figure 5 provides strong support for our hypothesis that as the fiscal capacity of the central state increased, rule of law also improved. Regions with high amounts of fiscal capacity were also unlikely to prosecute individuals for witchcraft. Furthermore, while fiscal capacity in witch-killing regions failed to increase throughout the 150-year period, the number of regions engaging in witchcraft prosecutions declined. Between 1550 and 1609, a total of 12 of 21 regions had trials. Between 1610 and 1649, this number declined to

seven of 21 regions, and after the dramatic increase in fiscal capacity illustrated in Figure 1, only three of 21 regions had trials. Importantly, Figure 5 also shows that, on average, tax collections across witchcraft regions were constant. By contrast, fiscal capacity in regions without trials either increased or stayed the same over all periods. This implies that regions that abandoned trials were doing so at the same time that their tax capacity was increasing. Were this not the case, then the average fiscal capacities of the regions without trials would be reduced by the former witchcraft regions.

4.2. Econometric Analysis

To further investigate the relationship between fiscal capacity and witch trial prosecutions, we exploit the panel structure of the data to control for factors other than fiscal capacity that may have led to a decrease in trials but that are difficult to observe. For example, a time-variant factor that may have been common to all regions would be changes in preferences (*mentalités*) regarding witchcraft. Perhaps people (or even just judges) stopped believing in the existence of witches. We control for this possibility using period dummies in a formal regression framework. Another possible source of bias stems from unobserved time-invariant factors that are unique to the individual regions but may be correlated with both witch trials and fiscal capacity. For example, a region with a great deal of political instability (for example, border regions such as Alsace or Franche-Comté) might have relatively low tax receipts and a high likelihood of having witchcraft trials. Failure to take account of these unobservable factors might cause us to falsely assign a causal role to fiscal capacity for the decrease in witch trials. We control for these potential sources of bias using region dummies (fixed effects).

To proxy for changing levels of economic development in different regions, we use a new data set of European cities compiled by Bosker, Buringh, and van Zanden (2013). This data set expands on and revises the Bairoch (1988) data that have been used in a large number of papers in economics to proxy for economic growth (for example, De Long and Shleifer 1993; Acemoglu, Johnson, and Robinson 2005). It includes cities with populations of at least 5,000 inhabitants and gives us estimates for the urban populations for 84 French cities.²³ We have direct estimates for 1500, 1600, and 1700, and we linearly interpolate these data to obtain estimates for the average city population in each of our periods. Figure 6 plots the distribution of the cities we have in our data set. To

²³ In the original data set (Bosker, Buringh, and van Zanden 2013), there are 105 cities in France. However, as described in the Appendix, some of these regions are not included in our analysis since they were not part of France during our period of study (for example, Nancy, Valenciennes, Trevoux, and Avignon) or there are no data on tax receipts or witch trials (for example, La Rochelle).

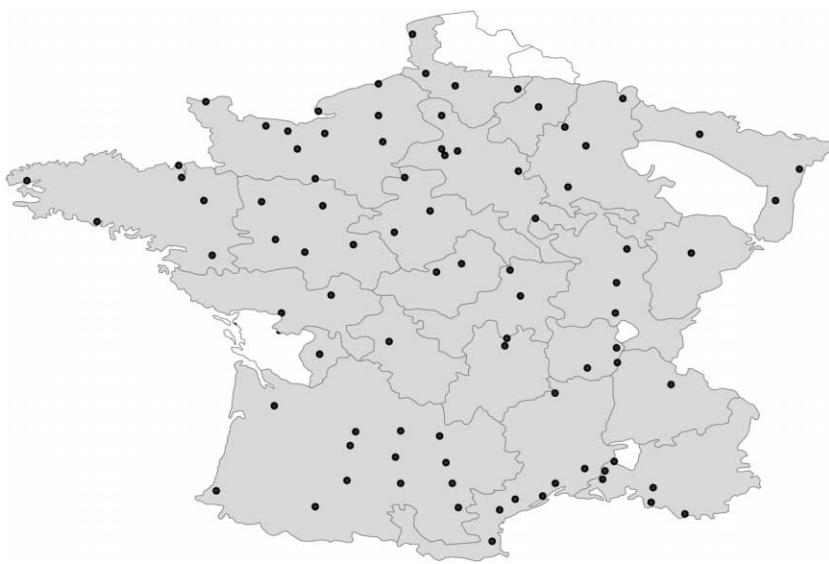


Figure 6. Cities with population greater than 5,000 individuals

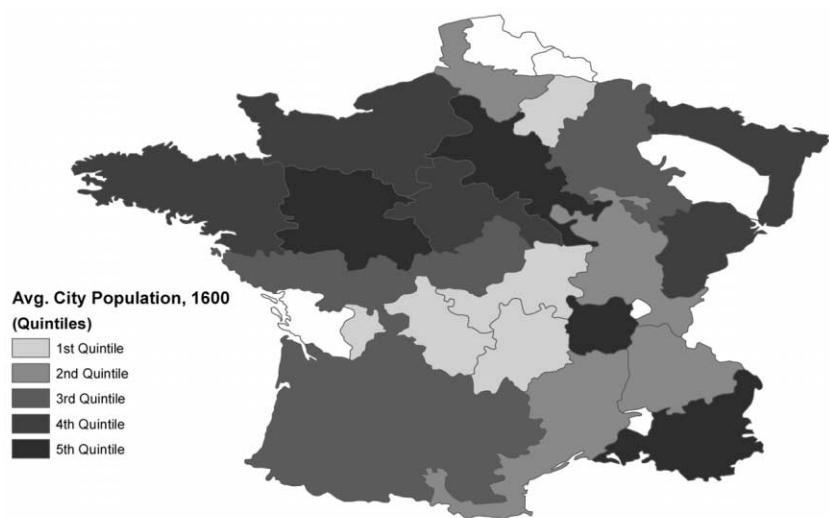


Figure 7. Average urban populations in 1600

provide a sense for regional variation in the average urban population, Figure 7 maps this statistic for the year 1600.²⁴

Our main empirical results are based on estimates of a series of specifications using the raw count data on trials. An obvious empirical strategy would be to model the witchcraft count data as a Poisson distribution process. However, the mean and standard deviation reported for Sum Trials in Table 1 indicate significant overdispersion. Thus, a more appropriate approach is to assume that a witch trial is a realization from a negative binomial distribution such that

$$P(N_{it} = n_{it} | \lambda_{it}) = \left(\frac{r}{r + \lambda_{it}} \right)^r \frac{\Gamma(r + n_{it})}{\Gamma(n_{it} + 1)\Gamma(r)} \left(\frac{\lambda_{it}}{r + \lambda_{it}} \right)^{n_{it}}, \quad (5)$$

where the number of trials for region i at time t is a random variable $N_{it} \in [0, 1, 2, \dots, n]$ with conditional mean value of λ_{it} . The term Γ is the gamma function, and r is a dispersion parameter measuring the extent to which the variance of N_{it} exceeds its mean.²⁵ We then estimate the parameters of equation (5), using maximum-likelihood estimation assuming that the expected number of witch trials is of the form

$$\ln \lambda_{it} = \beta c_{it} + \varepsilon_{it}, \quad (6)$$

where λ_{it} is simply the expected number of trials in region i at time t , c_{it} is our measure of fiscal capacity, and ε_{it} reflects unobserved heterogeneity.

The top of Table 2 reports the results for the Malet sample. We estimate versions of the negative binomial specification that allow for the inclusion of region-specific fixed effects in all specifications.²⁶ We also include our time-varying control for average city population in a region in all specifications. Specification (1) reports our estimate of β . The incident rate ratio indicates that a 1-unit increase in fiscal capacity (which happens to be about 1 standard deviation) reduces the number of trials by a factor of .44. For example, the mean number of trials across all regions and periods is 36. Thus, the estimate in specification 1 implies that a 1-standard-deviation increase in fiscal capacity in a given region leads to about 16 fewer trials. Specification (2) includes dummies for period effects. The estimated impact of fiscal capacity retains its economic

²⁴ The city data set in Bosker, Buringh, and van Zanden (2013) also allows us to potentially control for a host of other time-invariant geographic and institutional variables including the average elevation of a region's cities above sea level, the standard deviation of the elevation of the terrain in a 10-kilometer radius of its cities in meters, the soil quality of the land surrounding its cities, whether one of its cities was the seat of a bishop or archbishop, and whether it had cities that were self-governing communes (see Bosker, Buringh, and van Zanden [2013] for detailed explanations for how these variables are defined). However, since these variables do not vary with time, they are absorbed by the region fixed effects in our main regressions.

²⁵ For another application of the negative binomial distribution, see Krueger and Malecková (2003).

²⁶ To be precise, we implement the Hausman, Hall, and Griliches (1984) estimator. This is a true fixed-effects model only under the assumption that the model is linear, in which case all constant, within-group variation is controlled for. However, under negative binomial estimation, the linearity assumption does not generally apply. See Allison and Waterman (2002) for a critique.

Table 2
The Effect of Fiscal Capacity on Witchcraft Trials, 1550–1700

	Trial Count				Trials per Capita:	
	Baseline		Maximal		Baseline	
	(1)	(2)	(3)	(4)	(5)	(6)
Malet sample:						
Log Taxes per Capita	-.83*	-.86 ⁺	-.70**	-.66*	-.016 ⁺	-.012**
SE	.35	.48	.28	.30	.005	.006
	[.44]	[.42]	[.49]	[.52]	[.62]	[.47]
1609–49		-1.02*		-1.91**		-0.013 ⁺
SE		.52		.42		.006
		[.36]		[.15]		[.43]
1650–99		-1.46*		-1.44**		-0.015 ⁺
SE		.67		.57		.009
		[.23]		[.24]		[.50]
N	42	42	45	45	63	63
Groups	14	14	15	15	21	21
F-statistic					2.26	2.43
R ²					.31	.36
LR χ ²	5.49	10.30	6.58	106.4		
Forbonnais sample:						
Log Taxes per Capita	-.40	-1.23*	-.58*	-.55 ⁺	-.015**	-.015**
SE	.31	.50	.29	.33	.005	.005
	[.67]	[.29]	[.56]	[.58]	[.58]	[.58]
1600–49		-2.43**		-.69		-0.015*
SE		.52		.45		.006
		[.09]		[.50]		[.48]
1650–99		-2.18**		-1.26*		-0.018*
SE		.70		.53		.007
		[.11]		[.29]		[.58]
N	42	42	45	45	63	63
Groups	14	14	15	15	21	21
F-statistic					2.81	3.38
R ²					.39	.48
LR χ ²	48.03	99.31	4.10	9.68		

Note. Results for trial counts are from negative binomial regressions, with incident rate ratios in brackets. Results for Trials per Capita are from ordinary least squares regressions; values in brackets are the reduction in the percentage of a standard deviation in Trials per Capita induced by a 1-standard-deviation increase in fiscal capacity. LR = likelihood ratio.

⁺ Significant at the 10% level.

^{*} Significant at the 5% level.

^{**} Significant at the 1% level.

and statistical significance. The period effects are also economically and statistically significant. The incident rate ratios indicate that unobserved factors common to all 21 regions reduced the number of trials by a factor of about .36 between 1609 and 1649 and by a factor of .23 between 1650 and 1699. The unreported coefficients on average urban population are positive and statistically significant in both specifications.

Specifications (3) and (4) are similar but use the maximal data set of witch trials (see the Appendix for details on the construction of this data set). The

results are similar to those obtained using the baseline data set. In specifications (5) and (6), we estimate the effect of fiscal capacity on witch trials using Trials per Capita as our dependent variable. We estimate these regressions using ordinary least squares regression with region dummies in specification (5) and with region dummies and period dummies in specification (6). Numbers in brackets are the percentage of a standard deviation in Trials per Capita induced by a 1-standard-deviation increase in fiscal capacity. Thus, in the difference-in-differences specification reported, a 1-standard-deviation increase in taxes collected per capita in a region results in a decrease in witch trials of about one-half of a standard deviation. The coefficients on the period dummies are statistically significant and have about the same impact on trials as the fiscal capacity variable. Thus, using just the within-region variation in fiscal capacity and controlling for urban growth, we find large and statistically significant effects of increases in fiscal capacity on witch trials. This provides strong support for our hypothesis that increases in fiscal capacity were correlated with increases in legal capacity in preindustrial France. As fiscal capacity increased across regions, the deviations by local magistrates from de jure law to pursue witches decreased.

In Table 2, we also report these regressions for the Forbonnais sample, which uses our limited data on the change in the distribution of fiscal capacity before 1600. Thus, it provides more information on fiscal capacity across periods and regions, but at the cost of potentially greater measurement error. That said, as the descriptive statistics in Table 1 suggest, the measures of taille collections in the Malet data and the Forbonnais data are highly correlated. This is reflected in the regressions for the Forbonnais sample in Table 1. The incident rate ratios again suggest that a 1-standard-deviation increase in fiscal capacity reduces the number of trials in a region by a third. The period dummies imply a consistent decrease in trials across all regions of France throughout the 17th century. In the regressions using Trials per Capita as the dependent variable, a 1-standard-deviation increase in trials is again estimated as being associated with a decrease in trials of about three-fifths of a standard deviation.

4.3. Robustness

The witch trial data are uniquely suited for our purpose of identifying the effect of increases in state capacity on legal capacity since there are relatively large numbers of observations on trials spread throughout France. In Table 3, we check the robustness of our main results by excluding potentially influential regions and introducing a broader measure of urban population. All regressions in Table 3 follow our baseline specifications reported for the Malet sample in Table 2.

In columns 1 and 2 of Table 3, Paris is omitted from the regressions, as Paris both had a large number of trials and was the largest city in Europe at the time. In columns 3 and 4, the Metz-Alsace region is omitted from the data set. The spike in witch trials at the end of the 16th century in Figure 2 is largely accounted

Table 3
Robustness Checks

	Omit Paris (N = 39)		Omit Alsace (N = 39)		Control for Nearby Cities (N = 42)	
	(1)	(2)	(3)	(4)	(5)	(6)
Log Taxes per Capita	−.87*	−.79 ⁺	−1.06 ⁺	−1.59*	−.84*	−1.44**
SE	.37	.47	.55	.69	.36	.51
	[.42]	[.45]	[.35]	[.20]	[.43]	[.24]
1609–49		−1.16 ⁺		−2.37**		−2.67**
SE		.60		.53		.55
		[.32]		[.09]		[.07]
1650–99		−2.22**		−1.83**		−2.02**
SE		.85		.71		.73
		[.11]		[.16]		[.13]
Groups	13	13	13	13	14	14
LR χ^2	5.55	10.30	3.75	99.26	5.50	96.19

Note. Region dummies and time-varying controls for average city population in a region are included in all specifications. Incident rate ratios are in brackets. LR = likelihood ratio.

⁺ Significant at the 10% level.

* Significant at the 5% level.

** Significant at the 1% level.

for by the Alsace region. Furthermore, tax receipts in the Alsace region were about half those of the average region. Thus, we check whether our results are being driven by this potential outlier. The results in columns 3 and 4 indicate that this is not the case. The coefficient on fiscal capacity retains its significance at the 10 percent level, and the incident rate ratio is comparable to those in Table 2. Columns 5 and 6 introduce a broader measure of urbanization: the average number of cities with at least 10,000 inhabitants within a 20-kilometer radius for the region. We include this alternative measure of urban population in addition to our traditional measure of average urban population. Compared with the baseline results in columns 1 and 2 of Table 2, the estimates presented in columns 5 and 6 suggest that there is no difference in the results. Overall, the results presented in Table 3 suggest that our baseline estimates are robust to potential outlier regions or misspecification of urban growth.

5. Further Historical Evidence

5.1. Legal Centralization and the Decline of Witch Trials in France

We have found strong empirical evidence that increases in fiscal capacity in 17th-century France were correlated with a decline in the number of witch trials. Here we present further historical evidence that supports our hypothesis that this decline in the number of trials was driven by legal centralization.

The example of Pierre de Lancre, a magistrate from Bordeaux who was sent to investigate witchcraft in the Basque region of southwest France, illustrates

our argument. It was the local autonomy given to de Lancré that led to a massive witch hunt in 1609 in which 70 people were executed in less than a year. His book *Tableau de l'Inconstance des Mauvais Anges et Démons* was “an explanation of, and an apologia for, his relentless—and, judging by the many appeals to the French crown made against him—questionable legal practices exercised in governing the prosecutions of the Labourt witches and their priestly coconspirators” (Williams 1995, p. 94). De Lancré relied on child witnesses and subverted proper legal procedure because he feared that if he stopped “the witch menace might engulf the whole of France” (Williams 1995, p. 107).

Legal centralization, on the other hand, led to fewer witch trials. De Lancré was recalled when the archbishop of Bayonne, Bernard d’Eschaux, “realized that the consequence of Lancré’s crusade was a mounting witch panic among the people” and appealed to the Parlement of Bordeaux and to the king (Williams 1995, p. 93). The highest court in France, the Parlement of Paris, approved only 74 of 249 death sentences that were sent to it before 1600. Between 1611 and 1640, it approved only 4.7 percent of the death sentences brought before it (Soman 1992, p. 34). By contrast, in the north of France, approximately 50 percent of those accused were executed, and in the Jura region, about 46 percent were executed. One can readily follow the different standards of proof adopted by the Parlement during the late 16th and early 17th centuries. A decree of January 1588 banned all further trials by water. In March 1588, the magistrates proposed to make all witchcraft cases subject to appeal. The Catholic League intervened, however, and Paris was placed under siege for 5 years. By 1594, the issue was again being considered. In 1596–1602, 1600–4, and 1624, the Parlement succeeded in preventing several *maréchaussée* from declaring witchcraft to be a *crimen exemptum* and thus not subject to the jurisdiction of the Parlement (Soman 1992, p. 5).

As a final example of the differences in the behavior of local and central authorities when it came to prosecuting witches, consider the case of the apprentice weaver Bacqué. In 1670, this young man visited as many as 30 villages in southwest France, along with two of the counselors from the regional Parlement of Navarre (Pau). In each village, Bacqué would stand in the town square while the members of the village would file before him, one by one, so that he could declare whether or not they were witches. In this way, he identified 6,210 witches (Mandrou 1979, p. 236). The local counselors who accompanied him had started judicial proceedings against these accused when Henri Pussort, uncle of the finance minister Jean-Baptiste Colbert, intervened. Pussort’s efforts to stop these trials, however, met with resistance from the very seat of intellectual and political power at the time: Versailles. Several nobles based in Versailles had an inquiry initiated against Pussort for his efforts to intervene against the local judges. It was at this time that Colbert had Bacqué transferred out of Gascony and to the Bastille in Paris. Colbert halted the proceedings in the regional court and annulled all prosecutions that had already been passed through an edict of the Crown that “prevents the courts and averts the disorders that would be

caused by a procedure so irregular that it would envelop the majority of the inhabitants of the aforementioned province, trouble the repose of families and violate the *rules of justice*" (Mandrou 1979, p. 241).

This incident again illustrates the willingness of local magistrates to listen to charges inspired by popular fears and how these prosecutions could spread well beyond a single person or village. Finally, the emphasis of the central government, as enunciated through the words and actions of Colbert, shows that it was rules of justice that had to be recognized and disorder that was to be avoided, especially disorder of the type that could spread throughout an entire region.

5.2. *Changing Mentalités?*

One alternative hypothesis is that central courts were more skeptical and less likely to believe in the existence of witches. However, there is little evidence to support this view. The view that the decline in the European witch trials was caused by changing mentalities has been largely rejected (Levack 1999; Bostridge 1996; Bever 2008).²⁷ Educated elites continued to believe in witchcraft. As one historian observes, "From the viewpoint of 1700, the possibility of another bout of witchcraft prosecution was not safely dead and buried as those with hindsight may assume" (Bostridge 1996, p. 310). As late as 1769, the celebrated jurist William Blackstone could, while deplored the legal abuses that took place when witches were prosecuted, still assert that "[t]o deny the possibility, nay, actual existence, of witchcraft and sorcery is at once to flatly contradict the revealed word of God" (Blackstone [1765–69] 1893, bk. 4, p. 60).

Louis XIV pursued and burned over a hundred members of the aristocracy as witches between 1677 and 1682 for political reasons, but then issued an edict the following year banning the prosecution of anyone as a witch throughout his realm. Similarly, the actions of the "enlightened" nobles in Versailles who attempted to prosecute Pussort for attempting to stop the prosecutions is further evidence that belief in witchcraft was alive and well during the second half of the 17th century. As the examples of d'Argenson, Pussort, and Colbert suggest, this was driven by a concern with social order rather than skepticism of the supernatural. Among the less educated, belief in witchcraft persisted well into the 19th century. In the countryside of Cambrésis, for example, an observer noted, "The doctor is rarely called to Fressies to treat burns, sprains, or fractures. People prefer to call on a woman who blows on the injury, recites some fragments of the Gospel, makes the cross and asks for ten francs for her services" (authors'

²⁷ "Historians of witchcraft now reverse the traditional assumption and see the decline of witch beliefs as—at least in Western and Central Europe—an important cause, not an effect, of the change in elite mentalités" (Bever 2009, p. 264). While we cannot disentangle this, our results do find that there was a negative time trend associated with declining belief in witchcraft over time. However, this time trend explains only a portion of the decline in the number of trials.

translation of Muchembled [1979, p. 99]).²⁸ Similarly, “In Viller-en-Cauchies, every year . . . the young people go out . . . in the night to burn trusses of straw in the countryside in order to chase away bad spirits and call on the influence of witches” (authors’ translation of Muchembled [1979, p. 99]).²⁹

5.3. Evidence from the Rest of Europe

We are unable to replicate our analysis for France for the rest of Europe because systematic data on most European states’ fiscal systems are lacking until after 1600 and there are no data on the amount of taxes collected by most of the states in the Holy Roman Empire or from the Swiss cantons. This fact is highly supportive of our hypothesis. The Holy Roman Empire and Switzerland did not collect or record tax revenues in a symmetrical way because they both became highly decentralized and fragmented. Consistent with our framework, three-quarters of witches killed between the 15th and 17th centuries, around 25,000 individuals, died in the Holy Roman Empire or Switzerland (Monter 2002, p. 16).

Levack argued that the “prevailing pattern of jurisdictional particularism in Germany meant that witch-hunting could easily go unchecked” (Levack 2006, p. 212). One reason for the contrast between France and the Holy Roman Empire was that unlike France, “the Empire was never able to develop a regular and effective process by which cases could be referred or appealed to the *Reichskammergericht* (imperial supreme court) which sat at Speyer” (Levack 1999, p. 18). Monter contrasts centralized French courts “which generally rejected village testimony” (at least after 1600) with “the 550 villages and eleven small towns which today comprise Germany’s Saarland. During the half-century after 1580, these virtually autonomous rustics executed 450 per cent more witches than the *Parlement de Paris*, in a corner of the Empire divided among four principal overlords, two Protestant and two Catholic” (Monter 2002, pp. 9–10).

Evidence from variation between the states of the Holy Roman Empire is also consistent with our argument. The most severe witch hunts occurred in small and fragmented jurisdictions such as Würzburg, Luxembourg, Ellwangen, and Bamberg and in the lands ruled by the archbishops of Mainz, Cologne, and Trier—“areas of notoriously loose government control” (Monter 2002, p. 17).³⁰

²⁸ “Le médecin est rarement appelé à Fressies pour panser les brûlures, les entorses, ou les fractures. On préfère s’adresser à une femme qui souffle sur le mal, récite plusieurs fragments d’Evangile, fait force croix et demande dix francs pour ses honoraires” (Muchembled 1979, p. 99).

²⁹ “A Viller-en-Cauchies, tous les ans . . . les jeunes gens vont . . . dans le soirée brûler des bottes de paille dans les champs afin de chasser les mauvais esprits et conjurer l’influence des sorciers” (Muchembled 1979, p. 99).

³⁰ “The Prince-Abbot of Ellwangen alone accounted for one-ninth of the 3,229 known executions for witchcraft throughout Baden-Württemburg. Two other smaller Catholic prelates also instigated genuine witch-hunting panics: the monastery of Obermarchtal (whose territory of ten tiny settlements contained barely 350 adults) executed over 50 witches between 1586 and 1588 and 30 more afterwards; the Teutonic Knights at Mergentheim executed 114 witches between 1628 and 1630 during a panic inspired by developments in the neighbouring bishopric of Würzburg. But if a handful of Catholic prelates compiled the highest death totals in south-western Germany, a few self-governing cities,

These large-scale German witch trials were associated with the indiscriminate use of judicial torture. In contrast, the more powerful and centralized states in the empire tried notably fewer witches, and the judicial institutions of large states, such as Bavaria and Brandenburg, exerted a moderating influence on trials (Levack 1999, p. 18).

Scotland was one of the few other countries to experience large-scale witch panics. One reason why approximately three times as many witches were executed in Scotland as in England was the far greater level of discretion available to local lords and judges in the former country. Judicial torture was often employed in Scotland even though it “was administered illegally, without warrant from the privy council. Indeed, the council took action on more than one occasion to imprison or prosecute those who tortured witches” (Levack 2008, p. 23). Levack observes that “[t]he main difference, therefore, between the English and the Scottish use of torture is not that the laws of one country allowed its use, whereas the laws of the other did not, but that the central government of one country was generally able to enforce its own strict rules regarding the use of torture, whereas the government of the other could not” (Levack 2008, p. 23).

In contrast, the Spanish Inquisition—a highly centralized and national institution—was fairly cautious when it came to investigating claims of witchcraft. Inquisitors were instructed to consider natural causes of the phenomenon witches were claimed to have caused (Henningsen 1980). Trials largely ceased after 1611, and the total number of witches executed was very small. To summarize, the evidence from other European states thus provides further support for our claim that there was a relationship between state capacity and the decline of witchcraft trials in early modern Europe.

5.4. Implications of Legal Centralization

The attitude of the Parlement of Paris toward regional witch trials mirrors the attitude of the French Crown toward many legal abuses that were common in other parts of the country. The signing of the Code Michau in 1629 announced the Crown’s intention to centralize and standardize many aspects of administrative law. After the civil disturbance known as the Fronde (1648–53) had been put down, Colbert, in collaboration with the Parlement of Paris, embarked on judicial reforms that aimed at standardizing legal procedures and reducing the discretion available to local magistrates and courts. In 1665 a specially commissioned court was sent into southeastern France to investigate local judicial abuses (Hamscher 1976, p. 168). Two great codifying edits, L’Ordonnance Civile

ruling territories no larger than the Teutonic Knights at Mergentheim, were not far behind. Rottenburg executed at least 150 witches between 1578 and 1609; Rottweil executed 113 in thirty different years between 1566 and 1648” (Monter 2002, p. 17).

and l'Ordonnance Criminelle, were passed in 1669 and 1670, unifying many aspect of civil and criminal law (Colyar 1912).³¹

The number of *intendants* (government officials) increased from 4,041 in 1515 to at least 46,047 in 1665. This change was, in the words of one historian, staggering (Kwass 2000, p. 29). The *intendants*, first sent out into the countryside on an ad hoc basis in the 1630s and then systematically from the 1660s onward, were empowered to supervise and overrule local notables. They were drawn from a new elite known as the nobility of the robe, which was quite separate from the provincial nobility of the sword, and as commissioned employees of the king, they lowered the costs to the state of enforcing its laws at the expense of existing local rules (Moote 1971; Hurt 2002). Unlike other venal officials, the *intendants* did not buy their positions; instead, the king paid them a stipend and could dismiss them at will (Collins 1988, p. 54). As a result, their interests were solidly aligned with the central government, not the provinces. Indeed, they can be seen as a quasi bureaucracy that was connected into a central, Paris-based system of clientelism and patronage and largely independent of the local nobility (Kettering 1986). This program of centralization was, of course, only partially successful.³² But it provided stronger, more stable government than its predecessors had, and clientelism contributed to its development (Kettering 1986, p. 224). The decline in witch trials is a reflection of this improvement in legal capacity.³³

6. Conclusions

Legal capacity is an important institutional prerequisite for sustained economic growth. Research in political economy and economic growth suggests that an effective state is an important contributing factor in economic growth (Bockstette, Chanda, and Puttermann 2002). This paper provides novel evidence that fiscal and legal capacity are strategic complements as theorized by Besley and Persson (2009, 2011). Fiscal fragmentation in early modern France precluded the establishment of a strictly enforced common legal code, and this in turn set the stage for thousands of witch trials between 1550 and 1650. The increased demands placed on the state during a period of intensified military competition required fiscal and legal centralization and led the centralized state to play an

³¹ Heckscher (1955, p. 126) observes that here "Louis XIV's monarchy attained an important goal in codifying the law. Colbert's programme on this matter had been largely put into practice, although there remained a good deal more to be done even here." In particular, Colbert's plan to centralize all of the ordinances of France into a single legal code did not come to fruition (Colyar 1912, p. 67).

³² As Kettering (1986, p. 224) observed, the "modern characteristics of Louis XIV's government should not be exaggerated—it was an early modern state that was only quasi-bureaucratic and, although formally centralized and hierarchical, it was also cumbersome, incoherent, and fragmented by special interest groups."

³³ See Johnson, Koyama, and Nye (2011) for a more in-depth discussion of this point. For a similar argument in the context of heresy trials, see Johnson and Koyama (2013).

increasingly prominent role in coordinating the behavior of local jurisdictions so that they internalized the externalities stemming from the tolerance of local custom and superstition to influence legal procedure. One particularly visible measure of this shift was the decline in the number of witchcraft trials. Our argument is consistent with Olson (1993), who argued that rent seeking by centralized elites may be less damaging than decentralized rent seeking because, in the absence of democratic checks on authority, rulers with broader interests will tend to erect laws that internalize externalities.

A number of further conclusions can be drawn. First, using witch trials as a particularly salient example, we argued that it was all but impossible to impose a common legal standard without fiscal consolidation. In early modern France, legal and fiscal fragmentation were bound together in an equilibratory relationship because fiscal weakness led to the creation of new offices and the creation of new offices led to “perennial jurisdictional conflicts among the courts” (Hanscher 1976, p. 160). Fiscal consolidation was associated with legal centralization because it broke this equilibratory relationship. These developments were of lasting significance. Colbert’s reform of the tax system in the 1660s led ineluctably to the code of civil procedure, a legal reform that substituted “standardized procedures for regional variations” and thus “constituted a ‘first step’ toward the Napoleonic procedural code for civil law” and toward the modern civil law French legal system (Trout 1978, p. 119).

Second, the decline of superstition in early modern France was driven less by changing *mentalités* than by a process of fiscal and legal centralization. Fear of witchcraft continued throughout this period. However, by properly enforcing the rule of law, courts in France and elsewhere were able to control these fears and prevent them from resulting in large-scale witch panics.³⁴ During the 18th century, witch trials were common only in weakly governed states on the edge of Europe such as Poland and Hungary (Levack 1999, pp. 68–73).³⁵

Third, economists studying the origins of the modern state and economic growth have been overly influenced by the development path taken by Britain. Britain, or at least England, was a uniquely centralized state from the Middle Ages onward (Dincecco 2009). British elites were able to overcome holdup problems and efficiently reallocate property rights (Mokyr and Nye 2007; Bogart and

³⁴ This finding is consistent with accounts of the decline of witch trials in Scotland, Spain, The Netherlands, and elsewhere (Levack 1999). The Netherlands was the first modern economy and had the highest taxes per capita in Europe, and witch trials ended there in the early 17th century, soon after they started (Ankarloo 2002, pp. 80–81). Scotland, by contrast, was a weakly governed state in which witch trials and periodic witch panics flourished. Trials came to an end only under English dominion in the late 17th century (Levack 2008).

³⁵ Witchcraft trials came to an end in the Habsburg territories as a consequence of Maria Theresa’s *Article on Sorcery, Witchcraft, Divination, and Similar Activities* in 1766. This did not deny the existence of witchcraft, but it did make it all but impossible to prosecute someone for witchcraft. It forbade practices such as pricking suspects, subjecting them to cold-water ordeals, or searching for marks of the devil; restricted the ability of magistrates to respond to local fears; and permitted torture only when it was authorized by higher authorities or there was evidence that real harm had been caused by nonmagical means (Kern 1999).

Richardson 2009, 2011). This precocious centralization means that Britain does not necessarily provide the best case study for analyzing the process through which states acquire fiscal and legal capacity. We suggest that the example of France, which emerged from the Middle Ages legally and fiscally fragmented, may be more relevant for the study of how states might build fiscal or legal capacity today.

Finally, our findings support the view that there were important institutional improvements across western Europe before the Industrial Revolution (North, Wallis, and Weingast 2009; Bogart and Richardson 2012; Johnson and Koyama 2014). And our views are consistent with Alexis de Tocqueville's observation that the centralizing policies of the French state before the Revolution of 1789 paved the way for much that would come after it (Tocqueville 1998). The decline in witch trials was one instance of this improvement in institutions in the period prior to the onset of modern economic growth.

Appendix

Creation of the Data Set

The *généralité* was the core fiscal unit of the old-regime monarchy since the 15th century, and we use it as the basis for the creation of our panel variable, which we refer to as a region. We create our regions as follows.

In 1542, Francis I issued an edict creating 16 *généralités*. In 1700, there were 31 *généralités*: Paris, Soissons, Orléans, Amiens, Châlons, Bourges, Rouen, Caen, Tours, Bourgogne, Moulins, Poitiers, Bretagne, Nantes, Riom, Limoges, Metz, Lyon, Grenoble, Montaubon, Bordeaux, Toulouse, Montpellier, Provence, La Rochelle, Alençon, Navarre (Pau), Franche-Comté, Valenciennes, Strasbourg (Alsace), and Lille.

We omit La Rochelle from the data set because we have data for only 1 year (1695). In addition, in the northeast, Lille and Valenciennes were conquests of Louis XIV that were added to France in 1691 and 1678, respectively. Thus, we omit these two *généralités* as well.

We also unify several of the *généralités* because their borders changed between 1550 and 1700, they were unified with another *généralités*, or it was difficult to explicitly identify whether a number of witchcraft trials occurred in it or its neighbor. We create a region called Normandy that includes the *généralités* of Rouen, Caen, and Alençon. Similarly, Gascony includes Montaubon, Bordeaux, Navarre (Pau), and Toulouse. Finally, Metz-Alsace combines the tax receipts from Metz and Alsace. We are left with the 21 regions listed in Table A1.

The witch trial data were compiled from various primary and secondary sources by Marc Carlson.³⁶ We use Carlson's list to identify the *généralité* in which each witch trial occurred. In cases in which a number of trials were

³⁶ For these data and their sources, see Marc Carlson, Historical Witches and Witchtrials in North America (<http://www.personal.utulsa.edu/~marc-carlson/witchtrial/na.html>).

Table A1
Witch Trials and Taille Revenues, 1550–1700

Region	Witch Trials	Taille Receipts		Population in 1700
		Malet	Forbonnais	
Paris	124	14.5	14.2	1,426
Soissons	1	15.7	15.7	322
Orleans	18	18.9	19.7	607
Amiens	0	7.8	7.6	520
Châlons	0	10.9	10.6	693
Bourges	0	14.9	16.0	290
Normandy	13	6.8	7.3	1,890
Tours	16	16.7	16.8	1,069
Bourgogne	81	3.3	3.6	806
Moulins	0	21.1	21.7	324
Poitiers	5	23.6	24.8	612
Bretagne	1	2.5	2.6	1,655
Franche-Comté	4	4.4	3.8	340
Riom	2	24.0	23.9	560
Limoges	0	20.3	21.4	585
Metz-Alsace	1,043	5.0	4.5	425
Lyon	0	24.2	24.6	363
Grenoble	0	10.9	9.8	544
Gascony	802	4.1	4.1	2,512
Montpellier	679	2.2	2.3	1,520
Provence	2	1.8	2.3	640

reported over several years, we distribute them equally over the time period. If no location data are provided, the trial was omitted. We code the outcome of the trial when that information is available, but we do not incorporate this into our analysis since there are relatively few cases in which this could be done. We also omit 530 trials that Carlson incorrectly attributed to Gascony in 1609.

We also create a maximal data set in which we add to Carlson's data the data on 555 trials from other sources. We add 202 trials reported for Franche-Comté (Monter 1976) and 202 trials reported for Normandy (Monter 1997). Finally, we include 167 trials in the Champagne region (Soman 1992) that we allocate to our region Châlons.³⁷ Table A1 lists the 21 regions we include, the total number of witch trials in the base data and in the maximal data, and taille revenues (in grams of silver) collected per person.³⁸

As described in the text, we use the taille as our measure of fiscal capacity for several reasons. The taille regions, known as *généralités*, were fairly stable

³⁷ Soman (1992) reports aggregate numbers on other witch trials in the region of the Parlement of Paris, but he does not indicate where they occurred. Soman's hypothesis is also highly consistent with ours. He argues convincingly that by the beginning of the 17th century, in the jurisdiction of the Parlement of Paris, witch prosecutions dramatically decreased both in their frequency and in the severity of punishments because of the increasing influence of the centralized state over that of local authority. He finds that between 1611 and 1640, the Parlement of Paris approved sentences of executions in only 4.7 percent of cases (Soman 1992, p. 2).

³⁸ The regional population data are from 1700 and were compiled by Dupâquier (1988).

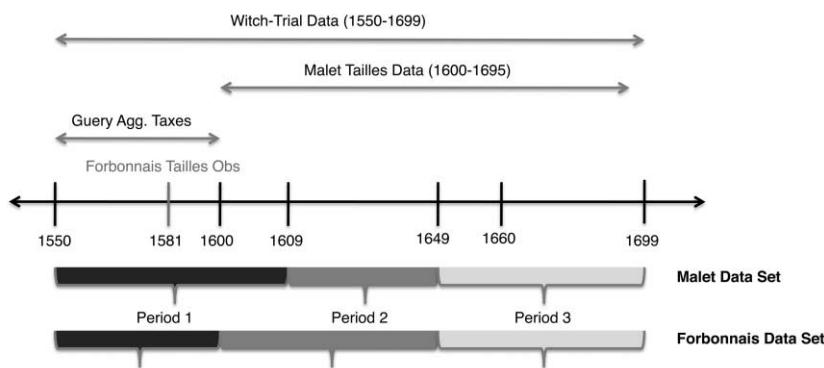


Figure A1. Witchcraft and tax data sets

from about the 14th century until the Revolution. This is in stark contrast to the indirect tax regions, which were constantly being consolidated and split. Another attractive feature of the taille data is that Malet published the details of the royal budgets from the entire 17th century down to the *généralité* level at the end of the 18th century (Bonney 1995). This represents a great amount of fiscal detail relative to the summary accounts (known as the accounts *abrégés*), which are our only other source of consistent revenue data for France but which, unfortunately, contain only nationally aggregated receipts.

One problem with constructing this data set is that Malet's data on regional taille receipts do not extend to the period 1550–99. The first way we address this issue is by splitting the panel into three time periods (1550–1609, 1610–49, and 1650–99) and assuming that regional tax receipts between 1600 and 1609 are good proxies for receipts between 1550 and 1599. We call the data set constructed in this way the Malet data.

An alternative method we use to fill in the tax revenue data for the 16th century is to make use of two additional historical sources of data. In his 18th-century history of the monarchy's finances, Forbonnais recorded taille receipts from all the *généralités* for a single year in the 16th century, 1581 (Forbonnais 1758). In addition, we have the aggregate amount of ordinary revenue going to the absolute monarchy for 11 of the years between 1550 and 1599.³⁹ By assuming that taille receipts were about two-thirds of ordinary revenue in the average year (which is consistent with 17th-century data) and using the disaggregated Forbonnais data as weights, we can impute regional taille receipts for the 11 years for which we have aggregate data. Then, as illustrated in Figure A1, we average

³⁹ The aggregate revenues were compiled by Guéry (1978). The years included are 1557, 1567, 1574, 1576, 1577, 1581, 1582, 1586, 1588, 1596, and 1597.

the data into three 50-year periods (1550–99, 1600–49, and 1650–99) to create an alternative data set that we refer to as the Forbonnais data.

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