

# Witch Trials<sup>1</sup>

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## Abstract

This paper studies witch trials in medieval and early modern Europe. We argue that these trials reflected non-price competition between Catholics and Protestants for market share in Christendom. Through witch trials competing Christian religions advertised their commitment and power to protect citizens from carnate manifestations of Satan's evil on earth. Similar to the way in which contemporary politicians spend most of their campaign resources attempting to attract swing voters around election times in battleground states, in times and regions in which the religious market was hotly contested, and thus competition for the devotion European salvation consumers was strong, Catholic and Protestant religion suppliers used witch trials to advertise the superiority of their respective brands. To investigate our theory and compare its explanatory power to leading, existing theories for the geographic and temporal pattern of witch trials in Europe, we create and analyze two new datasets. First, we create the largest and most comprehensive database on witch trials to date, covering more than 31,000 accused witches over a period of more than three and a half centuries for more than 20 countries in Europe. Second, to proxy religious-market contestability we create a dataset on the location of religious battles in Europe between 1400 and 1850. An analysis of these data supports our theory but does not support the leading, existing explanations for European witch trials. Nearly all witch-trial activity in medieval and early modern Europe is focused in religiously contested regions and occurs in years after the Reformation established Protestantism as a serious challenger to the Catholic Church during the great era of Catholic response: the Counter Reformation.

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## 1. Introduction

The period of the witch trials in Europe was an episode of history which spanned from the beginning of the 15<sup>th</sup> century until around the end of the 18<sup>th</sup> century. For roughly 400 years a person could be placed on trial and executed by local authorities—most likely hung and their body then burned—simply as a result of their neighbors or other townsfolk accusing them of being a witch. Accusations could be made for a wide range of potential offenses. Witches were said to have been able to cause anything from everyday troubles like persistent illness, the spoiling of milk, the killing livestock or babies, all the way to supernatural claims about cursing, or droughts and crop failures which resulted from the witch's power to cause bad weather. Once an accusation made, a witch was highly likely to find herself<sup>4</sup> defenseless and tortured into a confession of her criminal activity (*maleficium*). Since she would be unable to prove the absence of witchcraft<sup>5</sup>, her confession of these activities would render her guilty as charged.

Witchcraft trials were an incredible injustice, but we argue here they were not the product of ignorance. 'The Witch Hunts' are often dismissed as an episode of mass hysteria, or a craze which was confined to this period of history. The use of these trials in Europe persisted for over 400 years at great cost, not only of life, but they also burned up real economic resources in the process. It involved many steps: the accusation, the investigation, confinement and torture of the suspect, the application of one or more ordeals, the sentencing, execution, and burning of the body. All of this activity consumed a considerable amount of the local authority's time. Further, the killing of witches continues to this day in places like Papua New Guinea and Tanzania (Alpert 2013). If witchcraft trials were, pure madness, and not serving an intended purpose, it is likely this practice would have died out. Simply put, we aim to show in this paper the witchcraft trials in Europe were a form of non-price competition—a rational response by the churches given their institutional constraints and the changing marketplace conditions within Christendom that occurred during these years.

Following the work of Ekelund, Hébert, and Tollison (2002, 2004, 2006) we model the medieval Catholic and Protestant churches as profit maximizing producers. Leveraging their simple supply and demand framework, we extend their analysis of the church-firm, by offering a novel application of the imperfectly competitive market model. Our hypothesis is that witchcraft trials were used as advertising in the battle for Christian market share. The testable implication of this hypothesis is that we expect witchcraft trials to cluster in the most religiously contestable areas.

The modern political campaign serves as a useful analogy. Politicians compete for various government positions through their messaging and the candidate who wins office is generally the one who attracted the most voters. A standard result of the political competition literature is that candidates' advertising

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<sup>4</sup> Tried witches were by no means exclusively female, indeed there are examples such as Estonia where the majority of witches were male, but across Europe the historical evidence suggests that men comprised at most 20% of all tried individuals.

<sup>5</sup> A few notable exceptions were the use of water ordeals and weigh houses to "test" whether or not a person was indeed a witch. Witches were thought not to have a soul and would therefore weigh less than a person of comparable size. In the water ordeal, the accused was often bound and then dunked into a body of water. If the accused floated that would be evidence in support of the witch accusation. Related, one example of a market response to this belief was the use of weigh houses as witch's scales. The operators of a weigh house would weigh an accused witch and certify whether or not their weight was proportional to their body size. The extent and distribution of these scales is unknown to the authors, but to this day in Oudewater, Netherlands, tourists can visit the *Heksenwaag* and get an official certificate of their weight.

expenditures in a given region should be proportional to the number of undecided voters in that region.<sup>6</sup> While there is much evidence supporting this theory, consider the most recent American example. In the 2012 campaign for the American Presidency, Barack Obama (D) and Mitt Romney (R) combined to spend \$896 million on campaign advertisement across the United States. 52% of that total, or \$474 million, was spent in only three of the fifty states: Florida, Virginia, and Ohio (Washington Post 2012). Increasing the sample to include the top eight states, adding the previous three to North Carolina, Colorado, Iowa, Nevada, and Wisconsin represented 88% of total candidate advertising spending.<sup>7</sup> Political candidates know their promotional resources should be allocated to the places where the marginal benefit of their advertising dollars is the greatest—in battleground areas.

We test our religious competition hypothesis using two newly constructed datasets of witchcraft trials and religious war battle locations covering over thirty-thousand individuals and over 400 battle sites. Together these datasets cover twenty modern day European countries. In addition we also look to regional estimates collected by several different historians. Using religious war battle locations as a measure of religious tension, our analysis of this data shows the expected correlation between the intensity of trial activity and religious competition. Our findings indicate witchcraft trials were most intense in regions which would have been considered religious ‘swing-states.’

The witchcraft trials were heavily concentrated in the southern half of modern day Germany, Switzerland, eastern France, northern Italy and Scotland—areas known for their violent wars between rival Christian sects. In the regions where there was a strong, unified national church, such as Spain and southern Italy, they experienced relatively few trials (Gibbons 1998). Other countries which experienced few trials were Ireland and Portugal, where there are thought to have been as few as 10 total trials (Decker 2004, pg. 121). The geography of the trial activity occurred not only at the country level, but within each country the trials tended to cluster near border regions. Spain’s one witch trial episode took place in the Basque region located near Spain’s French border. The regional peak of trial activity occurred near the borders of eastern France, southwest Germany and Switzerland. The religious competition pattern not only shows up in the geographic distribution, but also the vast majority of trials occurred during the Reformation and Counter-Reformation periods, when the Catholic church lost its monopoly status and was forced to compete for political power with Lutherans, Calvinists, and Zwinglians. The fierce reaction experienced in this period of Christian separation was foreshadowed by the Catholic Church’s previous violence against, and near extermination of, the Cathar and Waldensian (or Vaudois) heresies of the 12<sup>th</sup> and 13<sup>th</sup> centuries in southern France and northern Italy.

This paper contributes to the literature on the economics of religion (Iannaccone 1998; Ekelund et al 1996) and to the “law and economics of superstition” (Posner 1980, Leeson 2010, 2011a, 2011b, 2011c, 2012) which examines objectively false beliefs and their role in the legal systems of rational people.

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<sup>6</sup> For the proof of this specific result, see Brams and Davis (1973); for the literature on political competition more generally, see Downs (1957), or Hotelling (1929).

<sup>7</sup> A similar calculation can also be made for the 2008 election. Barack Obama and John McCain spent a total of \$450 million on national advertising, 40% of that total was concentrated in four states: Pennsylvania, Ohio, Florida, and Virginia. The top 10 states accounted for 70%, including Michigan, Iowa, Wisconsin, North Carolina, Missouri, Indiana, and Colorado. Source: <http://www.cnn.com/ELECTION/2008/map/ad.spending/>

## 2. Three contending explanations of witchcraft trials on a large-scale

We focus in this paper on the witchcraft trial experience of early modern Europe, but witch trials were not unique to Europe, nor were they solely a Christian phenomenon. As Behringer (2004) makes clear, witch trials are known to have occurred in the United States (Salem), South America (Brazil, among others), Australia, China, India, many regions across Africa, and more. Steadman (1985) and Miguel (2005) also document witch killings among tribal societies in both Papua New Guinea, and Tanzania, respectively. Additionally, Behringer cites opinion poll data from the 1970s and 80s which showed the persistence of a modern belief in witches across members of the German clergy, and writes “Pope John Paul II (Karol Woityla, 1920-[2005], r.1978-[2005]) has repeatedly confirmed that the Catholic Church continues to believe in the existence of a personal devil” (Behringer 2004, p. 21). Our collective beliefs about witchcraft surpass the specifics of time and place.

The European witchcraft trial experience attracts particular attention, though, because early estimates of the number of witches involved in these trials were thought to be as high as nine-million individuals. These wildly speculative estimates were based on the extrapolation of witch hunt propaganda, written sermons, and accounts of famous large scale trials which made it into the general literature (Gibbons 1998). Beginning with C. L’Estrange Ewen in 1929, who documented witchcraft trials in Essex County, England, historians began to systematically study the archives of court trial records. This systematic approach to consulting primary and secondary sources drastically reduced modern witchcraft trial estimates to between 100,000 – 110,000 total persons accused, and between 40,000 – 60,000 executions (Behringer 2004; Scarre and Callow 2001; Ankarloo and Clark 2002; Gibbons 1998).

Even with drastically reduced trial figures, it makes sense why social scientists—historians, anthropologists, sociologists, and economists—have all sought to try and explain the patterns of witch trials and killings. And theories abound, from narratives based on the geography of the local environment<sup>8</sup>, to a pervasiveness of misogyny, and even explanations citing a domino effect.

Mostly these narratives tended to focus on the composition of the accused witch population, trying to explain why certain types of people were more likely to be the target of witch accusations in a given region. Oster (2004) notes the witch trial literature tended to focus on small-scale explanations and that there were “few causal explanations for why witchcraft trials happened at all and on such a large scale in many areas at the times that they did” (p. 215). Oster’s paper added to the discussion of these large-scale effects, by offering a test of the ‘scapegoat hypothesis.’ Many historians claimed surprise harsh economic conditions, typically associated with colder-than-expected temperatures and the resulting food shortages, would cause an increase in the demand for initiating violence against witches, because witches were thought to control the weather. Collecting data on witchcraft trials and weather conditions, Oster presents evidence in support of this hypothesis, finding adverse weather conditions were correlated with an increased frequency of witch trials.<sup>9</sup> It is hard to evaluate the strength of Oster’s evidence, however, since

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<sup>8</sup> The “mountains hypothesis” (Trevor-Roper 1967) is that social control by religious groups was harder in mountainous areas than plains regions which could sustain a feudal system. Pagans subject to persecution by the Christians fled to these mountains. One might expect then the use of witch trials would be especially prevalent in these areas.

<sup>9</sup> Edward Miguel (2005) also considers the impact of negative economic shocks on the frequency of witch trials, in the context of rural Tanzania. He finds that extreme weather patterns—either droughts or floods—are associated with higher rates of witch accusations and killings.

her data set was completely absent any witchcraft trials from Germany and contained records from only a few of the Swiss Cantons. These two countries accounted for an overwhelming majority of trial activity; Germany alone is thought to be responsible for half of all trial activity in Europe (Behringer 2004).

There are two other major theories which attempt to explain witchcraft trials on a large scale<sup>10</sup>, (1) the rise of capitalism, and (2) a ‘legal torture’ hypothesis, as described in Trevor-Roper (1967). The period of European witch trials was intertwined with the rise of capitalism, historically associated with the Calvinists from 1520-1620. As entrepreneurs of the time started to acquire wealth, these sources of revenue (taxes) weakened the tight financial relationship between the Catholic Church and sovereign rulers. According to this theory then, witch trials should be more prevalent in the areas where the intensity of capitalism was greatest, or in the areas where the existing hierarchy was most threatened.<sup>11</sup> Trevor-Roper presents some anecdotal evidence supporting the validity of this theory, but we add that Catholics were using witch trials and other forms of violence against religious competitors prior to 1520 and other Protestant groups were also known to be engaged in witchcraft trials, so the Calvinists should not be held completely responsible for the trial activity.

The second theory attributable to Trevor-Roper<sup>12</sup> is a ‘legal torture’ hypothesis – that in areas where torture was a legal punishment for regular crimes, torture was more likely to be used to elicit confessions of demonology. At one time, it was believed that anything said under torture was the truth (Pavlac 2009). Closely related to this theory is the ‘domino effect’ that was created when one accused witch served as a witness in the implication of other witches, from there, the dominos quickly fell. We combine this domino effect and the legal torture hypothesis here, on the basis that torture was actually the likely driver of the cascade effect—inquisitors wanted new accusations and tortured individuals could clearly identify a way to get the abuse to stop: name names. The legal torture hypothesis is particularly interesting because as Behringer writes (2004, p. 59-60),

Legal torture was initially conceived as an improvement to the legal procedure, because it aimed to achieve the material truth rationally, rather than by means of mystical intervention, as in ordeals.<sup>13</sup> We have to keep in mind that the meaning of legal torture differed decisively from modern perceptions.<sup>14</sup> Although torture had been meant to replace ordeals, in practice judges sometimes used unlimited torture as if it were an ordeal, particularly in heresy trials.

To the Church, witchcraft was an exceptional crime and therefore allowed for unlimited torture to be used in inquisitorial proceedings (Trevor-Roper 1999, p. 108-113).

Trevor-Roper argued the case that judicial torture originally caused witch trials to spread via a domino mechanism. He also claims the use of gruesome torture on suspected witches was ultimately what caused

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<sup>10</sup> Johnson and Koyama (manuscript) also argue for a ‘fiscal centralization hypothesis.’ Using data on witch trials in France from the period of 1550 to 1700, they argue witch trials were more frequent in areas where the rule of law was less formal. As the fiscal capacity of the state grew and spread across France, “local judges increasingly upheld de jure rules and the frequency of witch trials declined.”

<sup>11</sup> Ekelund et al (2002) present evidence that the places where Protestantism took root were urban areas that were more conducive to economic growth and that societies which had a culture of rent-seeking would reject Protestantism.

<sup>12</sup> Henry C. Lea (1890) was also known to have endorsed this view.

<sup>13</sup> Leeson (2012) specifically disputes the claim that ordeals were sheer mysticism.

<sup>14</sup> Behringer cites here Edward Peters’ 1985 book Torture.

the decline of widespread use of judicial torture, “In general, it seems clear that it was the growing disbelief in confessions produced by torture which brought torture into discredit” (Trevor-Roper 1999).

Looking at the data, the predictions of the legal torture theory show mixed results, as high trial areas such as Germany, Switzerland, and Scotland were known to widely use torturous practices, but torture was also used in low trial areas like Italy and Spain. Certainly it looks like where witchcraft trials were used, torture contributed its spread, but it does not look as though torture was a sufficient condition which assured the use of witchcraft trials.

### 3. Cathars and Waldenses: the early competitors

A belief in witchcraft, and the existence of witches, is long and enduring through human history. Once viewed as harmless pagan superstition, popular beliefs about the Devil and his ability to empower witches to inflict evil on Earth started to shift around the year 1000. Even as folk beliefs evolved and spread throughout Europe over the next 300 to 400 years, witches were not widely tried as criminals for the practice of witchcraft, until after 1400.

The official Church position on witchcraft, as late as 1140, was to denounce beliefs in witchcraft, because as articulated in *canon episcopi*, witchcraft was contained solely within the mind and was otherwise not a legitimate threat. If witchcraft were real, it would certainly warrant lethal force the same as heresy, since in theory witches could be just as dangerous as heretics, but again, at this time, witchcraft was not a “real” offense according to canon law.<sup>15</sup>

Speaking out against the Catholic Church, however, would be met with violence, as the Cathars and Waldenses (or *Vaudois*) experienced in southern France and northern Italy during the 13<sup>th</sup> and 14<sup>th</sup> centuries. These Christian-based sects stood in open defiance of Catholic doctrine, and were critical of the relatively wealthy organization, preaching apostolic poverty instead. Their message of poverty was modeled closely to the lifestyle of Christ who avoided Earthly possessions, and lived a life dedicated to service, which resonated strongly with poor commoners in these regions.

The Catholic Church first responded to the Cathars with excommunication, issuing papal bulls which decreed heretics should be found and delivered to the secular authorities for punishment.<sup>16</sup> When the decrees proved ineffective at stopping the spread of this heretical group, Pope Innocent III resorted to force and declared crusades against the Languedoc region of France in 1208 (Oldenbourg 1962). Even though the Church had no army of its own and had to rely on volunteers throughout the empire to actually wage the crusade, the Church’s political clout was strong enough to assemble an army to hunt the Cathars (Oldenbourg 1962, p. 5). Waging the Albigensian Crusade for the next twenty years, the Cathars in the

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<sup>15</sup> A widely held misconception was the equating of witchcraft trials with the Inquisition. Frequently trial records listed “inquisition” as the trial procedure, which is often mistaken for The Inquisition. As Kors and Peters document (2001: 117), in 1258 Pope Alexander IV specifically denied Inquisitors from prosecuting charges of witchcraft.

<sup>16</sup> Two papal bulls are particularly noteworthy and make explicit the Catholic Church’s mission to eliminate heretics. In 1184, Pope Lucius III issued *Ad abolendam*, which “decreed that bishops should conduct inquests of reported outbreaks of heresy, impose canonical penalties on proven heretics and then deliver them to secular authorities for punishment” (Stoyanov 2000: 236). Then in 1199, Pope Innocent III issued the bull *Vergentis in senium*, which again revived the connection between heresy and treason, which was punishable by death.

Languedoc region were eventually all but exterminated (Stoyanov 2000, p. 208). Cathar survivors would leave Languedoc and continue to spread their message until the beginning of the 14<sup>th</sup> century, when the heresy trials (sparked by the Crusade) finally extinguish the movement.

After the successful elimination of the Cathars, the Church turned its attention to the Waldenses in Lyon, France. The annihilation of the Waldenses would not be nearly as complete as the Cathars, since the Waldenses retreated to rural and mountainous areas, and also took to practicing in secrecy. Effectively though, with the Waldenses off in hiding, and the Cathars all but destroyed, the Catholic Church had achieved its goal of eliminating these religious competitors from the market by 1300, and would enjoy a virtual monopoly of Christendom until the Protestant Reformation beginning around 1517 with the nailing of Martin Luther's Ninety-Five Theses.

During the 14<sup>th</sup> century though there was still the issue of witchcraft not being a punishable criminal offense. In 1398 scholars at the University of Paris reversed the previous 300 years of Church doctrine by re-defining witchcraft as a heresy. The change is then affirmed by a series of Papal bulls (Stoyanov 2000, p. 237-8). With the machinery for executing heretics already in place, after 1400, the Catholic Church could now respond to witchcraft accusations and prosecute offenders at their discretion using the same mechanisms as the heresy trials. Formal witchcraft trials do begin shortly after 1400, but the trial activity does not reach even moderate levels until after 1487 when the *Malleus Malificarum*, or "Hammer of Witches" is published in Germany by Henrich Kramer and Jacob Sprenger. The series of Papal bulls and *Malleus* both served as codification of witchcraft persecution, but *Malleus* was the definitive argument that not only were the threats of witches real, but it also offered itself as a manual for how to proceed with the prosecutions.

#### 4. A simple economic framework

The supply and demand framework for this paper is laid out by Ekelund, Hébert, and Tollison (2002, 2004, 2006). They model the Catholic and Protestant churches as profit maximizing producers of 'spiritual services.' Ekelund et al make the case that "by the late Middle Ages the Catholic Church was pricing its 'product' too high to dissuade market entry by rival Protestant churches" (2002, p. 647). The authors argue prior to Protestant entry the Church was using its monopoly status to engage in price discrimination and extract high rents from its 'customers' in the form of tithes, taxes, and indulgences.

The imperfectly competitive market model offers a straightforward economic narrative of the battle between Catholics and the Cathars and Waldenses. The Catholic Church, owning a vast monopoly on Christendom throughout Europe, responded to the threat of competition by seeking to (literally) eliminate these new entrants. When nonviolent forms of competition proved ineffective for the Church, they began to engage in a more costly, but also more effective, strategy of total annihilation under the guise of heresy. Economic theory does not necessarily predict the use of violence, but if violence against competitors is in the opportunity set of the monopolist, and violence proves to be the most cost-effective method of regaining market share, then the use of violence is consistent with economic analysis.

Additionally, in the process of removing the Cathars and Waldenses from the market, the Church proactively responded by diversifying their salvation product line; likely because they anticipated the entry of future competitors willing to satisfy consumer demand for apostolic poverty. Market innovations

are the product of competition and the Catholic Church improved its position by setting up two new franchises of the Catholic Church known as the Dominican and Franciscan Orders, which aimed to service the poorer parts of the empire. After 1234 these new wings of the Catholic Church would be the ones who directly carried out the inquisitions of the Cathars and Waldenses.<sup>17</sup>

In the aftermath of the success of the Reformation spreading Protestantism throughout continental Europe, Ekelund et al (2004) argue the Catholic Church once again mimicked typical firm behavior, with its reaction to Protestant entry. Modern firms frequently respond to competitive entry by reorganizing their corporate structure. Ekelund et al propose the Council of Trent (1555) served this role for the Catholic Church. The authors also offer several testable predictions implied by their model of the Counter-Reformation.<sup>18</sup> The prediction of interest for our analysis is that “incumbent firms will try to develop policies (e.g., advertising) that will shift [industry] demand to the right and make its demand more inelastic” (Ekelund et al 2004, p. 694).

#### 4.1 Witchcraft trials: advertising for the church-firm?

A standard result of the imperfectly competitive market model is that firms will try to create brand loyalty through the use of advertising. We argue not only did Catholic and Protestant churches do exactly that, but further that these churches used *witchcraft trials* to communicate branded messaging about the quality of their spiritual services.

The three main views of advertising behavior in the industrial organization literature are: (1) the informative view, (2) the persuasive view, and (3) the complementary view (Bagwell 2001).<sup>19</sup> In their detailed analysis of the events surrounding, and the intent of the decrees made at, the Council of Trent, Ekelund et al focused on the information component of the Catholic Church’s Counter-Reformation marketing campaign (2004, p. 696),

In response to the Protestant threat, the Catholic Church sought to raise awareness of its members to the benefits of its product. The Council of Trent issued decrees establishing lectureships in Scripture and the liberal arts (5<sup>th</sup>:I:24-26), imposing duties of preaching and teaching on the clergy (5<sup>th</sup>:II:27-28; 24<sup>th</sup>:IV:195-96; 24<sup>th</sup>:VII:197-98), and providing detailed directions for the establishment of seminaries (23<sup>rd</sup>:XVIII:175-79).

We do not dispute Ekelund et al’s claim that the Catholic Church ramped up their production of information about their product, but due to the nature of the good itself, salvation being a *meta-credence good*, it is doubtful that informative advertising would have been the most successful approach. With

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<sup>17</sup> The direct link between Catharism and witchcraft is controversial in the historical literature. For our purposes here it is enough to show just that the Catholics had a ‘successful’ history of using violence against competitors, which at a minimum, likely informed their future decisions to initiate the executions for witchcraft trials.

<sup>18</sup> We use the stylized convention set forth by Ekelund, et al (2004) where we treat the Reformation and Counter-Reformation as two sequential episodes. Historians such as Reinhard (1989, p. 384) dispute the notion that these two periods are separate events.

<sup>19</sup> The informative view is that advertising serves as a way to spread information about the product (Telser 1964; Nelson 1970; Stigler 1961; Ozga 1960). In contrast, the persuasive view is that advertising changes the tastes and preferences of consumers, creating brand loyalty in order to seize market share held by competitors (Braithwaite 1928; Kaldor 1950). Finally, the complementary view is that advertising is able to affect the utility function of consumers by associating desired qualities to the consumption of the good in the minds of consumers, such as social status (Stigler 1977; Becker 1989).



*search goods*, *experience goods*, and *credence goods*, the cost of determining quality varies, but in all three cases it is possible for consumers to authenticate product quality.<sup>20</sup> However, in the meta-credence good case, consumers are never able to determine the quality of the salvation they purchase, no matter how much additional information they receive. In a market where the consumer choice is between competing brands of the meta-credence good, firms are likely to find brand persuasion or product complementarity as the more effective advertising techniques.

How did witchcraft trials serve to persuade congregation members? They did so in two ways. First, the investigation of accused witches was frequently in full public view, and the execution and burnings certainly were. This allowed church customers to ‘experience’ their religious beliefs in a tangible way. Watching the burning of a witch would be similar to watching modern day preachers perform ‘miracles’ during church services. Both displays attempt to communicate the message, *celestial and satanic forces are real*. And in the case of witchcraft trials, ecclesiastics are signaling a strong conviction in their religious beliefs, by being willing to investigate, torture, and persuade secular authorities to execute these ‘criminals’ for an objectively false offense.

Second, effective advertising often communicates multiple messages that depend on which consumer group the receiver belongs to. Conceivably, witchcraft trials could also function in this capacity. We know that both Catholics and Protestants used witch trials against their rivals but they also tried members of their own group. We imagine a spectrum of religious beliefs, and there might be several ways in which a witch trial could be interpreted. True believers of either the Catholic or Protestant brand are likely to view own-side trials against rivals as evidence confirming their world view and update their beliefs accordingly. However, as discussed above, witchcraft trials gave consumers something to ‘experience’ which likely caused those at the lower end of the spectrum to also update by increasing their branded beliefs. As a third consumer group, we lump together non-believers and consumers of the rival firm, because it is likely that these people would also update their (professed) beliefs in favor of the church running the witch trial. These were the very people who were the most at risk of being the next accused witch. Finally, since some trials included members of their own brand as well, trials could be used to manage the preferences and behavior of their congregations. For example, if the community at large identifies the behavior of a certain individual with being a ‘bad Catholic’ and then that person is tried and executed as a witch, that would send a signal, perhaps an unconscious one, to other Catholics not to engage in the behavior associated with that individual—such as considering a switch to one of the Protestant groups.

Some theoretical work on advertising suggests consumers must be receptive to advertising in order for it to work. Is there any reason to think the public was receptive of these witchcraft trials? Indeed there is. Neighbors and other townsfolk were the very people who generated the witchcraft accusations. These accusations were being made long before The Great Hunt was underway and while sanctioned witchcraft executions did come to a halt in Europe between 1750 and 1800, witches were still being lynched after authorities officially stopped the trials. It is clear the public believed in witches and wanted them punished for their evil deeds. In all likelihood, conditional on a belief in witchcraft, the trials would have been seen as a commendable activity by the masses and elites alike. Which meant if a religion wanted to create a loyalty for their brand, or attract new converts, and increase their influence in a particular region,

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<sup>20</sup> See Nelson (1970) and Ekelund and Saurman (1988) for detailed discussion of these product categories.

a natural strategy would be to create a public association between performing witchcraft trials and the desired religion's brand.

It is also plausible to consider that witch trials had an instrumental value component to their production; while the accused individuals were murdered unjustly, the majority of the individuals subject to these trials tended to be the elderly, socially vagrant, or mentally ill members of society. Additionally, the overwhelming majority of witches were women and highly likely to be widowed. As a group, witches tended to come from the members of society who had a very low social status and close to no political power.<sup>21</sup> Discretionally removing people from society using this unjust mechanism was abhorrent, but it might also make social interaction between the rest of society more pleasant—like when city politicians promise to “clean up the city!”—by rounding up the homeless and moving them to the designated section of town.

Or, for an American-centric example, consider fireworks shows put on by local governments on July 4<sup>th</sup> each year. If the operation of the event is smooth and the amount of fireworks displayed meets the community's expectations, the whole event serves to raise the profile of those local politicians who coordinated it. Successful public events could signal competence to future voters.

There is a component of the political advertising analogy, used here and in the introduction, which does not quite fit our religious competition story. Political candidates are forced to engage in non-price competition for obvious institutional reasons—there are laws in the U.S. which prevent the direct purchase of votes. It is clear then why U.S. political candidates must go through the ritual of persuasion through advertising campaigns. There was no such institutional constraint restricting the use of price competition between the Catholics and Protestants.

As Ekelund et al (2002) argue, the Protestants did engage in direct price competition with the Catholic Church. The Catholic Church was using its monopoly position in the market to engage in price discrimination which allowed the Church to extract economic rents. The Church selectively used the practices of tithing, taxes, the sale of indulgences, and the confiscation of the property of declared heretics<sup>22</sup> in order to collect a large portion of the market surplus. As a result, Ekelund et al argue consumers were pushed to the “margin of defection,” which created the conditions for successful market entry by Protestant reformers. These new entrants rapidly acquired market share by competing not only with a lower price<sup>23</sup> but also successful campaigns of differentiation away from the perceived abuses of the Catholic Church.

Now the existence of price competition, by itself, would not preclude firms from also competing on non-price dimensions. If advertising is effective, then the profit-maximizing strategy likely includes elements of both price and non-price competition.

For example, Coke and Pepsi compete in the carbonated soft drink market. Both of these firms have massive advertising budgets and several teams executing highly complex marketing strategies. They also engage in vigorous wholesale price competition. At the retail level the dollar price consumers pay is often

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<sup>21</sup> Generally speaking, women at this time did not hold leadership roles for their religious and political affiliations.

<sup>22</sup> Not unlike the practice of eminent domain used by modern governments.

<sup>23</sup> Protestants typically adopted a 10% tithe for their members. Similar to a ‘flat tax,’ this strategy was particularly attractive when compared to highly effective price discrimination techniques employed by the Catholic Church.

very similar, but at the wholesale level, Coke and Pepsi compete to license their product with exclusivity contracts. At many restaurants, movie theaters, and professional sporting events, there is often only one brand of beverage products offered by the merchant: Coke or Pepsi. In order to have their product sold at favorable locations Coke and Pepsi try to offer retailers the most attractive combination of wholesale price and consumer base.

Additionally, in the airline market, low cost carriers such as Southwest and JetBlue engage in both price and non-price competition with national carriers like American Airlines and Delta. Southwest and JetBlue do not fly every route that American and Delta do, but on the routes they do compete for customers, their prices are frequently lower than both American and Delta. At the same time, a key reason for the success of JetBlue and Southwest is the careful attention to detail these carriers pay with respect to customer service and other flight amenities.

Are there market level conditions which predict the likelihood that firms will advertise? In short, yes. Another empirical result of the Industrial Organization literature suggests that oligopoly with a limited number of firms provides the greatest incentives for firms within a given industry to advertise. Scherer and Ross provide the intuition (1990, p. 598),

The simple monopoly version [of the Dorfman-Steiner theorem] implies that advertising/sales ratios should be larger, all else equal, as market structures move from competition (with low price-cost margins) to monopoly (with high margins). When the possibility that oligopolists can capture market share from their rivals through advertising is recognized, one might anticipate a nonlinear, inverted U-shaped relationship between advertising/sales ratios and concentration, with peak advertising intensities occurring under more or less tight oligopoly rather than monopoly<sup>24</sup>.

With the Catholic Church competing for market share in Christendom with but a handful of smaller competitors, the conditions of the market were such that expected returns from advertising, for all firms, should have been at or near peak. So it should not have been a surprise to see the Catholics and Protestants waging combative advertising campaigns against each other. The remaining puzzle is what made witchcraft trials the appropriate advertising medium?

## 4.2 Why chose witchcraft trials as the medium?

As discussed in Section 3, when the early Catholic Church faced competition from the Cathars and Waldenses, they used crusades and heresy trials to eliminate these groups from the market. These methods proved highly effective against the new entrants back then, why not simply deploy the same tactics again?

There are several reasons to think witchcraft trials were a lower cost alternative to heresy trials and crusades. Heresy is a centralized process that requires high ranking church officials to define what exactly counts as heresy. Witchcraft accusations by contrast are decentralized; the local authorities could act directly once a witchcraft accusation was made. Neighbors could not settle scores through accusations of

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<sup>24</sup> Additionally, Julian Simon (1967) uses a Cournot-style model of optimal advertising strategy and concludes, “on most assumptions two sellers will together spend a sum greater for promotion greater than a monopolist.” John Cable (1972) argues the theoretical relationship between advertising and seller concentration is still ambiguous, but the results of his empirical analysis showed evidence for the inverted U-shape.

heresy, but they could claim to be bewitched. All one needed to do was gather some witnesses together and convince the local magistrate or ecclesiastic authority to investigate the case. If the accused is then found guilty, the execution could take place without ever consulting the Pope. The flexible nature of witchcraft trials also made them an especially convenient mechanism, as the historian Christina Lerner noted, “the advantage of witchcraft over the other crimes in this context is that it sums up all forms of non-conformity. Witches are evil. The prosecution of witches is a particularly economical way of attacking deviance” (1984, p. 65).

The crusade system was also high cost. Crusades, and general warfare, require an army and governments to lend the use of their soldiers. With so much turmoil and war taking place during the Reformation and Counter-Reformation periods it is unlikely that a sovereign would have volunteered their army for purposes which were not directly in the service of their region. The Church was a comparatively wealthy organization for its time, but it did not control a standing army of its own.

A lower per-unit cost helps to explain some of the switch to witchcraft trials, but effectiveness is also a consideration of an advertising campaign. Effective advertisements require the ability to capture attention, the creation of an emotional response in the consumer, and must be repeated frequently. An effective advertisement will have connected the emotional response with the brand in the minds of the consumers. What made witchcraft trials effective advertising?

Witchcraft trials were often a public spectacle. The executions, or burnings at the stake, frequently happened in the middle of the town square. Witch trials were punishment for the convicted, but they provided entertainment and information for those watching—just like TV commercials do today. Modern firms are willing to pay extremely high prices to advertise during TV programming with large expected audiences, like the Super Bowl. Super Bowl commercials are an anticipated event all of their own, and especially memorable commercials leave an impression far beyond the actual viewing. A witchcraft execution would have been seen by most of the townsfolk, and it is an event which would have been discussed in social circles for the weeks leading up to the execution and possibly months after it happened. As Steadman (1985) explains, “when a person is finally killed as a witch, accusations against her have circulated for some time, thereby permitting people to think about the killing and its likely social consequences” (p. 116). To Christina Lerner, “witch-hunting was the most public form of social control ever devised because the identification of the witch was dependent on the public status (ill fame) of the accused, and conviction was normally dependent on the reinforcement of her confession by witnesses to her malefices” (1981, p. 64).

Witch trials fostered an ‘us’ versus ‘them’ mentality, similar to the rivalry between professional sports teams; thereby connecting the emotions of the community with the religious group pursuing the trial.

Witchcraft trials could also be an effective means of changing people’s behavior. There was a randomness component to the activity; the accused in a witchcraft trial might have been anyone. Catholic witchcraft trials involved both Protestants and other Catholics (and *vice versa*). Arguably the uncertainty made the persuasion component of the trials more effective. In his study of witch killings among the Hewa tribe in Papua New Guinea, Steadman claims “by killing anyone, the witch-hunters announce to everyone their willingness to dispose of people who threaten them and their social relationships” (1985, p. 115). Lerner echoes Steadman’s account, “the execution of a witch was a demonstration of group solidarity. It removed the provocative deviant and redefined the boundaries of normality to secure the safety of the

virtuous community” (1984, p. 45). If a Catholic authority tries and executes a Protestant, the number of Protestants in that region decreases directly, but when another Catholic is the subject of a Catholic trial, it sends a signal to other Catholics that certain behaviors are socially unacceptable and should be stopped. Witchcraft trials served as verification of the strength of an ecclesiastic official’s authority in a particular region and raised the cost of socially unacceptable behaviors, likely diminishing their frequency. In this way, the Catholics tighten their control over their congregation and protect against the dilution of their religious brand; and the same for Protestants.

If the Catholic Church had instead made concessions to adopt some of the Protestant reformers proposed changes, or even simply ceded certain regions to their new competitors, it is imaginable that they could have lost control over many rank and file members of the Church in operation of Catholic franchises far away from the Vatican, leaving the Catholic brand exposed to hundreds of principal-agent problems. Allowing the Protestants to proceed unchecked would have weakened Catholic political authority, market share and tithe revenues—not only in the Protestant areas, but across the whole of Europe.

The deadly combination of low cost and effectiveness suggests that if the institutional environment had been different in the 12<sup>th</sup> and 13<sup>th</sup> centuries, the Church’s response to the religious competition brought on by the Cathars and Waldenses might have also played out differently. Previously, witchcraft trials were not in the opportunity set of the Church, but by the 15<sup>th</sup> century, that institutional constraint is lifted. Further, as we show in the next section, the beginning of the extremely high trial activity period coincides with the Peace of Augsburg in 1555; after which, the Lutherans are an officially recognized part of Christendom. We argue these events altered the institutional setting, making witchcraft trials the new efficient response to the competitive pressure of new entrants and deviant behavior in general.

## 5. Trial by fire: predictions and evidence

We collected data on witchcraft trials across Europe, amassing a data set of approximately 31,000 known witchcraft accusations across regions which comprise territories in 20 modern day European countries. The trials data covers the period of 1343 to 1880. These trial records are the product of 15 historical surveys on regional witchcraft trials; summary details of each source are offered in the Data Appendix.

In an ideal setting we would correlate the witch trial data with estimates for relative Christian market shares across the various regions. Population estimates are crude for this period of history and to our knowledge no systematic measure exists for relative market shares of the Catholics and Protestant groups. As a proxy for the amount of religious tension in a region, we use the locations of events and battles in religious wars. We identified ten wars which had distinct religious features. All of the events and battles were catalogued and geocoded, for a total of 405 events from 1524 to 1697. These data are also summarized in the Data Appendix.

The predication of our religious advertising theory of witchcraft trials is that trial activity will be concentrated in the areas which were the most religiously contested; both geographically and chronologically. The evidence supports this claim in both dimensions.

First, the beginning of the Reformation was centered in the southern half of Germany, near the border of modern day Switzerland. Throughout both the Reformation and Counter-Reformation periods, the religious tension should have been greatest in this region of Europe, along with the eastern border of France, and Switzerland, where about half of the Swiss territory switched from Catholic to Protestant allegiance (primarily Calvinist). Assigning the locations of trials to their modern day administrative regions, Figure 1 shows that the farther you get away from the geographic center of the Reformation, the witchcraft trial activity declines substantially. Places like Spain and southern Italy, both of which would be considered stronghold areas for the Catholic Church, there was little to no witch trial activity. Scotland also fits the religious tension pattern. Scotland did not see trial activity until 1560, shortly after John Knox and fellow reformers returned from Geneva, and brought back with them a Calvinist influence in 1559. Southeastern France and northern Italy, the two places where Cathar and Walden influence was greatest, also had a meaningful number of witchcraft accusations.

Religious wars generally fit the above pattern also. The Thirty Years War and the First and Second War of Kappel are centered on the Southern half of Germany and Switzerland. In Scotland, the battles and events during the Wars of the Three Kingdoms line up closely with the trial activity there. Our Catholic strongholds, Italy and Spain, saw nearly no direct religious war conflict. That is not to say that Spain had no involvement in these wars, but Spain's involvement was to send troops to defend their territory in what is today Belgium, Luxembourg, and the Netherlands. This area was home to the Dutch War of Independence where Protestants (Calvinists, Lutherans, and Anabaptists) had not only entered the market, but were gaining significant ground against the Catholics. In France, the battles and trials both concentrated in the southeast, near the Languedoc and Lyon regions where the Catholics waged crusades against the Cathars and Waldenses a century before.

The total volume of trial activity should also be positively correlated with religious tension across time. Figure 2 shows the distribution of the trial activity from 1350 to 1800. We can see that widespread witchcraft trial activity does not reach meaningful levels until after 1400, and then returns dormant by 1500, and stays that way until around 1555. The Protestant Reformation begins in 1517 and continues to spread across Europe over the next 40 years, but Europe does not see much trial activity until after 1555. As we discussed above, even though Martin Luther breaks away from the Catholic Church, Lutherans would not gain legal standing until the Peace of Augsburg in 1555. Between the Protestants needing time to acquire a meaningful share of the market and Lutheranism still considered a heresy until 1555, the lack of trials still fits with our narrative. It is also notable that the Council of Trent, where the Church 'reorganized,' did not begin until 1545 and was re-assembled several times until 1563. The great majority of all witchcraft trials are in the Counter-Reformation period, when the Church begins to actively resist the spread of the Protestants. The Counter-Reformation is likely the period where religious tension was highest.

Even though the religious war data does not cover the same range, this series follows roughly the same trend as the trials data. The bulk of the religious war events occurred during the Counter-Reformation. Witch trials did not occur on a grand scale during the first spike of war events, during the German Peasants' War, likely for the reasons explained above. Additionally, the events which make up this war foreshadow the religious tension that would manifest later in nearly the same general location during the Thirty Years War. It is possible that the relatively short nature of the Peasants' War meant that these

groups were not able to generate sufficient competitive forces which merited further action from the Catholic Church beyond suppressing the unrest.

Europe in the Counter-Reformation period experienced many battles scattered all throughout the continent. Taken together, the religious war events look to be a leading indicator of witch trials.

In Figure 3, we enlarge the time series chart on the period of 1500 to 1675, and a number of interesting events are correlated with spikes in trial activity. The Peace of Augsburg is signed in 1555, which officially recognized Lutherans as a Christian religion. This helps to explain why witchcraft trial activity was relatively sparse during the Reformation period, but begins in earnest directly after; Protestants were still subject to the machinery of heresy trials. When that option was closed off, witchcraft trials look to have been the alternative.

The trend in witchcraft trials is relatively steady until 1590, when we see a huge spike to around 700 trials that year. This coincides with the death of Charles II, Archduke of Austria, and the installation of his son, Ferdinand II, as his replacement. Ferdinand is said to have intensified the enthusiasm of the Counter-Reformation in the Austrian and Bavarian areas (Konnert 2006, 147). Erik Midelfort has suggested that regime changes in general are correlated with greater trial activity, because the new regime is trying to establish its authority—likely increasing tensions during transitions.

Through most of the Thirty Years' War, witchcraft trial activity was high, but not unusually so, when compared to the previous 50 years. Notably the witchcraft trials are declining right as the war begins in 1618. During periods of direct warfare, religious tension could be settled on the battlefield. At the conclusion of the Thirty Years War, when the Peace of Westphalia is signed, our data lists 35 witchcraft accusations. The very next year, in 1649, trial activity spikes to 589 accusations. The treaty signed in Westphalia might have ended direct combat, but is it unlikely to have reduced the felt religious tension.

There is a spike in witchcraft trials during the Thirty Years' War, during the years 1628 and 1629, which might seem to run against our general narrative of witchcraft trials during war. This spike is hard to explain, but we suspect there might have been a lull in the war around the Edict of Restitution. Ferdinand and the Catholics in general had won a series of battles and demanded Protestants return territory formerly controlled by Catholics. This spike may be the result of a break in the war.

The last high trials episode in Figure 3 is during the years 1661 and 1662. The overwhelming majority of these trials were occurring in Scotland at this time. This was shortly after the Restoration of 1660, which ended English occupation of Scotland. Christina Lerner associates this period with the re-establishment of a central authority, which “meant that witch-hunting in Scotland could be used for political purposes to stimulate national unity—a function it served in 1649 and again at the Restoration” (1984, p. 78). Just like the increased trials at the conclusion of the Thirty Year' War, the process of ‘cleaning house’ at the end of The Protectorate, in order to legitimize the new government, probably makes this an especially tense time in Scotland's history.

Finally, anticipating some potential concerns about the data set used in this paper, we address the following questions, (1) is this data set representative of a ‘European’ witchcraft trial experience; and (2) could the trials activity just have been a proxy for areas with heavy populations? We take each question in turn.

First, despite the great efforts of many historians who have combed archives in search of primary source material, there is no way to tell how many of the cases were lost to history forever through destroyed records. The most recent scholarship from historians estimates the total number of individuals accused of witchcraft between 100,000 and 110,000, and they put the total number of witches executed at between 40,000 and 60,000. In Table 1 we have reproduced a chart from Behringer (2004, p. 150). This table shows Behringer's collection of executions data from regional studies of different countries, scaled to a population severity index. At the top of the chart he lists the expected countries Switzerland, Germany, France, Belgium and Luxembourg; at the lower end of the severity index are Ireland, Spain, and Portugal. In Table 2 we have duplicated his table with our data. While our data is not as comprehensive as his sample, the general order of the countries is similar. There does not appear to be a discernible sampling bias for our data set of 31,000 accused persons.

Can the trial activity be explained by population? Would high population areas correlate with trial 'heat,' and be driving the results of the geographical distributions? Figure 4 is a duplication of Figure 1 with the addition of city level population data from a forthcoming data set by Bosker et al (2013). The yellow circles represent all the known cities with a population of greater than 5,000 persons in the year 1600, roughly the middle of the period of intense trial activity. In the diagram there are several cities, like Paris or Rome which have large populations and relatively few trials. In the areas where the witchcraft trials are the most intense, the cities are typically small. The geographic distribution of the trials does not appear to be driven by population in these areas.

## 6. Conclusion

Should witchcraft trials be dismissed as the product of ignorance or hysteria? Economic theory and our supporting empirical evidence presented here suggest an alternative macro-level explanation.

The frequency of witchcraft trials is best explained by the religious contestability of that region. The geographical distribution, the chronological distribution, and the timing of several institutional changes support our theory that witchcraft trials were used as a form of non-price competition (i.e. advertising) between religious groups fighting for control of Christendom. The market structure and behavior of these church-firms conformed to the imperfectly competitive market model. Our conclusion is that after 1555 witchcraft trials were the efficient response of rational actors to the institutional environment they operated in.

Not only does this paper add to the growing literature on the 'law and economics of superstition,' but the research presented here suggests a fruitful path for future research on the 'economics of moral panics.' There are many other episodes in history which have similar features to the witchcraft trial panic in medieval Europe. A similar analysis of the War on Drugs, the McCarthy era trials, or even the Satanic Ritual Abuse panic of the late 1980s could lead to a more general theory of moral panics and the political forces that drive them.



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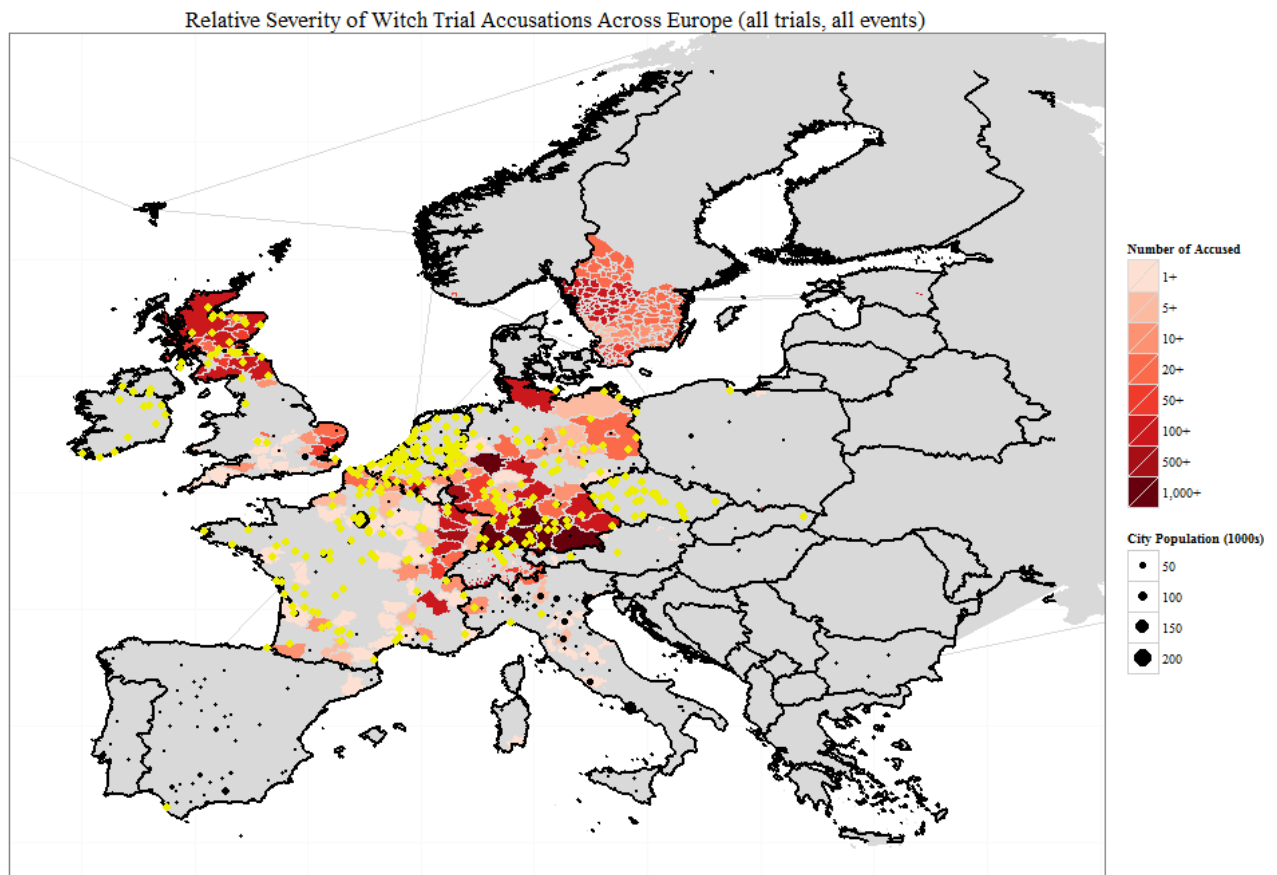
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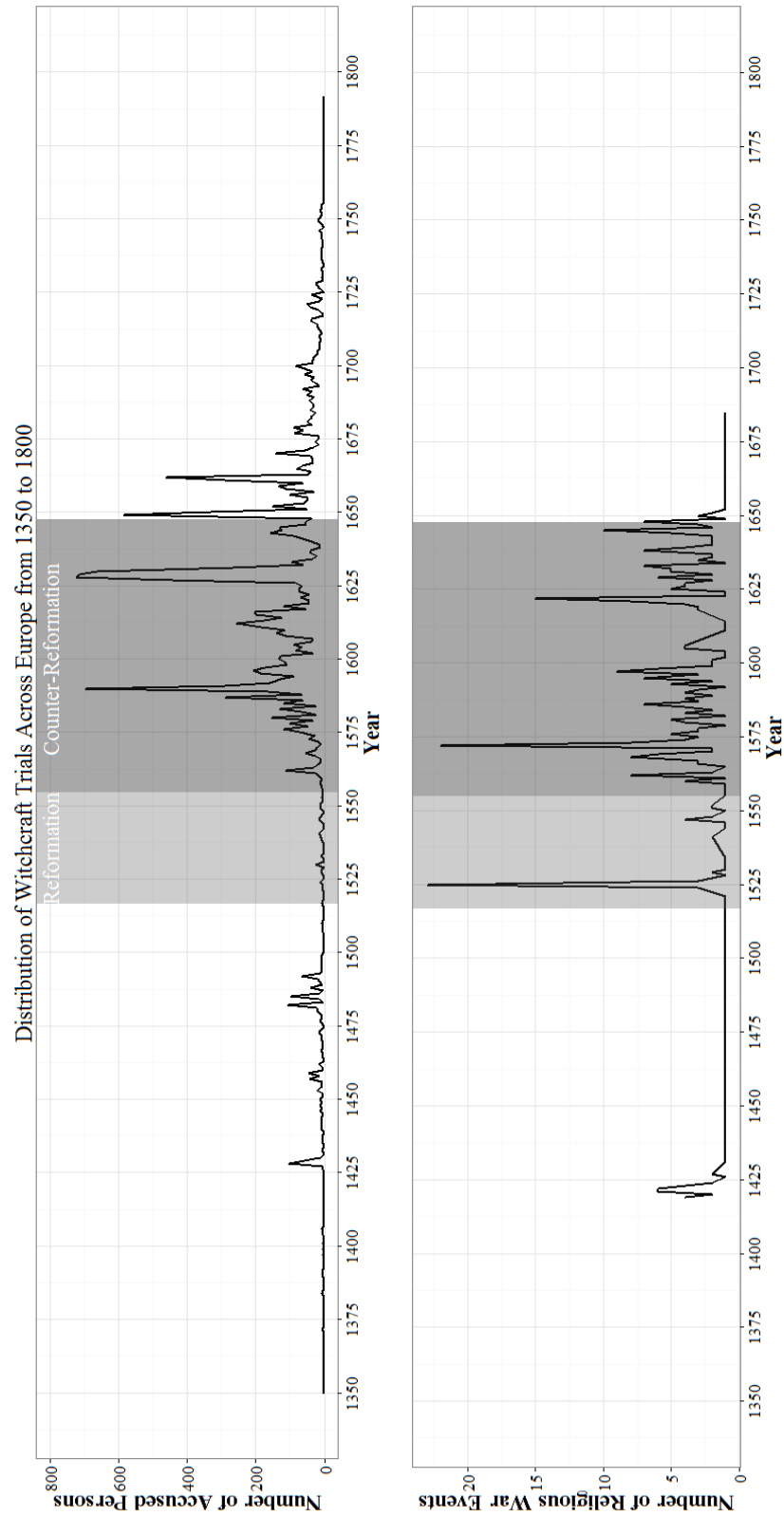
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## Figures and Tables

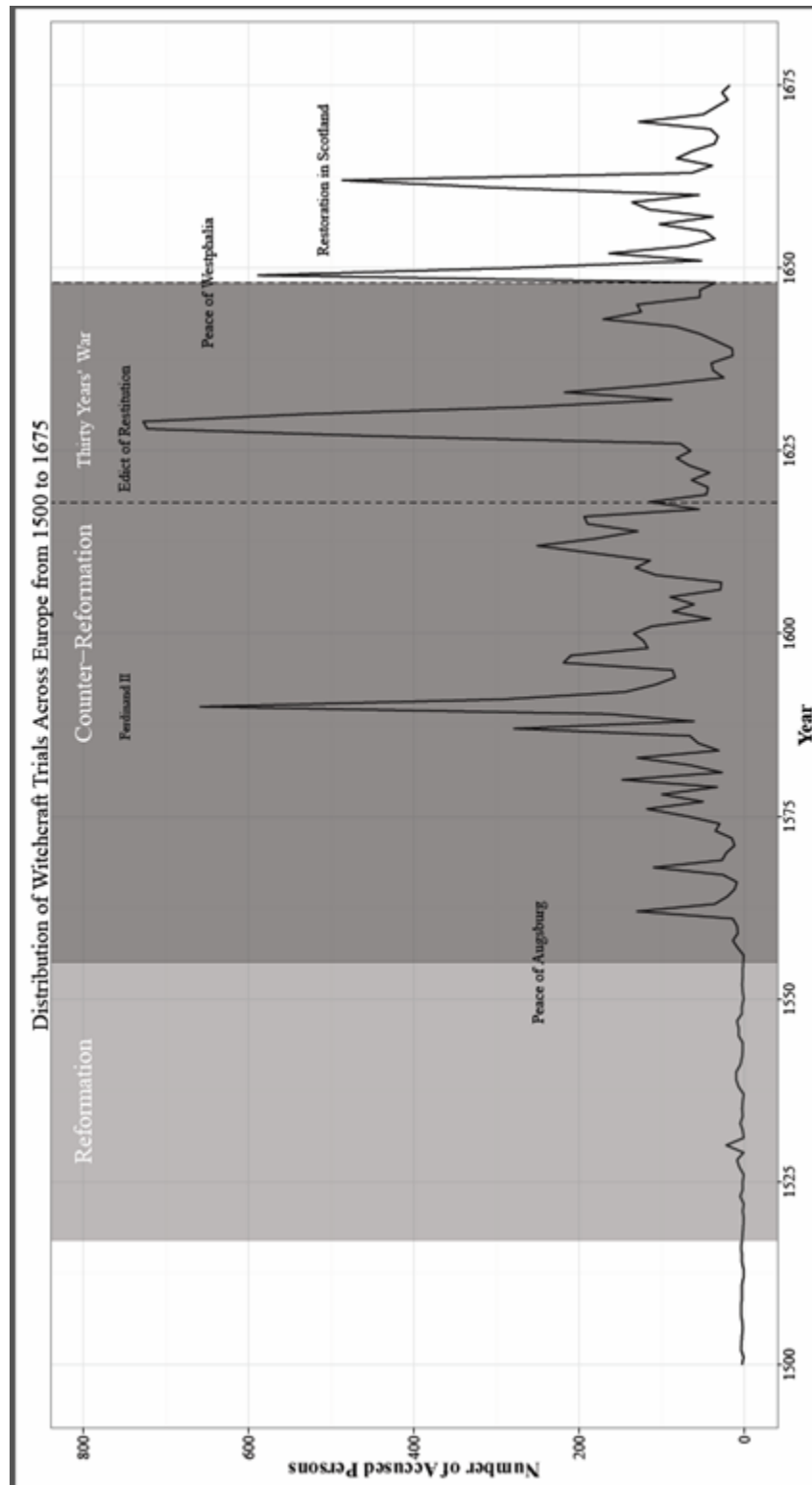
**Figure 1: Distribution of Witchcraft Trials and War Events Across Europe**



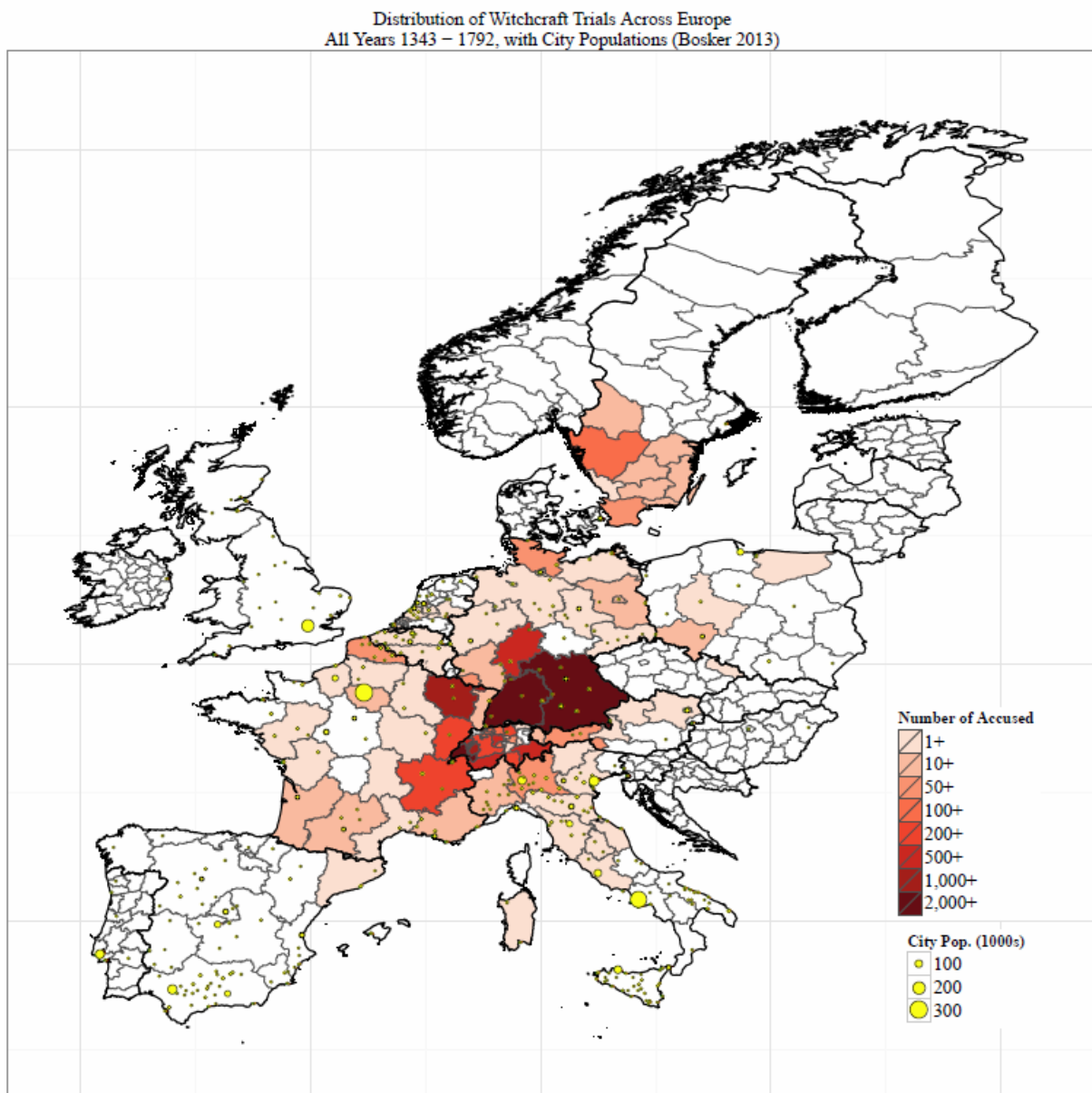
**Figure 2: Distribution of Witchcraft Trials Across Europe 1350 to 1800**



**Figure 3: Distribution of Witchcraft Trials Across Europe 1500 to 1675**



**Figure 4: Distribution of Witchcraft Trials Across Europe with City Populations**



**Table 1: The Severity of witch-hunting in Europe, Behringer Data**

<b>Table 1: The Severity of witch-hunting in Europe (Behringer 2004)</b>			
<i>Country</i>	<i>Executions</i>	<i>Country Population*</i>	<i>Executions Per 1000</i>
Liechtenstein	300	3,000	100.0
Switzerland	4,000	1,000,000	4.0
Belgium/Luxembourg	2,500	1,300,000	1.9
Denmark	1,000	570,000	1.8
Germany	25,000	16,000,000	1.6
Poland	4,000	3,400,000	1.2
Norway	350	400,000	0.9
Czech Republic	600	1,000,000	0.6
Iceland	22	50,000	0.4
Slovakia	400	1,000,000	0.4
Sweden	300	800,000	0.4
Finland	115	350,000	0.3
Hungary	800	3,000,000	0.3
Austria	500	2,000,000	0.3
France	5,000	20,000,000	0.3
Britain	1,500	7,000,000	0.2
Italy	2,500	13,000,000	0.2
Netherlands	200	1,500,000	0.1
Spain	300	8,100,000	0.0
Portugal	10	1,000,000	0.0
Ireland	4	1,000,000	0.0
Croatia	30	Unknown	
Estonia	65	Unknown	
Latvia	150	Unknown	
Lithuania	50	Unknown	
Russia	300	Unknown	
Slovenia	400	Unknown	
Turkey	0	Unknown	
Total	50,396		

\*Estimates are for the year 1600; Behringer cites *Encyclopedia of Witchcraft* (Golden 2004)



**Table 2: The Severity of witch-hunting in Europe, collected sources**

<b>Table 2: The severity of witch-hunting in Europe</b>				
<i>Country</i>	<i>Accused</i>	<i>Deaths</i>	<i>Country Population*</i>	<i>Accused Per 1000</i>
Switzerland	9,938	5,529	1,000,000	9.94
Norway	863	280	400,000	2.16
Finland	710	115	350,000	2.03
Germany	11,040	6,353	16,000,000	0.69
Hungary	1,642	472	3,000,000	0.55
Sweden	353	0	800,000	0.44
France	1,871	111	20,000,000	0.09
Austria	83	12	2,000,000	0.04
Netherlands	18	0	1,500,000	0.01
Ireland	12	0	1,000,000	0.01
Italy	97	0	13,000,000	0.01
Belgium/Luxembourg	9	0	1,300,000	0.01
Poland	12	0	3,400,000	0.00
Czech Republic	2	0	1,000,000	0.00
Spain	4	0	8,100,000	0.00
Scotland	3,841	198	Unknown	
England	342	93	Unknown	
Estonia	205	65	Unknown	
Unknown	38	4	Unknown	
Wales	3	0	Unknown	
Total	31,083	13,232		

\*Encyclopedia of Witchcraft (Golden 2004); See Data Appendix for collected sources

## Data Appendix

The historical surveys of regional witchcraft trials which make up the data set used in this paper are presented in the following table, along with summary statistics describing year range and the countries included therein.

**Table 3: Collected Trial Records by Source**

<i>Source</i>	<i>Accused</i>	<i>Deaths</i>	<i>Years</i>	<i>Countries</i>
Bader1945	8,887	5,416	1350-1775	Switzerland
Midelfort1972	4,403	3,290	1300-1700	Austria, France, Germany, Switzerland
ScotlandSurvey2003	3,840	198	1560-1727	Scotland
Behringer1987	3,546	1,182	1343-1792	Austria, Germany
Ankarloo1990	3,420	932	1520-1770	Estonia, Finland, Hungary, Norway
Kieckhefer1976	1,335	Unknown	1300-1499	Austria, Belgium, Czech Republic, England, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Poland, Scotland, Spain, Switzerland, Wales
Dillinger2009	1,224	1,014	1485-1711	Germany
Briggs2007	1,185	Unknown	1571-1630	France, Germany
Decker1981	1,132	894	1562-1732	Germany
Monter1976	837	152	1527-1681	France, Switzerland
Niess1982	553	Unknown	1532-1699	Austria, Germany
Sorlin1999	353	Unknown	1634-1754	Sweden
Valletta2000	251	93	1630-1748	England
Schraut1988	90	46	1562-1751	Germany, Switzerland
Bruns1984	27	15	1508-1728	Germany
Total	31,083	13,232		

**Table 4: Religious Wars**

<i>Religious War</i>	<i>Start Year</i>	<i>End Year</i>	<i>Territory Involved</i>
Hussite Wars	1419	1436	Czech Republic
German Peasants' War	1524	1525	Austria, Czech Republic, France, Germany, Switzerland
First War of Kappel	1529	1529	Switzerland
Second War of Kappel	1531	1531	Switzerland
Schmalkaldic War	1546	1547	Czech Republic, France, Germany
French Wars of Religion	1562	1598	France, Spain
Eighty Years' War (Dutch Independence)	1568	1648	Belgium, France, Germany, Luxembourg, Netherlands
Thirty Years' War	1618	1648	Belgium, Czech Republic, France, Germany, Italy, Poland, Slovakia
Wars of the Three Kingdoms (UK)	1639	1648	England, Ireland, Scotland
Nine Years War	1689	1697	Ireland