

Censorship, industry structure, and creativity: evidence from the Catholic Inquisition in Renaissance Venice

Stefano Comino
University of Udine

Alberto Galasso
University of Toronto, CEPR and NBER

Clara Graziano
University of Udine and CESifo¹

March 17, 2024

¹We thank Kevin Bryan, Nico Lacetera, Hong Luo, Amanda Sharkey and seminar participants at the University of Toronto, University of Trento, Kent State University, University of Pretoria, the Society for Institutional and Organizational Economics Conference, the Annual Conference of the Italian Economic Association, the XX Workshop of Italian Association for Industrial Economics (SIEPI) and the XII Workshop on Institutions, Individual Behavior and Economic Outcomes (IBEO) for valuable feedback. We thank Paul Grendler, Neil Harris, Erika Squassina and Andrea Ottone for providing insightful details on the Venetian printing press. Andy Back and Marco Castellani provided excellent research assistance. Stefano Comino acknowledges financial support from the project PRID-VQR of the University of Udine.

Abstract

We examine the effects of the book censorship implemented by the Catholic Inquisition on printing outcomes in Renaissance Venice. The Venetian press experienced minimum censorship until 1547, when a sudden change in the balance of European power led to a new relationship between the Republic of Venice and the papal state. We collect detailed information on indexes of prohibited books and publication activities by the main printers active in Venice during the 1500s. We use these data to construct treatment and comparison groups based on the specialization of each printer in transgressive publications before the Inquisition. Difference-in-differences regressions show that censorship had a significant impact on publication levels and industry structure, with the firms more heavily targeted by the Inquisition losing market shares to those less affected by censorship. These effects appear long lasting and associated to changes in survival and entry patterns. We also show that censorship led to a change in the direction of publishing, with printers more affected by the Inquisition shifting away from vernacular literature and becoming more reluctant to publish new and contemporary authors. These findings support the idea that censorship may have dynamic effects on the structure, evolution, and creativity of industries that go beyond the removal of certain types of creative work from the market.

Keywords: censorship, creativity, industry structure, Renaissance, Venice, printing press

JEL Codes: O33, N33, L51

1 Introduction

Censorship has been steadily present in human history for over two thousand years (Kemp, 2015). From the first officially recorded examples of censorship of written content in second century BC Rome, attempts of governments to control ‘dangerous ideas’ for political, religious or moral reasons have hardly waned (Berkowitz, 2021). Recent estimates indicate that less than 15 percent of the world’s population enjoys a press free from government intrusion (Freedom House, 2017). Content control is especially stringent in countries like China and Iran.

Economic research on the topic has focused on effects that censorship can have on citizens’ beliefs, political attitude (Chen and Yang, 2019; Xue, 2021) and on policy outcomes (Qin, Strömberg and Wu, 2017). The literature has also identified factors – such as censorship costs and market competition – which can shape the effectiveness of government control of the media (Shadmehr and Bernhardt, 2015; Qin, Strömberg and Wu, 2018). Outside of the political economy literature, there has been growing research interest in one historical attempt to block the circulation of written content: the Catholic reaction to the spread of Protestant ideas in the XVI century (Becker et al., 2021; Drelichman et al., 2021; Dewitte et al., 2022; Blasutto and de la Croix, 2023; and Cabello, 2023). This paper contributes to this emerging literature examining the effects of Catholic censorship on the structure and dynamic evolution of the censored industry, a topic that has so far attracted little empirical and theoretical attention. Our analysis combines insights from economic history, innovation and law and economics literatures.

Our study focuses on book publishers in Renaissance Venice, one of the largest European centers for printing in the 1500s. Following the development of the first movable type press in 1447 by Johannes Gutenberg in Mainz, Germany, the new printing industry flourished in Venice under minimal government regulation. Despite the attempts of the Catholic Church to contain the spread of Protestantism, the Venetian press experienced a minimum of censorship until the 1540s. The Republic of Venice could turn a deaf ear to papal pleas thanks to its strong international relations with England and with the Protestant princes of the Schmalkaldic league (Grendler, 1975). In 1547 a combination of unforeseen circumstances led to a swift change in the relationship between Venice and Rome. In that year king Henry VIII of England died and the league of Protestant princes was defeated by Holy Roman Emperor Charles V. Under this new balance of power, Venice found itself isolated and in need of allies. As a gesture toward Rome, Venice established a new magistracy with competence in heresy, which marked

the beginning of the Inquisition in Venice.

Our paper examines how the censorship imposed by the Inquisition affected the printing outcomes of Venetian book publishers. To do so, we leverage one of the main tools used by the Inquisition: the *Index Librorum Prohibitorum* -i.e., the indexes of prohibited books. These were lists approved by the Roman Church that aimed at censoring production and circulation of heretical publications. Beginning in 1547, several of these indexes were prepared by the Venetian government and the Catholic Church. These historical events provide a unique opportunity to examine the short- and long-term industry responses to censorship.

To guide our empirical analysis, we develop a theoretical framework that builds on the literature studying the strategic responses to product liability and safety perception (Viscusi and Moore, 1993; Galasso and Luo, 2022). We argue that, in general, the effect of censorship on market structure and supply of creative content is ambiguous. On the one hand, content banning may chill the incentives to create new content. On the other hand, censorship may incentivize the development of new and ‘safer’ content that circumvents the regulation. Whether the positive effect of censorship on content creation can compensate for its ‘chilling effect’ depends on the business and technological environment. Our framework emphasizes three factors that may tilt the trade-off toward a negative effect of censorship on creative effort, especially for firms more specialized in literary fields and more heavily censored genres. These factors are: (i) heterogeneous resources and capabilities, (ii) regulatory uncertainty, and (iii) reputation effects. We discuss historical evidence suggesting that these are all important features of our empirical setting.

Our empirical analysis combines several sources to construct new data on publishers and authors of books printed in Venice during the 1500s and to identify the literary field of each publication. We exploit biographical information of publishers to identify the most prominent book printing firms active in Venice during the 16th century and aggregate them into family firms. Firms in our sample differ in terms of the fraction of books they published before 1547 that were subsequently listed in one of the Inquisition indexes. We use this differential exposure to the Inquisition to construct treatment and comparison groups and compare outcomes in terms of publication levels, firm survival, and publishing fields using differences-in-differences regressions.¹

¹This approach resembles the methodology used in the labor economics literature to estimate the effect of minimum wage policies on firm outcomes, using information on the pre-policy distribution of wages to identify the firms most affected by a reform (see, for example, Draca, Machin and Van Reenen, 2011).

Our analysis shows a substantial decline in publications, measured by book editions, for firms that before the Inquisition printed books that would subsequently be listed in one of the indexes, relative to firms less exposed to the Inquisition. We show that this decline is not driven by differential publishing trends between the treatment and control firms before 1547, and that it is not simply due to treated firms no longer publishing new editions of banned books. Dynamically, the decline in publishing did not start until 1559, supporting the idea that the first widely enforced Inquisition index in Venice was the ‘Pauline index’ issued in 1559. Quantitatively, we estimate an average relative decline in the publication levels of treated firms of about 50 percent after 1559. Contrasting the publication activity of Venetian firms with the printing outcomes of some of the most prominent German and Swiss book publishers active during the period of our study, we show that about half of our baseline effect is due to a decline in publication by the Venetian firms more exposed to the Inquisition, and half is driven by an increase in publications by the Venetian firms less exposed.

We then turn our analysis to the impact of the Inquisition on the direction of creative efforts. Despite the religious origin of the Inquisition, we find that its most dramatic effects are on non-religious books. We show that this decline is driven by the publications of treated firms, and it is particularly strong for literature books published in vernacular languages (Italian and other dialects) rather than those published in Latin. This finding suggests that the Inquisition affected not only the levels but also the direction of publishing, with printing firms shifting away from contemporary works of prose, poetry, and drama.

After documenting the impact of the Inquisition on publications, we examine how this translates into effects on market structure, firm survival and entry. We show that the firms more exposed to the Inquisition reduced their yearly market share by 3.4 percentage points relative to the control group and that this effect was persistent and present decades after 1547. We also document how firms that before 1547 printed books that would later feature in the indexes have a shorter survival time relative to control firms. Specifically, we find that the lifespan of the firms more exposed to the Inquisition was 38 years shorter than that of firms in the control group. Censorship also appears to have created opportunities for new entrants, especially in the publishing fields more targeted by the Inquisition. We find that, on average, 5.5 firms entered the market every year up to 1559, and that this figure increased to 7 in the period after 1559. Together, these findings indicate that the Inquisition not only had an impact on book circulation but also had dynamic and long-lasting effects on the industrial organization

and the survival of the firms operating in the censored sector.

Finally, we examine how the decline in literature publications affected the type of published authors. We show that treated firms became less likely to publish contemporary authors in literature even if they were not included in an index. The empirical analysis suggests that censorship may have tainted the reputation of the publishers and affected the choice of publisher for new authors entering the Venetian market.

Overall, our analysis supports the idea that censorship may have effects that go beyond the removal of specific works of authorship from the market. Content banning policies may have long-term dynamic impacts on market structure, industry evolution, and on the direction of creative efforts. The historical case study analyzed in this paper highlights that responding to censorship can be particularly challenging for firms in the presence of heterogeneous competencies, regulatory uncertainty, and reputation effects. At the same time, our theoretical framework shows that the links between censorship, market structure and creativity are complex and nuanced. This highlights the need of additional research to inform managers and policy makers.

2 Related literature

This paper is related to various strands of literature. First, it is connected to the debate on the consequences of the Catholic Inquisition. History scholars are divided between those who believe that the effects of the Inquisition were limited (e.g. Kamen, 1998; Defourneaux, 1963) and those arguing that it had profound negative consequences for the cultural evolution of cities and regions (Rotondò, 1973; Seidel Menchi, 1987; Fragnito, 2019). A series of recent studies show that, in areas where the Inquisition had stronger influence, the presence of scientists diminished (Anderson, 2015; and Cabello, 2023) and the consequences were persistent, with negative echoes even for today's economic performance (Drelichman et al., 2021; and Cabello, 2023). These studies provide evidence that the Catholic Inquisition distorted the process of knowledge accumulation by means of two main channels. Censorship limited access to new, "revolutionary", ideas for scientists and scholars (Blasutto and de la Croix, 2023). In addition to that, it induced scientists to migrate towards areas where the impact of Counter Reformation was less pervasive (Dewitte et al., 2022). Closely related to our paper is the work by Becker et al. (2021). The authors look at several European cities and find that local indexes of prohibited books were effective in reducing the publication rates of indexed authors and printers. This

affected city growth and its attractiveness to scholars. In our paper, we focus on the effects of censorship on industry structure and evolution conducting a firm-level analysis of the most prominent printing site of Renaissance Europe. We contribute to the growing literature on the Catholic Inquisition highlighting how firm heterogeneity shaped the effects of censorship on the level and direction of publication efforts. We also document long-term effects on the structure and dynamic evolution of the industry, including entry of firms and authors.

More generally, our paper is related to the literature on how the competitive environment shaped the market for ideas in Renaissance Europe. Binzel, Link and Ramachandran (2021) examine how the Protestant Reformation accelerated the vernacularization of printing in Europe, which led to an increased diversity among authors and book content and to greater economic development. Dittmar and Seabold (2019) provide evidence that the market structure of printing industry affected the diffusion of innovative religious ideas. Cantoni, Dittmar and Yuchtman (2018) show that religious competition during the Protestant Reformation led to a reallocation of human and physical capital from religious to secular purposes. Finally, Comino, Galasso and Graziano (2020) analyze how guild market power shaped the propensity to use patent rights to protect innovations in Renaissance Venice. Our paper contributes to this literature by showing that policies restricting circulation of printed knowledge had an effect on market structure and industry dynamics.

Our findings have also implications for a series of recent studies examining how changes in product liability risk and safety perception can shape firms' innovation and the supply of new products. Theoretical models show that the impact of liability risk on innovation is ambiguous (e.g., Daughety and Reinganum, 2013). This finding is supported by the limited number of empirical studies examining this topic. Viscusi and Moore (1993) and Galasso and Luo (2017, 2021) find that, on average, higher liability and risk perception induces higher innovation investments. Conversely, Galasso and Luo (2022) document how a sudden increase in product liability risk faced by suppliers may disrupt vertical chains and have a 'chilling effect' on innovation investments. Our paper complements these findings showing that the static and dynamic strategic adjustments observed in high-tech industries following changes in product liability risk can also take place in creative industries as a reaction to censorship policies. We also document a positive association between censorship and entry of small firms. This is in line with previous empirical work on product liability (Ringleb and Wiggins, 1990; and Galasso and Luo, 2021) and has implication for theoretical law and economics literature, which has not

yet examined this effect (see Daughety and Reinganum, 2018 for a survey).

Finally, our paper is also related to the vast literature on media power and media capture surveyed by Prat (2015) and Puglisi and Snyder (2015). Specifically, two recent studies highlight the relationship between censorship, media power and citizens' behavior. Chen and Yang (2019) find that demand-side factors play an important role in shaping the effect of the Chinese internet censorship policy. Shadmehr and Bernhardt (2015) show that the optimal amount of censorship depends on media power and censorship costs which in turn depend on the possibility that citizens may revolt. Our work contributes to this literature by examining an historical case of government policies regulating the printing press. Our findings suggest that the complex and nuanced relationship between media content and market structure is not a special feature of the modern media industry but is rather a persistent historical phenomenon.

3 The Venetian printing industry and the Inquisition

In the 16th century, the Republic of Venice was one of the largest regional economies in Renaissance Europe. Its center was the maritime city of Venice with roughly 150,000 inhabitants at the end of the 16th century, and included the 'Terraferma' dominion, which encompassed the present-day Italian regions of Veneto, Friuli and part of Lombardy. The economy of the capital was driven by the vast international trading activities in spices, dyeing materials, silk, cotton, slaves, and precious metals (Pezzolo, 2013).

In 1469, a German immigrant from Mainz, master Johannes of Speyer, established the first printing venture in Venice. The Northern Italian city provided the perfect environment for the nascent industry given its artistic and intellectual achievements, its financial institutions, its location and its leadership in international trade. By the 16th century, Venice was one of the largest European printing sites, accounting for about three quarters of the books published in Italy and almost half of those published in Europe (Grendler, 1975). Book publishers were involved in several activities that encompassed contracting authors, book production, and sales. Printing a new book required a sizable financial investment and the revenues often materialized several months after production. Non-local distribution relied on land and sea transportation, which were risky and expensive at the time. Publishing firms were family enterprises with different generations of family members contributing and providing continuity to the business (Grendler 1977). In the first few decades of the 16th century, the sector enjoyed freedom and government support. There was effectively no publishers' guild until 1604 (Brown, 1891) and

regulation was limited.

European political powers and the Inquisition. The Venetian printing press experienced a minimum of censorship until the 1540s.² Then, a change in the European political balance led the Republic to support the Inquisition. In the 16th century, the political geography of Europe differed substantially from that of modern days. Italy was divided into various small states. Most of central Italy was under the control of the pope, with Rome as capital city of the papal state. Even outside the boundaries of the papal state, the Catholic Church enjoyed a virtual monopoly in the market for religion, extracting large rents through the sale of indulgences and through coronations conferring religiously derived political legitimacy (Cantoni et al., 2018). As a result, the Catholic Church was able to exert political influence, to enjoy economic privileges, and to own land across Western Europe. Distinct from the papal state, the Holy Roman Empire was a large imperial federation of semi-autonomous principalities. It included various regions of modern Germany, of Central Europe, and of Northern Italy. For most of the first half of the 16th century, Charles V was emperor of the Holy Roman Empire.

During the reign of Charles V the relationship between the Catholic Church and secular authorities in Europe changed substantially. This began in 1517, when Martin Luther sparked the Protestant Reformation, circulating his famous ‘95 Theses’ that criticized Church practices. Many local rulers who supported Luther viewed the new religious movement as a chance to oppose both the hegemony of the Church and that of Charles V. To this end, they formed a military alliance named the Schmalkaldic league. In the early period of the Protestant Reformation, the influence of the Catholic Church on the Venetian Republic was limited, as Venice looked benignly on the Schmalkaldic league and England (Grendler, 1975). This was evident in 1520, when the Catholic Church began to increase its control on books linked to the Protestant ideas and promulgated the papal bull ‘Exsurge Domine’ that excommunicated Luther and banned his books. Despite pressure from Rome to do something about heretics and heretical books, the Venetian government resisted the papacy. But a series of geopolitical events required a change in the relationship between Venice, Charles V, and the papal state. In 1547, Charles V defeated the Schmalkaldic league, and in the same year Henry VIII, King of

²Catholic censorship as a means to limit the diffusion of Protestant ideas begun in 1520 with the publication of ‘Exsurge Domine’, the papal bull that excommunicated Martin Luther and banned his books. In the following years, the scope of the censorship in the Italian peninsula was partly limited by the attempt of the Church to restore unity between Catholics and Protestants. These efforts vanished with the Diet of Regensburg (in 1541 and 1546) and with the Council of Trent.

England, died. The Republic found itself isolated and in need of allies as the threat to Venice's trade supremacy from the Ottoman Empire was escalating. This led Venice to seek imperial and papal assistance. As Grendler (1975; p.50) writes "*to erase the memory of their sympathy for the Protestant cause, and to assure pope and emperor of their orthodoxy, the Venetians in the spring of 1547 established a new magistracy with particular competence in heresy.*" The magistracy, which we will refer to as the Venetian Inquisition, worked as 'enforcing agent' of the indexes of prohibited books. This swift adjustment in the Venetian approach to heresy, triggered by the change in balance of European power, led to the book censorship in the Republic.

The Inquisition in Venice. Starting from 1547, a series of governmental acts introduced restrictions on book production and circulation. Press control and censorship took many forms, but the most important one was the prohibition of publishing, possessing, and reading books judged heretical or against the Catholic morality. To make such a prohibition effective, the Venetian Government requested the Venetian Inquisition to prepare a list of books to be banned. The resulting index, drafted in 1549, was strongly opposed by the publishers and it was never enforced. However, the list was a clear sign of the change in the government's attitude toward the press.

In 1553, the Roman Inquisition ordered the burning of the Talmud all over Italy. Venice complied with the order and the large and important Jewish printing industry disappeared from Venice for at least a decade. The censorship efforts of the Venetian government continued in 1554, when another index of prohibited books was prepared. But also in this case, the index was eventually withdrawn and never enforced. Pope Paul IV ordered the Roman Inquisition to prepare a new index of prohibited books, the Pauline Index, which was issued in 1559. The pope put pressure on Venice to enforce it in order to shield Venetians from heretical and immoral content. The Republic complied. The Pauline Index was also the first to include books with non-religious subjects, encompassing several vernacular classical authors such as Ariosto, Boccaccio, and Machiavelli. As explained by Grendler (1975; p.54), the Pauline Index led to a clear shift toward a Counter-Reformation posture: "*By 1560 the intellectual atmosphere had changed greatly. A generation of free, mocking, anticlerical authors had died or had found the climate uncongenial to their writing and had gone into retirement. Machiavelli's name was disappearing from books, and writers were noticeably more cautious. At the same time, a genuine religious revival under the leadership of a reformed papacy occurred.*"

Several other Roman Indexes followed the one by Pope Paul IV. In 1564, the Tridentine Index was issued. This Index included not only a list of banned books but also a series of rules to guide the Inquisition activity. Historians have stressed that the vague nature of these rules generated widespread uncertainty (Fraguito, 2019).³ Two additional indexes were prepared but not issued in 1590 and 1593. Eventually, in 1596 the Roman Inquisition issued the Clementine Index, which included more than one thousand prohibitions, and represents the highest point in the press control by the Catholic Church (Infelise, 1999).⁴ The Clementine Index was followed by a dispute between Venice and Rome over several rules appended to the index, such as the power of local ecclesiastical authorities to ban titles not listed if judged immoral. In the end, the arguments of the Venetian printers prevailed and a concordat between Rome and Venice was signed. This was a clear sign that the fervor of the Counter-Reformation was beginning to fade. Throughout the 17th century, the influence of the Catholic Church on the Venetian press diminished and banned books began circulating again, and eventually were printed again, in the Republic.

Enforcement. The Venetian Republic and the Roman Inquisition collaborated to prevent the publication and circulation of indexed books and to enforce the punishment in case of non-compliance. The Venetian inquisition comprised three lay members and three religious ones: the inquisitor, the patriarch and the papal nuncio. The lay members belonged to the Venetian nobility and acted as representatives of the Council of Ten, the chief judicial organ of the Republic. Sentences were pronounced by the ecclesiastics, but lay members retain the right to authorize the arrest. Overall, Brown (1891) reports 101 cases of press prosecution before the Holy Office in Venice between 1547 and 1585. Press prosecution intensified after the approval of the Tridentine Index and in the 1560s “*the Venetians prosecuted heretical books with as much zeal as even Pope Pius V could want*” (Grendler, 1975; p.49). The punishment for publishers not complying with the indexes could take different forms, with pecuniary penalties being the most common one. The Venetian legislation established severe penalties of 50 to 100

³For instance, rule VII prohibited immoral and obscene books, without providing a specific definition of obscene or lascivious content. The Tridentine Index also allowed printers to sell expurgated books in the case where content was considered appropriate but for a few ‘mistaken’ passages. The time required by the expurgation process was long and highly unpredictable. See Appendix C for additional historical information on the indexes.

⁴Outside of Rome and Venice, the neighboring cities of Milan and Parma drafted censorship indexes in 1554 and 1580, respectively.

ducats but, in practice, the inquisition generally imposed lighter fines that varied depending on the gravity of the offence and on the ability of the bookmen to pay (Grendler, 1977; p. 60). In many cases, the most important damage for the bookmen was the confiscation of the prohibited volumes. Anecdotal evidence indicates that, in several cases, the amounts of volumes confiscated to printers and publishers were large, beginning with the 1,400 books burned in Piazza San Marco and at the Rialto in 1548.⁵

The ability of the inquisition to prosecute bookmen greatly improved in 1569 when the Venetian Government approved a law that authorized the Holy Office to make inspections in the shops and the storehouses of printers and publishers. Inspections became systematic in the period 1569-1571; caught by surprise, twenty-two bookmen were confiscated prohibited books in the order of thousands. For the most serious offences, bookmen could also be arrested.⁶ In other cases, in addition to the fine or the imprisonment, other penances were imposed. For example, when the Venetian inquisition found prohibited books in his warehouse, Bindoni was sentenced to penances including a bread-and-water fast every Friday for a year. Another sanction that printers could suffer was excommunication, i.e. being excluded by the Catholic community and deprived by certain rights, such as receiving communion. Readers and owners of prohibited material could also be fined or excommunicated, and the possession of heretical books could lead to a trial for heresy. In addition, owners of prohibited books were required to disclose the identity of the seller of the manuscript, generating a general climate of suspicion. The Holy Office also worked to limit the circulation of prohibited content printed abroad by closely examining imported books at the custom house. Even if it is difficult to estimate the number of prohibited volumes smuggled, and despite historians have documented that some prohibited books circulated, according to Grendler: “*the Holy Office, with the aid of the state, quarantined all but a few Italians against Protestant literature*” (Grendler, 1977; p.200). Thus, our reading of the history literature suggests that the size of the black market was limited and concerned mainly religious books.

⁵To give an idea of how severe the damage due to confiscation could be, we report the case of the printer Giustiniani. According to the son of the printer, when in Talmud was burned in 1553, his father incurred a loss around 24,000 ducats (Grendler, 1977; p.93).

⁶Grendler (1977) reports different cases of booksellers possessing prohibited material and punished by the Holy Office “*with penances, a few days’ imprisonment, a year’s house arrest, and, of course, destruction of the books*” Grendler (p.184).

4 Theoretical considerations

When the circulation of a book is prohibited, its publisher experiences a shock akin to a sudden cost increase, as selling a copy of a banned book becomes impossible or very costly.⁷ Such a shock may not necessarily have a significant impact on publishing firms' profits and market shares. For example, the ban may only involve books that account for a negligible fraction of a firm's production. In this case, censorship is unlikely to generate substantial changes in profitability and market outcomes. Even when the banned books account for a large fraction of a firm's production, the ban may have minimal effects on sales and market share if consumers substitute their purchases of banned books with other titles sold by the firm.

If we consider firms' dynamic responses to the policy through the development of new content, the impact of censorship on competition and market structure becomes even more complex and nuanced. This is suggested by a growing literature on the strategic responses to product liability risk, which emphasizes the trade-offs faced by firms when regulation increases the liabilities that protect customers from dangerous products and services (Galasso and Luo, 2017; 2021). Stronger product liability regulation increases the costs of producing and selling products associated with high risk. This reduces firm profits and may lead to a drop in innovation incentives as new products face higher liabilities (Galasso and Luo, 2022). At the same time, the literature has also shown that regulation may alter consumer preferences and increase willingness to pay for safer products (Viscusi, 1993). This shift in consumer perception may serve as a 'demand-pull' force that incentivizes the development of safer products, which may shape the direction of creative efforts (Schmookler, 1966; Dosi, 1982). The strategy literature has indeed documented various cases in which firms have responded to stricter regulation and greater risk awareness with an increase in innovation (inter alia see Kesidou and Demirel, 2012; for environmental technologies, and Galasso and Luo, 2021; for radiation emitting diagnostic devices).

In the context of book censorship, content banning rules increase the costs of publishing transgressive books. The discussion above suggests that, on one hand, this may reduce the incentives to develop new content, especially in the literary fields more targeted by censorship, as the new books may end up being banned. At the same time, censorship may also incentivize

⁷Alternatively, one can think of the shock as a sudden drop in the demand, with the consumption of the banned book constrained to be equal to zero by the policy. In canonical IO models with linear demand and constant marginal costs, the two types of shocks are mathematically equivalent.

the development of new content as firms cannot sell some of their existing books and consumers may develop greater willingness to pay for non-transgressive content circumventing the regulation. Overall, this suggests that the effect of censorship on creative effort and production of new books is ambiguous and highlights the need for empirical research.

Drivers of negative effects. Whether the incentives to develop safer book content can compensate for the “chilling effect” of censorship depends on a number of social, economic, and regulatory factors. In the following, we discuss three important channels that may exacerbate the negative effect of censorship on creative effort, especially for the firms more specialized in literary fields and heavily censored genres.

First, re-directing production toward non-transgressive fields and genres may be challenging when firms possess heterogeneous technological and customer competencies. In this case, each firm tends to be successful in a particular submarket, but less efficient in submarkets for which it does not have the relevant competencies (Mitchell and Skrzypacz, 2015). This implies that censorship generates a competitive disadvantage for publishers operating more heavily in submarkets in which many books are banned. In Appendix A, we present a multi-product oligopoly model that examines this issue in greater detail. The modeling approach follows theoretical studies of the effects of product liability risk (Hay and Spier, 2005; Dawid and Muehlheusser, 2022; Hua and Chen, 2023). We assume that censorship increases firms’ marginal cost of production and changes the relative profitability of censored submarkets relative to safer literary fields. This induces firms to shift production in favor of less risky submarkets. However, the inferior capabilities in developing less transgressive content limit the ability of the firms specialized in the censored submarkets to compensate the drop in publication of transgressive books with an increase in the publication of non-risky titles. This leads to a decline in the total production of books for the most exposed firms relative to firms less affected by the regulation.

A second mechanism through which censorship may reduce firms’ creative efforts relates to regulatory uncertainty. Evidence suggests that policy uncertainty lowers investment, especially for firms operating in policy-sensitive sectors or for whom investment has a higher degree of irreversibility (Baker, Bloom and Davis, 2016; Gulen and Ion, 2016). In the printing sector, the incentives to invest in new content may be reduced when firms cannot predict how censorship will evolve and the type of content that will be banned. For example, firms may expect an entire literary field to be banned, which renders it impossible for firms specialized

in the field to re-direct their creative effort toward new titles within the genre. Uncertainty on future banned content is likely to have a larger impact on firms operating in the subfields more targeted by censorship, as these firms may need to invest in new assets and switch to a new submarket. In particular, uncertainty may generate an option value of waiting, inducing firms to postpone their switching investments until the uncertainty is resolved (Dixit and Pindyck, 2012).

The third channel relates to reputational costs and stigma. Stigma is a label evoking a collective perception that a firm is flawed and discredited (Devers et al., 2009; Tirole, 1996; 2021). Producing and selling a censored product may directly affect the reputation of a firm. Indirect effects through stigma by association may also be at play, with industry players less likely to transact not only with directly stigmatized individuals but also with their mere associates. In the context of book censorship, one may expect the stigmatization of censored authors to also affect publishers who worked closely with them. This may impact market demand, as consumers may become reluctant to buy other books of the publisher and may also have supply effects, as new authors may be reluctant to work with a stigmatized publisher (Luo and Zhang, 2021). Both effects penalize the firms specialized in fields targeted more by censorship, relative to other firms in the industry.

In a related paper, Blasutto and de la Croix (2023) develop a model of book publishing with homogeneous firms. In their context, the presence of censorship reduces the stock of revolutionary knowledge that authors have access to, which induces printers to focus on compliant books. Our model describes a different and complementary channel, in which censorship affects differentially publishing firms depending on their pre-existent heterogeneity in content specialization.

Implications for our empirical setting. Historical evidence indicates that censorship had real impacts on the profits of a Venetian publisher. Banned books were confiscated, thus imposing a loss on the bookseller. Additional pecuniary penalties were also common. In addition, Grendler (1977) reports cases of booksellers being arrested because of their prohibited books. This suggests that the costs associated with the censorship intervention were large enough to affect publishers' production and choice of content.

Each of the above-described factors limiting the ability of publishers to re-direct their production toward new content described above are present in our empirical setting. Grendler

(1977) explains that publishers specialized in certain subject matters.⁸ Several features of book publishing explain such specialization. Publishers had different expertise in editing and marketing specific categories of books. They also owned assets specific to the production of particular types of books (as in the case of music, cartography, or Greek language). Moreover, each publisher relied on a network of authors, friends, and collaborators to evaluate book proposals and plan future production (Pettegree, 2010).

Historical evidence also supports the idea of a substantial regulatory uncertainty. While initially the targets of the Inquisition were religious publications related to Protestant ideas, later editions of the indexes greatly expanded the scope of prohibitions, to also cover works of poetry, literature, and classical authors. In many cases, inclusion in the lists of banned books evolved in ways unpredictable to the publishers and the authors. As stated by Brown (1891; p. 137): “[...] *many of these books did not, mediately or immediately, touch upon religious questions, but were condemned for some triviality, such as the works of many poets and an immense number of books on a variety of subjects which did not contain any attack on dogma, but in which the presence of a single word which might raise a scruple had been deemed sufficient to condemn them to an everlasting death.*”

Finally, there is also evidence that publishers sustained large reputation costs when books in their catalogue became prohibited (Ottone, 2019). The Roman Church required Catholics to denounce whomever owned or sold prohibited books (Fragnito, 2005). Within this general climate of suspicion, reputational costs emerged through direct and indirect channels. The first (direct) mechanism was the excommunication of the publisher. Excommunication led to exclusion from the Catholic community and deprived an individual from certain rights, such as receiving communion.⁹ A second (indirect) mechanism through which publishers were stigmatized was their association with authors of banned books. Publishers and authors were often involved in close interactions, as authors actively contributed to defining the publisher’s editorial strategy (Grendler, 1977).¹⁰ These strong ties suggest that the stigma attached to the authors of prohibited books could easily spill over to publishers through mere association.

⁸For instance, Manuzio was renowned for its editions of classics and humanist commentaries. Tramezzino specialized in the publications of vernacular books – chivalric romances and history – and legal texts.

⁹This was a very powerful weapon for the inquisition because the Venetian booksellers, despite the hostile attitude toward the censorship, recognized the religious authority of the pope and “*were lively dread of excommunications*” (Brown, 1891; p. 140).

¹⁰For example, Quondam (1980) describes the close collaboration between the publisher Marcolini and the author Aretino, whose books were included in indexes.

Together, these direct and indirect reputation costs reduced the ability of censored publishers to respond to the policy with an increase in the production of new content.

The historical evidence summarized above confirms the presence of all three factors limiting the ability of firms to respond to censorship with an increase in supply of new content. While the historical accounts and the available data do not allow us to empirically disentangle and quantify the role of each of the three mechanisms, they suggest that a decline in publications for the firms more targeted by the Inquisition is more likely in our empirical setting. This testable prediction will guide our econometric analysis.

5 Data and empirical approach

Our empirical analysis relies on several data sources. The main database that we use to identify information on books published, publishers, and authors is Edit16 ‘Censimento nazionale delle edizioni italiane del XVI secolo’. Edit16 provides a comprehensive census of manuscripts published between 1500 and 1600 in Italy. For each manuscript, Edit16 reports its title, author, publisher, publication date, and place. The data also provide some biographical information on authors and publishers. In part of our analysis, we complement the data with information obtained from the Universal Short Title Catalogue (USTC), a repository of the editions published in Europe between the 15th and the 17th centuries.

Data on censored books are obtained from De Bujanda (1996), who provides a comprehensive description of the indexes of prohibited books issued across a variety of European countries. For each index, De Bujanda (1996) reports the full list of censored books, specifying their title, author, publisher, edition as well as place and year of publication. We manually match the data in Edit16 with the books listed in indexes drawn up in Rome, Venice, and its neighboring regions of Parma and Milan.¹¹ In practice, not all of these indexes were enforced. As we discuss in Section 3, historians have emphasized the importance of the Pauline index enacted in Rome in 1559, which will play a central role in our empirical analysis. We provide examples of the information available in Edit16 and in De Bujanda (1996) in Appendix D.

There is one feature of the data that requires further discussion. Edit16 provides only records of books for which at least one copy has survived up to today. This selection on survival can be a potential source of sample bias. The main concern is that the books targeted by the

¹¹Specifically, we match the following indexes: the Roman indexes of 1557, 1559, 1564, 1590, 1593, 1596; the Venetian indexes of 1549 and 1554; and those of Milan of 1554 and Parma of 1580.

Inquisition may be less likely to survive, as their circulation and possession was forbidden. This would lead us to over-estimate the negative impact of the Inquisition on book production, as our measures would undercount censored books. We expect this selection, even if present, not to play a quantitatively large role. Historians suggest that the books more likely to be completely removed from circulation were those printed in Protestant countries (Grendler, 1977). Evidence indicates that some copies of books printed in Venice were kept, even when circulation was substantially reduced. Grendler (1977) and Frajese (2010) document how theologians, jurists, and scholars could obtain reading permissions from the Church and access prohibited books for their studies.¹² At the same time, our data provide evidence that the indexes affected future editions of the listed books. Specifically, the likelihood of observing a new edition of a book declines substantially once it is included in one of the indexes. This is particularly the case for the books listed in the 1559 Pauline index.¹³ Appendix Figure A1 provides an illustration of this point, documenting a substantial drop in the publication of new editions of the books listed in the 1559 Index.¹⁴

We exploit the information reported in Edit16 to identify the most prominent book publishers active in Venice during the 16th century. To this end, we first group publishers into family firms, using the surname, location, and years of activity of each publisher together with the biographical information provided by Edit16. An analysis at the family level is appropriate in our context as historians have emphasized the crucial role of family ties in providing continuity within publishing firms (Grendler, 1977).

Our main analysis relies on a sample of 27 family firms that were active in Venice during the Roman Inquisition. Specifically, we include in our main sample families that were active in Venice (i.e., published at least one book) both before 1540 and after 1575. For each of these

¹²Our manual match between the books listed in the inquisition indexes and those in Edit16 confirms that prohibited books were not completely removed from circulation, as we were able to match more than 90 percent of the books in the indexes. The unmatched cases typically refer to Bibles or anonymous prayer books for which, absent the information on authors, it was impossible to identify the relevant Edit16 match.

¹³Take, for example, the manuscript ‘I Capricci del Bottaiò’ by Giovanni Battista Gelli, which was included in the Pauline index. While there are records of editions of the book published in Venice in the early 1550s, there are no new editions published after 1559.

¹⁴In the few cases where new editions of prohibited books are published after this index, the title of the book is often adjusted to include the caption ‘ricorrette con grandissima diligenza’ -i.e., revised with great diligence- suggesting that the original text of the book was amended to comply with the regulation. Another source of possible concern is that publishers might have published banned books under a false name. Edit16 corrects for this potential bias reporting both the publisher’s name appearing in the cover page and the true name of the publisher when different.

families, we collect information on the books published during the entire century. Overall, in the first decade of the sample period, the 27 firms accounted for roughly 75% of the production of books in Venice. Notice that in our sample there is no entry or exit of firms during the period 1540-75 by construction. Moreover, only a handful of sample firms enter or exit during the 50-year window 1537-1587, which is the main focus of our analysis (4 firms enter between 1537 and 1539 and 6 firms exit in 1575-87). In this respect, most of our analysis illustrates how the most prominent Venetian publishers responded to the Roman Inquisition at the intensive margin, by adjusting their publishing activity. In Section 9, we extend the sample and include firms that enter or exit the industry during the period 1540-75. We leverage this larger sample to examine the extensive margin effects of the Inquisition on industry entry and exit.

Econometric model. To investigate the impact of the Inquisition on the Venetian book publishing industry, we divide firms into a treatment and a comparison group, using information on the books they published before the Inquisition. Specifically, we classify firms into the treatment or comparison group depending on whether the firm published at least one book between 1520 and 1547 that will be listed in one of the Inquisition Indexes of prohibited books drafted in Rome, Venice, and nearby regions.

Intuitively, our treatment group captures publishing firms that, at the beginning of the 16th century, were more exposed to topics and authors that will later become targets of the Inquisition. It is important to notice the forward-looking nature of this approach as, in some cases, the books will be listed in an index decades after they are published by the firm. There are a number of advantages of using this pre-Inquisition exposure measure relative to other metrics linked to the contemporaneous effects of the indexes. First, our approach focuses on the books published before the shift in the European political equilibrium, which jump-started the Inquisition in Venice. As we explain in Section 3, it is unlikely that Venetian firms could anticipate these events and adjust their publications accordingly. Second, contemporaneous effects of indexes are more likely to reflect unobservable firm-level variables, which would bias our estimates.

Our analysis uses indexes from Rome, Venice, and other nearby Italian cities. As we discuss above, the Roman Indexes were strongly enforced across the Venetian Republic, even if they were promulgated by the Catholic Church in Rome. The two Venetian Indexes, prepared by the local government, were never implemented. Nonetheless, the books listed in these indexes provide information on the publications of Venetian publishers that the Church perceived as

being transgressive. For the same reason, we also use the indexes drafted in the two neighboring dukedoms of Parma and Milan.

The unit of observation in our analysis is a firm-year. Our empirical strategy relies on a difference-in-differences estimation:

$$Y_{f,t} = \alpha + \beta Inquisition_{f,t} + \delta_t + f_f + \varepsilon_{f,t} \quad (1)$$

where the dependent variable, $Y_{f,t}$, represents the publications by firm f in year t . Following a standard approach in the literature, we measure publications at the book-edition level. This dependent variable captures the contribution of each firm to the stock of creative knowledge available in the Venetian Republic (Binzel et al., 2020; Dittmar and Seabold, 2019). The treatment variable, $Inquisition_{f,t}$ is equal to one after 1547 for firms that were more exposed to the Inquisition. One can think of this variable as the product between two dummies: $treated_f \times after47_t$ where $after47_t$ is equal to one for each year after 1547 and $treated_f$ is an indicator capturing firms which published at least one prohibited book in the pre-Inquisition period 1520-1547. This leads us to classify 18 out of the 27 firms in our sample as treated. With this threshold, prohibited books account for about 3.5 percent of the publications of treated firms during the period between 1520 and 1547, on average. In Appendix B we examine robustness to alternative pre-Inquisition time windows and definitions of the treatment group. The terms δ_t and f_f are year and firm fixed effects. The coefficient β is a difference-in-differences estimator identifying the effect of the Inquisition on treated firms relative to firms in the comparison group.

In our analysis, we also distinguish between two treatment periods: $EarlyInquisition_{f,t}$ which is equal to one for treated firms in the period 1548-1558; and $Index_{f,t}$ which is an indicator for treated firms after the enactment of the Pauline Index in 1559. We cluster the standard errors at the firm level in all regressions.

While, in general, censorship has an ambiguous effect on the provision of creative output, the features of our empirical context suggest that $\beta < 0$. The theoretical framework and the historical evidence discussed in the previous Section indicate that three factors may lead to a decline in publications: (i) heterogeneous resources and capabilities, (ii) regulatory uncertainty, and (iii) reputation effects. To disentangle the magnitude of each of these factors is outside the scope of the paper, and not feasible with the available data. At the same time, the historical evidence discussed in Section 4 and Appendix C and the empirical evidence in Sections 6-10 are consistent with the idea that these factors shaped the effect of the policy.

Summary Statistics. Appendix Table A1 provides summary statistics. On average, each firm in our sample publishes about 7 new editions per year during the period 1537-1587. The dummy $Inquisition_{f,t}$ is equal to one for about 52 percent of the sample. In Appendix Table A2, we provide the complete list of the firms in our sample, the lifespan of each firm and the list of family members involved in the printing activities during the sample period. In Appendix Figure A2, we illustrate the total publication activity during our sample period, distinguishing between firms that were more and less exposed to the Inquisition. The number of new editions released each year by the two groups of firms appears to be relatively stable before the Inquisition, with the more exposed firms accounting for about 70 percent of the new editions released each year. After 1559, the year in which the Pauline Index was enacted, there is a substantial decline in publication by the more exposed firms. This is suggestive of a change in market structure, with less exposed firms gaining market share. In fact, our data show a change in market leadership during the period of our analysis. In the first decade of our sample period (1537-46), the three largest publishers are Bindoni (with a market share of 14.5% of new editions), Scoto (10.5%), and Nicolini (9%). All these publishers are exposed to the Inquisition according to our metric. In the last decade of the sample period (1578-87), the leading firms are Giunta (17%), Gardane (15%), and Rampazetto (11.5%), all not exposed to the Inquisition according to our measure. In the next Section, we confirm these preliminary findings with a differences-in-differences econometric analysis.

6 Censorship and publication rates

Table 1 presents the first set of estimates quantifying the relationship between the censorship and publications by Venetian publishers. The dependent variable is the number of new editions released by the firm in year t . Column 1 shows a substantial drop in publication rates after 1547 for firms more exposed to the Inquisition. Column 2, our baseline model, distinguishes between the early Inquisition period (1547-58) and the period after the Pauline Index (1559-87). This specification suggests that the early Inquisition period is not associated with a differential propensity to publish between firms more and less specialized in transgressive topics, and that the effect of the Inquisition begins only after 1559. This is consistent with the history literature discussed in Section 3, which documented that the Pauline Index was the first list of prohibited books to be effectively enforced in the Venetian Republic, and that it set the beginning of a stronger censorship period for the Venetian printing press.

Quantitatively, the estimates indicate that the firms more exposed to the Inquisition published 6.6 books per year less after the Pauline Index relative to the other firms in the sample, and the estimate is statistically significant at the five-percent level. Assuming the same difference between the two groups of firms before and after 1559, the hypothetical average number of books published by treated firms would have been 13.53 per year after 1559. This implies that the average decline in publication levels after 1559 is 49 percent.¹⁵ In column 3, we confirm this result using a Poisson model, which accounts for the count nature of the dependent variable. Exponentiation of the coefficient indicates a decline in book publications of roughly 59 percent, which is slightly larger than the magnitude uncovered by the OLS specification.

In contemporaneous work, Becker et al. (2021) examine the effect of the Catholic Inquisition on the diffusion of knowledge and urban growth across several European cities. In the case of Venice, they also find a negative impact on the publication rates of printers of indexed authors. Our findings complement their analysis in two ways. First, our focus on a single market permits us to identify more precisely the firms affected by the Inquisition and their exposure levels. The micro/case study approach led us to estimate a substantially larger effect of censorship on publication rates. Second, by recovering the detailed composition of the Venetian industry, we are able to investigate the effects of the Inquisition on industry structure, entry dynamics and the direction of publishing across areas of content. These issues, which are presented below, are not explored by Becker et al. (2021).

Robustness and extensions. There is the concern that our findings may be mechanically driven by treated firms no longer releasing new editions of indexed work. To address this issue, in column 4 we re-estimated our model using a dependent variable which only considers books not listed in the indexes. The estimates are qualitatively and quantitatively very similar to our baseline model. This is consistent with the idea that the direct effect of the ban of listed books only plays a marginal role in explaining the drop in publications which we estimated.

As we clarified above, we follow the standard approach in the literature and measure the output of each firm with the number of new editions published each year. One of the key reasons for using this approach is that comprehensive data on press runs are not available. A potential concern is that different editions may be characterized by large differences in press runs and, therefore, our measure of output may not represent accurately the yearly production of a firm.

¹⁵The average number of books published in the control group after 1559 is 9.03, and the pre-1559 difference between treated and control firms is 4.5 books per year.

However, historians have clarified that in the XVI Century press runs were limited and rather homogeneous in their sizes – in the order of 800 - 1,000 copies – and that books of great success were usually printed in multiple editions (Nuovo, 2013). As a robustness check, in column 5 of Table 1, we remove the reprints from the dependent variables, identified using information on the publisher, the author and the title of each book provided in Edit16.¹⁶ Results are very similar to our baseline in this specification, supporting the idea that the decline in publications is driven by a drop in new content and not simply by a decline in later editions of existing books. In Appendix Table A3 we confirm the robustness of our baseline specification using alternative econometric models and in a variety of empirical checks.

A natural extension of our analysis would be to replace the binary indicator for treated and control firms with a continuous measure, the fraction of books published before the Inquisition that will feature in the indexes. Unreported regressions show small and statistically insignificant elasticities in this alternative model. This suggests that the effect of the Inquisition is not linear in the exposure to the Inquisition. Appendix Table A4 examines this issue in greater detail. Overall, the analysis shows that the effect of the Inquisition on publication rates appears fairly homogenous among the treated firms in our sample, and it is not driven by the firms more heavily targeted by the Inquisition. In other words, the extensive margin (being a target of the Inquisition) rather than the intensive margin (the fraction of listed books) seems to be the driver of the effect. This finding is consistent with our theoretical analysis, as the effects of the economic mechanisms discussed in Section 4 are not necessarily linear in the number of banned books. In particular, the impact of regulatory uncertainty is likely to be shaped by expectations on future restrictions. Reputation effects depend on social interactions between printers, authors and customers and may be triggered by the publication of a small number of prohibited titles.¹⁷

Overall, the above findings show a decline in book publication for the firms more exposed to the Inquisition which goes far beyond the stop in printing of indexed titles. In light of

¹⁶We classify as a ‘new book’ the first occurrence of a combination of author, publisher and title observed in Edit16, while ‘reprints’ are subsequent occurrences. In Appendix B, we show that the results are robust to alternative definitions of reprints which require only part of the title to correspond to that of the first edition.

¹⁷A caveat relates to the forward-looking nature of our measure of exposure. We only consider books published between 1520-1547 that subsequently enter one of the Inquisition indexes, which may differ from the total number of prohibited books published by the firm over our entire sample period. While helping with endogeneity concerns, this approach may reduce the power of the continuous measure of exposure.

our theoretical framework, this suggests that the “chilling effect” of censorship dominated the incentives to develop new publishable content for the firms more involved in the commercialization of transgressive books. This supports the idea that publisher specialization, uncertainty in the evolution of censorship, and reputational costs – for which we provide historical evidence in Section 4 – were important features of the industry and affected the response of the more exposed firms.

Pre-treatment trend and time-specific treatment effects. Our empirical model assumes that before the Inquisition the firms in the treatment group have trends similar to those of the control group. To provide support for this assumption, we extend our baseline model to estimate the time-specific differences between treatment and control firms, β_t .

Figure 1 provides a graphical illustration of the estimated coefficients and their 95-percent confidence intervals. Before the Inquisition, the estimated differences between the treated and control firms are small and statistically insignificant. The results, which show that the decline in publishing did not start until 1559, support the common-trends assumption. The size of the negative effect becomes larger and statistically more significant over time. By 1585, the average decrease relative to control firms was close to 10 books, almost double the effect in 1560. This is consistent with the idea that the effects of the censorship activity became substantial with the Pauline Index of 1559, and that they were amplified during the following decades.

We used the tools developed by Rambachan and Roth (2023) to perform sensitivity analysis that relaxes the assumption of common pre-trends. Intuitively, these empirical tests assume that post-treatment violations of parallel trends cannot differ too much from the deviations measured before treatment. In Appendix figure A3 we plot confidence sets constructed using these tools for some of the coefficients in the last part of the treatment window.

Heterogeneous effects. Our baseline analysis has documented an average negative effect of the Inquisition on printing outcomes. Appendix Table A5 provides a first look at the heterogeneity in the effect. First, we contrast the firms with more than 50 percent of their pre-1547 publications in Latin with those printing predominantly in vernacular languages. The estimates show that the drop in publication is more substantial for the firms specialized in vernacular languages. In line with our theoretical discussion and historical evidence presented in Section 4, uncertainty over the scope and evolution of censorship was much larger for more modern vernacular literary work. Moreover, specialization in the editing and marketing of vernacular

books may have prevented these firms to switch their production and print in Latin.

Table A5 also examines whether the effect of censorship is mitigated by features of the firm’s network of authors. The estimates indicate that firms more targeted by the Inquisition reduce their publications more substantially when the number of distinct authors they publish is below the median. These results are consistent with the idea that the Inquisition induced firms to redirect their creative efforts toward new types of content, and that this was more challenging for firms that relied on a limited number of authors. Results support the idea of stigma by association, as the link between a banned author and a publisher is likely to be perceived as stronger when a printing firm relies on a limited set of authors. These findings are also consistent with the work of Luo and Zhang (2021) who show that features of the network of content creators can shape firms’ responses to negative events.

Finally, in Table A5 we investigate an additional source of heterogeneity related to the age of the book at the time of censoring. Specifically, for each indexed book published before 1547 we compute the difference between the year in which the book appears in an index for the first time, and the year in which the indexed edition is published. We then compute the average of this variable at the firm level. The regression shows that censorship had a slightly larger effect on firms whose indexed books were published more recently, relative to those whose indexed books were published less recently. One possible driver of the effect is that firms with more recent indexed books suffered larger financial losses, which reduced their ability to switch to different content and negatively affected their market share and growth prospect. An alternative and complementary channel is that firms with more recent indexed books were more specialized in content areas with greater regulatory uncertainty, such as vernacular literature. These findings also complement the analysis of Blasutto and de la Croix (2023), who argue that censorship of books that circulated for several decades before the Inquisition had lower impact on knowledge availability and cumulative knowledge creation.¹⁸

7 Competitive interaction and spillover effects

An important caveat in our analysis is that firms in the control group may have increased their publication activity as a result of the Inquisition. Specifically, the negative shock affecting

¹⁸In unreported regressions, we have further examined differences across firms taking into account whether they published authors for which the *opera omnia* was banned relative to those for which only specific books were prohibited. There is some evidence of larger effects of censorship for firms relatively more involved in the publication of completely banned authors.

firms targeted by the Inquisition may have created market opportunities for less-exposed firms. This competitive interaction leads to a violation of the Stable Unit Treatment Value (SUTVA) assumption, as the control group would be affected by a positive spillover (Rubin, 2005). More generally, the competitive reaction may lead us to overestimate the negative effect of the Inquisition on treated firms, as the observed decline in book publications by treated firms may not indicate an overall decline in publications at the industry level. In this Section, we explore this issue with two different approaches. First, we exploit a control group of foreign firms, which are less likely to be impacted by the Inquisition and unlikely to be direct competitors of Venetian publishers. Second, we directly account for competitive spillovers in the empirical analysis.

Foreign firms as control group. Our first approach is to compare the printing activities of the Venetian firms with those of a control sample of publishers of similar size active in other geographical markets where the Inquisition had limited or no impact. These characteristics of the ideal control group rule out publishers located in other Italian states – where the Inquisition Indexes were effectively enforced (Infelise, 1999) – as well as those located in many other European territories where local indexes of prohibited books were adopted. The impact of the Roman Inquisition was much lower in the Germanic territories of the Holy Roman Empire where the Protestant Reformation originated and spread. In these regions, even in those that remained Catholic, the Roman Indexes were not effectively enforced (Burkardt and Schweroff, 2010).

Following this reasoning, we contrast the publication rates of Venetian firms with those of some of the most prominent contemporary German and Swiss book publishers. More specifically, to identify the control firms we use the USTC data and focus on the cities of the Holy Roman Empire with the largest publishing activity. We then group the publishers based in these cities into family firms and select those operative for a substantial part of the 16th century. This process leads to a sample of 20 foreign publishing firms located in German and Swiss cities.¹⁹ In the majority of cases, the foreign firms we selected were active in cities or territories where the Protestant faith was predominant during the 16th century (Cantoni,

¹⁹The sample of foreign firms may appear small relative to the number of publishers active in Venice. This is because the average firm publication level, size, and lifespan tend to be smaller in German and Swiss cities relative to the Venetian industry. For example, according to USTC, in aggregate the publishers in Mainz released fewer than 50 new editions per year during the 16th century. In comparison, in Venice the number of yearly new editions was above 250 for most of the century.

2012). According to De Bujanda (1996), no index was implemented in the foreign cities in our sample.²⁰

Column 1 of Table 2 contrasts the publication of new editions by the Venetian firms affected by censorship (our treatment group in the baseline regression) with publications by foreign firms. The estimates indicate a drop in publications for Venetian firms of about 3 books per year after 1559. The coefficient for the earlier Inquisition period is smaller and not statistically significant. Conversely, column 2 compares the Venetian firms less exposed to the Inquisition (our control group in the baseline regression) with the sample of German and Swiss publishers. In this case, we observe a statistically significant increase in the publication of new editions by Venetian firms after 1559 relative to German and Swiss publishers.

There is the concern that spillovers may still be present even when we use foreign firms as control group, because of international competition among publishers. Historical accounts suggest that competition was mostly within-city rather than intra-city. As explained by Dittmar and Seabold (2019), books at the time were heavy and costly to transport on roads, and also fragile and susceptible to water damage when transported by boat.²¹

Among the cities in our control group, the one with stronger ties to the Venetian printing press was Frankfurt, which was the home of the most prominent book fair in Europe at the time. The fair was attended by several Venetian publishers and it influenced their publication choices and the timing of book releases (Nuovo, 2013). Columns 3 and 4 of Table 2 in the paper confirm our result, dropping from our control group the four sample firms located in Frankfurt, which are those for which competition is likely to be more severe.

Finally, an advantage of using foreign firms as control group is that these firms that were not only geographically distant from Venice, but were also located in European areas speaking a different language. In Section 8 below, we show that the effect of the Inquisition was predominantly concentrated in books published in vernacular languages, which are those less likely to be produced abroad. Building on this insight, in Appendix Figure A4 we provide event study graphs that contrast Venetian and foreign firms dropping from the dependent variable

²⁰The 20 firms are geographically distributed as follows: Augsburg (2 firms), Basel (5), Frankfurt (4), Leipzig (1), Köln (3), Mainz (1), Strasbourg (2), Wittenberg (1) and Zurich (1). Two firms (linked to the families Gutknecht and Neuber) were dropped from the sample as we observed an unusual data pattern during the early inquisition period. Results are robust to including these outlier firms but the coefficients on the early inquisition period are less precisely estimated. In unreported regressions, we also checked the robustness of our results to the inclusion of firms active in Vienna during the sample period.

²¹Dittmar and Sebold (2019) also cite Edwards (1994; p. 29): “*It was normally cheaper. . . to reprint a work in a distant town than to send a large shipment from the place of original publication.*”

the publications in Latin, which we expect to be easier to sell across markets with different local languages. These figures confirm the findings from Table 2, and provide additional support to the difference in differences model by showing similar publication trends for the Venetian and foreign firms in the period preceding the Inquisition.

Controlling for spillover effects. Above we have considered the presence of spillovers using a control group where violations of the SUTVA assumption are less likely to manifest. This is a common approach used in studies examining the impact of policies affecting differentially firms within a single or in related markets (see for example Fowlie et al., 2012). An alternative approach to study economic environments in which spillovers are present is to directly model such spillovers, and use the theory to obtain some guidance on how to account for them in the empirical analysis. In the context of economic history, this is the approach followed by Dewitte et al. (2022) that build and estimate a structural model of occupational and location choices. While a full structural analysis of the Venetian printing press is outside the scope of our paper, we conduct a second empirical exercise which follows Rotemberg (2019) and builds on the idea that firms in our sample offer differentiated products and that the competitive effects of the Inquisition may vary depending on the submarket in which they operate.

To group firms into submarkets, we rely on the language and on the content of the books published by the firm before 1547. The language in which books were written shaped competition as not all customers could read in Latin and therefore substitute vernacular content with Latin content. In terms of content, we distinguish religious texts from other Latin books as their usage in religious ceremonies reduces their likelihood of being replaced by other Latin books, and thus less likely to be considered substitute by consumers. This approach leads us to group publishers in three submarkets: those specialized in books written in vernacular Italian, those specialized in non-religious books in Latin, and a final group of publishers specialized in religious books written in Latin.

The regressions we present in Appendix Table A6 build on this categorization and include controls for potential spillovers generated by competitors targeted by the Inquisition. The coefficients for these indirect effect variables are consistent with the findings we obtained above in the analysis of foreign firms, and show a positive effect on competing firms not affected by the Inquisition. The magnitude of the effect also appears in line with the one estimated using the sample of German and Swiss firms, and suggests an increase of about 2-3 books a year for Venetian firms not exposed to the Inquisition when their competitors are exposed.

Discussion. In Table 1 we estimated a difference of about 6 new book editions after 1559 between the Venetian firms exposed to the Inquisition and those less exposed. The empirical exercises conducted in this Section allow us to decompose this aggregate effect. Specifically, the regressions imply that roughly half of the difference (about 3 books) is due to a decline in publication by the Venetian firms more exposed to the Inquisition and that the other half of the effect is driven by an increase in publications by the Venetian firms less affected by the indexes. This finding has two important implications. From an empirical perspective, it implies that comparing censored and non-censored firms in the same industry may overestimate the negative causal effect of censorship on the censored as the estimate includes a positive effect on the firms not affected by the ban. From a theoretical perspective, the result is consistent with the idea that in the presence of heterogeneous technological and customer preferences censorship can be a source of competitive advantage for the firms less affected by the regulation. We discuss more in detail this theoretical channel in the mathematical model presented in Appendix A, which also specifies conditions under which this effect emerges.

8 Censorship and the direction of creative effort

To this point we have examined the effect of book censorship on Venetian publishers, distinguishing between those more and less exposed to the Inquisition. In this Section, we explore how this effect varies across submarkets delineated by publishing fields. This analysis helps us to uncover the impact of the Inquisition on the direction of creative efforts. To conduct this exercise, we use the comprehensive list of subjects provided by the USTC database. Specifically, the dataset classifies each book into one of 35 unique fields that delineate literary genres. We manually classify each of these detailed fields into four macro-categories. Our first macro-field, which we name ‘Literature’, includes classic and contemporary works of prose, poetry, and drama. ‘Literature,’ ‘Poetry,’ and ‘Drama’ are examples of USTC subjects in this group. Our second category is ‘Religion’. This includes religious books and publications used in religious services. Some of the relevant USTC subjects are ‘Funeral Orations’, ‘Bibles’ and ‘Religious Books’. The third category comprises ‘Educational’ books. We include in this macro-field publications related to science, mathematics, and other academic disciplines. Examples of subjects in this category are ‘Astrology and Cosmography,’ ‘Science and Mathematics,’ and ‘Educational Books’. Our final category includes the ‘Residual’ publications. This group encompasses music and other specialty areas such as ‘Heraldic Works’ and ‘Culinary Arts’. The Literature

macro-category accounts for about 30 percent of the publications in our sample, Religion and Education for about 25 percent each, and the Residual category includes 20 percent of the sample. Appendix Figure A5 provides a first look at the field-level data and shows a substantial decline in the publication of new editions in the fields related to literature, relative to those belonging to the other macro-categories.²² The decline substantially exceeds the drop one would expect looking at the proportion of banned books in the Literature category.²³

To further investigate the effect of censorship on the direction of creative efforts, we use the 35 USTC fields and their grouping into macro-categories to examine the differential impact of the Inquisition on the publication rates across genres. Table 3 presents a series of regressions in which the unit of observation is a firm-field-year. Column 1 focuses on the fields in the literature macro-category and includes family-fields as well as year effects. The difference-in-differences estimator indicates a decline in new editions in literature fields for firms more exposed to the Inquisition relative to those less exposed. The coefficient on the early Inquisition period is small and statistically insignificant. The coefficient for the period following the Pauline Index is negative and significant at the 0.01 level, indicating an average decline of about 0.3 books per year in each of the literature fields.

Columns 2 to 4 repeat the analysis for the three other macro-categories of religious fields (column 2), educational fields (column 3) and the residual category (column 4). The publication rates between the firms more and less exposed to the Inquisition differ much less in these macro-categories. This is especially the case for books in educational fields and those in the residual category, where the coefficient for the period after 1559 is about a third of the one estimated in the literature fields, and is not statistically significant. For publications in religious fields, the estimates indicate an average per-field decline of about 0.2 books for the more exposed families, but the coefficient is not statistically significant. In columns 5 and 6, we focus on the literature fields and distinguish between books published in Latin and those published in vernacular languages. These regressions indicate that vernacular texts account for essentially all the difference in literature publications between the two groups of Venetian

²²Specifically, the figure shows that, on average, in each literature field there are roughly 10 new editions released each year during the first part of our sample period. After 1559, we observe a decline, leading to about 5 new titles a year per field. At the same time, in fields that do not belong to the literature macro-category, we observe an average of 5 new publications per year, and this appears constant across the sample period.

²³Religious books account for 46 percent of the indexed books published by the firms in our sample. Literature accounts for 37 percent of the banned books, while Educational books and the Residual category represent 10 and 7 percent of the prohibitions respectively.

firms in our sample. Appendix Table A7 provides a set of robustness for these findings.

The regressions presented in this Section are consistent with the idea that censorship led to a change in the direction of publishing, with printers reducing the supply of vernacular literature. This finding resonates with the reduction in the share of revolutionary books due to ‘reallocation of talent’ found by Blasutto and de la Croix (2021). In our analysis, the change in the direction of publishing appears to be driven by the firms more exposed to the Inquisition. As we described in Section 4, vernacular literature was the field where uncertainty over what would be banned was the highest, as assessing lascivious and immoral content in literary books was more subjective than identifying religious texts violating the Church’s dogmas (Brown, 1891). Moreover, specialization in the editing and marketing of vernacular literature books may have prevented these firms to switch to other categories. In this respect, the finding is in line with the predictions of our theoretical framework.²⁴

As highlighted by Grendler (1975; p.54), the change in direction affected a large and important area of publishing. Vernacular literature encompassed “*poetry, drama, collections of letters, dialogues on various topics, courtesy books, vernacular grammars, and vernacular classics like Dante, Petrarch, Boccaccio, and Ariosto. Into this group fall most of the works of the most popular and prolific sixteenth-century authors, like Pietro Aretino, Anton Francesco Doni, et al*”. Grendler (1975) also argues that the Inquisition led to an increase in the publication of religious books, especially devotional books read by clerics and laymen, rather than those for professional theologians. Our analysis does not provide much support for this claim.²⁵

9 Market structure, survival and entry

We now turn to the impact of the censorship on market structure and firm survival.

Market Shares. To begin, in column 1 of Table 4 we re-run our baseline analysis, scaling the dependent variable to capture the effect on market shares constructed as the ratio between the new editions published by the firm in the focal year and the total number of new editions

²⁴The Appendix mathematical model shows more precisely how censorship may affect the relative profitability of the publishing submarkets, which in turn may impact the structure and the evolution of the industry.

²⁵One reason for this is that the Inquisition may have had contrasting effects across religious books. On the one hand, censorship may have disincentivized the printing of heretical titles, on the other hand, the inquisition may have incentivized the publication of those supporting the Church’s orthodoxy. Distinguishing between heretical and non-heretical religious editions is challenging, as we expect the two groups of books to have similar (and sometimes identical) titles, especially in the case of Missals and Bibles. An analysis of the statistical distribution of words in titles, as in Dittmar and Sebold (2019), is unlikely to provide sufficient variation in our setting.

published in Venice by all the firms in our sample. Confirming the insights of our previous analysis, the regression shows that after the implementation of the Pauline Index, the firms more exposed to the Inquisition reduced their yearly market share by 3.4 percentage points relative to the control group. In column 2, we confirm the idea of a decline in market share in a simpler, cross-sectional model, where the dependent variable is the market share of the firm in the last decade of the sample period (1577-87). The regression controls for the market share of the firm in the first decade of the sample (1537-47) and for the first year of activity of the firm. Treated firms in this regression have a market share that is 4.9 percentage points smaller than other firms in the last decade of the sample.

Survival Column 3 in Table 4 leverages this simple cross-sectional model to examine the effect of the Inquisition on firm survival defined as the last year in which a book published by the firm is recorded. Because our main data source (Edit16) is truncated at 1600, we complement our data with information from Griffante et al. (2006) on publishers' activity beyond the end of the 16th century. The regression shows that the lifespan of firms more exposed to the Inquisition is about 38 years shorter than the lifespan of those less affected by the indexes.

By construction, our sample includes firms that were active for the entire time period 1540-1575. In column 4, we expand the sample to include all firms that were active in Venice in 1540 and after the implementation of the index in 1559. This adds 7 firms which exited between 1559 and 1575 to our sample. Results are similar in this extended sample, confirming that the lifespan appears shorter for firms more exposed to the indexes. Column 5 focuses on 12 additional firms that were active during the period 1540-47 but exited before 1559, the year in which the Pauline Index was implemented. This regression suggests that the effect of future exposure to the Inquisition on survival is small and statistically insignificant in this sample. Together, columns 4 and 5 indicate that publishing books that will be listed in the indexes appears strongly associated with lower survival when we focus on firms in existence when the indexes were enforced, but not for those that exit before 1559. This lends credence to our identification strategy.

Entry In Appendix Table A8, we examine changes in entry rates of new firms. We contrast the period before (1537-1559) and the period after the Pauline Index (1560-1587). Overall, we observe a large number of entrants, but only a few of them were able to survive for a prolonged

period. On average, there are 5.5 new firms entering the market each year up to 1559, and 7 new firms entering each year after the index. The increase in entry frequency appears to be driven by firms with short survival (less than 3 years). There is no significant difference in entry rates for firms that survive at least three years while the number of new short-lived entrants almost doubles after 1559.

The data also show that entry and exit are highly correlated, a feature that has been documented also in modern industries (Dunne et al, 1988). Consequently, the high entry rates are associated with much more modest changes in net entry. Specifically, we compute a net entry rate of about one firm per year during the entire sample period, with no significant difference between the period before and after the Inquisition.

Table A8 suggests that censorship may have created market opportunities not only for the incumbents less specialized in transgressive topics, but also for new market entrants. At the same time, the fact that most entrants tend to have low survival span is consistent with the idea that they engaged in riskier business opportunities, publishing content with high likelihood of censorship, or serving niche markets too small to guarantee sustainable profits. If this is the case, the results presented in Section 8 suggest that we should observe greater entry of short-lived firms in the area of vernacular literature. To corroborate this interpretation, we construct a measure of annual entry for each of the 35 USTC fields and examine differences in entry rates between literature and the other macro-categories. We focus on short-lived entrants (surviving less than 3 years) and on their publication in vernacular. An entrant is allocated to a field based on the edition it published during the first year of activity (or on their most prevalent field, in the case of multiple editions in the year of entry). Column 6 of Table 4 shows an increase in short-lived entrants in literature fields after the Inquisition relative to other fields using a difference-in-differences approach. This supports the idea that new short-lived entrants appear focused in the most transgressive fields. Consistently with the previous analysis, when we distinguish between the different phases of the Inquisition, we observe an increase in entry after the Pauline Index but not in the earlier Inquisition period.

Overall, the findings in this Section indicate that the Inquisition not only had a short-term impact on the production of prohibited books, but also dynamic and long-lasting effects on the industry.²⁶ It affected market shares, firm survival, and entry patterns. Our analysis

²⁶These dynamic effects complement those examined by Dewitte et al. (2022) and Becker et al. (2021) who stress the long term impact of the reallocation of talent across locations, and by Blasutto and de la Croix (2023) who highlight the persistent effects of the change in the stock of knowledge used in the cumulative innovation

shows that the firms more exposed to the Inquisition reduced their publication rates, lost market shares, and experienced shorter survival. This suggests that resources and capabilities of incumbent firms may become less valuable once a censorship policy is in place. Censorship also appears to have created opportunities for new entrants. This finding is consistent with empirical studies on product liability that have documented a positive association between risk and entry of small firms in hazardous sectors (Ringleb and Wiggins, 1990; and Galasso and Luo, 2021). This consistency across empirical settings has important implications for the law and economics literature, as theoretical studies of product liability typically do not consider its effects on entry (see Daughety and Reinganum, 2018 for a survey).

10 Censorship and book authors

In this Section, we examine whether the censorship, in addition to the change in the direction of publishing, also led to a change in the type of authors who were published in the literature fields. To perform this analysis, we collect additional information for each of the 2,764 books in the literature category that were published between 1537 and 1587 by the firms in our sample. First, we identify whether or not the book was published by a contemporary author. Using the information provided in Edit16, we classify authors as contemporary if they were alive during the XVI century.²⁷

In Table 5, we present a series of book-level probit regressions. Each specification includes effects for the year in which the book was published and for the firm publishing the book. The dependent variable in the first column is an indicator equal to one for books with contemporary authors. The estimates indicate that, after 1547, the books published by the firms more exposed to the Inquisition are less likely to have a contemporary author relative to those published by firms less exposed to censorship. The effect is larger and statistically significant for books published after 1559. In columns 2 and 3, we run similar regressions splitting the sample into books by authors who have at least one of their works included in an Inquisition Index (column 2) and books by authors not listed in any of the indexes (column 3). This split-sample exercise indicates that there is no difference between the two groups of firms in the probability of publishing contemporary authors listed in the indexes. Conversely, the analysis shows that, after 1559, books published by the firms more heavily exposed to the Inquisition

process.

²⁷More specifically, we consider contemporary authors who died after 1500 and were born after 1450.

are substantially less likely to have contemporary authors not listed in Inquisition Indexes.²⁸

In Appendix Table A9 we conduct a variety of additional exercises to facilitate the interpretation of these findings focusing on books by non-indexed authors. Our analysis suggests that the effect is not driven by a different propensity to publish books of contemporary authors who, at the time of the Inquisition, were already embedded in a printing relationship with a Venetian firm. On the contrary, our analysis shows that, after 1559, the firms targeted by the Inquisition appear less likely to publish the first book of a contemporary author entering the Venetian market. This is consistent with our theoretical framework, which emphasizes the crucial role of the author-publisher network, and its associated switching costs, in shaping the specialization of firms. We also find that the effect is stronger for the most prominent new authors, i.e., those with a sizable number of publications outside Venice. This further corroborates the idea of tainted printer reputation, as this appears more relevant for authors with greater bargaining power that probably had more options in choosing their publisher when entering the Venetian market.²⁹

Overall, these results indicate that the effects of censorship extended beyond authors and books directly included in the indexes. The firms more exposed to the Inquisition appear less likely to publish contemporary authors in literature, especially those not listed in Inquisition Indexes. This suggests that censorship may have shaped entry decisions for new writers which, in turn, may have affected the incentives to develop new literary content and the dissemination of new knowledge in the Venetian Republic.

11 Concluding remarks

This paper examines how the book censorship implemented by the Catholic Inquisition affected printing outcomes in Renaissance Venice. The historical case study provides a unique opportunity to examine the effects of censorship over an extended period of time, which is something challenging to study with contemporary data. There are three main empirical findings. First, our analysis of firm level data from the 1500s shows that censorship had a significant impact on

²⁸Similarly to what we observed when looking at the direction of creative effort, the reduction in the publications of contemporary authors in the field of literature is in line with the analysis in Blasutto and de la Croix (2023) according to which censorship altered the path of knowledge development.

²⁹These results are also broadly consistent with the findings of Becker et al. (2021) who show that authors were attracted by ‘defiant cities’ – proxied by the number of prohibited books that were published – which were supposedly guaranteeing them the ‘freedom of thought’

publication levels and market structure, with the firms more heavily targeted by the Inquisition losing market shares to those less affected by censorship. These effects appear long lasting and associated to changes in survival and entry patterns. Second, we show that censorship led to a change in the direction of publishing, with printers reducing their supply of vernacular literature. Finally, we find that the firms more exposed to the Inquisition became less likely to publish new contemporary authors.

The printing press in the Renaissance was the first instance of a major information and communication technology which reduced substantially the cost of disseminating new information. While modern creative industries differ from our empirical setting across several dimensions, our theoretical analysis suggests that in many business environments the ban of creative content may impact the structure of censored industries, their evolution, and the direction of creative efforts. It is important for managers and policy makers to recognize these dynamic effects and the threats and opportunities they generate.

References

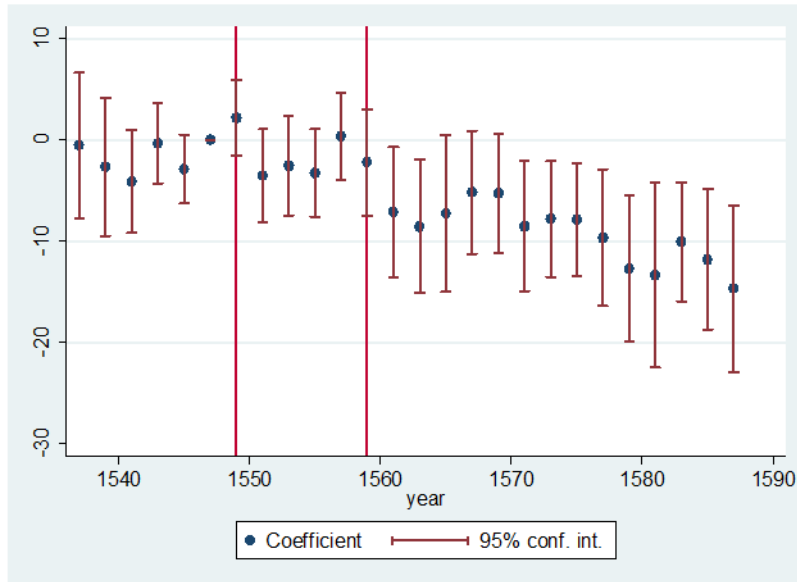
- [1] Anderson, Warren. 2015. "Inquisition and Scholarship," *Social Science History* 39(4): 677-702.
- [2] Baker, Scott, Nicholas Bloom, and Steven Davis. 2016. "Measuring economic policy uncertainty," *The Quarterly Journal of Economics*: 1593-1636.
- [3] Becker, Sascha, Francisco Pino, Jordi Vidal-Robert. 2021. "Freedom of the Press? Catholic Censorship during the Counter-Reformation," CEPR DP16092.
- [4] Berkowitz, Erin. 2021. "Dangerous ideas: a brief history of censorship in the West, from the ancient to fake news," Westbourne Press, London.
- [5] Binzel, Christine, Andreas Link, and Rajesh Ramachandran. 2021. "Vernacularization and Linguistic Democratization," CEPR DP15454.
- [6] Blasutto, Fabio, and David De la Croix. 2023. "Catholic Censorship and the Demise of Knowledge Production in Early Modern Italy," published online on *Economic Journal*.
- [7] Brown, Horatio. 1891. "The Venetian Printing Press," Nimmo, London.
- [8] Burkardt, Albrecht, and Gerd Schwerhoff. 2010. "Germania," in Prosperi, Adriano, Lavenia Vincenzo and Tedeschi, John eds *Dizionario storico dell'Inquisizione*, Scuola Normale Superiore di Pisa.
- [9] Cabello, Matias. 2023. "The Counter-Reformation, Science and Long-Term Growth: a Black Legend?," available at SSRN: <https://ssrn.com/abstract=4389708>.
- [10] Cantoni, Davide. 2012. "Adopting a New Religion: the case of Protestantism in 16th century Germany," *The Economic Journal* 122(560): 502-531.
- [11] Cantoni, Davide, Jeremiah Dittmar, and Noam Yuchtman. 2018. "Religious Competition and Reallocation: The political economy of secularization in the protestant reformation," *The Quarterly Journal of Economics* 133(4): 2037-2096.
- [12] Chen, Yuyu, and David Y. Yang. 2019. "The Impact of Media Censorship: 1984 or Brave New World?," *American Economic Review*, 109(6): 2294-2332.

- [13] Comino, Stefano, Alberto Galasso, and Clara Graziano. 2020. "Market power and patent strategies: evidence from Renaissance Venice," *The Journal of Industrial Economics* 68(2): 226-269.
- [14] Daughety, Andrew F., and Jennifer F. Reinganum. 2013. "Economic Analysis of Products Liability: theory," In *Research Handbook on the Economics of Torts*. Edward Elgar Publishing.
- [15] Daughety, Andrew F., and Jennifer F. Reinganum. 2018. "Market structure, liability, and product safety." in *Handbook of Game Theory and Industrial Organization II*. Cheltenham: Edward Elgar.
- [16] Dawid, Herbert, and Gerd Muehlheusser. 2022. "Smart products: Liability, investments in product safety, and the timing of market introduction," *Journal of Economic Dynamics and Control* 134: 104288.
- [17] De Bujanda, Jesus Martinez. 1996. "Thesaurus de la littérature interdite au XVIe siècle: auteurs, ouvrages, éditions avec addenda et corrigenda," Vol. 10. Editions de l'Universite de Sherbrooke Librairie Droz.
- [18] Defourneaux, Marcelin. 1963. "L'inquisition Espagnole et les livres Français au XVIIIe siècle," Presses Univ. de France, Paris.
- [19] Devers, Cynthia E, Todd Dewett, Yuri Mishina, Carrie A. Belsito. 2009. "A General Theory of Organizational Stigma," *Organization Science* 20(1):154-171.
- [20] Dewitte, Edgard, Francesco Drago, Roberto Galbiati, and Giulio Zanella. 2022. "Science Under Inquisition: the Allocation of Talent in Early Modern Europe," CEPR DP 17644.
- [21] Dittmar, Jeremiah, and Skipper Seabold. 2019. "New Media and Competition: printing and Europe's transformation after Gutenberg," CEP DP 1600.
- [22] Dixit, Robert and Robert Pindyck. 2012. "Investment under uncertainty," Princeton University Press.
- [23] Dosi, Giovanni. 1982. "Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change," *Research Policy*, 11 (3), 147-162.
- [24] Draca, Mirko, Stephen Machin, and John Van Reenen. 2011. "Minimum Wages and Firm Profitability," *American Economic Journal: Applied Economics*, 3(1): 129-51.
- [25] Drelichman, Mauricio, Vidal-Robert, Jordi and Hans-Joachim Voth. 2021. "The Long Run Effect of Religious Persecution: Evidence from the Spanish Inquisition," *Proceedings of the National Academy of Sciences* 118.33: e2022881118.
- [26] Dunne, Timothy, Mark J. Roberts, and Larry Samuelson. 1988. "Patterns of firm entry and exit in US manufacturing industries." *The RAND journal of Economics*: 495-515.
- [27] Fowlie, Meredith, Stephen P. Holland, and Erin T. Mansur. 2012. "What do emissions markets deliver and to whom? Evidence from Southern California's NOx trading program." *American Economic Review* 102(2): 965-993.
- [28] Fragnito, Gigliola. 2005. "Proibito Capire. La Chiesa e il volgare nella prima età moderna," Il Mulino, Bologna.
- [29] Fragnito, Gigliola. 2019. "Rinascimento Perduto, la letteratura italiana sotto gli occhi dei censori (secoli XV-XVIII)," Il Mulino, Bologna.
- [30] Frajese, Vittorio. 2010. "Permessi di Lettura", in Prospero Adriano, Vincenzo Lavenia and John Tedeschi eds. *Dizionario Storico dell'Inquisizione*, Scuola Normale Superiore di Pisa.
- [31] Freedom House. 2017. "Freedom in the World"
- [32] Galasso, Alberto and Hong Luo. 2017. "Tort Reform and Innovation," *Journal of Law and Economics* 60(3): 385-412

- [33] Galasso, Alberto and Hong Luo. 2021. "Risk Mitigating Technology: the Case of Radiation Diagnostic Devices," *Management Science* 67: 3022-3040
- [34] Galasso, Alberto and Hong Luo. 2022. "When does Product Liability Risk Chill Innovation? Evidence from Medical Implants," *American Economic Journal: Economic Policy* 14: 366-401
- [35] Gulen, Huseyin, and Mihai Ion. 2016. "Policy uncertainty and corporate investment," *The Review of Financial Studies* 29: 523-564
- [36] Grendler, Paul. 1975. "The Roman Inquisition and the Venetian press, 1540-1605," *Journal of Modern History*, 47:48-65.
- [37] Grendler, Paul. 1977. "The Roman Inquisition and the Venetian printing press," Princeton University Press, Princeton NJ.
- [38] Griffante, Caterina, Alessia Giachery, and Sabrina Minuzzi, 2006. "Le Edizioni Veneziane del Seicento. Censimento-Indici," Regione del Veneto Editrice Bibliografica.
- [39] Hay, Bruce, and Kathryn Spier. 2005. "Manufacturer Liability for Harms Caused by Consumers to Others," *American Economic Review* 95(5): 1700-1711.
- [40] Hua, Xinyu, and Yongmin Chen. 2023. "Multimarket Firms and Product Liability: Uniform vs Variable Rules," HKUST Business School Research Paper 2023-093.
- [41] Infelise, Mario. 1999. "I Libri Proibiti da Gutenberg all'Encyclopédie," Laterza, Bari.
- [42] Kamen, Henry. 1998. "The Spanish Inquisition: an historical revision," Weidenfeld and Nicolson, London.
- [43] Kemp, Geoff. 2015. "Introduction", in *Censorship Moments: Reading Texts in the History of Censorship and Freedom of Expression*, Geoff Kemp ed., Bloomsbury Publishing, London.
- [44] Kesidou, Effie, and Pelin Demirel. 2012. "On the drivers of eco-innovations: Empirical evidence from the UK," *Research Policy* 41(5): 862-870.
- [45] Luo, Hong, and Laurina Zhang. 2021. "Gender Inequality and the Direction of Ideas: Evidence from #MeToo," available at SSRN: <https://ssrn.com/abstract=3817029>
- [46] Mitchell, Matthew, and Andrzej Skrzypacz. 2015. "A theory of market pioneers, dynamic capabilities, and industry evolution," *Management Science* 61: 1598-1614.
- [47] Nuovo, Angela. 2013. "The Book Trade in the Italian Renaissance," Brill eds., Leiden-Boston.
- [48] Ottone, Andrea. 2019. "Il privilegio del Messale riformato. Roma e Venezia fra censura espurgatoria e tensioni commerciali," in *Privilegi librari nell'Italia del Rinascimento*, E. Squassina and A. Ottone editors, Franco Angeli, Milano.
- [49] Pettegree, Andrew. 2010. "The Book in the Renaissance," Yale University Press.
- [50] Pezzolo, Luciano. 2013. "The Venetian Economy" in Dursteler, Eric. *A Companion to Venetian History, 1400-1797*. Brill, Leiden.
- [51] Pleijt, A. de, and JL van Zanden. 2013. "Accounting for the 'Little Divergence' What drove economic growth in pre-industrial Europe, 1300-1800," *European Review of Economic History* 20: 387-409.
- [52] Prat, Andrea. 2015. "Media Capture and Media Power," Ch. 16 in *Handbook of Media Economics*, vol. 1B.
- [53] Puglisi, Riccardo and James Snyder. 2015. "Empirical Studies of Media Bias," Ch. 15 in *Handbook of Media Economics*, vol. 1B.
- [54] Qin, Bei, David Strömberg, and Yanhui Wu. 2017. "Why Does China Allow Freer Social Media? Protests versus Surveillance and Propaganda," *Journal of Economic Perspectives*, 31(1): 117-40.

- [55] Qin, Bei, David Strömberg, and Yanhui Wu. 2018. "Media Bias in China," *American Economic Review*, 108(9): 2442-76.
- [56] Quondam, Amedeo. 1980. "Nel giardino del Marcolini. Un editore veneziano tra Aretino e Doni," *Giornale Storico della Letteratura Italiana*, 157, 497; 75-112.
- [57] Rambachan, Ashesh and Roth, Jonathan. 2023. "A More Credible Approach to Parallel Trends," *Review of Economic Studies*, 90: 2555-2591.
- [58] Ringleb, Al H. and Wiggins, Steven N. 1990. "Liability and Large-Scale, Long-term Hazards," *Journal of Political Economy*, 98(3): 574-595.
- [59] Rotemberg, Martin. 2019. "Equilibrium Effects of Firm Subsidies." *American Economic Review*, 109(10): 3475-3513.
- [60] Rotondò, Antonio. 1973. "La censura ecclesiastica e la cultura," Einaudi, Torino.
- [61] Rubin, Donald B. 2005. "Causal inference using potential outcomes: Design, modeling, decisions." *Journal of the American Statistical Association* 100(469): 322-331.
- [62] Schmookler, Jacob. 1966. "Invention and Economic Growth," Harvard University Press.
- [63] Seidel Menchi, Silvana. 1987. "Erasmus in Italia: 1520-1580," Bollati Boringhieri
- [64] Shadmehr, Mehdi, and Dan Bernhardt. 2015. "State Censorship." *American Economic Journal: Microeconomics*, 7(2): 280-307.
- [65] Tirole, Jean. 1996. A Theory of Collective Reputations (with applications to the persistence of corruption and to firm quality), *The Review of Economic Studies*, 63(1) 1-22
- [66] Tirole, Jean. 2021. "Digital dystopia." *American Economic Review* 111(6) : 2007-48.
- [67] Viscusi, W. Kip. 1993. "The value of risks to life and health." *Journal of economic literature* 31(4): 1912-1946.
- [68] Viscusi, Kip and Michael Moore. 1993. "Product liability, research and development, and innovation," *Journal of Political Economy* 101(1): 161-184.
- [69] Xue, Melanie Meng. 2021. "Autocratic rule and social capital: evidence from imperial China." Available at SSRN 2856803.

FIGURE 1: Dynamic effects on yearly new book editions of firms more exposed to the inquisition relative to less exposed firms



NOTES: The dependent variable is the number of new book editions printed by the firm in Venice in year t. The figure plots the coefficients (and 95% confidence intervals) of the interaction terms between dummies for two-year time windows and the treatment dummy for the firms more exposed to the Inquisition.

Table 1: The inquisition is associated to a drop in publication rates for more exposed firms relative to less exposed firms

	(1)	(2)	(3)	(4)	(5)
Dep. Variable	New editions	New editions	New editions	New editions - no indexed	New editions - no reprints
Estimation	OLS	OLS	Poisson	OLS	OLS
Inquisition	-4.503* (2.246)				
Early Inquisition		0,939 (1.673)	0,226 (0.209)	1,091 (1.688)	0,783 (1.563)
Index		-6.568** (2.676)	-0.909*** (0.326)	-6.301** (2.659)	-6.384** (2.533)
Year effects	YES	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES	YES
Observations	1377	1377	1377	1377	1377

NOTES: robust standard errors clustered at the firm level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01. Inquisition=1 for treated firm after 1547. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559. The dependent variable in column 1-3 is the number of new editions published by the firm in the year. In column 4 the dependent variable only considers books which are not listed in the indexes. In column 5 the dependent variable does not include reprints.

Table 2: Publication levels of the Venetian firms more (less) exposed to the inquisition decline (increase) relative to a control group of foreign firms

	(1)	(2)	(3)	(4)
Dep. Variable	New editions	New editions	New editions	New editions
Venetian exposed X period 1547-58	-1.002 (1.453)		-0.656 (1.677)	
Venetian exposed X after 1559	-3.053** (1.078)		-3.343** (1.224)	
Venetian not exposed X period 1547-58		-1.881 (1.459)		-1.577 (1.694)
Venetian not exposed X after 1559		3.462*** (1.080)		3.207** (1.223)
Year effects	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES
Sample	Treated Ven. and foreign firms	Control Ven. and foreign firms	Treated Ven. and foreign firms (drop Frankfurt)	Control Ven. and foreign firms (drop Frankfurt)
Observations	1827	1368	1695	1236

NOTES:OLS regressions with robust standard errors clustered at the firm level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01. In columns (1) and (3) the sample includes treated firms (Venice) and foreign firms; columns (2) and (4) the sample includes control group (Venice) and foreign firms. In columns (3) and (4) firms active in Frankfurt are dropped from sample of foreign firms.

Table 3: The drop in publication of firms more exposed to the inquisition is the strongest for vernacular literature

Dep. Variable	(1) New editions literature	(2) New editions religion	(3) New editions educational	(4) New editions others	(5) New editions literat. vernacular	(6) New editions literat. latin
Early Inquisition	0.042 (0.059)	-0.016 (0.134)	0.084 (0.056)	-0.001 (0.022)	0.027 (0.049)	0.014 (0.024)
Index	-0.316*** (0.073)	-0.214 (0.217)	-0.122 (0.087)	-0.093 (0.072)	-0.256*** (0.063)	-0.060* (0.033)
Year effects	YES	YES	YES	YES	YES	YES
Firm-field effects	YES	YES	YES	YES	YES	YES
Unit of observation	firm-field-year	firm-field-year	firm-field-year	firm-field-year	firm-field-year	firm-field-year
Observations	9639	5508	11016	22032	9639	9639

Notes: OLS regressions with robust standard errors clustered at the firm-field level in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559.

Table 4: The Venetian firms more exposed to the inquisition lose market share and have shorter lifespan relative to less exposed firms. The literature fields experience an increase in short-lived entrants

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Variable	Share	Share last dec.	Exit year	Exit year	Exit year	Short-lived entrants
Early Inquisition	0.004 (0.009)					
Index	-0.034** (0.014)					
Early Inquisition X Literature						0.021 (0.024)
Index X Literature						0.051** (0.022)
Exposed firm		-0.049** (0.023)	-38.533*** (13.315)	-30.236** (12.630)	-0.641 (1.986)	
Year effects	YES	NO	NO	NO	NO	YES
Firm effects	YES	NO	NO	NO	NO	YES
Sample	full	full	full	extended	exit before 1560	field -year panel
N. Observations	1377	27	27	34	12	1530

NOTES: Robust standard errors clustered at firm level in parentheses. * p<0.10 , ** p<0.05, *** p<0.01. In column (1) the dep. variable is market share. In column (2) the dep. variable is market share in the last decade of the sample. In columns (3)-(5) the dep. variable is the exit year. Regressions 2-5 also control for market share in the first decade and entry year. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559. Exposed firms=1 for treated firms. Sample full: baseline sample of 27 firms; sample extended: also includes firms exiting between 1559-75; sample exit before 1560: only includes firms active during 1540-47 and exiting before 1560. In column 6 the sample comprises field-year observation for the full period. The dependent variable is the number of entrants publishing in vernacular and surviving less than 3 years. Literature =1 for USTC fields related to literature.

Table 5: The books published by the firms more exposed to the inquisition are less likely to have a contemporary author relative to those published by less exposed firms

	(1)	(2)	(3)
Dep. Variable	Contemporary author	Contemporary author	Contemporary author
Estimation	Probit	Probit	Probit
Early Inquisition	-0.406 (0.284)	-0.403 (0.510)	-0.320 (0.356)
Index	-0.716*** (0.244)	-0.269 (0.421)	-1.069*** (0.333)
Year effects	YES	YES	YES
Firm Effects	YES	YES	YES
Sample	Literature books	Literature books (with author listed in an index)	Literature books (with author not listed in any index)
Sample size	2764	1103	1661

NOTES: Robust standard errors in parentheses. * p<0.10 , ** p<0.05, *** p<0.01. Contemporary author=1 if the author was alive in the XVI century. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559.

ONLINE APPENDICES TO “Censorship, industry structure,
and creativity: evidence from the Catholic Inquisition in
Reinassance Venice”

Appendix A: Theoretical Model

In this section, we develop a game-theoretic model useful to study the effect of censorship in a context in which firms are specialized in different publishing fields. In our analysis, we follow Singh and Vives (1984) and we consider an economy with two differentiated goods and a competitive numeraire sector. Consumers utility is separable and linear in the numeraire good and quadratic in the quantity of differentiated products. This utility gives rise to the following inverse demand functions for the transgressive (T) and safe (S) books:

$$\begin{aligned} p_T &= a_T - \beta_T Q_T - \gamma(Q_T + Q_S), \\ p_S &= a_S - \beta_S Q_S - \gamma(Q_T + Q_S). \end{aligned}$$

We assume that γ is positive meaning that book varieties are substitutes.

Books are produced by two firms, A and B, that compete *à la* Cournot. We assume that each firm produces both varieties and we denote q_j^i the quantity of variety $j = T, S$ produced by firm $i = A, B$. Marginal costs are constant and are denoted by C_j^i , $i = A, B$ and $j = T, S$. The overall number of books of variety j produced in the economy is the sum of the production of the two firms: $Q_j = q_j^A + q_j^B$.

Firm i chooses q_S^i and q_T^i to solve the following profit maximization problem

$$\max_{q_T^i, q_S^i} \sum_{j \in \{S, T\}} (a_j - \beta_j(q_j^i + q_j^{-i}) - \gamma(q_j^i + q_j^{-i} + q_{-j}^i + q_{-j}^{-i}) - C_j^i) q_j^i$$

From the system of first order conditions we can derive the equilibrium quantities:

$$\begin{aligned} q_T^A &= \frac{(a_T - a_S + C_T^B - C_S^B - 2(C_T^A - C_S^A)) \gamma + \beta_S (a_T + C_T^B - 2C_T^A)}{3(\gamma \beta_T + \gamma \beta_S + 3\beta_T \beta_S)} \\ q_T^B &= \frac{(a_T - a_S + C_T^A - C_S^A - 2(C_T^B - C_S^B)) \gamma + \beta_S (a_T + C_T^A - 2C_T^B)}{3(\gamma \beta_T + \gamma \beta_S + 3\beta_T \beta_S)} \\ q_S^A &= \frac{(a_S - a_T + C_S^B - C_T^B + 2(C_T^A - C_S^A)) \gamma + \beta_T (a_S + C_S^B - 2C_S^A)}{3(\gamma \beta_T + \gamma \beta_S + \beta_T \beta_S)} \\ q_S^B &= \frac{(a_S - a_T + C_S^A - C_T^A + 2(C_T^B - C_S^B)) \gamma + \beta_T (a_S + C_S^A - 2C_S^B)}{3(\gamma \beta_T + \gamma \beta_S + \beta_T \beta_S)}. \end{aligned} \tag{1}$$

We use these formulas to examine how the Inquisition activity can change firms' production levels. We start our analysis considering what happens before the Inquisition is in place.

No Inquisition

As we discuss in the paper, history scholars suggest that publishers tended to specialize in certain subject matters. Factors leading to such a specialization included the close and stable relationship that publishers and authors often established, the fact that in some cases publishers were also prolific authors, or the need to use specialized asset to publish particular types of books (as in the case of music, cartography, or greek books). Based on this evidence, we assume that one firm has a cost advantage in the production of transgressive books, while the other has a cost advantage in the production of safe books. Formally, absent the Inquisition, we let the marginal cost of firm i producing variety j be $C_j^i = c_j^i$ and, without loss of generality, we assume that firm A has a cost advantage in the production of books of type T , $c_T^A < c_T^B$, while firm B has a cost advantage in the production of safe book, $c_S^B < c_S^A$.

Equilibrium quantities can be obtained from (1) imposing $C_j^i = c_j^i$. Simple comparisons between the production of the two firms reveal that the market share of firm A is larger than that of firm B in the case of transgressive books, while it is smaller in the case of safe books.

Inquisition

We now extend the setting to consider the effect of an index of prohibited books and censorship by the Inquisition. Censorship regulation imposes restrictions that limit the ability of firms to freely operate. We model these restrictions as an increase in the marginal cost of production and we assume that they impose a heavier burden to A, the firm specialized in the production of books for the segment which is the main target of censorship. We allow for the restrictions to impact also in the segment of safe books – possibly because of the ambiguities of the regulation that we describe in the paper –, increasing production costs, though to a lesser extent compared to transgressive books. Formally, the marginal costs of firm A become $C_T^A = c_T^A + \bar{\Delta}$ and $C_S^A = c_S^A + \alpha\bar{\Delta}$, while B's costs become $C_T^B = c_T^B + \underline{\Delta}$ and $C_S^B = c_S^B + \alpha\underline{\Delta}$. We assume that $\bar{\Delta} > \underline{\Delta} \geq 0$ which means that the restrictions impact more on the activities of firm A, specialized in the publication of transgressive books; moreover, we assume that $\alpha \in [0, 1]$ implying that the restrictions may leak to the segment of safe books.

Equilibrium quantities under the index – denoted $q_T^A(\bar{\Delta}, \underline{\Delta})$, $q_S^A(\bar{\Delta}, \underline{\Delta})$, $q_T^B(\bar{\Delta}, \underline{\Delta})$, $q_S^B(\bar{\Delta}, \underline{\Delta})$ – can be calculated from (1) using the appropriate marginal costs.

Effect of the Inquisition on the overall production of books

In this section, we look at the effect of the index on the overall production of books – transgressive and safe – of the two firms. Let us denote $Q^i = q_T^i + q_S^i$ the overall production of books of firm i absent the Inquisition and let $Q^i(\bar{\Delta}, \underline{\Delta})$ denote the same variable once the Inquisition is in place. We compute the difference between $Q^A(\bar{\Delta}, \underline{\Delta}) - Q^B(\bar{\Delta}, \underline{\Delta})$ and $Q^A - Q^B$. Simple algebra reveals that the difference is

$$-\frac{(\bar{\Delta} - \underline{\Delta})(\alpha\beta_T + \beta_S)}{\gamma\beta_T + \gamma\beta_S + \beta_T\beta_S}, \quad (2)$$

since $\bar{\Delta} > \underline{\Delta}$, expression (??) is negative. This means that our model predicts that the effect of the Inquisition is to reduce the overall production of books of firm A compared to that of firm B. While the direction of the effect of the Inquisition is clear, expression (??) highlights that magnitude of the decline depends on market characteristics – the degree of substitutability across varieties (γ) and the price-sensibility of the demand functions (β_T and β_S) – and on how the regulation impacts on firms' costs – as parametrized by $\bar{\Delta}$, $\underline{\Delta}$ and α . Ultimately, the significance of the magnitude of the decline in A's production compared to B's is therefore an empirical question.

We now consider each firm separately. Looking at firm A and computing $Q^A(\bar{\Delta}, \underline{\Delta}) - Q^A$ we have

$$\frac{(2\bar{\Delta} - \underline{\Delta})(\alpha\beta_T + \beta_S)}{3(\gamma\beta_T + \gamma\beta_S + \beta_T\beta_S)}$$

which again is negative. This implies that the index causes a reduction in the overall production of books of firm A.

Considering the effect of the index on firm B we have that $Q^B(\bar{\Delta}, \underline{\Delta}) - Q^B$ equals

$$\frac{(\bar{\Delta} - 2\underline{\Delta})(\alpha\beta_T + \beta_S)}{3(\gamma\beta_T + \gamma\beta_S + \beta_T\beta_S)}$$

which can be either positive or negative. This means that the Inquisition – which increases the production costs of firm B as well – can lead to either an increase or a decrease in the overall production of books of firm B. Looking more closely to the above expression one can notice that firm B produces more under the Inquisition when $\bar{\Delta} > 2\underline{\Delta}$. This condition implies that the burden of the restrictions introduced by the Inquisition imposes a rise in costs which is significantly larger for firm A compared to firm B. In this case, despite the increase in costs, the non exposed firm benefits from a major comparative gain compared to the competitor and induces it to produce more than what it does when censorship is not in place.

Therefore, under condition $\bar{\Delta} > 2\underline{\Delta}$ our model predicts that the reduction in the overall production of firm A compared to B highlighted in expression (??) is due to both a decrease in production of firm A and to an increase in production of firm B.

Further predictions of the model: effect of the Inquisition on the production of transgressive and safe books

We now consider the impact of the index on the production of each variety separately. We start considering production of books of type T . The results are qualitatively the same as in the case of the overall production of books of the previous section.

Comparing the difference between the production of transgressive books of firm A and firm B once censorship is in place with the same difference before Inquisition (i.e. computing the difference between $q_T^A(\bar{\Delta}, \underline{\Delta}) - q_T^B(\bar{\Delta}, \underline{\Delta})$ and $q_T^A - q_T^B$) we have

$$-\frac{(\bar{\Delta} - \underline{\Delta})(\beta_S + \gamma(1 - \alpha))}{\gamma\beta_T + \gamma\beta_S + \beta_T\beta_S}$$

this expression is negative and it implies that, comparatively, firm A reduces the production of transgressive books with respect to B due to the regulation.

Consider now the production of safe books. Computing the difference between $q_S^A(\bar{\Delta}, \underline{\Delta}) - q_S^B(\bar{\Delta}, \underline{\Delta})$ and $q_S^A - q_S^B$ we obtain

$$-\frac{(\bar{\Delta} - \underline{\Delta})(\alpha\gamma + \alpha\beta_T - \gamma)}{\gamma\beta_T + \gamma\beta_S + \beta_T\beta_S}$$

which can be either positive (when $\alpha < \frac{\gamma}{\gamma + \beta_T}$) or negative (when $\alpha > \frac{\gamma}{\gamma + \beta_T}$). When looking at safe books one needs to consider that the Inquisition entails an additional effect: it changes the relative costs of transgressive relative to safe books thus inducing firms to a shift in production in favour of these latter. This shift is stronger for firm A – for whom the difference in the increase in costs between transgressive and safe books is larger – and it is more intense the smaller α . Overall, as a consequence of this shifting effect, the impact of the Inquisition on the production of safe goods of firm A compared to firm B is in general uncertain.

References

- [1] Singh, Nirvikar, and Xavier Vives. 1984. "Price and quantity competition in a differentiated duopoly." *The Rand Journal of Economics*: 546-554.

Appendix B: Additional empirical findings

In this appendix, we discuss the results presented in the appendix tables that are not explicitly commented in the text of the paper. We also discuss several additional empirical findings.

Robustness of the baseline specification.

Table A3 provides the first battery of robustness checks for our baseline specification. To address the concern that our baseline findings are not driven by a few outlier large firms, in column 1 we show that results are similar in a weighted OLS model, in which observations are weighed by the pre-47 publication level of the firm. The effect is slightly larger in this specification but not statistically different from our baseline regression. Column 2 shows that our baseline estimate is robust to dropping the two firms that publish more during our sample period (owned by the Bindoni and Scoto families). Unreported regressions show similar robustness if we drop the smallest firms from the sample. To address the possibility that firms anticipated the effect of the Inquisition in the years preceding 1547, in column 3 of Table A3 we present a specification which exploits the publications of each firm during the period 1500-42 to classify firms into treatment and control groups. Results are robust to this alternative model. Column 4 drops from the sample the Ruffinelli family for which, according to Edit16, most of the book production takes place outside Venice (57 percent of their book production is in other Italian cities). Results remain qualitatively and quantitatively similar to our baseline regression. In unreported regressions we drop two other families with strong presence outside Venice, the Giuntas (47 percent of the production is outside Venice) and the Paganinis (33 percent of the production in other cities). Despite the smaller sample, we obtain estimates with similar magnitude to those of our baseline model.

In column 5 we remove from the dependent variable the ‘reprints’. In doing so, we use a broader definition of reprints compared to the one employed in Table 1, column 5, of the paper. Specifically, a book is considered a reprint when in Edit16 there is an earlier edition with the same author, publisher and which involves the same ten words of the title (full overlap is required for titles consisting of less than 10 words). With this definition reprints account for about 11% of the production. Results shown in column 5 are very closed to those presented in Table 1 of the paper. Unreported regressions confirm the robustness of these result using alternative definitions of reprints. In column 6 we show that results are similar with heteroscedasticity-consistent standard errors (the Huber/White/sandwich estimators) that are

not clustered at the family level. In a series of unreported regressions we confirm that results are robust to various approaches to estimate the standard errors.

To distinguish between treatment and control groups, we rely on a threshold cut-off (at least one book in the indexes) that classifies as treated the firms in the top two terciles of the distribution of the fraction of prohibited books published before the Inquisition. Our results are robust to using a more restrictive approach, which includes in the treatment group only firms for which the fraction of prohibited books published before the Inquisition exceeds the 40th percentile. Also in this case, results appear qualitatively and quantitatively similar to our baseline estimates, indicating that our findings are robust to local variations of the threshold cut-off.

A natural extension of our analysis would be to replace the binary indicator for treated and control firms with a continuous measure, the fraction of books published before the Inquisition that will feature in the indexes. Unreported regressions show small and statistically insignificant elasticities in this alternative model. This suggests that the effect of the Inquisition is not linear in the exposure to the Inquisition. Appendix Table A4 examines this issue in greater detail. We first show that results are robust to dropping from the sample firms for which the exposure variable is between the 33rd and 53rd percentiles. By dropping this intermediate quintile, the regression exploits a sharper difference between control and treatment groups and only considers firms for which prohibited publications account either for a very small or a very large fraction of their pre-Inquisition books. We then examine the effect of the Inquisition, dropping the firms with the largest level of exposure (top 20 percent of the sample). Results are similar, if anything slightly stronger, in this specification. This indicates that the drop in publications that we estimated is not driven by the firms for which the fraction of prohibited books published before the Inquisition is the most extreme. We confirm this insight, focusing only on treated firms (above the 33rd percentile of exposure) and contrasting those in the top quartile of the distribution with the other firms. In this regression, the coefficients are small and statistically insignificant, suggesting that the drop in publication rates of firms with the highest fractions of listed books is similar to the one of firms with more moderate levels of exposure. Overall, this suggests that it is the extensive margin (being a target of the Inquisition) rather than the intensive margin (the fraction of indexed books) that drives the effect of censorship. As we report in the paper, these findings are consistent with our theoretical framework and, in particular, with the regulatory uncertainty and reputational costs and stigma channels.

Robustness of the family-field analysis

Table A7 provides a set of robustness checks for the findings shown in the family-field analysis (Table 3 of the paper). Column 1 confirms that the decline in literature publications is driven by families more exposed to the Inquisition, using a Poisson model. Column 2 shows robustness to regressions at the firm level rather than at the firm-field level. After 1559, firms more exposed to the Inquisition publish fewer literature books relative to firms less exposed. Columns 3 and 4 show that this effect appears driven by books written in vernacular rather than those written in Latin.

A caveat to our analysis is that it was performed by dropping the books for which USTC does not provide a subject field. These observations account for about 10 percent of the books in our sample. To address this issue, we re-estimated column 4 of Table 3 of the paper, creating a new subject field for the books for which classification was not available. We included this field in the residual macro-category. Results are qualitatively and quantitatively robust to this alternative treatment of the missing values.

Additional analysis on book authors

In column 1 of Appendix Table A9 we examine whether the Inquisition correlates with differences between treated and control firms in the propensity to publish non-indexed contemporary authors who were active in Venice before our sample period. Specifically, we focus on the sample of books by non-indexed author, and the dependent variable takes value 1 when the author is contemporary and started to publish in Venice before our sample period. We observe no statistically significant differences between the two groups of firms in publishing these authors, who are those we expect to be already known and embedded in relationships with Venetian printers. This evidence suggests that the effect of the Inquisition on the publishing of contemporary authors is not driven by the behavior of authors switching publisher.

In column 2, we use the same sample of books and the dependent variable equals 1 for the first book by a contemporary author that did not publish in Venice before our sample period. We look at the first book in an attempt to study the behavior of authors that were new to Venice and were not already embedded in a relationship with Venetian printers. The results suggest that, after 1559, these authors were less likely to choose publishers exposed to the Inquisition. In columns 3 and 4 we distinguish between the most prominent new authors (those with a number of publications outside Venice above the median) and the less prominent new authors

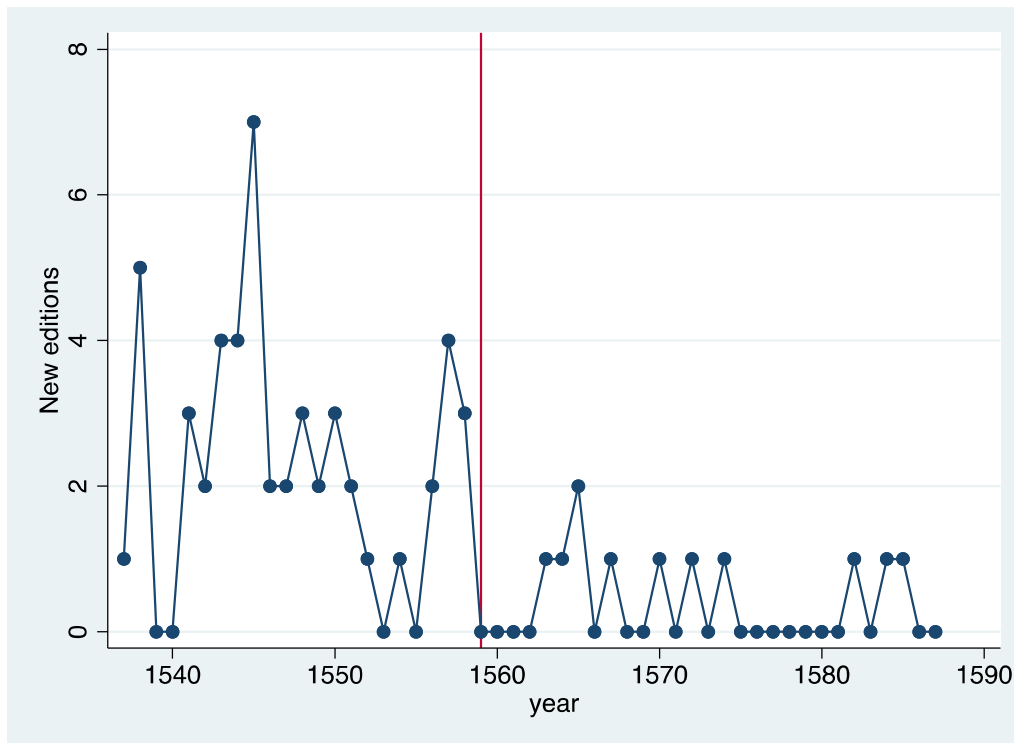
(with a number of publications outside Venice below the median). We find effects of stronger magnitude and statistically significant for the more prominent authors, which are those we expect to have more bargaining power and, eventually, more options to select a publisher. This provides additional support to the idea that censorship may have tainted the reputation of the publishers and affected the choice of new authors deciding to enter the Venetian market.

In line with our new theoretical framework, we looked for additional evidence supporting the idea that publishers of banned books may have suffered from a worsening of their reputation. We follow Padgett and Ansell (1993) that, in a study on Renaissance Florence, show that marriages were determined by the social and economic network the family belongs to, and that they can inform about the variation in the social standing of the family. Specifically, we collected data on marriages involving a noble husband during the period 1400-1599. Records of these marriages are available from the “Avogaria di Comun” of the Archivio di Stato di Venezia and were digitized by Puga and Treffer (2014). We examined whether the likelihood that a family member of a printer marry into a noble family changed with the Inquisition. Unfortunately, the data are very sparse. There is no record of marriage between the 27 family in our sample and noble families before 1559. Looking at the period after 1559 (up to the middle of the 17th century), we find that only one of sample families marries into nobility. This is the Giunta family, which is in the control group of our sample. This evidence is extremely limited, but consistent with the idea that only the less stigmatized firms could aim for a marriage into nobility.

References

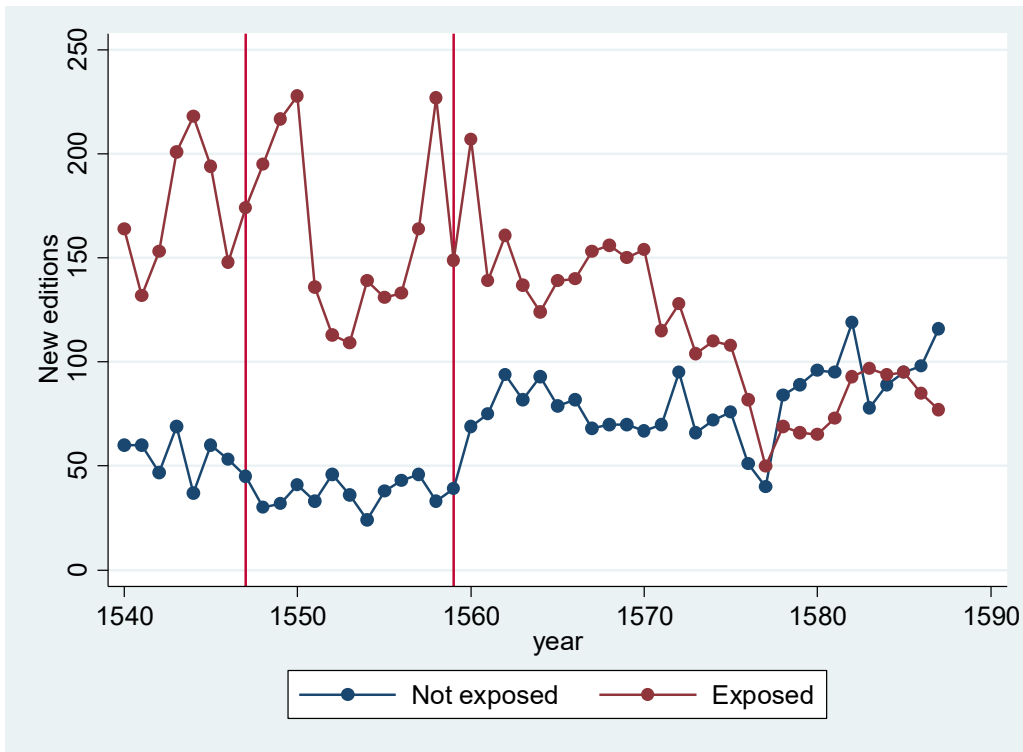
- [1] Padgett, John F., and Christopher K. Ansell. "Robust Action and the Rise of the Medici, 1400-1434." *American journal of sociology* 98, no. 6 (1993): 1259-1319.
- [2] Puga, Diego, and Daniel Treffer. "International trade and institutional change: Medieval Venice's response to globalization." *The Quarterly Journal of Economics* 129, no. 2 (2014): 753-821.

Figure A1: Effectiveness of the Pauline Index



NOTES: The figure plots the editions of books listed in the Pauline index released each year in Venice. The red line corresponds to 1559, the year in which the Pauline index was enacted.

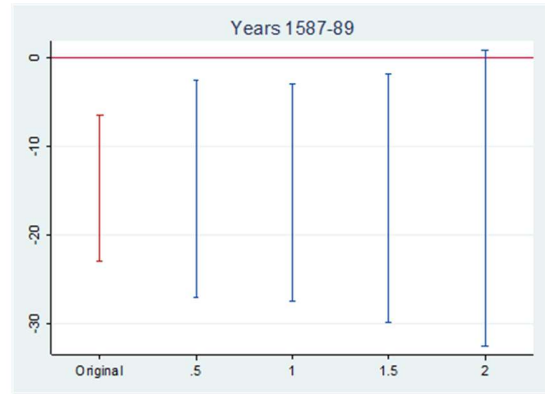
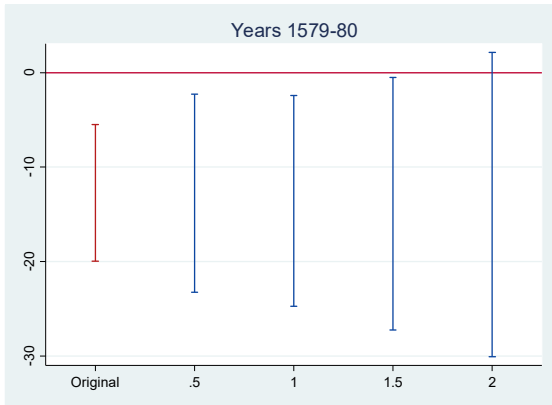
Figure A2: New editions published by Venetian printers



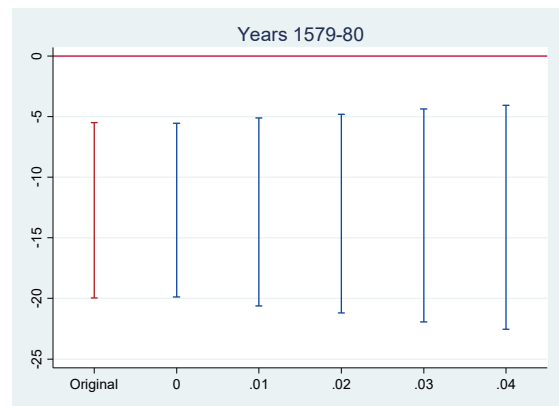
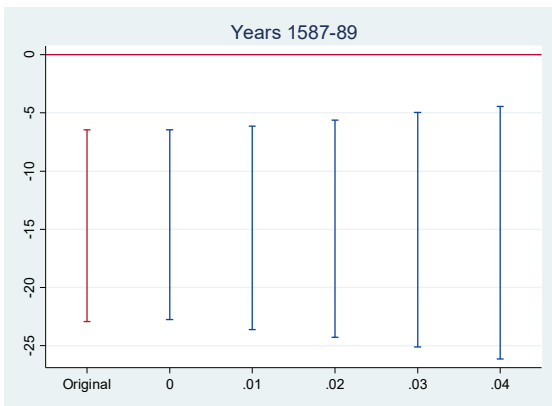
NOTES: Total new editions released each year by firms more exposed to the inquisition and those less exposed to the inquisition. Exposed firms are those which published at least one prohibited book before the inquisition was established. Red lines correspond to years 1547 and 1559.

Figure A3: Sensitivity analysis for violations in parallel trends

A. Bounds on relative magnitudes

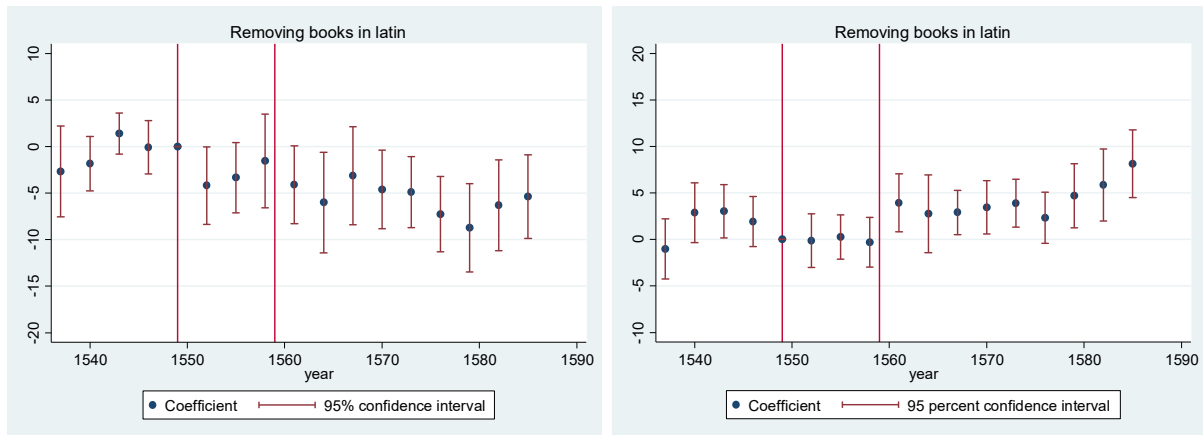


B. Smoothness restrictions



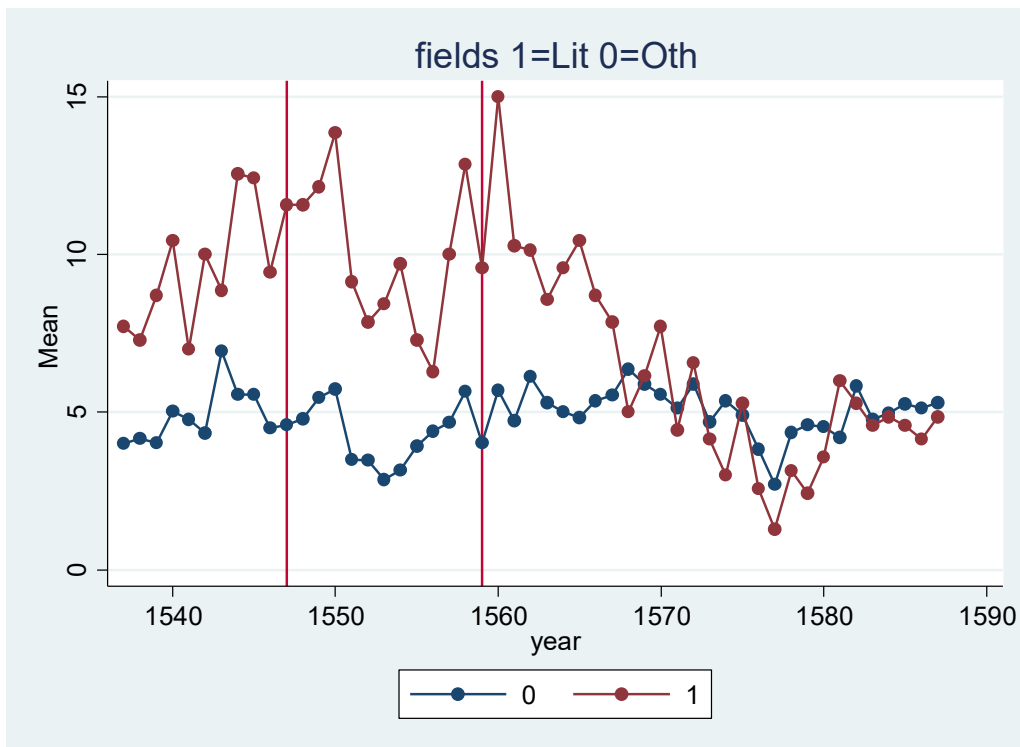
NOTES: The figure implements robustness tests proposed by Rambachan and Roth (2023) for selected coefficients of the difference in difference event study presented in Figure 1. Panel A shows sensitivity analysis restricting post-treatment violations to be no larger than M times the maximal pre-treatment violation. Panel B allows violations of pre-trend by a factor, M , across consecutive periods. The values of M are reported in the horizontal axis.

Figure A4: Dynamic effects on yearly new editions of Venetian firms relative to foreign firms (books in Latin removed)



NOTES: The dependent variable is the number of new editions printed by the firm in year t ; books written in Latin are excluded from the analysis. The left panel includes Venetian firms exposed to the Inquisition and foreign firms; the figure plots the coefficients (and 95% confidence intervals) of the interaction terms between dummies for two-year time windows and the treatment dummy for the Venetian firms. The right panel includes Venetian firms not exposed to the Inquisition and foreign firms; the figure plots the coefficients (and 95% confidence intervals) of the interaction terms between dummies for two-year time windows and a dummy for the Venetian firms.

Figure A5: Literature fields vs other fields



NOTES: The figure plots the yearly average number of new editions per field (USTC classification). 1: Literature fields; 0: other fields. Red lines correspond to years 1547 and 1559.

Table A1: Summary statistics

	obs.	mean	sd	min	max
New editions	1.377	7.391	9.731	0	64
Inquisition	1.377	0.523	0.500	0	1
Early inquisition	1.377	0.144	0.351	0	1
Index	1.377	0.379	0.485	0	1

NOTES: Unit of observation is a firm-year. The time window covered is 1537-1587. New editions = number of new editions published by the firm in Venice in year t. Inquisition=1 after 1547 for firms exposed to the inquisition. Early inquisition=1 for firms exposed to the inquisition during 1547-1558. Index=1 after 1559 for firms exposed to the inquisition. A firm is classified as exposed to the inquisition if, in the time-window 1520-47, it published at least one book listed in the indexes of prohibited books of Rome, Venice, Milan or Parma.

Table A2: Sample firms, members and period of activity

TREATED FIRMS				TREATED FIRMS			
Family	Family members involved (1537-87)	First pub in Edit16	Exit	Family	Family members involved (1537-87)	First pub in Edit16	Exit
Arrivabene	Giorgio, Cesare, Andrea, Cornelio.	1501	1598	Tramezzino	Francesco, Michele il vecchio, Venturino, Michele il giovane.	1532	1592
Bindoni	Alessandro, Francesco il vecchio, Benedetto, Agostino, Bernardino, Marco, Stefano, Candido, Francesco il giovane, Gaspare il vecchio, Giovanni Antonio, Gaspare il giovane.	1504	1602	Valgrisi	Vincenzo, Pietro, Guglielmo, Felice, Giovanni.	1539	1603
Comin	Comin da Trino. Also with the emblems: Al segno del Nettuno and Al segno della Croce	1539	1580	Viani	Bernardino il vecchio, Alessandro, Bernardino il giovane, Vincenzo.	1501	1582
Giolito	Giovanni il vecchio, Gabriele, Giovanni Francesco, Giovanni il giovane, Bonifacio, Giovanni Paolo, Chiara.	1505	1642	Zanetti	Bartolomeo, Cristoforo, Francesco, Bonifacio, Pietro, Luigi, Alessandro, Antonio, Fiorenza. Also with the emblem: Tipografia della Congregazione dell'orologio.	1535	1593
Liechtenstein	Peter, heirs of Peter.	1501	1585	CONTROL FIRMS			
Lorio	Lorenzo, Jacopo, Giulio, Camillo, Lorio.	1514	1585	Farri	Giovanni, Domenico, Onofrio, Giovanni Antonio, Pietro, Ottavio. Also with the emblem: Al segno della Carità.	1540	1647
Manuzio	Aldo, Paolo, Antonio, Aldo. Also with the emblems: Accademia Veneziana, Al segno di Aldo and Biblioteca Aldina	1501	1599	Francesco da Salò	Francesco da Salò il vecchio, Francesco il giovane.	1527	1600
Marcolini	Francesco, P.M.L. Also with the emblem: Accademia dei Pellegrini.	1534	1577	Gardane	Antonio, Angelo, Alessandro.	1538	1685
Navò	Curzio Troiano, Fabio.	1537	1599	Giunta	Lucantonio, Filippo, Bernardo, Giuntino, Filippo, Iacopo, Tommaso, Benedetto, Lucantonio (il giovane), Cosimo.	1501	1688
Nicolini	Giovanni Antonio, Pietro, Stefano, Cornelio, Giovanni Maria, Domenico.	1512	1610	Imberti	Gerardo, Domenico, Giovanni Domenico.	1529	1662
Ruffinelli	Venturino, Giacomo, Giovanni Angelo, Diego, Tommaso. Also with the emblem: Al segno del Nettuno.	1534	1588	Paganini	Paganino il vecchio, Alessandro, Paganini il giovane, Pietro.	1501	1610
Scoto	Bernardino, Ottaviano il vecchio, Ottaviano il giovane, Barndino, Girolamo, Giovanni Maria.	1501	1641	Pinzi	Filippo il vecchio, Donnino, Aurelio, Filippo il giovane, Camillo. Also with the emblem: Al segno del Mappamondo.	1501	1581
Sessa	Giovanni Battista il vecchio, Melchiorre il vecchio, Giovanni Battista il giovane, Melchiorre il giovane, Luigi, Giovanni Bernardo, Francesco, Veronica.	1500	1629	Rampazetto	Francesco il vecchio, Giovanni Antonio, Francesco il giovane.	1540	1615
Torresano	Andrea il vecchio, Federico, Giovanni Francesco, Bernardino, Girolamo. Also with the emblem: Biblioteca Aldina.	1501	1589	Valvassori	Giovanni Andrea, Florio, Luigi.	1520	1593

NOTE: sources Edit16 and Griffante et al. (2006)

Table A3: Robustness of the baseline regression

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Variable	New editions	New editions	New editions	New editions	New books only	New editions
Estimation	weighted OLS	OLS	OLS	OLS	OLS	OLS
Early Inquisition	0.632 (2.230)	1.426 (1.666)		1.521 (1.647)	0.667 (1.412)	0.939 (1.097)
Index	-8.030** (3.662)	-5.338** (2.372)		-6.108** (2.720)	-6.307*** (2.240)	-6.568*** (0.964)
Early Inquisition 42			-1.007 (1.878)			
Index 42			-5.944** (2.791)			
Year effects	YES	YES	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES	YES	YES
Clustered std. error	YES	YES	YES	YES	YES	NO
Sample	full	largest firms dropped	full	Drop firm most active outside Venice	full	full
Observations	1377	1275	1377	1326	1377	1377

NOTES: robust standard errors clustered at the firm level in parentheses (except Col. 6). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Col. (1): observations weighted by pre-47 publication level of the firm; Col. (2): dropped the largest two firms (Bindoni and Scoto); Col. (3): baseline regression with exposure based on books published in 1500-42 time window; Col. (4): drop Ruffinelli family (firm most active outside Venice); Col. (5): dep. variable does not include reprints; Col. (6): baseline regression with robust standard errors not clustered at the family level. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559. Early Inquisition 42 and Index 42 are constructed classifying firms as treated if they published at least one listed book in the 1500-42 time-window.

Table A4: Effects across different inquisition exposure levels

	(1)	(2)	(3)
Dep. Variable	New editions	New editions	New editions
Early Inquisition	1.271 (1.875)	0.719 (1.992)	1.823 (2.751)
Index	-5.234** (2.518)	-6.817** (3.105)	-0.765 (2.940)
Sample	Dropped firms with exposure between 33rd and 53rd percentile	Dropped firms with largest exposure (top 20%)	Only firms above 33rd percentile - treated firms in top quartile
Year effects	YES	YES	YES
Firm effects	YES	YES	YES
Observations	1173	1173	918

NOTES: OLS regressions with robust standard errors clustered at the firm level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559. The level of exposure of firms is based on the ratio between the books published in 1520-47 that will be listed in one of the indexes of prohibited books and the total number of books published by the firm in the same time window.

Table A5: Inquisition and publication of books - heterogeneous effects

Dep. Variable	(1) New editions	(2) New editions	(3) New editions	(4) New editions	(5) New editions
Early Inquisition	3,027 (2.218)	0.472 (2.467)	1.835 (2.545)	1.134 (1.598)	0.939 (1.673)
Index	-3.207 (3.593)	-8.420* (4.583)	-3.994 (3.970)	-6.925** (2.401)	
Index Recent					-8.580*** (2.163)
Index No Recent					-6.316** (2.775)
Observations	612	765	714	663	1377
Sample	Firms with more than 50% publications in Latin before 1547	Firms with less than 50% publications in Latin before 1547	Firms with a number of distinct authors above median	Firms with a number of distinct authors below median	Full 1377 obs.

NOTES: OLS regressions with robust standard errors clustered at the firm level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559 in cols. (1)-(4). Col. (5), Index Recent=1 for firms in the top quintile for book age at the date of inclusion in the Index. Index No Recent=1 for the other treated firms.

Table A6 - Controlling for spillover effects

Dep. Variable	(1) New editions	(2) New editions
Early Inquisition	0.939 (1.099)	0.939 (1.673)
Index	-6.729*** (0.992)	-5.575*** (0.974)
Competitors exposed X Index	4.349** (2.174)	
At least 1 competitor exposed X Index		2.233** (0.993)
Observations	1377	1377

NOTES: OLS regressions with robust standard errors clustered at the firm level in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559. Competitors exposed X Index: fraction of competitors that are treated times dummy=1 after 1559. At least 1 competitor exposed X Index: dummy=1 if at least one competitor is treated times dummy=1 after 1559.

Table A7: Robustness of the family-field regressions

	(1)	(2)	(3)	(4)
Dep. Variable	New editions literature	New editions literature	New editions literature in vernacular	New editions literature in latin
Estimation	Poisson	OLS	OLS	OLS
Early Inquisition	0.208 (0.196)	0.293 (0.638)	0.192 (0.505)	0.101 (0.281)
Index	-1.202**** (0.317)	-2.210** (0.802)	-1.793** (0.723)	-0.417 (0.346)
Year effects	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES
Unit of observation	firm-field-year	firm-year	firm-year	firm-year
Sample size	9639	1377	1377	1377

NOTES: robust standard errors clustered at the firm level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559.

Table A8: Entry rates

	1537-59	1560-87	equality t-test
Entrants per year	5.5	7	p=0.06
Surviving at least 3 years	3.77	4	p=0.71
Surviving less than 3 years	1.73	3	p<0.01

Table A9: Inquisition and publication of books by authors new to Venice

	(1)	(2)	(3)	(4)
Dep. Variable	Contemporary author already active in Venice	Contemporary author new to Venice	Contemporary author new to Venice (high bargaining power)	Contemporary author new to Venice (low bargaining power)
Estimation	Probit	Probit	Probit	Probit
Early Inquisition	-0.371 (0.299)	-0.221 (0.353)	-0.458 (0.452)	-0.053 (0.424)
Index	-0.083 (0.242)	-0.666** (0.281)	-0.975** (0.407)	-0.454 (0.313)
Year effects	YES	YES	YES	YES
Firm effects	YES	YES	YES	YES
Sample	Literature books with author not listed in any index	Literature books with author not listed in any index	Literature books with author not listed in any index. Drop new authors with low bargaining power	Literature books with author not listed in any index. Drop new authors with high bargaining power
Sample size	1661	1661	1437	1564

NOTES: robust standard errors clustered at the firm level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Contemporary author already active in Venice=1 if author alive in XVI century and active in Venice before 1537. Contemporary author new to Venice=1 for the first book published by an author alive in XVI century and active in Venice only after 1537. High bargaining power if the number of publications outside Venice of the new author is above the median. Low bargaining power if below median. Early inquisition=1 for treated firms during 1547-1558. Index=1 for treated firms after 1559.

Appendix C: Additional Historical Evidence

In this Appendix, we provide additional evidence on the evolution of censorship and on the relationship between authors and publishers. These arguments complement the discussion in the main text of the paper and provide further support to the theoretical framework developed in Section 4.

Indexes of prohibited books, vernacular literature and regulatory uncertainty

The target of the Inquisition changed over time. Religious publications related to Protestant ideas were the initial target but the number of prohibitions and their scope rapidly expanded to include topics and genres – especially those related to literature – that had no direct connection with religious issues. Different editions of the Roman indexes encompassed an increasing number of prohibitions and different rules for their enforcement.

The main concern of the Church was that ordinary people, possibly influenced by superstition, could misinterpret texts and be induced to engage in sinful behavior. According to Pope Clemens VIII “*Books affect their readers. Books can infect the incautious minds with hidden poison during the reading process. (...) Incautious readers cannot defend themselves from unconsciously receiving harmful contents. Censorship should therefore control books, the reading experience and, ultimately, man. For this reason, poetry was to be included in censorship*”. (Helm, 2015, p. VII). Since the knowledge of Latin was considered an indicator of an adequate education, the regulation was particularly severe in censoring vernacular books, both religious (Bibles in vernacular included) and literature books (in particular vernacular literature titles such as chivalry romances that were very popular at that time). Vernacular Bibles were prohibited, even in the case of translations of approved and legitimate Latin Bibles because of the concern that uneducated people, possibly tempted by heretic views, could misinterpret the main religious message of the Holy Scriptures.¹

The prohibitions of vernacular poetry and prose have been particularly severe. Authors like Boccaccio were banned because they depicted a corrupt clergy and explicit sexual content. Censorship targeted love poetry and romances where women were deified, giving rise to a tension between religious rules and carnal love and desire. Vernacular literature often represented

¹Historians have documented cases of punishment for spreading an unapproved interpretation of the Bible. For example, Ginsburg (1980) describes the 1583 trial of the miller Menocchio, in the mainland of the Venetian Republic, which ended with the condemnation of the miller, guilty of heresy because of improper interpretation of the Bible.

love as an absolute need, something so strong that men could not resist. According to the Inquisition this was in contrast to free will and divine providence. For instance, an inquisitor criticized the poet Petrarch because: “*Petrarch denies man’s free will and divine providence so that he believes himself to be compelled by fate to love Laura*” (Helm 2015; 96). Other problematic topics common in vernacular literature include supernatural powers or rings and objects of occult rituals. Finally, several books were banned because of their improper use of religious language to indicate profane places and objects. As explained by Helm (2015; p103) “*literary places often played important roles in poetry and censorship through the profanation of a sacred place by means of occult rituals, the abuse of religious language, and other forms of mingling of the sacred and profane, as seen in censorships of the Furioso and Dante. In addition to the earlier examples of “cemetery” and “church”, another example is “paradise”. “Paradise” was used with both literal and metaphorical meanings, so the simple censorship of a place name restricted the freedom of language, style and content.*”

The enlargement in the scope of prohibitions together with a series of extremely general rules that allowed for different interpretation by the inquisitors greatly increased uncertainty about the regulation and its enforcement. In what follows we present some of the key features of the main indexes of prohibited books of the XVI Century in Italy.

Venetian Index 1549: Venice was the first to draft an index of prohibited books in 1549. The index, though never enforced in practice, comprised 149 prohibitions, related to Protestant books in most of the cases. No literary books were included (Fraguito, 2019, p.77).

Pauline Index 1559: the index issued under Pope Paul IV in 1559 was the first prepared by the Roman Inquisition and it comprised more than one thousand prohibitions. It banned all vernacular editions of the Bible in addition to 30 Latin editions of the Bible and 10 of the New Testament (Wolf, 2006). The Pauline Index vastly enlarged prohibitions and, as explained by Grendler (1975), led to a clear shift toward a Counter-Reformation posture. For the first time, the index also included books with non-religious content, encompassing several vernacular classical authors such as Ariosto, Boccaccio, and Macchiavelli. It was followed by the introduction of legal hurdles for the publication of new books.

Just few months after the approval of the index Pope Paul IV died. The newly elected Pope, Pius IV, announced some revisions to the index and assigned the task of preparing the list

of prohibited books to the bishops gathered in Trento for the Council. The revisions announced by the new Pope were indicative of the existence of different views about censorship within the Roman Church, with Pope Paul IV in favor of marked centralization of the censorship activity in the hand of the Roman Inquisition, and Pope Pius IV in favor of a more decentralized organization where local inquisitors and bishops had a more important role. Despite the limited span of validity, the Pauline Index had a profound impact on censorship activities (Fraguito, 2019).

Tridentine Index 1564: after 5 years of discussions and revisions, in 1564 the Roman Church issued a new index which introduced only minor changes to the list of banned books included in the Pauline Index. The great novelty of the Tridentine Index was the inclusion of a series of general rules to guide the Inquisition activity. Historians have stressed the vagueness of these rules which generated widespread uncertainty (Fraguito, 2019). For instance, rule VII introduced a general prohibition against immoral and obscene books without providing a specific definition of what obscene and immoral meant. This allowed great discretion in the interpretation and execution of the rule. The enforcement of the index was decentralized and responsibility for the inquisitorial activities were given to local bishops. The decentralization of the enforcement in combination with the ambiguity of the rules put forward by the Tridentine Index greatly increased uncertainty about the regulation, as the same book could be treated very differently by local inquisitors. Another novelty of the Tridentine Index was the procedure of expurgation i.e. the possibility to amend books whose content was considered to be appropriate except for a few ‘mistaken’ passages. Large discretion also characterized the procedure of expurgation. For publishers it was not possible to estimate the time needed for the whole procedure to be completed, nor to predict what parts of the books were acceptable and what required adjustments (and additional cost) or would be canceled altogether (Fraguito, 2019). While waiting for the decision on of the Inquisition about the expurgation, the book was ‘suspended’ , that is, it could not be sold.

Clementine Index 1596: the last Roman Index of the XVI century was issued in 1596. This new index expanded the number of banned books as it included 1143 prohibitions, 682 of which referred to authors whose works was totally banned. The Clementine Index is considered the highest point in the press control by the Roman Inquisition (Infelise, 1999).

Publishers' specialization, reputation and author-publisher relationship

Grendler (1977) suggests that publishers, especially the larger ones, tended to specialize in certain subject matters. For instance, Manuzio was renowned for its editions of classics and humanist commentaries. Tramezzino specialized in the publication of vernacular books – chivalric romances and history – and legal texts. Several factors led to such a specialization. Publishers' expertise in editing and marketing specific categories of books, as well as the ownership of assets specific to the production of particular types of books (as in the case of music, cartography, or Greek books) were important drivers of specialization. Another important driver was the close relationship that publishers often established with their authors. Reporting the case of the publisher Marcolini and of Aretino, Quondam (1980) illustrates the thorough overlap between the role of publisher and that of author, with continuous feedbacks and exchange of ideas. Quondam talks explicitly about a Marcolinian-Aretinian project whose aim was to constitute a homogeneous group of intellectuals outside the usual contexts of the time (Quondam, 1980; pp. 94-95). About 50% of the total editions published by Marcolini in the period 1534-1545 were either new editions or reprints by Aretino and, overall, the Aretino's editions represented about one third of Marcolini's total production. This and other examples reported in Grendler (1977) and Quondam (1977) highlight the intimate relationship that publishers and authors often established.² In some cases, there was a complete overlap of the two figures, as publishers were also authors of the works. Grendler (1977) reports the examples of Francesco Sansovino and Anton Francesco Doni who were both prolific authors and prominent publishers. The presence of strong ties between authors and publishers and the overlap between the two roles emerges in our data as well. For instance, the philosopher Agostino Nifo, author of more than one hundred editions, published his books almost exclusively with the Scoto family. The works of the Flemish composer De Monte Philippe were published by just two firms, Gardane and Scoto. The mix between the roles of author and publisher is exemplified in our dataset by the case of Paolo Manuzio, who was a distinguished publisher and also author of numerous dissertations and commentaries on classical authors.

The close relationship between publishers and authors lends support to two of the chan-

²The close relationship between publishers and authors is confirmed by the case of the Giolito family. Several of the artists whose works were published by Giolito were not only authors of the books but also close collaborators of the family, as they served in numerous editorial activities such as translations, commentaries or in the preparation of prefaces (Quondam, 1989). Sometimes, authors were hosted and lived in Giolito's premises, a fact that reinforces the idea of an organic relationship between the artists and the publisher (Quondam, 1989; p. 100-101).

nels through which censorship affected printing outcomes that we discuss in the theoretical considerations of Section 4 of the paper. Close ties between these two figures reduce the ability of publishers to switch to new authors and genres as a response to censorship. This suggests that publishers specialized in the production of transgressive books were likely to be the most affected by the regulation. At the same time, close ties also imply that the stigma attached to the authors of prohibited books was likely to spill over publishers by mere association, as it occurred in other contexts studied by the strategy literature (e.g. Pontikes et al., 2010; Zavyalova, et al., 2012). In other words, the close relationship with authors of banned titles may have tainted the reputation of publishers, impacting significantly on their activities.

References

- [1] Fragnito, Gigliola. 2019. *Proibito capire il Mulino*, Bologna.
- [2] Ginsburg, Carlo 1980. *The Cheese and the Worms: The Cosmos of a Sixteenth Century* Miller, Baltimore: Johns Hopkins University Press 1980.
- [3] Grendler, Paul. 1975 "The Roman Inquisition and the Venetian press, 1540-1605 *Journal of Modern History*, 47:48-65.
- [4] Grendler, Paul. 1977. "The Roman Inquisition and the Venetian printing press." . Princeton University Press.
- [5] Helm, Jennifer. 2015. *Poetry and Censorship in Counter-Reformation Italy*. Brill.
- [6] Infelise, Mario. 1999. "I Libri Proibiti da Gutenberg all'Encyclopédie" . Laterza, Bari.
- [7] Pontikes, E., Negro, G., & Rao, H. 2010. Stained red: A study of stigma by association to blacklisted artists during the "red scare" in Hollywood, 1945 to 1960. *American Sociological Review*, 75(3) 456-478.
- [8] Quondam, Amedeo. 1980 "Nel giardino del Marcolini. Un editore veneziano tra Aretino e Doni" *Giornale Storico della Letteratura Italiana*; 157, 497; 75-112.
- [9] Quondam, Amedeo. 1989. "Mercanzia d'Onore e Mercanzia d'Utile Produzione Libreria e lavoro Intellettuale a Venezia ne Cinquecento" in Petrucci, Armando. *Libri, editori e pubblico nell'Europa moderna*. Laterza.

- [10] Zavyalova, A., Pfarrer, M. D., Regeer, R. K., & Shapiro, D. L. 2012. "Managing the message: The effects of firm actions and industry spillovers on media coverage following wrongdoing." *Academy of Management Journal*, 55(5): 1079–1101.
- [11] Wolf, Hubert. 2006 *Storia dell'Indice : il Vaticano e i libri proibiti*, Donzelli.

APPENDIX D: Information on publishers, editions, authors and prohibited editions - Examples

D.1: Examples of publisher data (Edit16)

Bindoni, Agostino

Date di attività: 1523 - 1558

Date in banca dati: Venezia [1524?] - 1558;

Tipografo attivo a Venezia, originario dell'Isola Bella del Lago Maggiore. Si trasferì a Venezia con i fratelli Alessandro, Bernardino e Benedetto. Stampò sia da solo che in società con Benedetto e con Bernardino, e con Luca Bini. Non si conoscono sue edizioni dopo il 1558. Ebbe 5 figli, tra cui Stefano e Marco, entrambi tipografi.

Notizie:

Indirizzo:

Nella contrata de Santo Paterniano

Augustinus Bindonus; Agostino Bindoni; Augustinus de Bindonis; Augustino de Bindoni; Augustinus Bendonus; Agostino de Bindoni; Agostino Milanese

Farri, Domenico

Date di attività: 1555 - 1602

Date in banca dati: Venezia 1555 - 1600;

Tipografo attivo a Venezia, figlio di Cristoforo e fratello di Giovanni e Giovanni Pietro. N. nel 1519, lavorò dapprima con i fratelli a San Zulian, da solo a San Moisè e a San Antonin, in società con Giovanni Bonadio a Santa Sofia. Fu processato per stampa di testi privi d'imprimatur o con privilegi a favore di altri tipografi. Ebbe 11 figli: Onofrio, Giovanni Antonio, Pietro, Ottavio, Benedetto, Girolamo, Luchina, Silvia, Camilla, Pantasilea e uno di cui non si conosce il nome. M. il 1.2.1604. Gli succedettero i figli Onofrio, Giovanni Antonio e Pietro.

Notizie:

Insegna:

Grifone

D.2: Examples of data on editions (Edit16)

Titolo: Cortigiana.
Pubblicazione: In Vinegia : appresso Gabriel Giolito de Ferrari e fratelli, 1550.
Descrizione fisica: 76 [i.e. 75], [1] c. ; 12°
Impronta: s-re a.ai e.pa MoLe (3) 1550 (R)
Lingua: Italiano
Luoghi: I.Venezia
Paese: Italia
Autori: 1.Aretino, Pietro <1492-1556>
Editori: 1.Giolito De Ferrari, Gabriele & fratelli
Fonti: BOGIO, CCBIT, INAUR
Stato: Massimo
Identificativo: CNCE 2471

Titolo: Il primo libro de balli a quattro voci, accomodati per cantar et sonar d'ogni sorta de istromenti. Di d. Giorgio Mainerio parmeggiano maestro di capella della S. Chiesa d'Aquilegia.
Pubblicazione: Venezia : Angelo Gardane, 1578.
Descrizione fisica: 4 fasc. ; 4°obl.
Note: S, A, T, B.
Lingua: Italiano
Luoghi: I.Venezia
Paese: Italia
Genere: Musica a stampa
Autori: 1.Mainerio, Giorgio <ca. 1535-1582>
Editori: 1.Gardane, Angelo
Fonti: RISM, URFM
Stato: Minimo
Identificativo: CNCE 44707

D.3: Examples of author data (Edit16)

Nome: Aretino, Pietro <1492-1556>
Notizie: Letterato e poeta, autore di commedie e scritti satirici, nato ad Arezzo nel 1492 e morto a Venezia nel 1556. Usò lo pseudonimo di Partenio Etiro.
Nome su edizioni: Pietro Aretino
Fonti: IBI, BOGIO, FRI, EI, DBI, DEI, IBN, ADCAM, CG, BNF, NUC (Aretino, Pietro); BMSTC, BLC (Pietro, Aretino); JO (Petrus Aretinus); NBG (Aretin, Pierre L'); BU (Aretin , Pierre); DAG (Bacci, Piero/Aretino, Piero).;
Stato: Massimo
Identificativo: CNCA 846

Nome: Mainerio, Giorgio <ca. 1535-1582>
Notizie: Compositore. Nato a Parma intorno al 1535, morto ad Aquileia nel 1582. Sacerdote, fu mansionario e maestro di cappella del Duomo di Aquileia.
Nome su edizioni: Giorgio Mainerio parmeggiano
Fonti: DBI, DEUMM, FET, GRV, IBI, RISM, EIT, AP, NUC, BNF, BMSTC, IN, S ML, ENMUS (Mainerio, Giorgio);
Stato: Massimo
Identificativo: CNCA 11753

D.4: Examples of prohibited editions (De Bujanda, 1996)

696	ÉDITIONS DES OUVRAGES CONDAMNÉS	697	ÉDITIONS DES OUVRAGES CONDAMNÉS
			VENEZIA
BASCARINI, Niccolò et MAGNO, Marco Antonio: VALDÉS, J., <i>Alphabeta christiano</i> , 1545 (III, 204; VI, 162; VIII, 364).	BETTINI, L., <i>Oracolo della renovazione della chiesa</i> (G. Savonarola), 1543 (VIII, 576). MAINARDI, A., <i>Facetie</i> , 1538, 1549 (VIII, 215). — Et PAGANO, Matteo: MAINARDI, A., <i>Facetie</i> , c.1555 (VIII, 215).		BENALI, Bernardino: FORESTI, J.F., <i>Supplementum chronicarum</i> ^(E) , 1483, 1486 (IV, 525).
BERTANO, Giovanni Antonio: SANSOVINO, F., <i>Concetti politici</i> ^(E) , 1578 (IX, 426). SIRINO, G., <i>Come acquistar si debbe la divina gratia</i> , 1574 (V, 510; VI, 648).	BINDONI, Francesco et PASINI, Matteo: ALESSANDRI, C.B.O., <i>Nova Phenice</i> , 1526 (IX, 90). <i>Bible. N.T.</i> (ita.), 1538 (VIII, 329). MAINARDI, A., <i>Facetie</i> , 1525, 1548 (VIII, 215). OCHINO, B., <i>Prediche</i> , 1541 (IV, 411; V, 526; VI, 624).		BERTANO, Giovanni Antonio: SANSOVINO, F., <i>Concetti politici</i> ^(E) , 1578 (IX, 426). SIRINO, G., <i>Come acquistar si debbe la divina gratia</i> , 1574 (V, 510; VI, 648).
BEVILACQUA, Niccolò: DELLA CASA, G., <i>Poemata</i> , 1558 (VIII, 282). Héritiers de: SIMEONI, G., <i>Figure de la Bibbia</i> , 1574 (IV, 482).	BONDANI, G., voir BINDONI, Agostino. BIONDO, Girolamo, avec BINDONI, A. BOLANUS, Franciscus, avec SANTRITTER, J.L. BONELLI, Giovanni Maria: DELLA BARBA, P., <i>Discorsi filosofici sopra il sogno di Scipione</i> , 1553 (IX, 164).		BEVILACQUA, Simone: BOIARDO, M.M., <i>Orlando innamorato</i> ^(E) (t. III), 1495 (IV, 545).
BINDONI, Agostino: GELLI, G.B., <i>Capricci del bottaio</i> , 1550 (III, 234). — <i>Circe</i> (ita.), 1550 (V, 469). TRICASSO DA CERASARI, P., <i>Chyromantia</i> (ita.), 1538 (VIII, 305). — Dubia: SIRINO, G., <i>Come acquistar si debbe la divina gratia</i> , 1558 (V, 510; VI, 649).	BONIBELLO, Marco Antonio: GELLI, G.B., <i>Circe</i> (ita.), 1595 (V, 469). BONIBELLO, Michele: FIORAVANTI, L., <i>Capricci medicinali</i> , 1595 (VI, 647).		BINDONI, Agostino: GELLI, G.B., <i>Capricci del bottaio</i> , 1550 (III, 234). — <i>Circe</i> (ita.), 1550 (V, 469). TRICASSO DA CERASARI, P., <i>Chyromantia</i> (ita.), 1538 (VIII, 305). — Dubia: SIRINO, G., <i>Come acquistar si debbe la divina gratia</i> , 1558 (V, 510; VI, 649).
BINDONI, Alessandro: GRAPALDI, F.M., <i>De partibus aedium lexicon</i> ^(E) , 1516 (IV, 536). — Et BIONDO, Girolamo: GRAPALDI, F.M., <i>De partibus aedium lexicon</i> ^(E) , 1517 (IV, 536).	BOSELLI (BOSELLO), Pietro: TRACHELLO STATIO, F., <i>Propedeumata oratoria</i> , 1556 (VI, 323; VIII, 469). — Avec GRIFFIO, G. BRUCIOLI, Alessandro: — Dubia: VALDÉS, J., <i>Alphabeta christiano</i> , 1546 (III, 204).		BINDONI (DE BENDONI), Bernardino: BENEDETTO DA MANTOVA, <i>Trattato del beneficio di Gesu Cristo</i> , 1543 (III, 198; V, 546; VI, 666; VIII, 385).