

Illegal book trade and the market for political ideas in eighteenth century France*

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Abstract

How could radical political ideas spread across eighteenth-century Europe despite censorship by autocratic monarchies? The paper presents new evidence that the illegal book trade of the age was able to facilitate a fully functioning market for ideas. The paper exploits a policy shock where France abandoned its import duty on books in 1775 and estimates import-demand elasticities for the illegal book market, drawing on microdata of 854,000 individual book sales from one of the major publishing houses in Europe, the *Société Typographique de Neuchâtel*. We find large import-demand elasticities of the same order of magnitude as estimates for modern goods. We take this as strong evidence that the illegal book trade facilitated a fully functioning modern market for ideas. We even find larger elasticities for censored and radical works and, using text analysis, show that these used pre-revolutionary rhetoric that attacked and undermined the *ancien régime* in the period leading up to the French Revolution.

Keywords: Knowledge economy, censorship, book trade, illegal publishing, paper tax, radical enlightenment

JEL: N43, N73, Z11, H20, L82, O31, O33

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1 Introduction

At face value, eighteenth century Europe looked like a patchwork of autocratic states with active censorship and without a free market for ideas. Yet, we also find that this period produced significant innovations in political ideas (Mokyr, 2016; Almelhem et al., 2026). In fact, the roots of many of our contemporary ideas of democracy lie in eighteenth century Europe, especially in the period preceding the French Revolution (Israel, 2002, 2011). This raises the question of how this continent of mostly absolutist regimes with official censorship could give rise to so many intellectual innovations. After all, European monarchs controlled the institutions that licensed publication and could prohibit the arguments that questioned their legitimacy. So, how did the ideas of the enlightenment reach their readers?

A possible answer lies in Europe's fragmented structure. Dissidents could not only travel from one polity to another, but also publish in countries where their books were not prohibited. The importance of state fragmentation and dissidents' mobility for the European knowledge economy and for the Republic of Letters has been prominently emphasized by Mokyr (2016). We apply this argument to the market for political ideas and the illegal book trade. In the eighteenth century, publishers operating in another country were often engaged in exporting pirated reprints. This made it easy for them to also include censored works in their shipments that could not be printed domestically. Yet, did the illegal book trade provide a sufficiently functioning market for ideas?

This paper provides the first quantitative evidence that the illegal book trade created a fully functioning market for ideas by drawing on the case of *ancien régime* France. Using the complete sales data from one of the most important enlightenment publishing houses, the *Société Typographique de Neuchâtel* (Burrows, 2013b), we show that the market for illegal books in France responded elastically to price shocks. Moreover, we argue that the economic structure of the *ancien régime* actually encouraged the illegal book trade. As a part of an operation to salvage its precarious state of finances, the French state introduced a tax on paper in 1771 that raised production costs for domestic publishers. As a consequence, this lowered the relative price of illegally traded books from abroad, including censored and radical books that challenged the legitimacy of the regime.

To provide causal estimates of market responses in the illegal book trade, we compare the exports of the *STN* to other European countries in a synthetic difference-in-differences design. As a source of exogenous variation, we rely on a sequence of French policy shocks. After introducing a tax on domestic paper in 1771, the French state offset the advantage this gave to foreign publishers with an additional import duty. In April 1775, the duty was revoked while the tax remained. Foreign publishers were left with a lasting cost advantage inside France.

We find that after the revocation of the import duty in 1775, shipments to France rose by 49% relative to synthetic France. Set against a duty of roughly 10% of the price of a book, this implies a trade elasticity of 4.0. The estimate lies within the range of trade elasticities estimated for modern goods (Broda and Weinstein, 2006; Caliendo and Parro, 2015; Fisman and Wei, 2004). We take this as strong evidence that the illegal book trade was a fully functioning market that was responsive to price shocks and able to ensure the flow of ideas across borders.

The shock also changed the relative price of censored and prohibited literature. Censored books were supplied almost entirely from abroad, whereas legal books came mostly from domestic publishers. A uniform cut in the price of foreign books was therefore a targeted cut in the price of censored relative to legal literature. Consistent with this, shipments of titles censored by the French state respond with an elasticity of 5.4 to the 1775 shock, more strongly than the *Société Typographique de Neuchâtel*'s trade as a whole. Across genres, the response is strongest for the radical enlightenment, erotic literature, and science, highlighting the inflow of radical ideas through the illegal book trade.

Next, we investigate the rhetorical content of the censored books imported into France through the illegal book trade. For this, we analyse the language of books by relying on full text data. We capture the rhetorical dimensions of *desacralizing the monarchy*, *anticlericalism*, *critique of despotism*, and employment of *sexualized political language* by using a large language model to classify the full text books. We then compare the prominence of these rhetoric patterns in the censored literature to the literature printed in France. To make the analysis comparable, we restrict the domestic French sample to only radical genres and add pre-revolutionary pamphlets as an additional comparison group. Overall, we classify 521,402 paragraphs made up of 233 million words. We find the censored literature imported through the illegal book trade was more radical than radical literature printed in France.

Finally, we also classify the language of the revolutionary period by relying on revolutionary pamphlets from the Newberry collection and Marat's radical newspaper, *L'Ami du peuple*. We find that the censored literature was also similar to the rhetorical patterns observed in the texts from the Revolution. Overall, we conclude that the illegal book trade indeed facilitated the flow of radical and proto-revolutionary ideas into France.

Lastly, we critically discuss the external validity of our estimated trade elasticities. Note that it is not clear ex ante whether the trade patterns we find for the sales data of *Société Typographique de Neuchâtel* only capture the trade of one major foreign publisher or generalize to the full market of foreign publishers surrounding France. Since the *Société Typographique de Neuchâtel* is the only publisher for which micro-level sales data survives, we instead draw on the number of published books from Quérard's *La France Littéraire*, a compendium of all French-language books of the period. We show that, in line with our previous findings, the number of French-language books published abroad increased following the tax on paper and revocation of the tariff on books, while the number of domestically printed books fell immediately after the introduction of the tax. These results further support our previous findings and show that the tax on paper and revocation of the tariff created favourable incentives for publishers of French books outside of France.

Altogether, the results imply that censorship in the *Ancien Régime* was ineffective in limiting the print market for radical political ideas. We show that the quantity of imports in the illegal book trade, including censored literature, responded to price shocks like that of any other traded good. We further show that the economic policies of the French state created the economic incentives that led to a large inflow of censored books that challenged the authority of the king and ancien régime and prefigured the rhetoric of the French Revolution. Although the regime reacted in 1782 with a crackdown on censored and illegal literature, this came too late. After all, the state could only stop the inflow of further books

from abroad. The illegal books that had been illegally imported into France over the last decade remained within the country and continued to be read – including the radical material, desacralizing the monarchy, attacking the clergy, and calling out against despotism, and with them Bayle, Montesquieu, Diderot, Voltaire, and Rousseau.

Our paper contributes to four literatures. First, it adds to the literature on the role of the knowledge economy in Europe’s economic ascent pioneered by Mokyr (2002, 2016) and Greif, Mokyr and Tabellini (2025). Mokyr’s ideas have given rise to a rich empirical literature (De la Croix, Doepke and Mokyr, 2018; Ku, Koyama and Sng, 2018; Hornung, 2014; Dittmar and Meisenzahl, 2020; Stefanski, 2026; Zanardello, 2024; De la Croix, Scebba and Zanardello, 2026). The studies closest to the paper at hand are Squicciarini and Voigtländer (2015), who show that cities with more copies of Diderot’s *Encyclopédie* experienced more economic growth, as well as Rosenberger (2024).

Secondly, it contributes to the literature on the role of economic incentives in early print capitalism and other historical media (Dittmar, 2011; Dittmar and Seabold, 2019; Rubin, 2014; Cantoni, Dittmar and Yuchtman, 2018; Giorcelli and Moser, 2020; Buringh and Van Zanden, 2009). This is related to the literature on tax and tariff evasion (Allingham and Sandmo, 1972; Javorcik and Narciso, 2008; Slemrod, 2007; Fisman and Wei, 2004) and illegal activity as a response to prices pioneered by Becker (1968).

Thirdly, it is part of a rich historical literature on the French enlightenment publishing industry pioneered by Darnton (1973, 1982, 1987, 1995, 1996, 2012, 2021, 2024b, 2014) and others (Chartier, 1991; Febvre and Martin, 1958). This literature has given rise to several projects in the field of digital humanities that have attempted to map the French enlightenment publishing industry (Darnton, 1973, 1982, 1987, 1995, 1996; Darnton and Schlup, 2005; Darnton, 2012, 2021, 2024b; Burrows, 2013a,b; Burrows and Curran, 2012; Curran, 2010a,b, 2013; Schlup et al., 2002; Freedman, 2012).

Finally, the paper adds to a growing literature in economics and economic history that looks at the French Revolution through the lens of political economy (Rosenthal, 1992; Acemoglu et al., 2011; Dincecco, 2011; Franck and Michalopoulos, 2017; Squicciarini, 2020; Finley, Franck and Johnson, 2021; Kelly, 2021; Blanc, 2023; Ottinger and Rosenberger, 2023; Waldinger, 2023; Chambru, Henry and Marx, 2024; Sasaki, 2025; Stewart, 2025; Davoine, Enguehard and Kolesnikov, 2025).

The rest of the paper is organised as follows. Section 2 introduces the historical background — both the nature of the enlightenment book trade in *Ancien Régime* France and the tax shocks which are the basis of the present analysis. Section 3 introduces the data used throughout this paper: the *Société Typographique de Neuchâtel*’s records in section 3.1 and the historical bibliography of French literature by Quérard (1827-1839) in section 3.2. Section 4 looks at the effect of the abolition of the retaliatory tariff in combination with the tax on the STN’s exports in aggregate. Section 5 investigates which books exactly were affected disproportionately by the shock. Section 6 employs natural language processing to investigate the content of the books the STN exported to France. Section 7 empirically investigates the effects of the paper tax on domestic French book production. Section 8 discusses the significance of these quantitative results, especially in light of the work by Mokyr (2016) and Darnton (1982). Section 9 concludes.

2 Historical Background

2.1 Intellectual property rights and the illegal book trade in the *ancien régime*

Intellectual property rights in their modern form did not exist in the eighteenth century. Instead, the French Crown granted monopolies to guilds who tried to enforce exclusive rights to sell the books they had gotten from contracts with authors. Before the French Revolution, the production and distribution of these books in the Kingdom of France were firmly in the hands of the Paris guild, the *Communauté des libraires et imprimeurs de Paris*.¹ Guild members could purchase the exclusive right to print and publish a certain book, a so-called *privilège*, from the king, giving them a legal monopoly over the titles in their catalogs (Darnton, 1982, p. 185-187).

Yet it was universally agreed that these printing rights stopped at the border of each state (Darnton, 2021) as monopolies could only cover the sovereign territory of the ruler that granted them. Hence, booksellers in one country could not enforce their “intellectual property rights” in another country (ibid.).

The lack of modern intellectual property rights created a system with ample incentives for importing pirated books from abroad: Reprinting books in another country was legal within the structure of the *ancien régime*. These books only infringed existing monopolies the moment they entered the into France. Even then, foreign publishers only broke French law but could operate in perfect legality in their own territory. Moreover, the highly fragmented structure of Europe made smuggling and an illegal book trade relatively easy.²

¹It consisted of the printers’ and booksellers’ guild of the capital, making up 36 printers and around 100 dealers Darnton (2021). In 1666, Colbert had intervened in an ensuing trade war between printers in Paris and the provinces by placing the Paris guild in charge of the entire trade and thereby ruining the business of provincial book dealers and printers. The monopoly of the guild’s members over the book trade was “airtight” (Darnton, 1982, p. 186), especially since a new edict on publishing was passed in 1723, which had strengthened their position. This edict of 1723 made sure that privileges to publish certain titles remained in family possession and could be inherited, confirmed the tax exemption of books, and made sure that non-guild members were severely constrained in their operations, not even being allowed to sell old paper.

²Contemporaries were already aware of the problems created by the inter-European book trade without full censorship and intellectual property right protection. The treaty negotiations in Aix-la-Chapelle in 1748 had already included a proposal for universal intellectual property right protections (Darnton, 2021, p. 3). It was not adopted, nor were other proposals more successful (ibid). The obstacle was not just a coordination problem between states. In the end, elite interests within the *ancien régime* were complex. Protection of intellectual property rights was favoured by the Paris guild and opposed by the provincial guilds who often were happy to participate in various forms of the illegal book trade (Darnton, 2021).

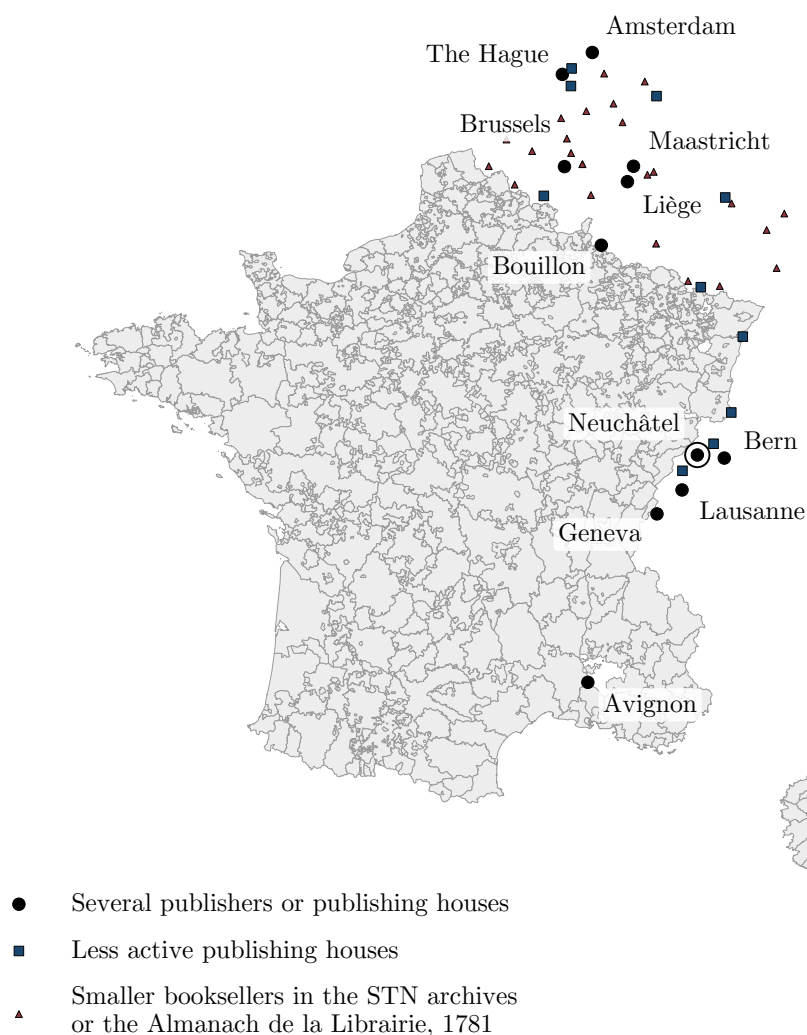


Figure 1: Enlightenment Publishing Centres of the Fertile Crescent

Notes: The classification of cities by publishing activity is drawn from Darnton (2021, p. 60). The administrative boundaries of *Ancien Régime* France are from Gay, Gobbi and Goñi (2024), who digitised Brette (1904).

As a consequence, in the eighteenth century France became surrounded by more and more printing houses across its border, legally printing works by French authors in their own territories while also participating in the highly profitable illegal book trade into France. Figure 1 illustrates the geographical pattern of this *Fertile Crescent* (Darnton, 2021) of printing houses at the French border, including cities in the Dutch Republic, autonomous principalities in the Low Countries, the Rhineland, the Old Swiss Confederacy and its Associates, as well as the Papal domain of Avignon, each town home to several publishing houses active in the clandestine cross-border trade into France. The publishing houses of this *Fertile Crescent* combined the export of legal books (by foreign authors or old works where the *privilège* had expired) with the pirating of “copyrighted” books (books that had first been printed by a French printer with a Royal *privilège*). Since the export of pirated books was already illegal, publishers often also increased profits through the distribution of censored and seditious *livres philosophiques* as

well as books within the gray area of property rights and state censorship (Darnton, 1982, p. 122-123).³ We illustrate this logic in Figure 2.

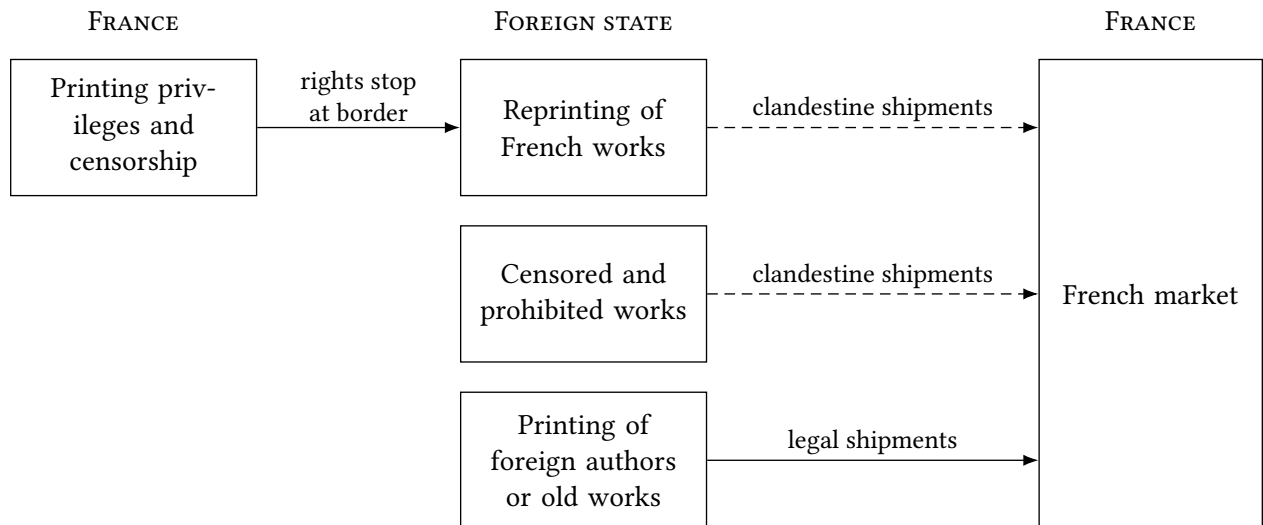


Figure 2: Territorial printing privileges and the cross-border book trade

Notes: The figure shows the logic of the cross-border book trade. Printing privileges and censorship stopped at the French border. Hence, publishers abroad could legally reprint French works. They became illegal once imported. Publishers exported all three types of books to France: i) pirated reprints, ii) censored and prohibited works, and iii) legal prints of foreign authors or very old works without privileges (where no French guild privileges were infringed) to France.

One of the most important centers of this clandestine trade in illegal literature was the Principality of *Neuchâtel*, ruled in personal union by the Prussian King and an associate of the Old Swiss Confederacy. The Old Swiss Confederacy and its associates were both central - located in the heart of Western Europe - and marginal - in the sense that its political fragmentation and weak central authority left a lot of space for freedom of thought and speech outside the reach of the European Crowns. This ideal position of geographical centrality - implying low transport costs - and political marginality combined with the fact that French was the *lingua franca* of the European intellectual elite made the French-speaking West of the Confederacy and its associates in Geneva and Neuchâtel, a major center of the European enlightenment book trade (Curran, 2021, p. 15-19).

The town of Neuchâtel was home to the *Société Typographique de Neuchâtel (STN)*, one of the most important printing and publishing houses of the French enlightenment. The *Société Typographique de Neuchâtel (STN)* offers a perfect illustration of the institutional framework of the illegal book trade. It was founded in 1769 by Frédéric-Samuel Ostervald, a prominent patrician of Neuchâtel who served as *Maître Bourgeois en Chef* and *Banneret* of the city, the two highest civilian positions in the principality (Darnton, 2021, pp. 96-98). The company held a Royal monopoly from the Prussian state whose King acted as Prince of the territory of Neuchâtel. Within Switzerland, it operated as a legal book seller. Yet, it also printed an increasingly wide range of pirated French works that were sold into France. The

³See section 3.3 for a detailed discussion of these different degrees of illegality.

printing of these works was legal, only the import itself infringed French printing monopolies. To import its books into France, the STN drew on a wide range of methods. First, it could hide illegal shipments within other books that were legally imported - mainly books written outside of France or old works. Inside bales of unbound printed sheets of books without *privilèges* - for example because they were very old or written by foreign authors - which provided a veneer of legality, explicitly illegal, pirated, offensive, and seditious literature made its way across the border. Moreover, French officials at the border could be bribed and provincial guilds within France were usually happy to cooperate within the illegal book trade that infringed the rights of the Paris guild (Darnton, 2021).⁴ By 1772, the STN already exported 470 books per month into France.⁵

Most importantly, the STN is the only clandestine publishing house of the Enlightenment whose records have survived to this day almost in their entirety. Because of double-entry bookkeeping it is possible to reconstruct *all* trades of the STN even though some records are missing (Curran, 2021, p. 1). Its archives, kept at the *Bibliothèque Publique et Universitaire de Neuchâtel*, have thus become the focus of the study of the Enlightenment book trade (Darnton, 1973, 1982, 1987, 1995, 1996; Darnton and Schlup, 2005; Darnton, 2012, 2021, 2024b; Burrows, 2013a,b; Burrows and Curran, 2012; Curran, 2010a,b, 2013; Schlup et al., 2002; Freedman, 2012)⁶

The practice of this illegal book trade also had important implications for the political economy of censorship. Since the importing of pirated books was in itself legal, it also circumvented the traditional systems of state control and censorship. For a publisher like the STN, adding books that were censored in France to their publication list was basically costless. Hence, enlightenment authors that feared conflict with censors could easily draw on a preexisting system of illegal book printing. Voltaire's "*Questions sur l'Encyclopédie*" was sold by the STN from 1770 onwards and was followed by three other books before 1773⁷. One year later in 1771, the STN started selling D'Holbach's "*Système de la nature*", a book which the *avocat-général* Séguier asked the *Parlement de Paris* to burn because it reproduced the "*indéfensible hypothesis of Epicurius and Spinoza*"⁸ (Séguier, 1771).

⁴All of these methods basically disguised the pirated books as legal books that were written abroad and did not infringe the rights of the French guilds. Yet, even the pirated books were subject to import taxes. Hence, the 1771 imposition of 60s import duty and the 1775 abolition of that duty crucially changed the incentives of both the legal and illegal book trade from abroad.

⁵It was probably best known for producing the cheap and immensely popular *Quarto* and *Octavo* editions of Diderot's *Encyclopédie* (Darnton, 1973).

⁶Burrows (2013b, p. 5) calls it "[...] universally estimated to be the richest source on the international book trade during the enlightenment." Darnton (1996, p. xxi) writes that the "[...] only papers that have survived come from a single source: the *Société typographique de Neuchâtel* [...]" The only other publisher's archive that survives in parts is the *Luchtmans archief* in the University Library in Amsterdam (Burrows, 2013b, p. 26).

⁷"Dieu. Réponse au *Système de la nature*" (1770), "*L'examen important de Milord Bolingbroke*" (1772), and "*Histoire du parlement de Paris*" (1773)

⁸In the original: "*L'auteur y reproduit l'hypothèse insoutenable d'Epicure et de Spinoza.*"

2.2 Terray's tax on paper and tariff shock

This section provides the historical background to the French tax on paper that changed relative production costs between French and foreign publishers. It was first implemented in 1771 — back then coupled with import duties intended to neutralize the relative price effect. However, in 1775, the import duty was withdrawn, and the shock in relative production costs between France and foreign publishers came into full effect. In the following, we give a detailed overview over the political economy of the tax and the institutional environment following the shock in 1775.

	<i>production costs</i>			<i>producer-specific</i>	<i>policy</i>		
	1771–1775 tax on paper introduced, offset by import duty on books						
Paris guild	paper	+	other production	+	author payment	+	paper tax
foreign (STN)	paper	+	other production	+	transport & smuggling	+	import duty
	from 1775 import duty abolished, paper tax retained						
Paris guild	paper	+	other production	+	author payment	+	paper tax
foreign (STN)	paper	+	other production	+	transport & smuggling		import duty

Figure 3: Terray's tax on paper and tariff shock

Notes: The figure provides an overview over the costs faced by either the Paris guild or foreign publishers who illegally exported pirated books into France. The cost structure is shown for 1771–1775 when the new tax on paper was balanced with additional import duties and post 1775 when the import duty was abandoned but the tax on paper retained.

In the second half of the 18th century, the French Crown was left scrambling for new sources of tax revenue. The ruinous expenses incurred through the Seven Years' War and an inefficient tax system based on tax farming had created a situation of serious fiscal strain and a need for new sources of revenue. In 1771 the finance minister abbé de Terray identified such a new source of income: the *papier blanc* used by printers, which was previously not taxed (Darnton, 1982, p. 190). On the 1st March 1771, a tax of 20 sous per ream of paper was introduced, effectively raising the price of paper by 10%.⁹ This dealt a significant blow to the Paris guild of printers and booksellers, as paper represented their main input cost (Darnton, 2021, p. 29). Crucially, it gave a significant competitive advantage to the guild's foreign competition. The fear of foreign (illegal) competition was raised by the guild that feared "the total ruin of printers and booksellers and the destruction of the book trade throughout the kingdom" (as quoted in Darnton, 2021, p. 30). Therefore, to protect domestic producers, Terray reacted in September 1771 by coupling the tax on paper with an import duty on books. This was first set at 60l. per hundredweight but immediately lowered to 20l. per hundredweight following wide protests

⁹The tax amounted to one livre per ream. Under the new tax regime, Darnton (2021, p. 29) reports that a ream of good white *papier d'Auvergne* cost 11 livres in Paris. Hence, with 20 sous amounting to one livre, we get the pre-tax paper price as 10 livres, and the tax set at 10% of the value of paper.

from book sellers. The duty added about 2.7 *livres* per ream, an effective tariff of 12 to 17 per cent on the production cost of a book and of 10.7% on its sale price — more than the tax on paper had added.¹⁰

The duty added 4 to 5 *livres* per ream, an effective tariff of roughly a fifth to a quarter of the production cost of a book — more than the tax on paper had added.¹¹ This, however, created a set of contradictory incentives. The state, concerned about the desperate state of its finances, needed to preserve the tax on paper, and financially profited from the additional import duty, but also did not want to ruin its own publishing industry. The guild feared competition from foreign publishers operating at lower cost, but was also harmed by the import duty: Its own export business was based on book-swaps with foreign publishers. The 60 *livres* tax effectively made foreign imports nonviable, thus also endangering the highly lucrative foreign export business of the guild (Darnton, 2021, p. 30).¹²

The following years were shaped by protests and interventions from both the guild and the foreign publishers and for four years “between 1771 and 1775, the state issues edict after edict, and the booksellers reply with ‘memorandums upon memorandums’” (Darnton, 2021, p. 31). This period was ended with the death of Louis XV and the appointment of Turgot as controller-general of finances in 1774. Under Turgot, the dispute was settled with a final edict on the matter published on the 23rd April 1775, which kept the tax in place (Darnton, 1982, p. 190; Darnton, 2021, p. 30 f.) but abolished the import duty (Darnton, 1982, p. 191). This final settlement effectively was to the detriment of the Paris guild.¹³ Although able to maintain its foreign trade, the retained tax on paper gave foreign publishers, the *STN*

¹⁰A quintal of 100 *livres poids de marc* (~48.95 kg) holds about 3,750 sheets, that is 7.5 reams of 500 sheets, a ream of printing paper weighing some 13 lb. The duty of 20 L per quintal is thus ~2.7 L per ream (20/7.5), or 0.107 *sous* per sheet. Darnton (2021, p. 29) notes that French paper cost ~11 L/ream (Swiss ~8 L) and comprised 50% of production costs, implying that the duty amounted to about a quarter of the cost of French paper (a third of Swiss paper), or 12% of a book’s production costs at French paper prices and 17% at Swiss prices. Against the *STN*’s price of one *sou* per sheet for ordinary reprints (Darnton, 1987), it is 10.7% of the sale price. This number also directly enters the calculation of the import-demand elasticity in section 4.2.

¹¹The 20 *livres/quintal* duty equals 0.2 L per pound (20 L/100 *livres poids de marc* ~ 48.95 kg, or ~0.4 L/kg). Thus a 20 lb ream incurred ~ 4 L of duty (0.2 · 20), and a 25 lb ream ~ 5 L (0.2 · 25). Darnton (2021, p. 29) notes that French paper cost ~11 L/ream (Swiss ~8 L) and comprised 50% of production costs, implying that the duty amounted to 36–45% of the cost of the paper, or 18–23% of a book’s production costs at French paper prices and 25–31% at Swiss prices.

¹²Indeed, the guild feared that foreign publishers might just start to pirate all French books, and hence erase their foreign market share (Darnton, 2021, p. 30).

¹³It appears that one of the motivations for the revocation of the tariff on books was Turgot’s physiocrat policies aimed at liberalizing markets. Fittingly, the decree ending the tariff on books was published one day after Turgot’s liberalization of the grain market. At the same time, it should be emphasized that Turgot’s policies were still rooted within the political economy of the *ancien régime*, with its competition of different interest groups and its conflict between the Paris and provincial guilds. The official *Arrêt du Conseil d’État du Roi* from 23 April 1775 argues that the tariff also harmed exports by making exchange swaps with foreign book sellers impossible (Conseil d’État du Roi, 1775). Moreover, it names the petitions of several booksellers that had lobbied against the tariff. It further states practical reasons, such as that opening crates damaged books, and that the public profited from literature and education. Moreover, note that the Paris guild of printers was one of the few coporparations exempted from Turgot’s repression of the Parisian guilds in 1776 (Darnton, 2021, p. 32) showcasing the practical limits of the physiocrat program.

among them, a major advantage over their French competition, as they were now able to undercut their competition's prices inside France.

We validate the impact of the 1771 tax by tracing the size of French books over time from *La France Littéraire* in Figure 4. We assume that publishers in the Paris guild would have tried to respond to the tax by decreasing the size of their books (incl. font size and borders) to save on the input factor that became scarcer, paper. Figure 4 shows that the sizes of books published in France collapse exactly in 1771. This is the consequence not of individual books being slightly smaller but the consequence of a shift away from larger formats like folios or quartos to smaller formats like octavos or duodecimos. In Switzerland, by contrast, we do not see a similar development.¹⁴

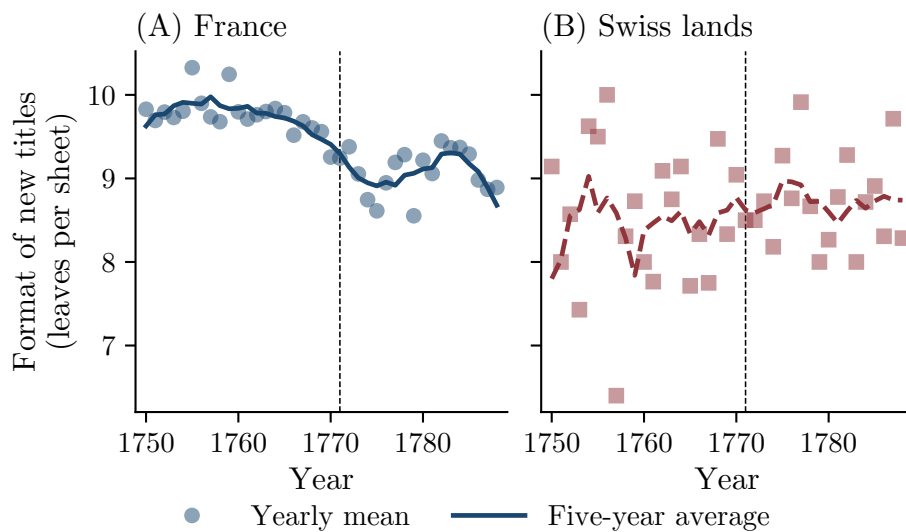


Figure 4: Trends in book size

Notes: Mean format of the new titles in *La France littéraire* by year of publication, 1750–1788, for titles published in France (panel A) and in the Swiss lands (panel B). We assign each title to the land of the place named in its imprint, in the borders of the eighteenth century, as in Section 7.1. The format is the number of leaves into which a printed sheet is folded: 8 for an octavo (in-8), 12 for a duodecimo (in-12). A lower number stands for a larger page. Markers show yearly means, lines the moving average over five years. The vertical line marks the paper tax of 1771.

The effects of the abolition of import duties on foreign publishers exporting to France can be immediately seen in figure 5. It plots the exports of the *Société Typographique de Neuchâtel* (STN), one of the major publishers in Switzerland and the Fertile Crescent. Before the final decision to keep the tax in place while the import duty which counterbalanced the tax was in effect, the *STN* exported about as

¹⁴Books were smaller in Switzerland than in France already before 1771. This is consistent with the role of the Swiss cities in the print economy of the *fertile crescent* of enlightenment publishing. Official publications from Paris tended to be larger and more expensive, while clandestine publishers often focussed on smaller, more affordable editions. One example is the cheap *octavo* edition published in Switzerland that made the *Encyclopédie* a commercial success (Darnton, 1973).

much to France as it did to Non-French-speaking Europe. Almost immediately after the edict in 1775, sales to France rise, while sales to Non-French-speaking Europe remain constant.

The STN was aware that this gave them a competitive advantage and they advertised their resulting competitive pricing. In a letter to Benjamin Franklin in which he tries to win him as a customer, the founder of the STN, Frédéric-Samuel Ostervald wrote that "(...) *we can, as we had the honour of telling him, supply it at a much better price than in France, as we pay no tax.*" (Ostervald and Bosset Deluze, 1996).¹⁵

This sales boom to France lasted until 1777, when a new publishing code loosened the guild's stranglehold on the book trade. This new publishing code brought many books for which Paris guild printers had previously held *privilèges* into the public domain. Additionally, a judgment from the King's Council in that year ruled that owners of counterfeit books printed before 1777 could get these books stamped such that they could be sold legally (Labarre, 2011). All of this mainly benefited the provincial book-sellers and publishers who had still not recovered from the trade wars and Colbert's policies in the 17th century and were suffering under the tightness of the Parisian monopoly. Fostering competition and "*increasing commercial activity*" was an expressed goal of the crown (Hesse, 2022, p. 41; Darnton, 1982, p. 188 ff.; Darnton, 2021, p. 35). As these provincial book dealers were both competition and middlemen for the STN, this new publishing code meant a reduction in their competitive edge and a temporary slowdown in their sales boom. As can be seen in figure 5, sales returned to the levels of their "European" trade.

This drastically changed again in January 1782, when the tax on paper was increased by a surtax. A ream of white paper was now taxed at 30 sous. This surtax immediately restored the foreign clandestine publishers' competitiveness and STN sales to France rose. As Darnton (1982, p. 191) writes about Naigeon's *Encyclopédie méthodique* published in that year, a French printer would have had to sell a volume for 11 livres to just break even, while a pirated *Neuchâtelois* version sold for 6 livres while still generating a 40-50% profit margin for the patrons at the STN. The clandestine printers and book sellers of the Fertile Crescent experienced an unprecedented sales spike at the expense of the Parisian competition.

The boom was again short-lived, however. On June 12th 1783, the foreign minister Vergennes signed an order to the tax farm that would henceforth require all imported books to be inspected in the *Chambre syndicale* of the Parisian guild (Darnton, 1982, p. 191). This would allow the guild itself to inspect the cargo and weed out pirated and illegal books, which had hitherto been hidden in bales of unbound printed sheets. Additionally, transportation costs being a significant driver of prices, the costs of a round trip via Paris to the final destination made the STN uncompetitive (Darnton, 1982, p. 192). The crackdown was successful. As we can see from the STN sales data (figure 5), sales to France begin to collapse immediately, and already in 1784 sales to non-French speaking Europe outstrip sales to France.

¹⁵In the original: "(...) *nous pouvons, comme nous avons eu l'honneur de le lui dire, le fournir à beaucoup meilleur compte qu'en France ne payant aucun impot.*" (Ostervald and Bosset Deluze, 1996)

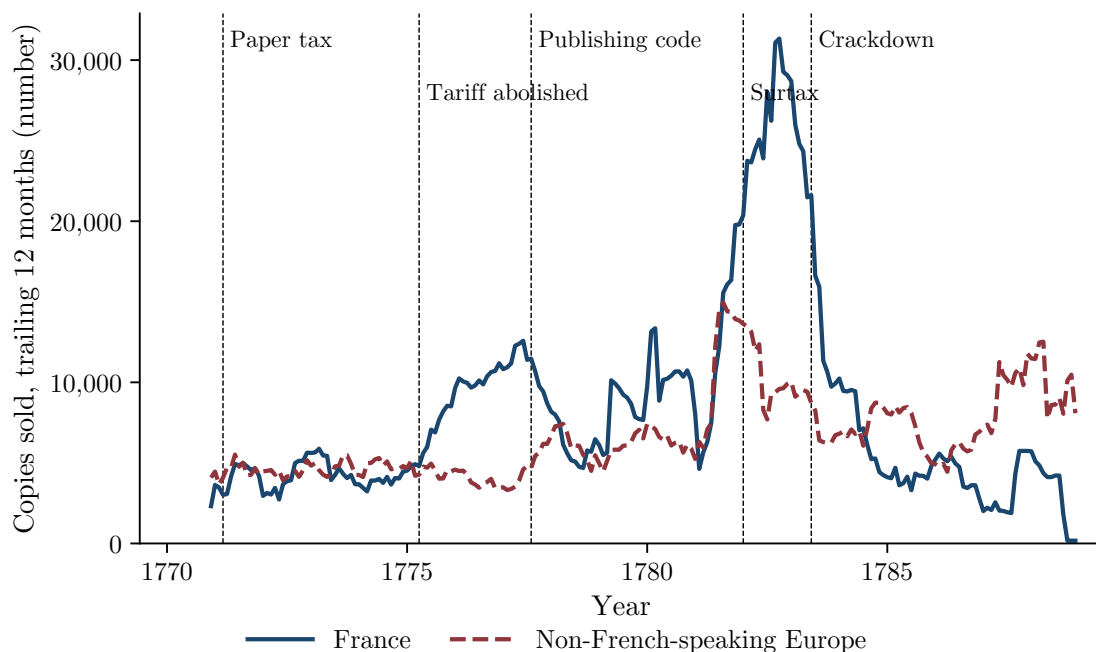


Figure 5: Year-to-date book sales from the *Société typographique de Neuchâtel* into France and the rest of Europe

Notes: The figure shows trailing twelve-month sums of copies of books sold by the *Société Typographique de Neuchâtel* by month to France and non-French-speaking Europe. We exclude incoming trades and focus exclusively on outgoing trades. French-speaking destinations outside of France are excluded as sales to these cities often included swaps with other bookdealers that then shipped to France, which means that they were indirectly treated as well. This includes Neuchâtel itself. The data is from the *French Book Trade in Enlightenment Europe (FBTEE)* project (Burrows et al., 2014; Burrows, 2013a,b; Burrows and Curran, 2012; Curran, 2010a,b, 2013; Darton, 2012) introduced in section 3.1 and runs from 1770 until 1788. The vertical lines show five policy shocks. On 1st March, a 20 sous per ream paper tax was introduced. It was immediately counterbalanced with an import tariff on books. After years of changing edicts, the import tariff was abolished on the 23rd April 1775 while the paper tax was left in place. On 30th August 1777, a new publishing code released many titles into the public domain. In 1782, the paper tax was increased by a surtax of a further 10 sous per ream. On 12th June 1783, there was a crackdown on book imports when all books were ordered to be inspected at the Paris guild.

2.3 The importance of the illegal book trade for the European knowledge economy

Early modern Europe was characterised by political fragmentation and polycentricity. In isolation, this fragmentation would not have been conducive to innovation. In models of endogenous technological change, higher population implies more technological change (Aghion and Howitt, 1992; Grossman and Helpman, 1993), a consequence of the nonrivalry of technology (Arrow, 1962; Romer, 1990).¹⁶ However, authors from David Hume (1742) to Mokyr (2016) have suggested that this limitation was overcome

¹⁶See also Kremer (1993) and Boserup (1965)

by the free exchange of ideas in the European knowledge economy, and that the free exchange even profited from this fragmentation.

According to Mokyr (2016), the importance of the free exchange of ideas through the Republic of Letters, travel, and print culture stemmed from the fact that it provided innovators and intellectuals with a wider audience than was available in the small European polities (Mokyr, 2016, p. 179), while it still did not diminish the advantages of fragmentation: The possibility to seek refuge or exile in rivaling polities and the competition of rulers for innovators and intellectuals.

The Republic of Letters was primarily a “*virtual entity*” (Mokyr, 2016, p. 180-181) - a network of letter writers without brick-and-mortar institutions. It did have a material base, however. An important part of which was the European printing houses, as Eisenstein (1979) points out. Not only were these shelter and meeting places, by spreading ideas across borders, they also undercut censorship efforts by conservative executives and thereby complemented the mobility of intellectuals with the cross-border mobility of the printed idea (Mokyr, 2016, p. 189).

Mokyr (2016) argues the Republic of Letters, like all institutions, depended on a set of functioning rules. He names freedom of entry, contestability, transnationality, and a commitment to placing new knowledge in the public domain as the most important. We provide evidence that print houses like the *Société Typographique de Neuchâtel* were indeed crucial for making censorship effectively impossible in Enlightenment Europe. Additionally, however, we also find that the print houses of the clandestine enlightenment book trade also played a crucial role in guaranteeing the conditions outlined above. We find that the clandestine book trade undermined censorship efforts of individual governments *through* operating transnationally, and ensured that knowledge was placed in the public domain by undermining monopoly and *privilège* systems.¹⁷ Even though monopoly structures aimed at confining the book trade to a limited set of insiders, outsiders like the STN could not only enter the market effectively freely but also expand production elastically to take over market shares of official oligopolists. Even though the crown’s system of *privilèges* excluded many ideas from the possibility of being legally published, the clandestine book trade ensured freedom of entry for these authors as it managed to smuggle these books into the Kingdom of France at scale.

3 Data

3.1 The *Société Typographique de Neuchâtel* - The Clandestine Enlightenment Book Trade

The main data source of the present paper is the complete sales records of the *Société Typographique de Neuchâtel*, the semi-legal publishing house in Neuchâtel discussed in section 2.1. The STN’s surviving records - day books, stock books, order books, and letters - have been digitised by *The French Book Trade in Enlightenment Europe (FBTEE)* project (Burrows et al., 2014; Burrows, 2013a,b; Burrows and

¹⁷An exclusive right of a certain printer to produce a book similar to contemporary copyrights

Curran, 2012; Curran, 2010a,b, 2013; Darnton, 2012) and offer a complete and consistent database for all sales of the *STN*.

Our *STN* dataset, which we have obtained by web-scraping the FBTEE’s website, registers the sale of 853,945 copies, shipped to clients in 63,395 registered shipments, 52,773 of which are sales.¹⁸ Only 14,945 trades consist of books published by the *STN*. The other trades are pirated from other publishers or sold on their behalf. The *STN* shipped books to 229 towns all over Europe and 815 individual clients, mostly local booksellers.

For every book trade, the dataset contains extensive information on the transaction, the client, as well as the book. About the transaction, we know the date of the shipment and the number of copies shipped. Additionally, we know the name, occupation, location, and sex of the client, as well as names and addresses of potential middlemen. Finally, we know the title, publisher, edition, publishing location, and language of each book, as well as a number of “keywords” and the “Parisian Category” of the book.

The “keywords” have been assigned by Burrows (2013b) with the support of librarians at the Brotherton Library at the University of Leeds, using “a purpose-built project keyword system” as part of the FBTEE project. Each book has been assigned up to 24 keywords from a list of 1,360 possible keywords. This is a contemporary *ex post* classification, not necessarily how contemporaries in the 18th century would have classified these books.

The “Parisian Category”, by contrast, is a categorization based on the eighteenth-century tree system of the Parisian booksellers. This system has five categories: *Belles Lettres* (fiction), *Histoire* (history), *Jurisprudence* (jurisprudence), *Sciences et Arts* (sciences and arts), and *Théologie* (theology). Burrows (2013a) have added “Undetermined” to this list. These categories then branch out into different sub-categories, such that 107 different *Parisian Categories* are in the dataset. Since these categories were devised by the Paris printers’ guild who engaged in the production and distribution of legal literature, subversive literature is not explicitly classified or “undetermined”, we therefore work with Burrows’s classification.

We use 1,360 keywords defined by Burrows (2013b) to assign every book to one or several of the following 15 categories: literature and arts, religion, politics, radical politics, industry and technology, administration, law, history, science, education, agriculture, philosophy, erotic literature, enlightenment, and radical enlightenment. Appendix A.1 outlines the mapping of keywords to genres.

This comprehensive dataset comprising the surviving evidence on the enlightenment book trade has not yet been used extensively in the economics literature but has recently been employed by Giommoni, Loumeau and Tabellini (2026).

3.2 *La France Littéraire* - A title catalogue of French literary works

To measure France’s universe of newly published books, we have digitised Joseph-Marie Quérard’s *La France littéraire*, published in ten volumes between 1827 and 1839, a comprehensive collection of

¹⁸The remaining trades are books the *STN* buys to resell.

published French titles between 1700 and 1827. Crucially, unlike administrative registers underlying other title catalogues, such as [Estivals \(1965\)](#) or [Furet \(1965\)](#), Quérard records titles wherever they were printed, including foreign and clandestine editions. We use a gpt-4o-mini large language model to process the information contained in the page descriptions obtained from OCR.

Overall, *La France littéraire* contains 104,549 works by 29,447 authors. It records each work’s title, publication year, publisher, place of publication, format, page count, and price. Figure 6 presents the long-run trend in newly published French titles between 1700 and 1827. Moreover, Appendix Figure A1 combines *La France littéraire* with the Universal Short Title Catalogue to capture the long-run trend in new French titles between the fifteenth century and 1827. By ca. 1750, we document a transition towards exponential growth in new French titles.

To also assign subject classes, we train a BERT classifier on the STN classification system and then apply it to the titles of *La France littéraire*. To avoid contamination bias from BERT models trained on modern data (see e.g. [Johansen, Koschnick and Vedel, 2026](#)), we use *D’AlembERT*, a time-locked model for early modern French texts ([Gabay et al., 2022](#)).¹⁹ Appendix section B documents the training process and presents evaluative statistics. Moreover, it compares the per-subject coverage between the USTC and *La France littéraire* and argues that for works authored by real persons (i.e. not institutions or anonymous works), *La France littéraire* reaches a coverage comparable to the USTC.

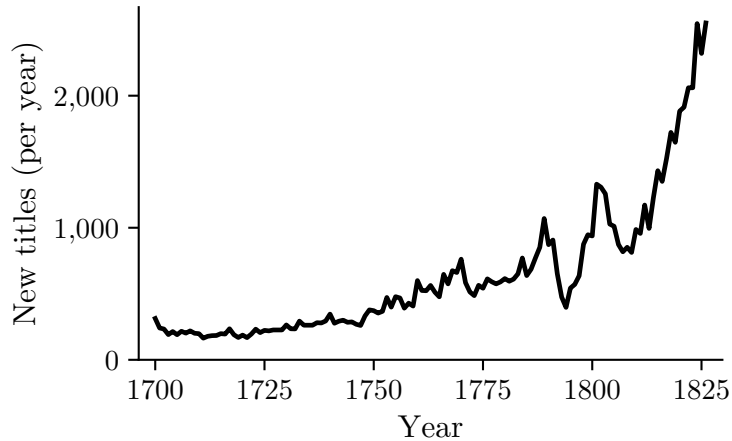


Figure 6: Number of Books by Year in *La France Littéraire* ([Quérard, 1827-1839](#))

Notes: New titles in *La France littéraire* by year of publication, 1700–1826. The year of publication is the first four-digit number in the year field of an entry.

3.3 Censored Literature

To empirically quantify the censored literature, we draw on [Darnton’s \(1995\) *The Corpus of Clandestine Literature in France*](#). As described in section 2.1, identifying censored and de facto policed literature is

¹⁹*D’AlembERT*’s training corpus captures primarily early modern French texts, however it also includes post-1800 FRANTEXT data that reaches up to 1920 ([Gabay et al., 2022](#)). Still, this constitutes a significant improvement over modern models trained on data from the internet.

not a straightforward task. Fundamentally, only books with a *privilège* (the crown confirming authorship and printing rights) were fully legal. Hence, all pirated copies from abroad or the provinces were illegal.

Yet, the state also focused on books that were actively censored for their content. Quantifying this content-based censorship comes with the problem that the *directeur de la Librairie* never published a list of officially censored books. For a book to be published with a *privilège* it had to clear several legal hurdles and be completely orthodox in content. Only a few books managed to do so. This was worrying even to Chrétien-Guillaume de Lamoignon de Malesherbes who took over the role of the “state’s censor” as the *directeur de la Librairie* in 1750. He remarked that “A man who had only read books that originally appeared with the formal approval of the government [...] would be behind his contemporaries by nearly a century” (Darnton, 1996, p. xix). Himself in contact with major figures of the enlightenment, Malesherbes responded to this situation not by changing the legislation regarding the *privilèges*, but by creating more and more loopholes for unofficial yet still not seditious books. The result was a grayscale of illegality. Between the books published with a *privilège* by the guilds and the clearly illegal offensive, seditious or libertine *livres philosophiques*, extended a sliding scale of various shades of semi-legality. Books without a *privilège*, and thus without “copyright”, could have had *permissions tacites*, *permissions simples*, *permissions de polices*, or just a *simple tolérances*. While not technically legal, the authorities would tacitly tolerate these publications as they did not attack Church, Crown, or morality (Darnton, 1996, p. xix-xx).

Therefore, we follow Darnton who assembled a list of censored books based on the practice of the state censors. Darnton’s list has been assembled from a combination of four sources. Firstly, the *STN* compiled their own lists of books in their catalog which were, by the *STN*’s own account, illegal in France and would therefore have to be hidden from authorities (Darnton, 1995, p. 235). This list comprises 457 titles. Secondly, he found other similar lists drawn up by other semi-legal publishing houses in Geneva, Lausanne, and Bern, comprising 261 titles, 175 (65%) of which were also sold by the *STN*. Thirdly, he has collected information on books confiscated in police raids. The police confiscated 300 different titles, 179 (60%) of which were sold by the *STN*. Fourthly, he has found corresponding records for customs confiscations. The French customs confiscated 280 titles, 167 (60%) of which were *STN* titles (Darnton, 1995, p. 7).

In total, Darnton (1995) assembles a list of 720 titles which were definitely considered to be illegal and which would have been confiscated by state authorities, and, as Darnton states, “[a]lthough it does not cover every book sold ‘under the cloak’ (*sous le manteau*) during those years, it offers a fairly complete view of the entire corpus of illegal literature” (Darnton, 1995, p. 3).

Figure 7 gives an overview of the genres which were heavily censored. Erotic literature is twice as heavily represented in the corpus of illegal books as it is in the *STN*’s catalog. Similarly, enlightenment and radical politics literature is overrepresented in the corpus of clandestine literature. As would be expected, educational, scientific, and religious literature remain underrepresented in the lists of illegal publications.

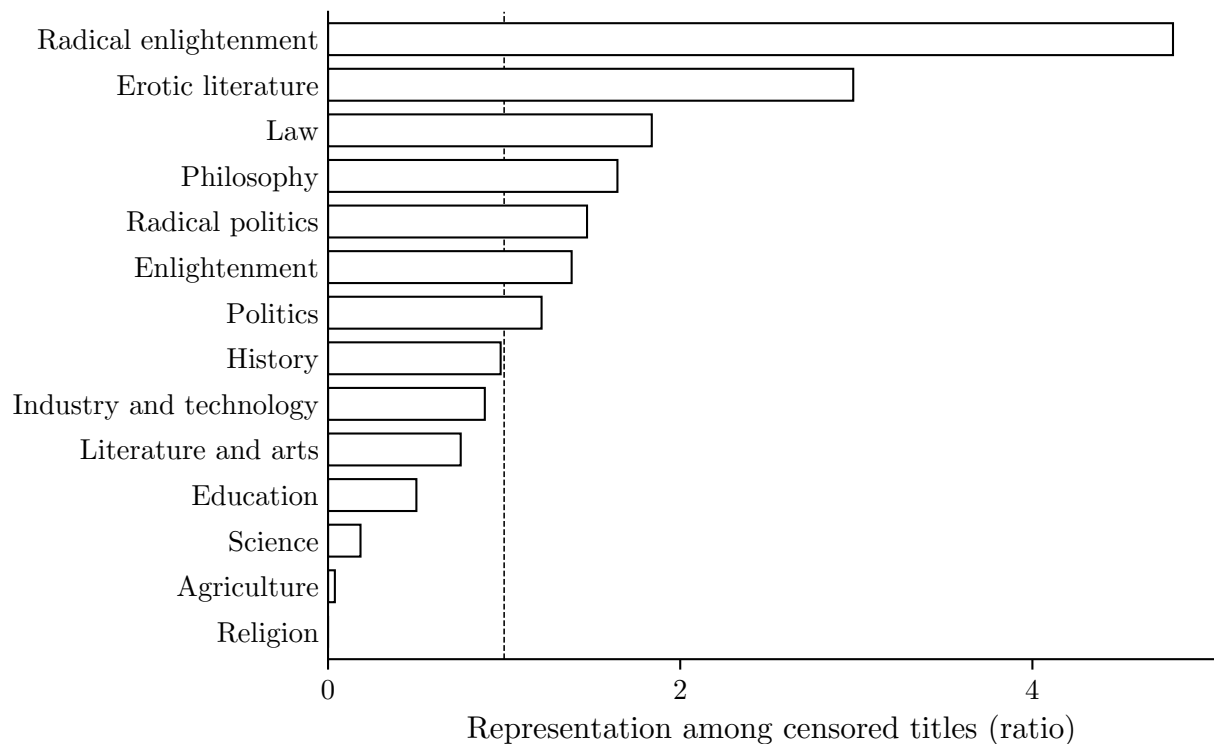


Figure 7: Over/under-representation of topics in censored articles in STN

Notes: For every subject, the share of the subject among the *STN*'s shipments of censored titles, divided by its share among all shipments of the *STN*. A ratio above one, marked by the dashed line, means that the subject is over-represented among censored titles. Censored titles are the titles in the corpus of [Darnton \(1995\)](#).

Figure 8 indicates how important the *Société Typographique de Neuchâtel* was in the trade in illegal books. It draws on the inventories of ten police raids across France between 1773 and 1783, which are one of the sources of [Darnton \(1995\)](#), and reports the 26 titles that the police confiscated most often: the titles found in at least four of the ten raids. The *STN* sold 22 of these 26 titles. In eight of the ten raids, at least 83% of the titles of this list that the police found were also sold by the *STN*.²⁰ Note that this does not automatically mean that the books were indeed shipped by the *STN*, however.

²⁰The shares are higher than the 60% reported above, because the figure covers only the titles that the police confiscated most often, not all titles of a raid.

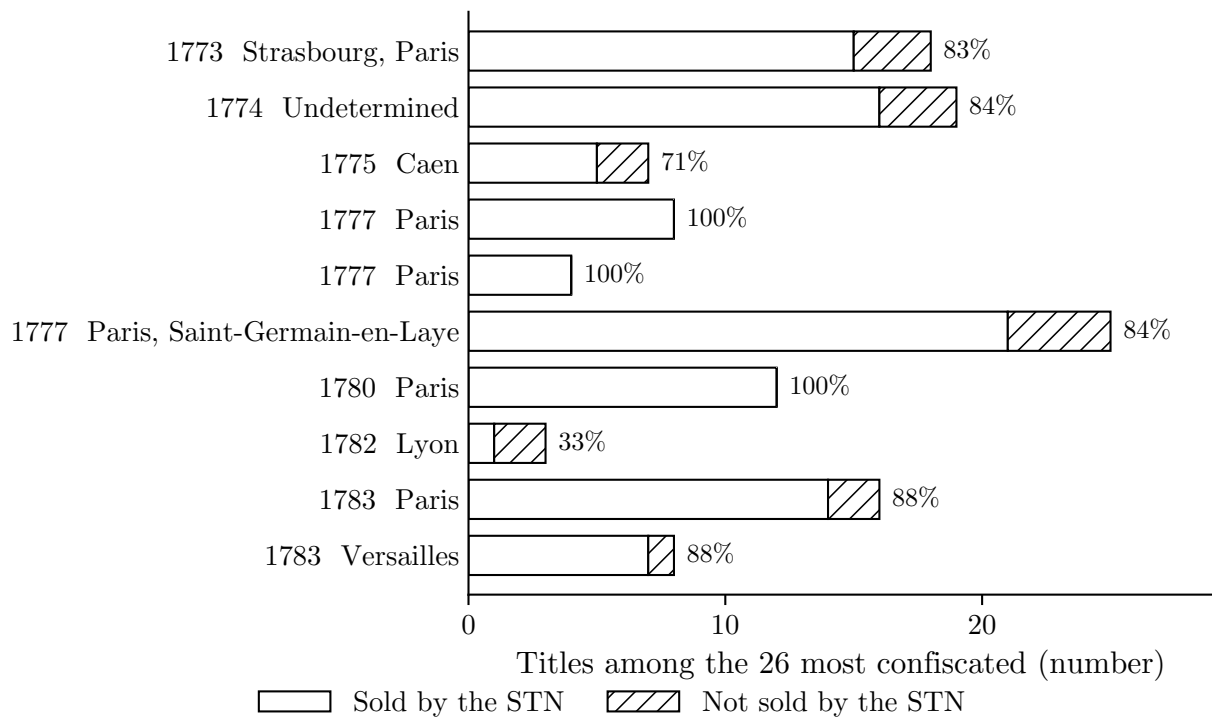


Figure 8: STN Books Confiscated in Police Raids

Notes: The ten inventories of police raids in [Darnton \(1995, pp. 251–253\)](#), 1773–1783. For each raid, the bar counts the titles among the 26 that the police confiscated most often, in at least four of the ten raids; the inventories hold between 7 and 169 titles in all. A title counts as sold by the *STN* if the ledgers of the *STN* ([Burrows, 2013b](#)) record at least one sale of it. The percentage at the end of a bar is the share of the titles sold by the *STN*. Of all 297 titles with a police confiscation in the checklist of [Darnton \(1995\)](#), the *STN* sold 154 (52%).

4 Book Imports into France from the *Société Typographique de Neuchâtel*

The tax on *papier blanc* did not immediately give an advantage to foreign publishers like the *Société Typographique de Neuchâtel*. As mentioned, a tariff that was calibrated to exactly counteract the tax meant that there was a level playing field for domestic and foreign producers until the edict of April 1775 when the tariff was abolished. This meant that the *STN* had to massively and quickly increase production in order to meet the new demand.

We study whether the *STN* achieved this by employing two different empirical strategies. First, we employ a difference-in-differences design that compares France to non-French speaking Europe. The results are reported in section 4.1. Second, because, due to Europe’s heterogeneity, this might not be a plausible control unit, we employ a synthetic difference-in-differences design in section 4.2.

4.1 Difference-in-differences design

Even though the Kingdom of France was its most important market, the *Société Typographique de Neuchâtel* (STN) sold books to all of Europe. Because the European intellectual elite spoke and read French from Lisbon to Saint Petersburg, language did not constitute a barrier for a transnational market in enlightenment literature. Figure 5 shows that prior to 1775, the French market was almost equal in size to the market outside French-speaking Europe. We therefore use non-French speaking Europe as the control group for France. The French-speaking cities in Belgium, Switzerland, as well as the Papal city of Avignon are excluded because the *STN* data includes shipments made to other publishers in cities of the *fertile crescent*, which would then be shipped on to France. It can therefore not be excluded that the tax in combination with the tariff abolition had an effect on shipments to these cities.

To show the effect of the tariff abolition in combination with the tax on the *STN* exports to France, we first introduce a difference-in-differences model in which we estimate the differential effect of this policy change on the *STN*'s exports to France. Specifically, we estimate the following equation.

$$\ln Y_{r,t} = \alpha_r + \sum_{k \neq -1} \beta_k (\mathbf{1}[t - t^* = k] \times \text{France}_r) + \gamma_t + \varepsilon_{r,t} \quad (1)$$

Where $Y_{r,t}$ is the trailing 12-month sum of copies sold in region r at month t , α_r are region²¹ fixed effects, and γ_t are monthly fixed effects, t^* is the month of the policy shock, namely April 1775 when the edict abolished the tariff. The coefficient of interest is β_k , which represents the differential effect between France and non-French speaking Europe.

Figure 9 shows that in the two years prior to the abolition of the tariff, there was no significant difference between *STN* sales to France and *STN* sales to non-French speaking Europe. Since $Y_{r,t}$ is the trailing 12-month sum of sold copies, we would expect a response to the shock earliest 12 months after the shock. This is indeed exactly what we observe. Only six months later, the *STN* sells significantly more to France than to non-French speaking Europe. Appendix Figure A3 reports the same setting with 4-months bins instead of trailing months.

As described in section 2.2, the paper tax and the tariff abolition were not the only policy shocks during the observation period. Additionally, a new publishing code shifted the equilibrium in favour of the provincial publishers, there was a surtax added to the paper tax in 1782, and in 1783, there was a crackdown on illegal publishing. Since the book trade faced several other shocks post 1775, incl. the crackdown on illegal publishing by the state in 1783, Appendix D presents a heterogeneity analysis by time period and individual shocks.

²¹French départements, non-French sovereign territories

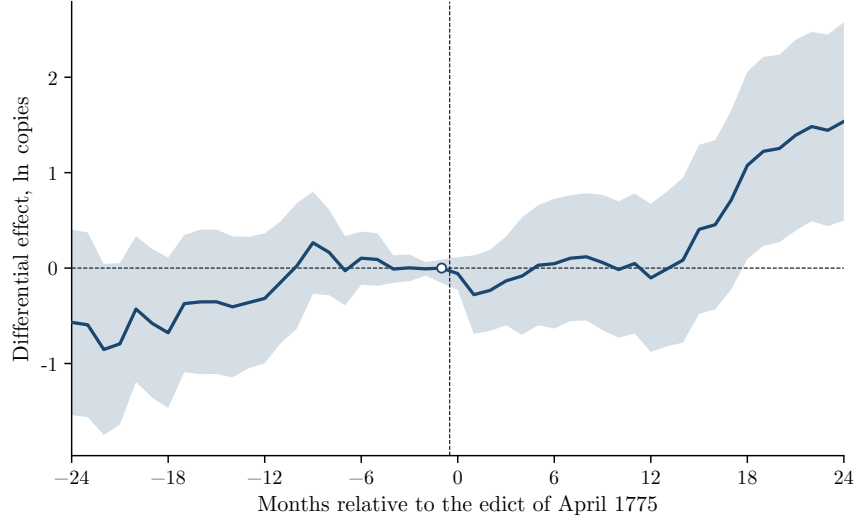


Figure 9: Event Study, Paper Tax kept and Tariff abolished (1775), monthly data

Notes: Event study of the edict of April 1775. The figure plots the β coefficient in equation 1 on monthly *STN* shipments over the period of 24 months on either side of the edict which finally abolished the import duty on books while leaving the paper tax in place. The sales numbers are trailing twelve-month sums of copies sold in a region where the treatment region is the Kingdom of France and the control region is Europe excluding French-speaking Europe, whose *fertile crescent* booksellers shipped their books back into France and would therefore be treated indirectly. Regions are French *départements* for the treated group (51) and sovereign territories for the control group (39). The shaded bands are 95% confidence intervals created from standard errors clustered by region. Since the dependent variable is a trailing twelve-month sum, the estimate at month k contains the twelve months preceding it. The response is thus gradual by construction and should not be read as a monthly impulse. Standard errors are clustered at the region level.

4.2 Synthetic difference-in-differences

The previous difference-in-differences estimate has used all of non-French speaking Europe as the control unit. Yet, the demand for books throughout Europe was highly heterogeneous. Throughout the observation period, the Dutch book market was in decline, while the German book market steadily grew. Moreover, for the *STN*, not all countries were key markets. While the *STN* was very active in its home region, the Swiss Confederacy, and its neighbours, France, and the Holy Roman Empire, exports into Scandinavian countries were limited and received any exports only in some years.

To construct a more plausible set of control units, we adopt a synthetic difference-in-differences approach (Arkhangelsky et al., 2021) that addresses both problems, violations of the parallel-trends assumption and unrepresentative years. Unit weights are chosen for destinations whose pre-1775 *STN* imports trajectories are similar to France, time weights select the pre-treatment years that carry information, and fixed effects absorb the level gap. Moreover, weights are chosen by the estimator, hence minimizing our degrees of freedom.

Formally, the estimator solves:

$$(\hat{\tau}, \hat{\mu}, \hat{\alpha}, \hat{\beta}) = \arg \min_{\tau, \mu, \alpha, \beta} \sum_{c=1}^N \sum_{t=1}^T (Y_{ct} - \mu - \alpha_c - \beta_t - W_{ct} \tau)^2 \hat{\omega}_c \hat{\lambda}_t, \quad (2)$$

$Y_{c,t}$ represents the copies sold by the *STN* in country c in year t . α_c and β_t capture country and year fixed effects. W_{ct} equals one for France from 1775, when the edict confirmed the tax on paper and revoked the duty of 60 *livres* per quintal, after which external printing houses gained a relative price advantage. $\hat{\omega}_c$ and $\hat{\lambda}_t$ are estimated unit and time weights. Then, τ captures the average treatment effect on the treated. The donor group covers the 13 historical territories the *STN* shipped to in 1769–1788.

Based on the average treatment effect from equation 2, we also provide estimates of the import-demand elasticity of book exports by the *STN*. We capture how much book exports changed as a consequence of the revocation of the 20 *livres* per quintal tariff on books.²²

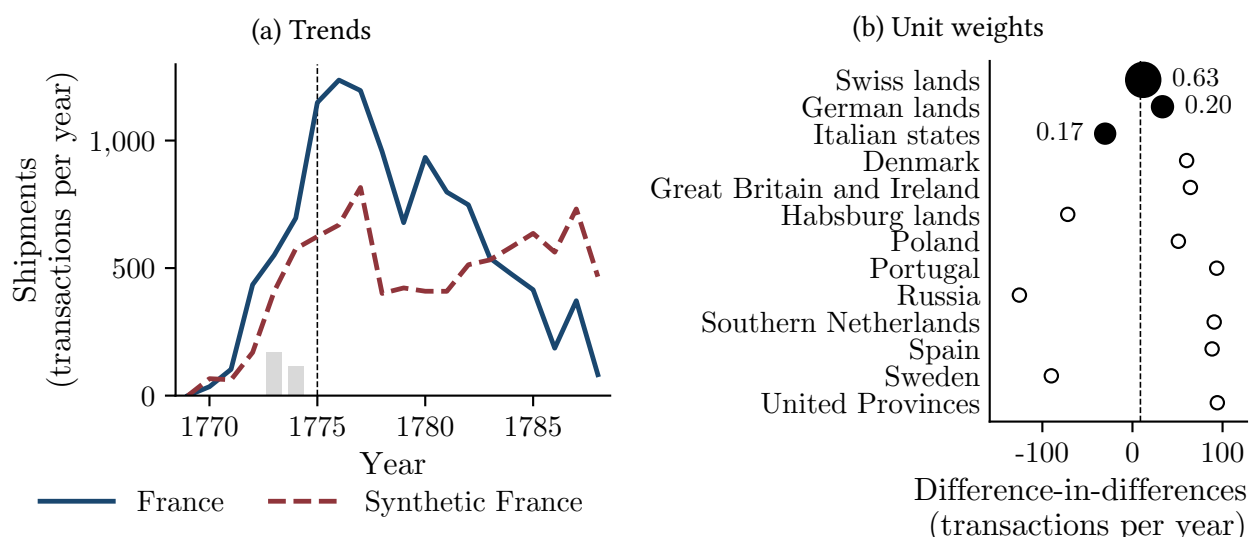
$$\hat{\varepsilon} = \frac{\ln \bar{Q}_F - \ln (\bar{Q}_F - \hat{\tau})}{\ln(1 + \delta)} \quad (3)$$

where $\bar{Q}_F$ are mean yearly shipments to France and $\bar{Q}_F - \hat{\tau}$ captures the counterfactual as given by the synthetic control group. Together, they constitute the change in exports following the revocation of the tariff. $1 + \delta$ captures the magnitude of the price shock. On a quintal of 3,750 sheets and at the *STN*'s price of one *sou* per sheet for ordinary reprints (Darnton, 1987), the tariff is $\delta = 10.7\%$ of the price of a book, where $\delta = d/(s p)$, with d the duty in *sous* per quintal, s the sheets in a quintal and p the price of a sheet.

Figure 10 presents results. First, panel a) shows the estimated trends between France and synthetic France. We find that after the confirmation of the tax on paper in 1775, shipments to France rose significantly by up to 100%. Then after the state's crackdown on illegal publishing in 1783, the *STN*'s sales to France collapsed and returned to pre-tax levels. Given that effectively the incentives set by the tax on paper were in place between 1775 and 1782, panel c) presents average treatment effects on the treated for this period. We find that the tax on paper increased the *STN*'s exports to France by 318 shipments per year, that is by 49% of the 645 shipments a year that synthetic France would have received.

Next, panel b) presents donor weights. Our measure of synthetic France is mainly composed of the Swiss and German lands as well as the Italian states. Were book markets in these countries similar and on a same trend as France's book market? Overall, the comparison appears plausible. Switzerland was culturally and economically close to France, and the German lands experienced a similar strong enlightenment movement as in France. Likewise, French enlightenment ideas were widely received in both Switzerland and Germany, and the great *philosophes* like Voltaire, Rousseau, or Maupertuis travelled and lived in these countries.

²²The settlement of April 1775 removed the duty on imported books that the edict of September 1771 had set at 60 *livres* per quintal. Note that the rate was lowered twice in the four years of edicts and counter-edicts that followed. However, the ongoing lobbying battle made the expected tariff highly uncertain. The full risk of export created through the 60 l. tariff was only removed with the death of Louis XV and Turgot's appointment as new minister by Louis XVI who then permanently removed the tariff on 23 April 1775.



(c) Synthetic DiD estimates of the treatment effect

	ATT	Std. err.	p-value
<i>1769–1782</i>			
Treatment	317.57	100.89	0.002
in log points	0.401	0.157	0.010
Implied elasticity	3.95	1.54	0.010

Figure 10: The 1775 edict and *STN* shipments into France

Notes: Synthetic difference-in-differences estimates (Arkhangelsky et al., 2021) on the *STN* sales ledgers, 1769–1788. Panel (a) plots the number of sales transactions to clients in France against synthetic France over the full window. The vertical line marks the edict of 23 April 1775, which abolished the import duty on books while keeping the paper tax. Bars at the bottom show the weights of the years before the edict. Panel (b) presents donor’s difference-in-differences against France. SDID weights are shown by the size of each circle and individual labels. Panel (c) reports the average treatment effect on the treated for 1775–1782, the period before the crackdown on illegal imports of June 1783, the effect in log points, the log of *STN* shipments to France over their counterfactual (France less the ATT), and the implied elasticity. Standard errors and p-values based on placebo SEs. The standard error for the implied elasticity follows from that of $\hat{\tau}$ by the delta method.²³

Panel c) also reports the implied price elasticity. For 1775–1782, the elasticity of shipments with respect to the tariff-inclusive price is 4.0. It is likely a lower bound estimate: Under-declaration of shipments would have made the duty actually paid smaller and therefore raised the effective elasticity. Moreover, as described in section 2.2, the 20 l. tariff was lowered in October 1773, to 6 l. 10 s. with a surcharge of 8 s. per livre, 9.1 l. in all. Based on Darnton (2021), we argue that the lowered tariff rate was a part of ongoing lobbying by competing interests within the French printing industry, leaving considerable uncertainty about whether the lower rate would remain in place. Foreign publishers therefore still had to account for the risk of a return to the 20 l. tariff when considering whether to expand their

operations. Still, if we take the lowered tariff rate at face value, it would imply a markedly higher elasticity of 8.5.

The estimate of an elasticity of 4.0 is well within the range of trade elasticities for modern goods (Broda and Weinstein, 2006; Caliendo and Parro, 2015) and of the response of declared imports to tariffs (Fisman and Wei, 2004). Indeed, the illegal market still faced many obstacles, such as avoiding censorship and agents of the Paris guild. Nonetheless, these estimates point to a fully functioning and elastic market for illegal books.

One crucial assumption that our argument is based on is that paper prices remained stable throughout the observation period. Moreover, we assume that paper prices themselves did not strongly react to reduced demand as a consequence of the tax on paper. We discuss the evidence on French and foreign paper prices in Appendix section C concluding that prices were stable and relatively inelastic to demand shocks during the period.

4.3 Elasticity of Substitution

The results in this section have shown that the *Société Typographique de Neuchâtel*, as an exemplary case of an Enlightenment publisher, was able to expand supply elastically in response to a price shock. Can this supply elasticity be quantified? We cannot calculate an actual elasticity of supply as we do not have data on prices. We can, however, get some indication of the elasticity by looking at it from the cost side. Darnton (1982) writes that a *ream of good white Papier d’Auvergne now cost 11 livres in Paris and 8 livres in Switzerland [...]*. (Darnton, 1982, p. 29) The initial tax was 20 sous per ream, so exactly equal to 1 livre. If we trust Darnton (1982), the price must have increased from 10 to 11 livres - i.e. by 9.5%. As indicated, paper represented around 50% of printers’ input costs (Darnton, 2021, p. 29). This implies a 4.8% increase in marginal costs for French printers. This, in combination with the results of section 4, allows us to calculate an implied elasticity - not of the STN’s supply, but an elasticity of substitution between two suppliers for the same book. An increase in marginal costs of 4.8% and a log export quantity change of 1.028 implies a ratio of 21.6. We can also conduct the same exercise for the 1782 surtax, which was constituted by a further 2.2% increase in marginal costs, which, together with the log export quantity change of 0.584²⁴ implies a ratio of 26.3. This is not the elasticity of the STN’s supply, but the elasticity of substitution between two suppliers of the same book. Even though the shocks are five years apart and of different intensity, the implied ratio is persistent. It implies that marginal changes in prices will lead to massive increases in exports as STN books and domestic books appear to be near-perfect substitutes.

5 Effects on censored and radical literature

In section 4, we have shown that the market for illegal books responded elastically to the price shock of the revocation of the tariff in 1775 by drawing on the STN as a paradigmatic example of foreign

²⁴See Appendix D.

clandestine producers of the fertile crescent. However, the 1775 shock did not only change the relative prices between legal French prints and foreign illegally pirated editions. It also changed the relative price of the censored literature since it was overwhelmingly printed abroad. To see this, let s_g denote the share of genre g that French readers bought from foreign printers, so that the average price of genre g is

$$P_g = (1 - s_g) p^{\text{Paris}} + s_g p^{\text{foreign}}. \quad (4)$$

The legal printers in the *Communauté des libraires et imprimeurs de Paris* dealt exclusively in orthodox content with royal approval and *privilèges*. The supply of censored books, therefore, had either to come from underground printing in France (which was dangerous) or from outside France (which, before 1775, was costly).²⁵ For censored books, let us assume that the foreign share was close to one, $s_C \approx 1$, whereas legal genres, supplied largely by the guild, had a small foreign share s_L .

Then, in 1775, the tax on paper and revocation of the tariff on books lowered the cost of both pirated editions and censored literature that could be secretly shipped together. If foreign prices fell by Δ percent while Parisian prices remained unchanged, the price of each genre fell by approximately $s_g \Delta$ percent. For legal genres that still were, to a large degree, supplied by the official guilds, the price shock was, relatively, less important. For the censored literature that, by definition, came from illegal publishers, the effect was large, as its price fell by the full Δ .

Hence, the 1775 shock lowered the relative price of censored books in comparison to legal genres, by approximately

$$\% \Delta \left(\frac{P_C}{P_L} \right) \approx -(1 - s_L) \Delta. \quad (5)$$

As an illustration, with the revoked tariff in 1775, the price change amounted to $\Delta = \delta = 10.7\%$. Censored books, which traveled in the same declared bales, therefore became about 10.7% cheaper. If we assume that a fourth of legal books came from abroad,²⁶ legal books became only about 3% cheaper on average, and the price of censored relative to legal literature fell by about 8%. A uniform price cut on all foreign books thus acted as a targeted price cut on censored literature.

The following section a) documents the increased inflow of censored literature into France following the 1775 shock and b) identifies which genres within the STN exports increased most. For this, we use information from the keywords assigned to the books by Burrows (2013b), as well as from the list of illegal literature assembled by Darnton (1995) to assess which books exactly profited from the shift of suppliers away from Paris and towards the fertile crescent and how this might have changed the ideas that the literate class in France got in contact with.

²⁵The clandestine enlightenment printers, like the STN, had a much broader catalogue including pirated works, tolerated works, and censored books.

²⁶Darnton (2021) guesses that at least half of the ordinary books sold in France between 1750 and 1789 were pirated. However, this number refers to the post-treatment period and includes domestic publishers who also produced pirated literature. We therefore choose 25% as a more conservative value for the example.

5.1 Synthetic Difference-in-Differences Results for Censored Books

We first consider the 720 books in Darnton's (1995) *The Corpus of Clandestine Literature in France* (see data section 3.3) that capture the effective censorship of the state.

To test the effect of the 1775 shock on the explicitly censored literature, we adopt the same synthetic difference-in-differences design as in section 4.2. We follow the model specification from equation 2 but restrict our book sample to the books which are listed as illegal in Darnton (1995).

The results of the first synthetic difference-in-differences designs (synthetic France) are reported in figure 11. We find that following the 1775 price shock, the shipments of officially censored books into France increased strongly, by ca. 100 transactions a year. Overall, we find an even larger elastic response to the price shock than for all exports with an implied elasticity of 1.96. As expected, lowering the price for censored literature from abroad made the censored literature relatively cheaper and led to a significant inflow of illegal literature into France.

Next, we find again that the crackdown against illegal and censored literature in 1783 under Vergennes as foreign minister reversed the trends and ultimately stopped almost all shipments of censored literature into France. However, it can be clearly seen that the reaction of the state came relatively late. By the late 1780s, foreign publishers had shipped officially censored literature into France for over a decade. While, post 1783, the state successfully managed to repress new shipments of censored literature, the books that had already been exported remained in France and continued to be read.

Given their politically explosive nature, we conclude that the French state paid a heavy political price for its policy on the book trade that had tried to square tax income with the mercantilist/physiocratic aim of sustaining the French export market of books. Throughout the period, the STN alone had conducted ca. 700 shipments of officially censored books into France. Books like the anonymous *libelle* "*Anecdotes sur Mme la comtesse du Barry*" which sold almost 1500 copies or D'Holbach's "*La politique naturelle*" were actively challenging the legitimacy of the monarchy and spread rumours about its sexual deviance and impotence. We document the strong revolutionary rhetoric of these books in section 6.

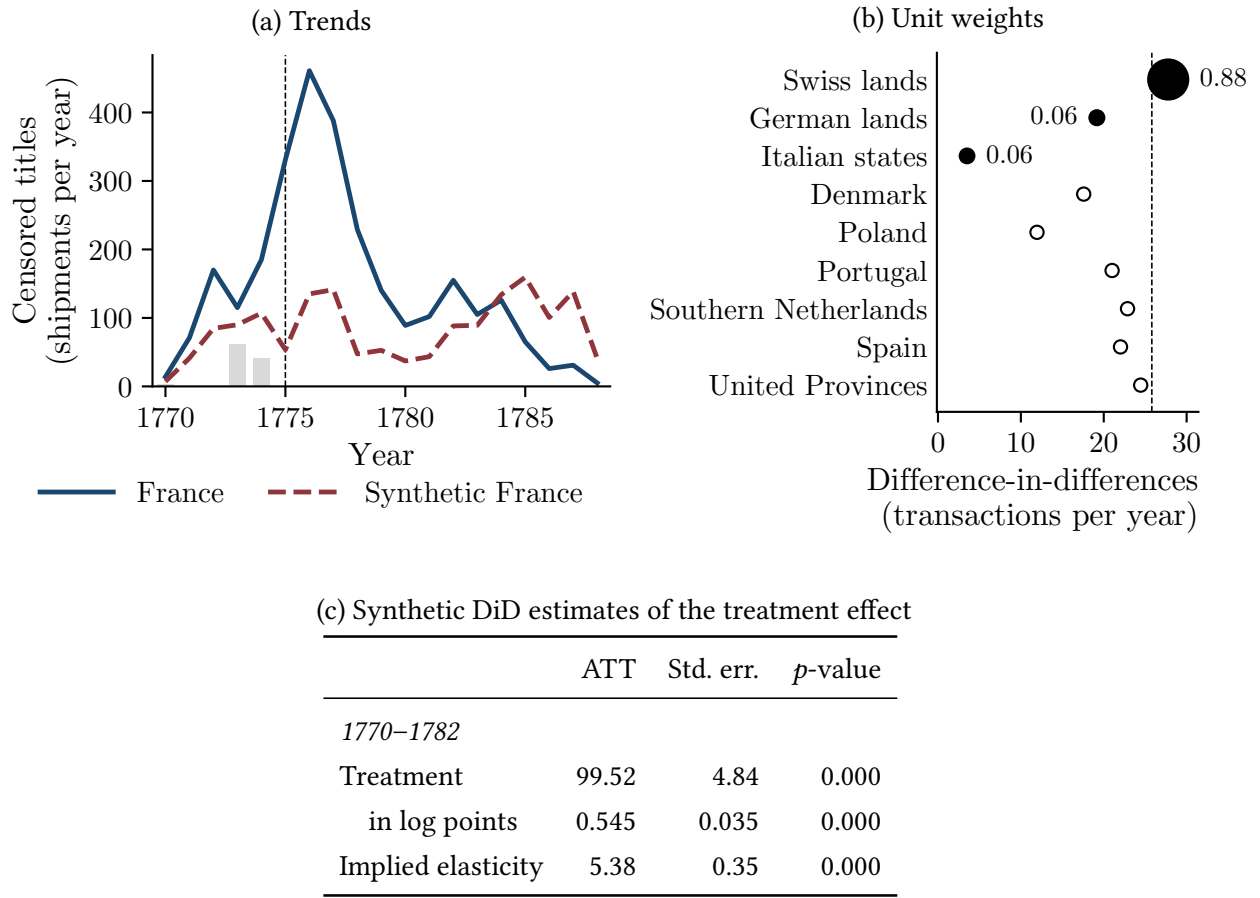


Figure 11: Synthetic difference-in-differences results for censored literature, donors with censored shipments before 1775

Notes: Synthetic difference-in-differences estimates (Arkhangelsky et al., 2021) on the *STN* sales ledgers, 1770–1788. The outcome is the number of sales transactions of censored titles, the titles in the corpus of Darnton (1995), to clients in France. The donors are the lands that received censored titles before 1775, at least one shipment a year on average; the four lands whose shipments begin after 1775 are left out. Panel (a) plots France against synthetic France over the full window; the vertical line marks the edict of 23 April 1775, and the bars at the bottom show the weights of the years before the edict. Panel (b) shows, for every donor land, the difference-in-differences of France against that land alone. The size of a marker and the number next to it give the weight of the land in synthetic France, hollow markers stand for a weight of zero, and the dashed line marks the estimate for the full window. Panel (c) reports the average treatment effect on the treated for 1775–1782, the period before the crackdown on illegal imports of June 1783, the effect in log points, the log of censored shipments to France over their counterfactual (France less the ATT), and the implied elasticity for the duty of 20 *livres* per quintal, 10.7% of the price, as in figure 10. Standard errors and *p*-values are based on placebo standard errors; the standard error of the elasticity follows from that of $\hat{\tau}$ by the delta method.

5.2 Synthetic Difference-in-Differences by Genres

Thanks to [Burrows \(2013a\)](#), we have extensive information about the content of all the books in the STN's catalogue. We have amalgamated these keywords into 15 distinct genres: *enlightenment*, *radical enlightenment*, *philosophy*, *politics*, *radical politics*, *erotic literature*, *religion*, *science*, *history*, *literature & arts*, *law*, *administration*, *education*, *agriculture*, and *industry & technology*. The mapping is described in detail in appendix A.1. These keywords now allow us to study in detail which books exactly benefited disproportionately from the introduction of the tax.

Once again, we apply our synthetic difference-in-differences model from equation 2 to the 15 different genres to estimate which genres responded most strongly to the price shock. As in equation 3 in section 4.2 we calculate elasticities based on the average treatment effects and price shock. Individual results for each genre are reported in Appendix F. To compare the individual results, Figure 12 provides a comparison of the estimated elasticities. Since we test the effect on 15 categories, we apply a Bonferroni adjustment to standard errors to account for multiple hypothesis testing.

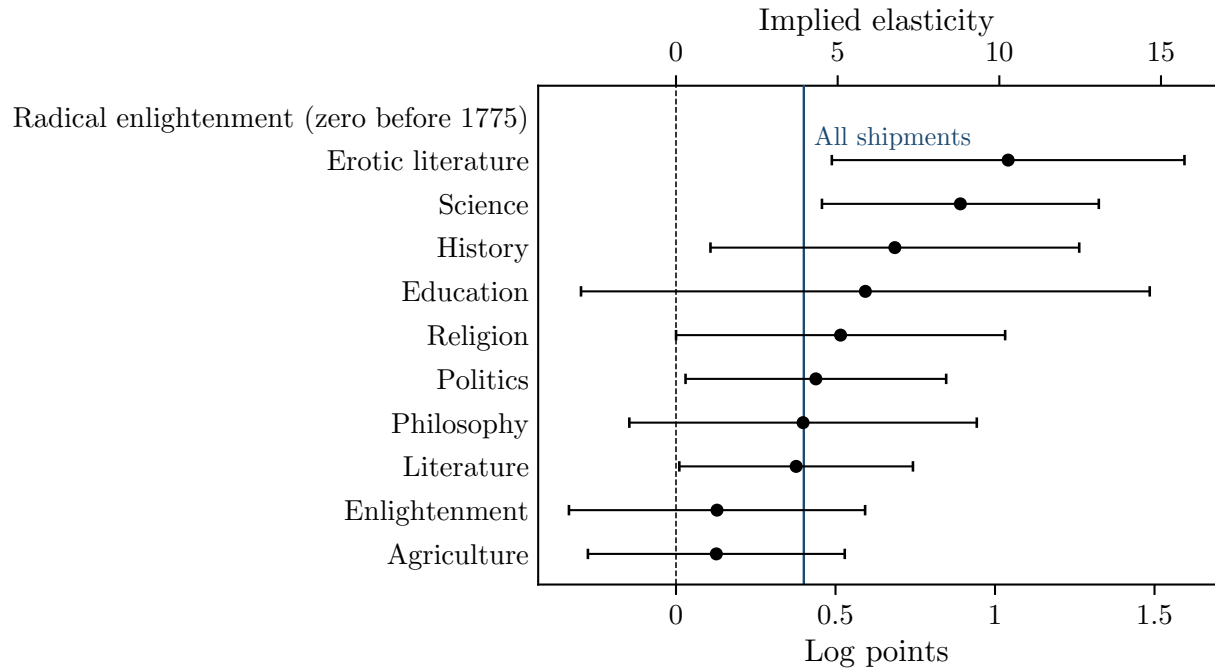


Figure 12: Trade elasticities of the edict of 1775 by genre

Notes: Implied trade elasticities by genre, from one synthetic difference-in-differences estimation per genre (see equation 2), with the number of transactions of the genre as the outcome, 1769–1782. The effect in log points and the elasticity are calculated as in equation (3) and figure 10. The solid line marks the elasticity for all shipments (figure 10); the dashed line marks zero. The genres follow the keywords of [Burrows \(2013a\)](#), see appendix A.1. Individual estimates per genre are documented in appendix F. Note that there were no radical enlightenment shipments to France prior to 1775, therefore the elasticity cannot be calculated. 95% confidence intervals based on placebo standard errors, delta method, and adjusted for multiple hypothesis testing by the Bonferroni method shown.

We find the strongest elasticities for *erotic literature*, *science*, *history*, and *education*. Of these, *erotic literature* and *science* are significantly larger than the average elasticity response with an implied elasticity of 3.2 and 3.8 respectively (see Appendix Table A6). Moreover, note that we do not report an elasticity for the *radical enlightenment* since before 1775 there were no exports to France in that genre (it rose to over 20 transactions directly after 1775, see Appendix Figure A4, a strong response in its own right).

Altogether, the genre analysis indicates that, as predicted, the more radical genres in general responded most strongly to the price shock. Although distinctly different categories, radical enlightenment, erotic literature, and science were all strongly connected to what would become the program of the French Revolution. The radical enlightenment shared its highly rational program with science (Israel, 2002, 2006). Erotic literature during this time often had a political and anticlerical program (Darnton, 1996) — see also section 6 for examples from the STN corpus.

Hence, altogether, the evidence in this section supports the prediction that the 1775 shock acted as a targeted price cut on censored literature. Shipments of censored titles to France responded even more elastically than the STN’s trade as a whole, and the response was strongest for the most radical genres: *erotic literature*, *science*, and the *radical enlightenment*. A fiscal policy aimed at revenue from paper and ensuring functioning book exports from France thus widened access to precisely the ideas the monarchy sought to suppress. Its effects were clearly felt in France — in the words of Diderot (1763): “Name me, I beg you, one of these dangerous, proscribed works, printed clandestinely abroad or in the kingdom, that has not within four months become as common as a privileged book.”²⁷

Next, Section 6 provides further evidence on the revolutionary rhetoric present in these works. Lastly, section 7 provides evidence that the response to the shock 1775 holds across the fertile crescent and is not only STN specific.

6 The Revolutionary Rhetoric of the Illegal Literature

While the crown could draw on the tax on paper to alleviate its desperate state of finances, it also revoked the tariff on books to secure the French export of books. Yet, this created incentives for an increasing inflow of illegal and pirated literature. As shown in section 5.1, this also changed the relative price of the fully censored literature, leading to an increased inflow of censored books as part of foreign

²⁷In the original: “Citez-moi, je vous prie, un de ces ouvrages dangereux, pros crits, qui, imprimé clandestinement chez l’étranger ou dans le royaume, n’ait été en moins de quatre mois aussi commun qu’un livre privilégié.” Diderot (1763) then continues: “What book is more contrary to good morals, to religion, to the received ideas of philosophy and government, in a word, to every common prejudice, and consequently more dangerous than [Montesquieu’s] *Persian Letters*? (...) Yet there are a hundred editions of the *Persian Letters*, and there is not a schoolboy of the *Quatre-Nations* who cannot find a copy on the quay for his twelve sous.” In the original: “Quel livre plus contraire aux bonnes mœurs, à la religion, aux idées reçues de philosophie et d’administration, en un mot à tous les préjugés vulgaires, et par conséquent plus dangereux que les *Lettres persanes*? (...) Cependant il y a cent éditions des *Lettres persanes* et il n’y a pas un écolier des *Quatre-Nations* qui n’en trouve un exemplaire sur le quai pour ses douze sous.”

publisher's export operations. What were the political implications of the inflow of these censored books?

This section analyses the language of the censored literature that was illegally imported into France. We argue that the language of these books prefigured the rhetorical patterns of the French of the Revolution and hence is likely to have contributed to the delegitimization and desacralization of the crown in the decades leading up to the Revolution.

For this, we take three samples of books to capture pre-revolutionary discourse, 1) officially censored literature shipped by the STN (see data section 3.3), 2) political literature as a sample from all French books consisting of the subjects of *enlightenment*, *radical politics*, and *erotic literature*, the subjects most likely associated with radical pre-revolutionary discourse, and 3) revolutionary pamphlets as collected through the Newberry Collection, a collection of pamphlets chosen for their connection to the French Revolution. We compile these samples for the time frame of 1764–1788.

We then contrast these with the rhetoric of the French Revolution. We capture this through two corpora 1) the Newberry Collection of revolutionary pamphlets 1789–1800 and 2) Marat's newspaper *L'Ami du peuple* that stood out for its radical rhetoric in denouncing the enemies of the Revolution and advocating for popular insurrections and political violence.

We then set out to identify core features of Revolutionary discourse in these full-text corpora. By drawing on [Darnton \(1996\)](#) and [Israel \(2002, 2006\)](#), we identify the rhetorical categories of *desacralizing the monarchy*, *anticlericalism*, *critique of despotism*, and *sexualized political* as key features of revolutionary discourse.

To identify these features in the full text corpora, we employ a gpt-5-mini large language model that is prompted to classify the individual paragraphs from the underlying text corpora along these dimensions. For pamphlets and the illegal literature we classify the full corpus, for the *LTF*, we sample by randomly drawing 14,000 paragraphs within each genre and year of publication. Overall, we classify 521,402 paragraphs made up of 233 million words. Exact prompts, sampling approach, and descriptive statistics of the corpora are provided in detail in appendix I.

(Note: Validation is work in progress)

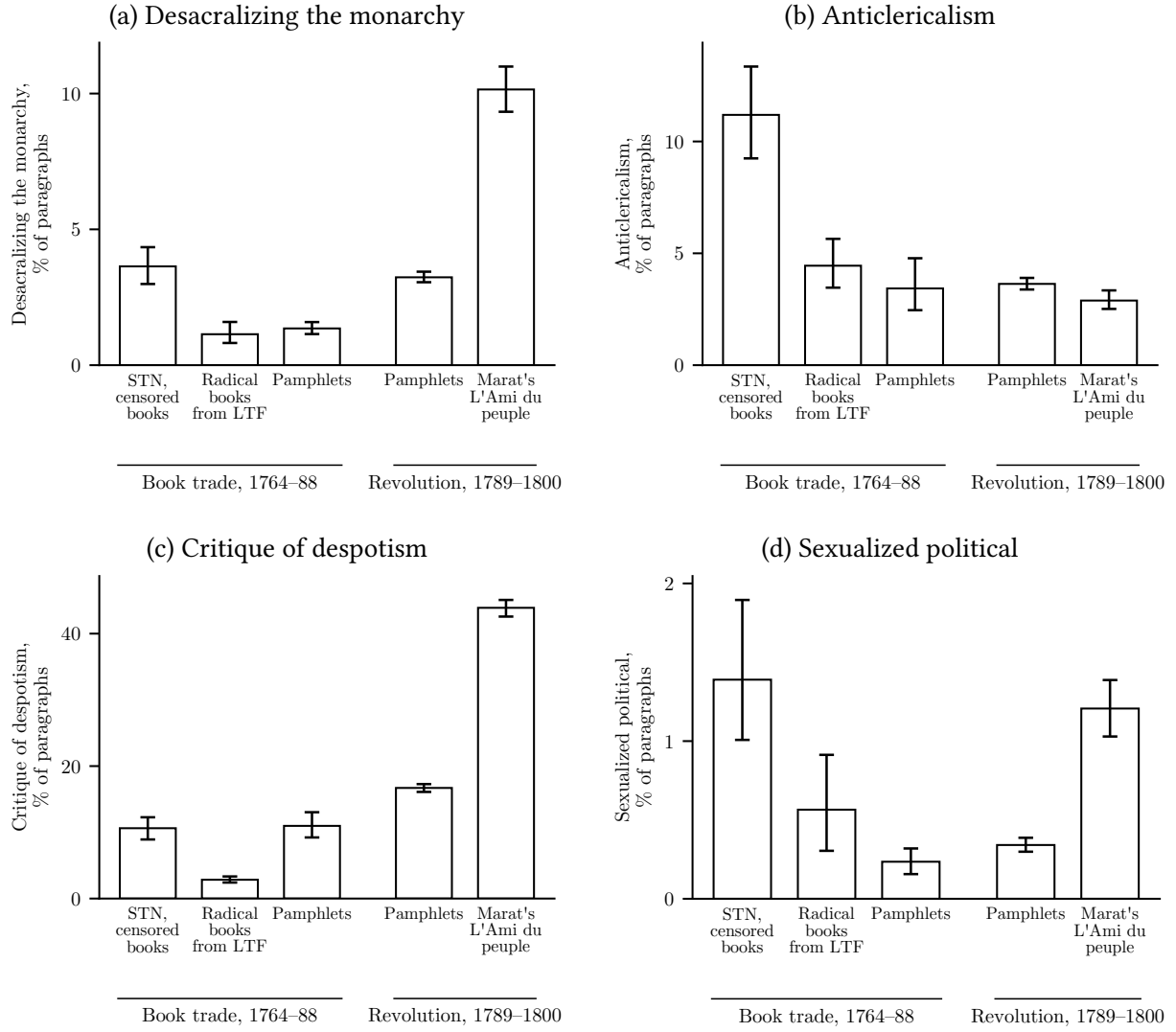


Figure 13: The rhetorics of the illegal book trade and Revolution

Notes: The figures show the mean of revolutionary rhetorical concepts found in the paragraphs of the following corpora: Censored books exported by the *Société Typographique de Neuchâtel* (STN), Political books from *La France Littéraire* (LTF) (incl. *enlightenment*, *radical politics*, and *erotic*), pamphlets from the Newberry collection, as well as Marat's newspaper, *L'Ami du peuple*. Corpora are split by the pre-revolutionary period 1764–88 and the Revolution, 1789–1800. The four measured rhetorical concepts are *desacralizing the monarchy*, *anticlericalism*, *critique of despotism*, and *sexualized political*. The classification was conducted by a gpt-5-mini model. $N = 521,402$. 95% document-level cluster-bootstrap intervals indicated.

Table 1: Rhetorics in STN censored literature compared to political works in La France Littéraire

	(1)	(2)	(3)	(4)
	Desacral. monarchy	Anticlerical	Despotism	Sexualized political
STN, censored books	2.89*** (0.60)	10.34*** (1.65)	7.20*** (1.25)	1.29** (0.51)
Pamphlets	0.39* (0.21)	1.47* (0.77)	5.32*** (1.04)	0.18* (0.11)
Paragraph length	Yes	Yes	Yes	Yes
Genre	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Mean dep. var. (political books from LTF)	1.14	4.45	2.84	0.57
Paragraphs	216,600	216,600	216,600	216,600
Documents	2,201	2,201	2,201	2,201

Notes: The table shows the level of the average of the following rhetorical stances, *desacralizing the monarchy*, *anticlericalism*, *critique of despotism*, and *sexualized political*, of censored books from the *Société Typographique de Neuchâtel* (STN) and pre-revolutionary pamphlets from the Newberry collection in comparison to books from the LTF within the subject classes of *enlightenment*, *radical politics*, and *erotic literature*. Standard errors clustered at the document level. *** denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level.

Figure 13 presents mean differences in revolutionary rhetoric between catalogues. We find that the censored books exported into France by the STN have the highest density of radical rhetorics across all three pre-revolutionary classes. With that they resemble and foreshadow the actual revolutionary literature of 1789–1800.

We also formally confirm that these results are not driven by year-, genre-, or text-length effects. For this, we formally regress the rhetorical outcomes on books coming from the STN censored books and pamphlets, with political books from *La France Littéraire* as the comparison group. Formally, for paragraph p of a document d first published in year t ,

$$y_p = \alpha + \beta_1 STN_d + \beta_2 Pamphlet_d + X_p' \gamma + \delta_t + \varepsilon_p, \quad (6)$$

where y_p is 100 if the classifier flags the paragraph for the theme and 0 otherwise, STN_d marks the censored books the STN sold and $Pamphlet_d$ the pamphlets, so that β_1 and β_2 are differences in percentage points from the political books in *La France littéraire*. X_p is a vector of controls for the length and squared length of a paragraph and the genre of the document. δ_t are year fixed effects.

First, looking at the frequency of text that desacralized the monarchy in Figure 13, we find that ca. 4% of all paragraphs of censored books exported by the STN actively employed rhetorical tools that desacralized the monarchy. With this, they are three times more likely to use this device than the baseline of politically radical books from the LTF (see table 1). Even pre-revolutionary pamphlets do not employ the device as often as the STN’s censored literature. At the same time, we find the same share of paragraphs desacralizing the monarchy in revolutionary pamphlets during the period 1789–

1800, and an even larger share, 10% in Marat's *L'Ami du peuple*. We can illustrate this rhetoric with this anonymous pamphlet from 1776 of which the STN sold 6 copies:

“Est-il assez prouvé par cet écrit que le Peuple n'est point fait pour le Prince, mais bien le Prince pour le Peuple? Voit-on clairement que le Prince, le Roi, le Magistrat Souverain, quelque titre qu'on lui donne, n'est point envoyé du ciel, mais établi par le commun consentement des citoyens?”

Essai contre l'abus du pouvoir des souverains (1776)

Translated: Is it proved well enough by this writing that the People is not made for the Prince, but the Prince for the People? Is it clearly seen that the Prince, the King, the Sovereign Magistrate, whatever title one gives him, is not sent from heaven, but established by the common consent of the citizens?

We find equally striking results for *anticlericalism*. Here, with 11% of paragraphs invoking anticlerical themes, the *STN* censored books have more than twice the anticlerical share of contemporary radical books from *La France Littéraire* and contemporary pamphlets. Moreover, the *STN*'s censored books have a larger share than either the revolutionary pamphlets or *L'Ami du peuple*.

This clearly documents the strength of anticlerical ideas that were imported through the illegal book trade. While the anticlerical tradition itself dates back to Voltaire, much of the anticlericalism of the 1770s and 1780s aligned with the more radical atheist themes of the radical enlightenment (Israel, 2002, 2006, 2015). We can see its force illustrated in this paragraph from d'Holbach's *Théologie portative* in 1768 — of which 172 copies were shipped by the *STN* into France.

“Dans toutes les religions du monde ce sont des hommes divins, que Dieu a lui-même placés sur la terre pour y exercer un métier très-utile ; il consiste à distribuer gratuitement des craintes afin d'avoir le plaisir de distribuer ensuite des espérances pour de l'argent. C'est un point fondamental sur lequel tous les prêtres du monde ont toujours été parfaitement d'accord.”

d'Holbach, Théologie portative (1768), entry “Prêtres”:

Translated: In every religion of the world there are divine men whom God himself has placed on earth to practise a most useful trade: it consists in distributing fears for free so as to have the pleasure of then distributing hopes for money. This is a fundamental point on which all the priests of the world have always been in perfect agreement.

Next, we find that for the rhetoric of the critique of despotism, the *STN* exported books were more than two times as likely to critique despotism as the politically radically books from the *LTF*. With this, they were approximately at the same level as contemporary pre-revolutionary pamphlets and prefigured the Revolution that heavily drew on this rhetorical device, especially so in Marat's *L'Ami du peuple*.

We can illustrate the potency of the early critique of despotism with this paragraph from Mirabeau's *Des lettres de cachet et des prisons d'état* from 1782 of which 146 copies were shipped into France by the STN:

“Il y a bien de l'inconséquence à croire que la nation doit beaucoup à ses rois pour avoir renversé le système féodal & détruit la noblesse, puisque depuis ce moment ils ont dit au peuple, comme Pompée aux Mamertins qui alléguoient leurs privilèges : il n'est point question de citer les loix à un homme qui a les armes à la main.”

Mirabeau, Des lettres de cachet et des prisons d'état (1782)

Translated: It is quite inconsistent to believe that the nation owes much to its kings for having overthrown the feudal system and destroyed the nobility, since from that moment they have said to the people, as Pompey said to the Mamertines who pleaded their privileges: there is no point in quoting the laws to a man who has arms in his hands.

Finally, we find that out of all corpora, revolutionary or pre-revolutionary, the STN censored books stand out as the corpus most heavily relying on sexualised political rhetoric.²⁸ The best example of such philosophical pornography is *Thérèse philosophe* by the Marquis d'Argens, a constant bestseller during the decades preceding the revolution. The book's eponymous heroine is, as the title suggests, a *philosophe*. The novel's storyline is a series of very explicitly described orgies that Thérèse experiences throughout her life. They are interspersed, however, with philosophical and metaphysical discussions between the participants.²⁹ This connection between sexual scandal and dissent was also apparent in the so-called *libelles*, explicit pamphlets sold on the streets, which described the elites' sexual deviancy in lurid detail and were instrumental in spreading antipathy towards the monarchy among the masses (Darnton, 1982, p. 29-30). As Darnton (1982) puts it: “This sexual sensationalism conveyed a social message: the aristocracy had degenerated to the point of being unable to reproduce itself.” (Darnton, 1982, p. 30). An example of such a text is this libel on Louis XVI's brother, the future Philippe Égalité, in 1784 of which 20 copies were shipped by the STN:

“Un jour, dit-il, je me trouvai à une de ces parties fines ; le dîner fut assez bon ; le Duc, deux hommes & huit femmes, nous étions tous nuds comme la main ; cela ne nous empêcha pas de ...”

Vie privée, ou apologie du très sérénissime prince Mgr le duc de Chartres (1784)

Translated: One day, he says, I found myself at one of those private parties; the dinner was quite good; the Duke, two men and eight women, we were all as naked as one's hand; that did not prevent us from ...

²⁸Here, one should add that Marat's *L'Ami du peuple* was not the most radical newspaper in employing political pornography as a political device. For example, Hébert's, *Le Père Duchesne*, took this device to new extremes.

²⁹This was not merely a strategy to “sell” enlightenment ideas by inserting them into erotic fiction. Thérèse's sexual life/phantasy and her freethinking approach to philosophical questions are both expressions of the same libertinage, the same rejection of Catholic orthodoxy and morality, and the two aspects, pornography and philosophy, could not be disentangled from each other.

Lastly, books and pamphlets often evoked multiple themes at once as can be seen in this pamphlet defiling Louis XV's mistress, Mme du Barry, while evoking anticlerical themes:

“On a remarqué que la V... M... descend de quatre prostituées, que Catherine Ire fut femme d'un soldat, et que la comtesse du Barry est fille d'une servante et d'un moine.”

La Chronique scandaleuse (Imbert de Bourdeaux, 1783; no. 93; 198 copies)

Translated: It has been remarked that the V[irgin] M[ary] descends from four prostitutes, that Catherine I was a soldier's wife, and that the comtesse du Barry is the daughter of a servant and a monk.

Altogether, by looking into the content and rhetorics of the censored literature shipped by the STN there remains little doubt that these books employed rhetorical devices similar to those of the Revolution that attacked the foundations of the monarchy at its heart by desacralizing the monarchy, attacking the legitimacy of church and clergy, critiquing despotism, and further delegitimizing the ruling elite through the employment of sexualized political rhetoric.

The danger of the illegal literature was fully perceived during its own time. In August 1770, the avocat général Séguier asked the Parlement of Paris to burn d'Holbach's *Système de la nature* as well as six other books, arguing that “*With one hand they have tried to shake the throne, with the other they have sought to overturn the altars.*” (Séguier, 1770).³⁰ Listening to the script of Beaumarchais' *Le Mariage de Figaro*, Louis XVI exclaimed that “This is detestable, it will never be played; one would have to destroy the Bastille for the performance of this play not to be a dangerous inconsistency” (as reported by Madame Campan in 1823).³¹ Yet, the ancien régime was full of these inconsistencies. The economic policy of the book trade incentivising the import of illegal and censored books was one of them.

7 The full market: Publishing of new books inside and outside of France

As a final extension, the paper considers whether the results found for the *Société Typographique de Neuchâtel* (STN) are representative for the entire foreign book trade in the fertile crescent.

To provide evidence on the external validity of the previous findings, the paper exploits data from Quérard's *La France littéraire* (LTF) that provides an authoritative list of all printed French works in the French language, including those printed abroad. While the LTF does not include sales statistics, we can still compare trends in the number of unique books published in France and abroad. With this, we capture the entire publication market in French books.

³⁰Translated from the original: “D'une main, ils ont tenté d'ébranler le Trône; de l'autre, ils ont voulu renverser les Autels.”

³¹Translated from the original: “C'est détestable, cela ne sera jamais joué; il faudrait détruire la Bastille pour que la représentation de cette pièce ne fût pas une conséquence dangereuse.”

Note that this analysis is more restrictive than the prior analysis of book trades. The current analysis only captures the publication of new books outside of France, not the export of pirated editions of already published books. Yet, we would assume that the tax on paper and the revocation of the tariff on books would also have incentivised authors to publish their first editions abroad.

7.1 Synthetic difference-in-differences

As before, we test the impact of the tax on paper by comparing France to a set of donor lands in a synthetic difference-in-differences approach (Arkhangelsky et al., 2021). Drawing on *La France littéraire* (LTF), we count the new titles in the French language that were published in France and in each foreign country. A significant number of publishers abroad released works in French, mainly for the French market. Hence, this approach captures the production of new works, not the intensity of printing.

Note that this setting was differently affected by the tax on paper and revocation of the tariff on foreign books. For the book trade, the 1771 tax had created an incentive for foreign publishers that was neutralized by the simultaneous tariff on books. For places of first publication, both the 1771 tax on paper and tariff on imports created different incentives to move abroad. On the one hand, the tariff made it more difficult to access the internal French market. On the other hand, it gave a distinct advantage to accessing the foreign European markets since the tariff also had harmed book exports from France.³² We therefore choose 1771 as our year of treatment in this analysis assuming that, for the place of publication, incentives changed post 1771 and would subsequently have been additionally tipped in favour of foreign publishers with the revocation of the 1775 tariff.

We assign each title to the land of the place named in its imprint, in the borders of the eighteenth century. The panel covers 1751–1782 in periods of two years. Naturally, France published more than ten times as many titles as in French than any of its surrounding countries. Hence, we cannot adopt a level-specification as before as the levels would be dominated movements of the French series. Therefore, we measure the outcome as an index relative to the pre-tax-treatment period:

$$Y_{ct}^{index} = 100 \left(\frac{Y_{ct}}{\bar{Y}_{c,pre}} - 1 \right), \quad (7)$$

where Y_{ct} is the number of new titles published in land c in period t , and $\bar{Y}_{c,pre}$ is the mean of land c over 1751–1770. The index captures how far output deviates from the normal scale of each land. As in section 4.2, the estimator solves:

$$(\hat{\tau}, \hat{\mu}, \hat{\alpha}, \hat{\beta}) = \arg \min_{\tau, \mu, \alpha, \beta} \sum_{c=1}^N \sum_{t=1}^T (Y_{ct}^{index} - \mu - \alpha_c - \beta_t - W_{ct} \tau)^2 \hat{\omega}_c \hat{\lambda}_t, \quad (8)$$

where Y_{ct}^{index} is the index of new titles published in land c in period t . α_c and β_t capture land and period fixed effects. Treatment, W_{ct} , is captured by the introduction of the paper tax in France in 1771

³²The international trade in books was usually conducted in book swaps between importer and exporter: The lack of imports following the tariff therefore also harmed the exports of French publishers (see Darnton, 2021, p. 30).

($W_{ct} = \mathbf{1}[c = \text{France}] \times \mathbf{1}[t \geq 1771]$). $\hat{\omega}_c$ and $\hat{\lambda}_t$ are estimated unit and time weights. Then, τ captures the average treatment effect on the treated, the effect of the tax on domestic publishing. Note that Quérard identifies common city imprints frequently used as false imprints by provincial guilds in France when breaking the Paris guild's monopoly. Where he knew the actual place of printing, he gives it in brackets after the place printed on the title page. To avoid contamination of the control group, we leave out all titles with the imprint of a place abroad for which Quérard exposes more than 10% of the imprints, and at least ten, as false: Cologne, London, Amsterdam, The Hague, Geneva and Brussels (Appendix G). Without these imprints, Great Britain and Ireland and the Southern Netherlands publish too few titles to form a donor unit.

Figure 14 reports the results of the synthetic difference-in-differences model. We find a large effect on publishers locating abroad, leading to ca. 50 new books being published by foreign publishers instead of in France. Weights are split roughly equally between the main donor countries. For robustness, Appendix H repeats the estimation with the log of titles, which implies that French output fell by 27% relative to synthetic France. Note that with the relatively small sample of donor countries statistical power is limited by sample design. Appendix figure A2 shows that the trends break around 1771 in the absolute number of books published in France.

Altogether, the results from *La France Littéraire* show a clear trend where the new price structure created through the tax on paper and revocation of tariffs seems to have incentivised French authors to switch to publishers from abroad. The number of printed works in France declined, while the number of works produced abroad increased.

Overall, this exercise shows trends in the overall publishing of new titles that are consistent with the previous results for the *Société Typographique de Neuchâtel*. We argue that the results for the *Société Typographique de Neuchâtel* generalize to the full political economy of publishing during the last decades of the Ancien Régime. Stuck between the government's need to finance itself and internal competition between the provincial and Paris guilds, the Ancien Régime created a set of incentives that led publishers from abroad to increasingly enter the French market. As shown in section 5.1, this made it increasingly easy for radical authors to avoid censorship. The following section discusses the relationship between early radical publications.

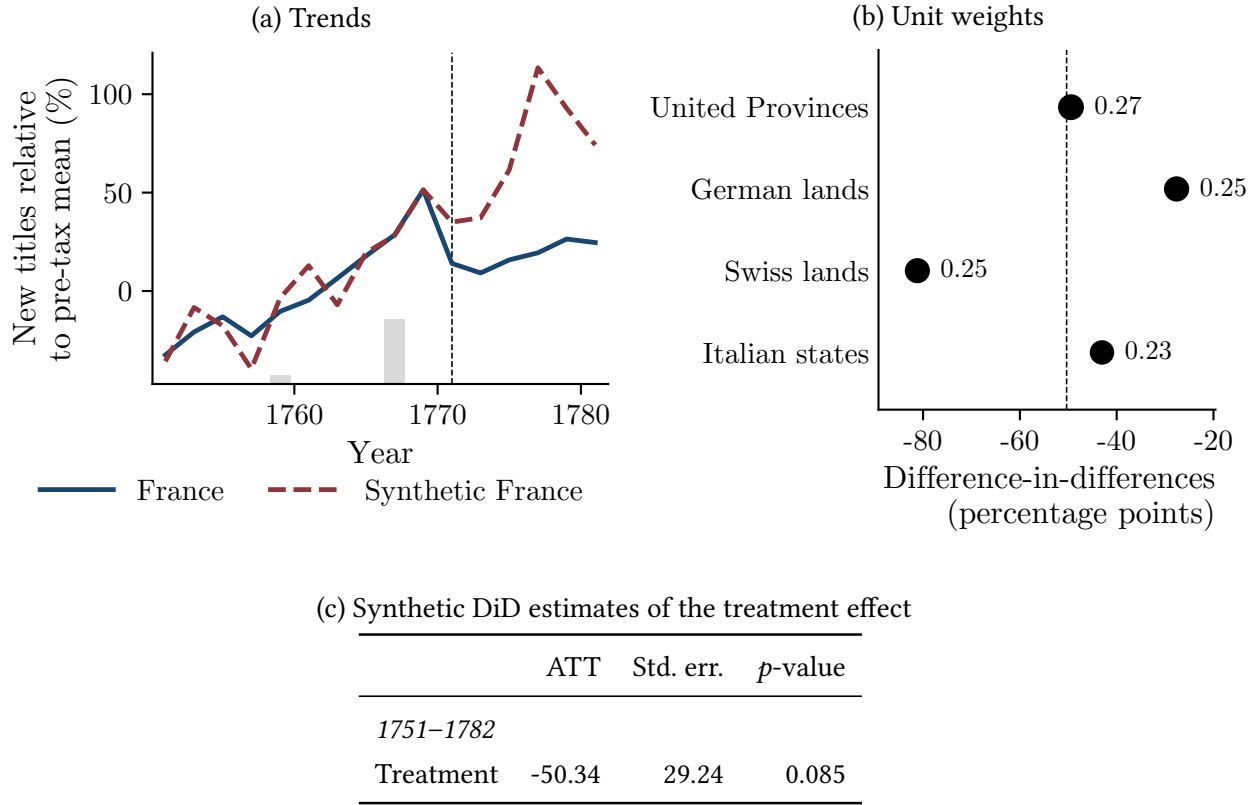


Figure 14: The paper tax of 1771 and new titles published in France

Notes: Synthetic difference-in-differences estimates (Arkhangelsky et al., 2021) on the titles of *La France littéraire*, 1751–1782, in periods of two years. The outcome is the number of new titles published in a land relative to its mean over 1751–1770, in percent. Panel (a) plots France against synthetic France; the vertical line marks the paper tax of 1771, and the bars at the bottom show the weights of the periods before the tax. Panel (b) shows, for every donor land, the difference-in-differences of France against that land alone. The size of a marker and the number next to it give the weight of the land in synthetic France, and the dashed line marks the estimate. Panel (c) reports the average treatment effect on the treated for 1771–1782, with a placebo standard error. The window ends before the crackdown on illegal imports of June 1783. Titles with the imprint of Cologne, London, Amsterdam, The Hague, Geneva or Brussels are left out, because Quérard exposes more than 10% of these imprints as false (Appendix G). The donor lands are the German lands, the Italian states, the Swiss lands and the United Provinces.

8 Discussion

We have shown in this paper that the *Société Typographique de Neuchâtel* managed to expand its exporting operation despite a large part of its shipment being illegal in France. We could prove that the expansion in exports to France was not in fact just a diversion of exports to other locations to the now more lucrative high-priced French market, but a genuine expansion of production, thereby proving to be a crucial building block of the European knowledge economy, which relied on the dissemination of printed books (Squicciarini and Voigtländer, 2015).

First note that the numbers presented in sections 4 and 5 most likely represent lower bound estimates. It was not uncommon for books to be read by more than one person or household. Public and semi-public libraries were already established and relatively widespread. Additionally, other semi-public spaces where reading took place existed, such as the *Chambres*, *Cabinets* or *Sociétés de lecture*, private organisations that gave members access to collectively owned books. Booksellers also rented out books for years or weeks at a time and private owners were lending and borrowing books from each other frequently (Darnton, 1984; Chartier, 1987). This does not even count the dissemination of ideas from books to cheap pamphlets which were sold on the street and read in cafés yet (Darnton, 1982). This implies that there is a *multiplier* that would need to be applied to our results to arrive at the number of people that got in touch with the ideas presented in the books.

While such a multiplier for the illegal book trade is impossible to quantify, estimates for this *multiplier* exist for newspapers. Based on statements by the 18th-century bookseller Panckoucke, Feyel (1991, 2000) estimates that the ca. 70,000 copies of newspapers sold by Panckoucke in 1780 and 1781 reached about 560,000 readers, which would imply a multiplier of eight. Popkin (1990) summarises different historians and contemporaries and arrives at a number between four and ten. The corresponding number for books is even harder to quantify. Numbers survive only for a few of the abovementioned institutions. Quénart (1978) reports that the reading chamber *chambre de lecture de la Fosse* in Nantes alone had 125 paying members and Young (1792) reports from his travels in the 1780s that Nantes - with roughly 70,000 inhabitants the 6th or 7th largest town in France at the time (Bairoch, Batou and Chevre, 1988) - alone featured six such chambers. We can thus assume that we can apply a multiplier in the range of four to ten to our results to arrive at an estimate of how many people read an imported book directly, while the number of people who got into contact with its ideas was even higher.

Printing houses thus played an essential role in the European Knowledge Economy and the *Republic of Letters*, the correspondence network of European enlightenment intellectuals. This was already argued by Eisenstein (1979) who pointed to their role as producers of periodicals and books, as well as providing shelter and a meeting place for dissident foreign intellectuals.

We provide evidence that the network of clandestine enlightenment printing houses, as one of the brick-and-mortar parts of the largely virtual Republic of Letters, also played a role in maintaining the “main rules” governing the Republic of Letters and the European knowledge economy (Mokyr, 2016, p. 189). According to Mokyr (2016), these rules were the freedom of entry, contestability, transnationality, and the commitment to putting new knowledge in the public domain.

We found that rigid supply constraints were not a barrier to entry for new and aspiring writers. Our results in section 4 document clearly that supply increased in response to an increased demand.³³ Contestability of ideas was not guaranteed by the official printers’ guild of the *Communauté des libraires et imprimeurs de Paris*. On the contrary: books needed an official seal of orthodoxy and a *privilege* to be

³³We do not find evidence that there was entry at the extensive margin for new publishing houses. From incoming trades shipped to the STN we know something about the STN’s network and cannot document any new entrants after the tax shock. The STN’s network of other enlightenment publishing houses was already in place before the introduction of the tax in 1771.

printed. Among the *STN*'s exports, by contrast, as shown in sections 5.1 and 5.2, illegal and unorthodox literature expanded more than orthodox books did, meaning that orthodox ideas could be contested in the form of books, which would actually reach readers internationally.

Our results also show that the *STN* did not only operate transnationally, but that it was also part of an integrated transnational market where prices in one country affected supply not only domestically - as shown in section 7 - but also abroad - as shown in section 4. The *Communauté des libraires et imprimeurs de Paris* was not committed to placing knowledge in the public domain. *Privilèges* were enforced within France and meant that only a certain printer family could publish a certain text. Pirateers like the *STN* managed to undermine this system. We do not know about the exact extent of the *STN*'s piracy, but given that we know the claimed place of imprint for the *STN*'s books, we know that 8.3% of the titles in the *STN*'s catalogue claim a false imprint, likely pirated work. Our data shows that in the year 1782, 47% of all trades concerned books with a false imprint. This meant that pirating was a large part of the *STN*'s business and that the *Communauté des libraires et imprimeurs de Paris*' commitment to not putting knowledge in the public domain was successfully undermined. Also in line with Mokyr (2016), we conclude that political fragmentation was key to enabling the *STN* to provide these functions. Only the fact that France was surrounded by small polities often governed by absent rulers - the Prussian King in Potsdam in the case of Neuchâtel or the Pope in Rome in the case of Avignon - ensured that their activity was outside the domain of the French crown.

We can thus show that there was a functioning market for ideas in 18th century Europe. The implied import-demand elasticities are well within the range of modern trade elasticities in well-functioning international markets (Broda and Weinstein, 2006; Caliendo and Parro, 2015; Fisman and Wei, 2004). A functioning market for ideas was crucial for innovation in Europe. As outlined in section 2.3, if we assume nonrivalry of technology (Arrow, 1962; Romer, 1990) - as is the case in models of endogenous technological change (Aghion and Howitt, 1992; Grossman and Helpman, 1993) - European political fragmentation would have been detrimental to European innovation and growth. A constant share of resources devoted to innovation yields more innovation with higher population if the cost of a new technology is independent of the number of people using it (Kremer, 1993). Europe's fragmentation would therefore have led to inefficiently low growth. A functioning market for ideas, however, made sure that innovations, technologies, and political ideas spread throughout Europe. We demonstrate the functioning of this market even in the face of censorship.

Given our results in section 5, we can extend Mokyr's argument from useful knowledge to radical political ideas. The genres that profited most from the expansion in supply in response to the tax change was not science and practical knowledge, but radical enlightenment literature which emerged as a new genre among the *STN*'s exports to France, as well as erotic literature.

The erotic literature in question does in fact not sit awkwardly with the radical enlightenment tradition. The radical enlightenment, according to Israel (2002), was a radical materialist strand of the enlightenment, contrasted with a *moderate enlightenment* that was still infused with religious ideas. Parts of the "sexualized political" category are included in the *radical enlightenment* genre and potentially revolutionary literature. The illegal sexualized literature that was part of the enlightenment book trade

and the *STN*'s fare was not just material to provoke sexual arousal among its readership. It was an integral part of the subversive tradition of the *radical enlightenment*. Darnton (1996, p. 85-115) dedicates an entire chapter to this genre of "*Philosophical Pornography*".³⁴ We can thus conclude that the fertile crescent also served as the basis for a free market of *politically radical* ideas.

This also raises another question, however. Given that the tax inadvertently led to an increased inflow of politically radical, seditious, and illegal material merely around two decades prior to the French Revolution, the question of a connection between books and revolution arises. The hypothesis of a causal connection between this literary underground of enlightenment publishing and the Revolution was raised by Darnton (1982), although he has weakened his claims in a recent article (Darnton, 2024a). For Darnton (1982), there existed a clear link between the Revolution of 1789 and the enlightenment book trade. "[L]ike the drip drip of water on a stone" the inflowing books "wore away the layer of sacredness that made the monarchy legitimate [...]" (Darnton, 1996, p. 216).³⁵

Section 6 uses natural language processing and a large language model to document that the literature censored by the French crown that was exported by the *STN* was indeed radical and did foreshadow themes that would later define the rhetoric of the Revolution. We find that the censored *STN* literature smuggled into France was already as likely to desacralise the monarchy between 1764-1788 as Revolutionary Pamphlets from the *Newberry French Revolution Collection* would be after 1789 and as likely to feature sexualised political language as Marat's revolutionary newspaper *L'Ami du peuple* after the Revolution. No similar pattern can be discerned from *radical* literature in *La France Littéraire* (Quérard, 1827-1839) which was not censored. Censored *STN* books did prefigure many of the themes of the French Revolutionary rhetorics decades before the Storming of the Bastille.

Investigating the question of a causal link between revolutionary intensity and the inflow of radical ideas econometrically is difficult because of endogeneity concerns, however. Cities in France with more radical *STN* imports are more likely to have had a higher pre-existing demand for such content. Distinguishing causation from a result driven by simultaneous or reverse causation bias is impossible. Using distance to Neuchâtel as an instrument in a period of high transportation costs does not work, as France was surrounded by other *fertile crescent cities*. Proximity to Neuchâtel is strongly correlated with *STN* imports. That a bookdealer in Lille receives fewer shipments from the *STN*, however, does not mean they receive no enlightenment literature. It most probably means that their suppliers are located in the Low Countries rather than faraway Neuchâtel. Appendix J discusses in detail why various approaches to causally identify the relationship between illegal book inflows and revolutionary intensity fail.

³⁴The best example of such philosophical pornography is *Thérèse philosophe* by the Marquis d'Argens, a constant bestseller during the decades preceding the revolution. The book's eponymous heroine is, as the title suggests, a *philosophe*. The novel's storyline is a series of very explicitly described orgies that Thérèse experiences throughout her life. They are interspersed, however, with philosophical and metaphysical discussions between the participants. This was not merely a strategy to "sell" enlightenment ideas by inserting them into erotic fiction. Thérèse's sexual life/phantasy and her freethinking approach to philosophical questions are both expressions of the same libertinage, the same rejection of catholic orthodoxy and morality, and the two aspects, pornography and philosophy, could not be disentangled from each other. (Darnton, 1996, p. 89-91)

³⁵Darnton (2024a) has recently revisited and qualified this thesis and no longer takes such a strong position.

Table 2: Subversive Content Share and Revolutionary Intensity

	(1) Jacobin	(2) Early Jac	(3) ln(Deaths)
Share: subversive composite	0.123 (0.079)	0.246** (0.108)	0.189 (0.370)
Log town population	0.147*** (0.052)	0.252*** (0.064)	1.627*** (0.232)
Distance to provincial guild	0.001 (0.001)	-0.001 (0.001)	0.003 (0.006)
Distance to Paris	-0.000 (0.000)	-0.000 (0.000)	0.004*** (0.001)
R-squared	0.179	0.366	0.558
Observations	63	63	63

We can, however, present some suggestive evidence in accordance with [Darnton \(1982\)](#). Looking at the correlation of a battery of measures of revolutionary intensity commonly used in the literature³⁶ with the subversive content share of the *STN*'s shipments to a specific city or *bailliage*, one result stands out as the single significant one. Controlling for population, cities with a higher subversive content share in their *STN* shipments are much more likely to have a Jacobin club before 1791. Interestingly, the revolution was not more violent as measured by the number of deaths or *émigrés* associated with the revolution in areas with a higher subversive share. This is only suggestive evidence and we cannot know in which direction the causation goes. It is, however, in line with Darnton, who mainly stressed the importance of the subversive literary underground in shaping the Jacobinical worldview, stating that *"[i]t was in the depths of the intellectual underworld that [...] the Jacobinical determination to wipe out the aristocracy of the mind was born."* ([Darnton, 1982](#), p. 21) and that the peddlers of illegal and subversive literature *"[...] functioned as the ideological carriers who injected the crude, Jacobinical version of Rousseauism into the Parisian sans-culotterie."* ([Darnton, 1982](#), p. 39) It makes sense that these cities were more likely to be home to a Jacobin Club *before* these institutions became ubiquitous and that revolutionary fervor manifested itself not in excessive violence but in the civic organisation of radical political thought.

³⁶We use the share of Refractory Clergy from [Squicciarini \(2020\)](#), which has been used in [Ottinger and Rosenberger \(2023\)](#), [Kelly \(2021\)](#), and [Blanc \(2023\)](#). Secondly, we use the *HiSCoD* Conflict Dataset ([Chambru and Maneuvrier-Hervieu, 2022](#)), which has been used in [Ottinger and Rosenberger \(2023\)](#), [Chambru, Henry and Marx \(2024\)](#), and [Stewart \(2025\)](#). Thirdly, we use the contents of the bailliage-level *Cahiers des Doléances*, the collections of complaints filed for the General Assembly in 1789, coded by [Shapiro and Markoff \(2001\)](#). Like [Acemoglu et al. \(2011\)](#) and [Chambru \(2019\)](#), we focus exclusively on *doléances* (complaints) focused on taxation in general or the *gabelle* salt tax in particular. Fourthly, we use the number of *Émigrés* from [Greer \(1951\)](#) and the number of executions by department during the *Terreur* by [Greer \(1935\)](#). Both of these measures were used by [Sasaki \(2025\)](#). Finally, we use the list of cities with affiliated Jacobin Clubs between 1789 and 1791 from [Kennedy \(1981\)](#).

9 Conclusion

Mokyr (2016) sees the fragmentation of the European continent into a "*polycentric political environment*" as a necessary precondition for the emergence of a parallel transnational Republic of Letters and the European Knowledge Economy (Mokyr, 2016, p. 179). The existence of a competitive marketplace for ideas meant that while political rulers were constrained by the borders of their polities, the influence of intellectuals stretched across Europe. This also helped Europe overcome the adverse effects of its political fragmentation on innovation by ensuring that ideas spread across the entire continent. One crucial part of the infrastructure of this network was the clandestine book market and the printing houses of the enlightenment, which disseminated the intellectual output of the Republic of Letters across Europe. In order to provide for a functioning market of ideas and to effectively undermine censorship efforts by the European states, it was crucial that these printing houses were not supply constrained and could expand their supply in response to demand shocks.

Exploiting a tax shock in 1771 France, we show that the *Société Typographique de Neuchâtel* (STN), the only enlightenment publishing house for which complete records survive, managed to absorb the resulting demand shock and expanded production significantly.

We are investigating a tax on white paper introduced by the French Crown in March 1771. As paper represented 50% of costs for book printers, this tax represented a significant cost shock. The tax of 20 sous per ream was initially offset by a 60 livres per quintal import duty on books to dampen the effect on the print industry. In April 1775, this import duty was abolished, giving foreign book producers a price advantage of about 10% over domestic producers. This abolition is the shock we are investigating.

Employing a synthetic difference-in-differences design (Arkhangelsky et al., 2021) in which we compare exports to France to a synthetic control, we find that the tax in combination with the abolition of the tariff led to a 49% increase in book inflows into France from the *Société Typographique de Neuchâtel*. This result implies an import-demand elasticity of 3.95 for the clandestine book trade - a result that is within the range of modern trade elasticities (Broda and Weinstein, 2006; Caliendo and Parro, 2015; Fisman and Wei, 2004). This indicates that the supply of the clandestine book trade could expand very elastically in response to demand shocks. We show that this was not a diversion of exports but a true expansion of production, as sales to other markets also grew slightly.

The import-demand elasticities differed by genre. We find that illegal books experienced an even sharper increase in import numbers after the tariff abolition with an implied import-demand elasticity of 5.38. Books that we classify as belonging to the *radical enlightenment* (Israel, 2002) emerge as a new genre of exports to France immediately after the abolition of the tariff. Before the tariff abolition, the STN did not export these books to France and only sold them to the rest of Europe. The genres that benefitted most from the shock were erotica and scientific publications.

The content of these books which benefited disproportionately from the foreign producers' price advantage in many ways prefigured the rhetoric of the French Revolution, which took place less than two decades after the introduction of the tax. Employing a natural language processing approach using a large language model, we classify over 500,000 paragraphs from censored STN books, radical

books which were not part of the *STN*'s exports, and two corpora of pamphlets and newspapers from the French Revolution. We find that censored *STN* books desacralise the monarchy at three times the rate of politically radical non-*STN* books - at the same rate as revolutionary pamphlets from 1789–1800. They are even more likely to endorse anti-clerical views than revolutionary pamphlets or Marat's *L'Ami du peuple* by 11%.

The expansion of supply by foreign clandestine publishers coincided with a displacement of French domestic book production. Domestic book production measured by the number of new titles published each year remained 27% below the output of synthetic France.

This confirms Mokyr's idea that the fragmented nature of Europe that coexisted with a transnational market for books was crucial for the European Knowledge Economy. Policing printers' activities was easier for the French authorities than policing a long and porous border. This meant that the state's censorship was a tax rather than an impermeable barrier. The existence of a truly transnational market with transnational prices undermined these efforts by the French state. The market for books and ideas in the French enlightenment was elastic and not supply constrained. It thereby fulfilled a crucial role in the European Knowledge Economy by undermining censorship efforts by the crown and ensuring that the adverse effects of political fragmentation were overcome. We can extend his framework, which mainly applied to useful knowledge, to the market for political ideas. The cash-strapped French crown, in an effort to raise revenue, created the economic conditions for a massive inflow of radical new political ideas.

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Appendices

A Société Typographique de Neuchâtel

A.1 Classification of *FBTEE* Keywords into Genres

Each title in the *FBTEE* database (Burrows, 2013b) was assigned one or multiple keywords. In total 237 distinct keywords have been assigned by Burrows (2013b) with the support of librarians at the Brotherton Library at the University of Leeds, using a “a purpose-built project keyword system”. We have amalgamated these 237 keywords into the fifteen genre categories which are used throughout the paper. Every keyword is assigned to exactly one category and no keyword is associated with two genres. Because most books have several keywords, however, the resulting genre categories are not mutually exclusive at the level of the individual book title. Of the 3,294 distinct titles in the *STN* dataset, 1,867 are assigned to several genres. Genre shares thus do not sum up to 100%.

Table A1: Amalgamation of *FBTEE* keywords into genre categories

Genre	<i>FBTEE</i> keywords
<i>Enlightenment and radical thought</i>	
Enlightenment	alambert; buffon; christian enlightenment text; confessions of rousseau; constitutional theory; dictionary; encyclopaedia; political rights; political theory; rousseau; rousseauian text; voltaire
Radical enlightenment	anti-aristocratic works; anti-clerical works; atheism; atheist work; deism; deist work; despotism; freemasonry; irreligious works; religious toleration; sceptical works
Philosophy	astronomy; epistemology; materialism; metaphysics; moral philosophy; philosophers; philosophie; philosophy; philosophy of history
<i>Politics</i>	
Politics	church and state; colonial policy; current affairs; frederick ii of prussia; international relations; louis xiv; louis xv; military affairs; political institutions; politics; social issues; wars of religion
Radical politics	american revolution; cultural news; diamond necklace affair; jansenism; jansenist text; libel and slander; magnetism; mesmerism; montbailli affair; personal libel; religious persecution; satirical works; scandal; scandalous anecdotes
<i>Illicit literature</i>	
Erotic literature	amorous adventures; burlesque; erotic works; lesbianism; libertine texts; pornographic works; prostitution

continued

Table A1, continued

Genre	FBTEE keywords
<i>Religion, science, and letters</i>	
Religion	abelard; apologetic works; bible stories; biblical history; biblical study; catechisms; catholic text; catholicism; christian doctrine; christian life; christian theology; christianity; church history; communion; concordances and biblical dictionaries; convent literature; devotional manual; ecclesiastical affairs; gospels (non-canonical); jesuits; jesus christ; judaism; martyrdom; monasticism; paganism; papacy; passion of christ; prayer; protestant text; protestantism; religion; religious houses; religious missions; religious observance; religious orders; romantic fiction; saint dominic; scriptures; sermons; testimonies to faith; work of religiosity; world religions
Science	anatomy; biology; botany; chemistry; combustion; economic theory; economics; fuels; gases; general science; geography; geology; gravitation; history of mathematics; history of medicine; history of science; hydro-power; maps and atlases; mathematics; mechanics; medical remedies; medicine; military science; natural history (general); newton; nutrition; optics; paleontology; pathology; pharmacology; photosynthesis; physics; physiology; science; scientific correspondence; scientific instruments; scientific method; steam engines; surgery; veterinary science; zoology
History	alexander the great; ancient world; byzantium; charlemagne; chronology; classical antiquity; classical remains; conquistadors; history; hundred year's war; inquisition; mary queen of scots; middle ages; military history; octavia (caesar augustus' sister); roman empire; thirty years' war; trojan war; world history
Literature and arts	allegorical works; autobiography; children's literature; comedy; comic poetry; didactic fiction; drama; drame; epic poetry; epistolary fiction; fantasy adventures; fine arts; historical drama; historical fiction; literary correspondence; literary criticism; literary history; literature; music; mythology; opera; painting; picaresque tales; poetry; political fiction; prayer books; prose drama; prose fiction; sacred texts; sentimental fiction; short stories; social fiction; social mores; theatre; theology; tragedy; travel; verse drama; writing (art of)
<i>Law, administration, and applied subjects</i>	
Law	criminal law; judicial memoirs; judicial proceedings; law; legal reform; natural law; penal system
Administration	financial administration; public administration; taxation

continued

Table A1, continued

Genre	FBTEE keywords
Education	education; educational curriculum; french language; german language; grammar; languages; latin language; literary studies; pedagogy; rhetoric; school book; vocabulary
Agriculture	agriculture; agronomy; animal husbandry; arable farming
Industry and technology	commerce; industry; international trade; manufacturing; technology

Notes: Keywords are reproduced as they appear in the FBTEE database (Burrows and Curran, 2012). The number of keywords per category ranges from three (Administration) to forty-two (Religion). Categories are constructed as indicator variables equal to one if a title carries at least one keyword belonging to that category. In the regressions, Politics and Radical politics are reported separately; Administration is reported separately from Law.

B La France littéraire

B.1 The *La France littéraire* Catalogue

To capture published book titles in France between 1700 and 1800, we draw on Joseph-Marie Quérard’s *La France littéraire, ou Dictionnaire bibliographique des savants, historiens et gens de lettres de la France* — a self-declared complete collection of French published works during this period. It appeared in ten volumes with Firmin Didot in Paris between 1827 and 1839 (Quérard, 1827-1839). Quérard, a bookseller’s clerk from Rennes, conceived it based on the model of German and English trade bibliographies. In the *Discours préliminaire* to volume 1 he presents it as a national bibliography “d’un usage général et journalier” for scholars and booksellers (Quérard, 1827-1839, vol. 1, p. xii), and he explains the start in 1700 by dating the formation of a national literature to “vers la fin du dix-septième siècle”, from which point the dictionary was to include “l’intégralité des productions littéraires de la France” (Quérard, 1827-1839, vol. 1, p. ix). It sets out to capture all French works printed since 1700 wherever they appeared, reprints of earlier French works, translations into French, French editions of foreign originals, and foreign writers publishing in French. Entries are arranged by author with a short biographical notice and record for each work its title, year, place, publisher, format, number of volumes and, where known, the trade price in francs. Quérard compiled from the trade press, above all Beuchot’s *Bibliographie de la France* (from 1811), from the catalogues of the Paris libraries and booksellers, and from living authors and provincial correspondents (Quérard, 1827-1839, vol. 1, pp. xvii–xxi).

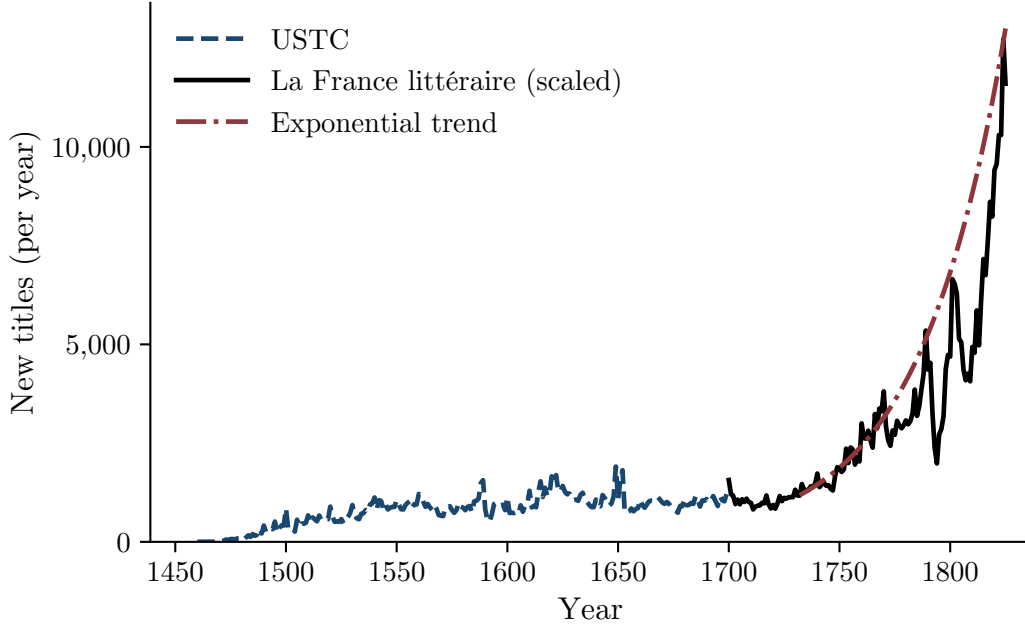


Figure A1: Long-term Trends in new publications in French, 1450–1825

Notes: The figure shows long-run aggregate trends in published French books, 1450–1825. To capture the period before 1700 in which *La France littéraire* begins, we use USTC data. Because the USTC is a more comprehensive source than *La France littéraire*, we scale *La France littéraire* to 100 for the USTC 1699 value to keep accurate estimates of the aggregate. Lastly, the paper fits an exponential trend to the years 1730–1771, before the tax on paper, to illustrate the exponential nature of growth in book production during the eighteenth century. The trend implies that the number of titles doubled every 27 years.

B.2 Digitising the catalogue

The paper draws on page-level transcriptions of the ten volumes from Wikisource. Overall, the 10 volumes amount to 6,178 pages. Each page is first cleaned of OCR and capitalisation errors by gpt-4o-mini. Pages are then concatenated and segmented into 19,823 author chunks. Each chunk is parsed by gpt-4o³⁷ into a fixed JSON schema of author fields (name, birth and death years, places of birth and death, learned societies) and work fields (title, year, place, publisher, format, volumes, price, pages). A second call audits the draft against the source text and adds omitted works. All calls run at near-zero temperature with fixed seeds, and oversized entries such as Voltaire’s are chunked before extraction. Following Coqueret et al. (2026), we reproduce the prompts in subsection B.5. The resulting catalogue contains 104,549 works by 29,447 authors.

B.3 Coverage

La France littéraire is a bibliography of authors, anonymous print enters only where Quérard could attribute it, administrative records are excluded. Moreover it only includes works in French, Latin works from French authors, for example, are excluded. As a test of the representitiveness of *La France littéraire*, the paper compares it with the Universal Short Title Catalogue. The USTC ends in 1700, while *La France littéraire* begins in 1700. Hence, the years around 1700 offer a useful comparison case. In 1690–99 the USTC lists 1,068 French imprints per

³⁷Exact pinned snapshot gpt-4o-2024-11-20.

year, 90 per cent in French and 9 per cent in Latin; 71 per cent of the French-language records carry no author, and 46 per cent are ordinances and edicts. *La France littéraire* records 222 works per year in 1700–09, a quarter of the USTC’s French-language editions but four fifths of its authored ones (276 per year).³⁸ Table A2 applies the paper’s classifier (section B.4) to the USTC titles of the 1690s. Relative to all French-language print, *La France littéraire* under-represents *law* (1.7 against 24.8 per cent of works), *politics* (10.3 against 21.6) and *religion* (20.0 against 26.4), and over-represents *literature and arts*, *science*, *history* and *education*. The difference is predominantly driven by *La France littéraire* excluding anonymous or institutional records. When comparing known-author records, the difference disappears for *law*, *literature and arts*, *philosophy*, and *the radical enlightenment*. Only *religion* (20 against 42 per cent) and, to a lesser degree, *politics* remain under-represented. Hence, the paper suggests that *La France littéraire* offers a close approximation of the quality of modern short title catalogues when studying works by real and known authors.

Table A2: Subject composition of the USTC (1690–99) and *La France littéraire*, same classifier

Subject class	USTC 1690–99		<i>La France littéraire</i>		Ratio, LFL 1700–09 to	
	All	Authored	1700–09	1700–1827	USTC all	USTC authored
Religion	26.4	42.4	20.0	8.4	0.8	0.5
Law	24.8	1.7	1.7	2.3	0.1	1.0
Politics	21.6	13.0	10.3	14.9	0.5	0.8
Literature and arts	13.4	25.0	26.7	31.1	2.0	1.1
Science	5.7	6.6	17.4	22.2	3.0	2.6
Industry and technology	2.9	0.6	0.8	1.8	0.3	1.4
History	2.3	5.3	12.5	8.0	5.4	2.4
Education	1.2	2.5	5.5	6.0	4.6	2.2
Philosophy	0.7	1.8	2.1	1.7	3.0	1.2
Agriculture	0.3	0.1	0.7	1.1	2.6	7.7
Radical enlightenment	0.2	0.6	0.6	0.3	2.6	1.0
Enlightenment	0.2	0.3	1.2	1.6	6.8	4.8
Radical politics	0.1	0.0	0.0	0.0	0.0	0.0
Erotic literature	0.1	0.1	0.5	0.5	7.7	3.8
Works with at least one label	8,370	2,622	2,097	79,032		

Notes: Shares in per cent of works. A work with k labels contributes $1/k$ to each, so columns sum to 100. USTC records are filtered to contain France as the country and first language French in 1690–99 (9,638 records, 8,370 with at least one label). “Authored” records carry an author field.

Table A3 provides descriptive statistics for *La France littéraire*. Of the 104,549 works, 82,177 fall into the sample period of, 1700–1827, applied in this paper. Output grows from 222 works per year in the 1700s to 726 in the 1780s and 2,146 in 1820–27. Paris supplies 64 per cent of works with a place. Foreign presses a quarter of coded places before 1750 and a fifth in 1750–89 and 7 per cent thereafter. Two thirds of all works are printed in Octavo and duodecimo formats. Overall, authorship is concentrated, 44 per cent of authors contribute only a single work, while the average number of books per author is 3.5.

³⁸Figure A1 in the main text splices the two series by scaling *La France littéraire* to the USTC level of 1699.

Table A3: Descriptive statistics of the digitised *La France littéraire*

<i>Panel A: Size and time coverage (all extracted records)</i>	
Works / author records	104,549 / 29,447
Works with a parsable publication year	94,447
Works dated before 1700 / 1700–1827 / 1828–1839	1,627 / 82,177 / 10,461
Authors with at least one work dated 1700–1827	23,481
<i>Panel B: Completeness of fields (works dated 1700–1827; per cent non-missing)</i>	
Place of publication / format / publisher	81.5 / 86.9 / 60.8
Number of volumes / price in francs / page count	41.6 / 24.2 / 14.4
Birth / death year / birthplace / learned society (per cent of authors)	24.7 / 22.0 / 30.0 / 15.1
<i>Panel C: Composition (works dated 1700–1827)</i>	
Paris, per cent of works with a place	64.3
French imprints, per cent of coded places: 1700–49 / 1750–89 / 1790–1827	74.3 / 78.4 / 92.5
Format, per cent: in-8 / in-12 / in-4 / folio / other / missing	44.2 / 22.5 / 8.9 / 2.0 / 9.3 / 13.1
Title language, per cent: French / English / Spanish / Latin / Italian	93.9 / 2.4 / 0.7 / 1.2 / 0.8
Works per author: mean / median / single-work authors (per cent)	3.5 / 2 / 43.6
<i>Panel D: Subject labels (works dated 1700–1827; per cent of works carrying the label)</i>	
Works with at least one label / mean labels per work	96.2 / 1.49
Literature and arts / science / politics / religion / history	41.8 / 27.7 / 23.2 / 14.8 / 13.1
Education / philosophy / enlightenment / industry and technology / law	9.1 / 4.3 / 3.8 / 3.6 / 2.9
Agriculture / radical enlightenment / erotic literature / radical politics	1.9 / 1.2 / 1.1 / 0.05

Notes: Title language is detected using fastText (1id. 176) on the title. Subject labels are multi-label predictions of the classifier described in section B.4. Panel D does not sum to 100 because a work can carry several labels.

B.4 Assigning subject classes

Quérard does not record subject class information. The paper assigns classes using a BERT classifier trained on STN classes.

The training data come from the FBTEE edition of the *Société typographique de Neuchâtel* catalogue, whose 3,601 works carry curated keyword annotations. We map this keyword vocabulary through a hand-constructed classification scheme onto 14 subject classes — *literature and arts*, *science*, *history*, *politics*, *religion*, *education*, *philosophy*, *law*, *agriculture*, *industry and technology*, *enlightenment*, *radical enlightenment*, *erotic literature*, and *radical politics*. This yields 3,207 titles with at least one class label; the classification is multi-label, so a work can be, for example, both *politics* and *radical enlightenment*.

On these titles we fine-tune D’AlemBERT, a transformer language model pretrained on early modern French (Gabay et al., 2022), which matches the the language of the eighteenth century far better than classifiers trained on contemporary French. The labeled titles are split 80/20 into training and test sets. The model is trained for up to eight epochs and the checkpoint with the highest test F1 is retained. A work is assigned every class whose predicted probability exceeds 0.5.

On the 20 per cent held-out test set, the classifier reaches a micro-averaged precision of 0.69, recall of 0.54, and F1 of 0.61. Table A4 reports the per-label statistics. Precision and recall are strong for the large classes (F1 of 0.80

for *literature and arts* and 0.73 for *science*) and decline with class size. For the rare radical genres at the centre of this paper the classifier is conservative: precision remains moderate (0.50 for *radical enlightenment*) but recall is low (0.12), so the classifier misses radical works far more often than it invents them. The genre-level series can therefore be read as lower bounds on radical literature.

Table A4: Per-label classification metrics

label	support	tp	fp	fn	precision	recall	f1
Literature and arts	324	256	58	68	0.815	0.790	0.803
Science	146	101	30	45	0.771	0.692	0.729
History	119	74	31	45	0.705	0.622	0.661
Agriculture	21	10	2	11	0.833	0.476	0.606
Education	77	38	22	39	0.633	0.494	0.555
Politics	156	75	47	81	0.615	0.481	0.540
Religion	158	74	43	84	0.632	0.468	0.538
Law	37	13	7	24	0.650	0.351	0.456
Enlightenment	68	25	22	43	0.532	0.368	0.435
Philosophy	82	28	28	54	0.500	0.341	0.406
Industry and technology	26	7	7	19	0.500	0.269	0.350
Radical enlightenment	59	7	7	52	0.500	0.119	0.192
Erotic literature	38	5	12	33	0.294	0.132	0.182
Radical politics	15	0	0	15	0.000	0.000	0.000

B.5 Prompts of the language-model calls

Page cleaning. Model gpt-4o-mini, temperature 0, seed 12345, plain-text output; the user message is one page of Wikisource text.

PAGE CLEANING: SYSTEM PROMPT
You are a helpful assistant who helps me in cleaning the OCR scan of author bibliographies. You are given the OCR of single pages of historical authors and the books they published. The OCR comes with bad formatting and OCR mistakes. Correct these pages and deliver only the corrected page as an output. One key task for you is to ensure correct capitalization. Only author shall be capitalized. Other words shall not be capitalized. Return the cleaned page. Do not add extra information or comments.

Structured extraction. Model gpt-4o-2024-11-20, JSON-object output, temperature 0.05, seed 12345; the user message is one author chunk.

EXTRACTION: SYSTEM PROMPT
You extract structured data from historical French bibliographic text. Return one JSON object with a single key called 'authors'. 'authors' must be an array, each element following this schema: Author Information:

- name (string)
- birth (integer, year)
- death (integer, year)
- place_of_birth (string)
- place_of_death (string)
- membership_in_learned_societies (list of dictionaries):
- society_name (string)Works (list of dictionaries):
- title (string)
- year (integer)
- location (string, if available)
- publisher (string, if available)
- book format (string, if available)
- volumes (integer, if available)
- price_in_francs (integer, if available)
- pages (integer, if available)

Example Output:

```
{
  'name': 'Claude Thiollaz',
  'birth': 1750,
  'death': 1820,
  'place_of_birth': 'Marseille',
  'place_of_death': 'Brest',
  'membership_in_learned_societies': [
    {
      'society_name': 'l'Académie des inscriptions et belles-lettres',
    }
  ]
  'works': [
    {
      'title': 'Traité sur quelque chose',
      'year': 1785,
      'publisher': 'de l'Imprimerie royale',
      'location': 'Paris',
      'book_format': '12mo',
      'volumes': 1,
      'prince_in_francs': 25,
      'pages': 120
    }
    {
      'title': 'Mémoire sur la navigation de France aux Indes',
      'year': 1790,
      'publisher': 'Chez Durand',
      'location': 'Lyon',
      'book_format': '8vo',
```

```

        'volumes': 1,
        'price_in_francs': 18,
        'pages': 200
    }
]
}

```

Note that the page I'm giving you contains OCR errors. Correct these. Ensure that each output is well-structured and follows this format. If any information is missing, write NA. Use a consistent and standardized format for dates and numbers.

Audit. Model gpt-4o-2024-11-20, JSON-object output, temperature 0.01, seed 54321; the messages are the system prompt, the author chunk as user message, and the draft JSON of the extraction call as assistant message.

AUDIT: SYSTEM PROMPT

You are an auditor. Compare the OCR page (user message) with the extracted JSON (assistant message). Produce **only** a corrected JSON object that:

- keeps exactly the same schema and top key 'authors';
- removes any undeclared keys;
- adds works that were missing
- fixes works that were truncated
- fills in obvious omissions (publishers, publication years, places, learned societies
- double checks that no works are missing.
- preserves data that are already correct.

Return **only** the final JSON

Condensing Voltaire's entry. Voltaire's entry (597,375 characters) exceeds the context that the extraction call handles reliably. It was split into eight token-equal blocks, each condensed to its bibliographical lines by gpt-4o-2024-11-20 (temperature 0, top-p 0, seed 12345) with the prompt below, in which the placeholders idx and total are replaced by the block number and 8. The concatenated summaries were then split into six parts, passed through the extraction and audit calls, and the resulting author records merged, with works de-duplicated on title and year.

VOLTAIRE: SUMMARISATION SYSTEM PROMPT

Vous résumez la partie {idx} sur {total} de l'entrée bibliographique de Voltaire. Rédigez un résumé très détaillé. Préservez les informations bibliométriques. Compressez uniquement le texte descriptif. Produisez du texte brut. Les données bibliométriques comprennent : titres, années de publication, éditeur, lieu d'édition, format de l'ouvrage, nombre de volumes, prix en francs et pagination. Assurez-vous que le résumé soit complet et que toutes les œuvres publiées soient listées. Veillez également à ce qu'aucune information bibliométrique ne soit omise. Vous ne devez pas inclure de lettres.

B.6 Trends over time

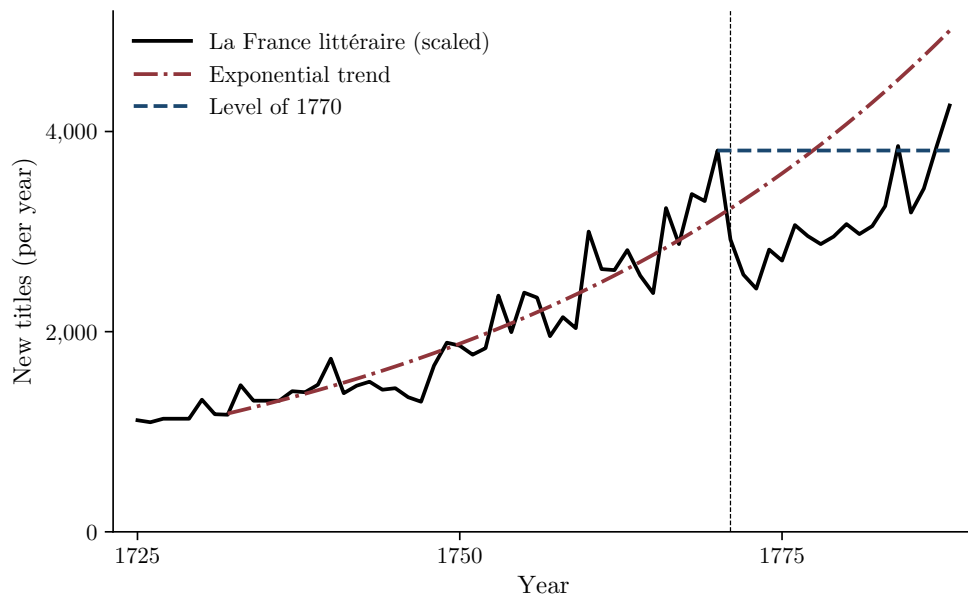


Figure A2: Long-term Trends in the French Language Publishing Industry

Notes: The figure shows long-run aggregate trends in published French books from *La France littéraire*. The figure zooms into the period 1725–1788. The dashed vertical line denotes the tax on paper in 1771. The figure adds the exponential trend, estimated on 1730–1771, and the level of 1770 to capture the trends before the tax.

C Historical evidence on paper prices

This section presents historical evidence on the price stability of French and foreign paper. It further discusses how elastically the paper price responded to changes in demand from publishers.

As [Scoville \(1967\)](#) notes, it is not possible to obtain detailed data on paper prices for the period. What can be stated, however, is that the tax did not lead to a reduction in the demand for paper and that there is therefore no reason to assume that it led to a reduction of the pre-tax paper price. [Scoville \(1967\)](#) notes how the paper industry kept growing after 1771 - two large new paper mills were constructed during our observation period: at Montbron in 1778 and at Sisteron in 1785. In the data on the procurement of paper by the *STN*, we can see that the *STN* procured its paper mostly from France ([Darnton, 1987](#), p. 190–191). A potential demand reduction from the French side due to the introduction of the paper tax would therefore have been offset by the increased demand from foreign publishers, as the market for paper was transnational at the time. Here it is important to note that the tax on paper only applied to paper used in France but not to paper exported from France.

[Darnton \(1987\)](#) provides some information on prices for the year 1777. This period coincided with the printing of the *STN*'s popular quarto edition of the *Encyclopédie* by Diderot and D'Alembert, which created additional demand for paper ([Darnton, 1973](#)). He notes that during this period, a period where the paper tax was in effect, prices rose from 9 livres per ream in January to first 9 livres 5 sous by May, 9 livres 10 sous by September, and culminated at 10 livres in October 1778 ([Darnton, 1987](#), p. 186). These price fluctuations are remarkably small given the Duplain procured 36 million sheets of white paper and the "[...] *paper market of Lyons, and the mills of the Massif Central which fed it, had run dry.*" ([Darnton, 1987](#), p. 187) This forced the *STN* to build up its own supply system, relying on local paper millers around Neuchâtel. This episode reveals that the price of paper must have reacted unelastically to demand shocks, mainly due its highly elastic industrial supply base that reached into international markets. Even if a this massive demand shock did only increase paper prices by 11% over the course of almost two years, the price effect of the paper tax, initially exactly 1 livres per ream too, on pre-tax paper prices must have been at most modest.

D The Effect of Other Shocks during the Period

As outlined in section 2.2, the paper tax and tariff abolition were not the only policy changes that could have affected *STN* sales to France in the period for which we have *STN* data. Two years after the tariff abolition the new publishing code strengthened the position of provincial publishers by putting more works in the public domain, reducing the demand for piracy and thereby hurting the *STN*'s business. In 1782 a surtax of an additional 10 sous, a 50% increase, made *STN* books more competitive. Finally, in 1783, Vergennes' crackdown ended the *STN*'s comparative advantage.

We estimate a difference-in-differences model that includes all four of these shocks:

$$\begin{aligned} Sales_{c,t} = & \beta_0 + \beta_F France_c \\ & + \beta_1 Post_t^{1775} + \beta_2 (Post_t^{1775} \cdot France_c) \\ & + \beta_3 Post_t^{1777} + \beta_4 (Post_t^{1777} \cdot France_c) \\ & + \beta_5 Post_t^{1782} + \beta_6 (Post_t^{1782} \cdot France_c) \\ & + \beta_7 Post_t^{1783} + \beta_8 (Post_t^{1783} \cdot France_c) \\ & + \gamma population_{c,t} + \varepsilon_{c,t} \end{aligned} \tag{9}$$

We estimate this model in both logs and levels and including and excluding population controls.

The results are reported in table A5. The legislative changes had large and significant effects. The initial introduction of the tax led to an increase of the inflow of books of 60 to over 100%. This corresponds to 3,000-6,000 additional books in one year. The new publishing code that favored the provincial publishers reversed about half of that growth. The surtax increased the inflows from the *STN* by an additional 60%. Finally, the Crackdown 12 years after the tax's introduction seems to have been effective.

Table A5: Difference-in-differences results: *STN* sales into the kingdom of France

	(1)	(2)	(3)	(4)
	Sales	Sales	ln(Sales)	ln(Sales)
France	-431.4*** (48.57)	-405.9*** (52.59)	-.1179*** (.01414)	-.1134*** (.01326)
France × tariff abolition (1775)	6507*** (109.2)	6484*** (115.7)	1.028*** (.01711)	1.023*** (.01819)
France × publishing code (1777)	-3697*** (218.9)	-3668*** (222.9)	-.632*** (.02867)	-.6294*** (.02919)
France × surtax (1782)	12288*** (343)	12341*** (354.4)	.5844*** (.02908)	.5886*** (.02965)
France × crackdown (1783)	-4637*** (489.1)	-4737*** (457.3)	-.8732*** (.04608)	-.881*** (.0419)
Population control		☒		☒
Observations	2,891	2,729	2,891	2,729
Regions (clusters)	99	83	99	83

Notes: Year fixed effects in all columns. The outcome is the year-to-date sum of copies the *STN* sold to a town, in levels or in logs; *France* marks towns of the kingdom. Standard errors in parentheses, clustered by region, French *départements* and, outside France, eighteenth-century sovereign territories. *** denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level.

E Difference-in-differences for 1775 shock

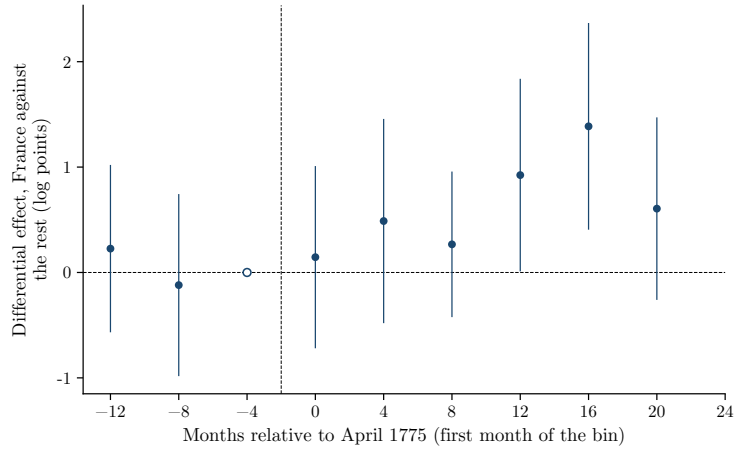


Figure A3: Event study of the edict of April 1775, four-month bins

Notes: The design of figure 9, equation 1, with the copies summed over non-overlapping four-month bins instead of the trailing twelve-month sum, so that the estimates share no shipments, from twelve months before the edict to four years after it. The specification includes region fixed effects. 95% confidence intervals reported. Standard errors clustered by region, French *départements* and, outside France, sovereign territories.

F Synthetic difference-in-differences by genre: individual results

This appendix reports the individual synthetic difference-in-differences results behind figure 12. Table A6 gives, for every genre, the estimated effect of the 1775 edict on the number of *STN* transactions to France in 1775–1782 with its placebo standard error, the effect in log points and the implied elasticity; figure A4 plots, for every genre, the shipments to France against those of synthetic France.

Table A6: SDID by genre, 1769–1782

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Agriculture	Education	Enlightenment	Erotic literature	History	Literature	Philosophy	Politics	Radical enlightenment	Religion	Science
ATT	2.2 (2.3)	56.3 (22.1)	10.9 (13.2)	56.6*** (6.1)	61.1*** (12.8)	101.6*** (29.0)	1.1 (0.4)	18.6*** (4.9)	12.7*** (0.8)	10.5*** (2.9)	34.6*** (3.7)
Observations	196	196	196	196	196	196	196	196	196	196	196
Groups	14	14	14	14	14	14	14	14	14	14	14
Mean pre-treatment dep. var (France)	8.7	33.7	32.0	15.5	41.7	112.5	6.7	18.3	0.0	5.7	15.2
Effect in log points (s.e.)	0.13 (0.14)	0.59 (0.32)	0.13 (0.17)	1.04 (0.20)	0.69 (0.21)	0.38 (0.13)	0.40 (0.19)	0.44 (0.15)	–	0.52 (0.18)	0.89 (0.15)
Implied elasticity (s.e.)	1.2 (1.4)	5.9 (3.1)	1.3 (1.6)	10.3 (1.9)	6.8 (2.0)	3.7 (1.3)	3.9 (1.9)	4.3 (1.4)	–	5.1 (1.8)	8.8 (1.5)

Notes: Synthetic difference-in-differences estimates (Arkhangelsky et al., 2021) on the *STN* sales ledgers, 1769–1782, one estimation per genre. The outcome is the number of a land’s transactions in the genre; the ATT is the effect on France in 1775–1782 in transactions a year. The effect in log points is the log of France’s transactions in 1775–1782 over their counterfactual, France less the ATT, with the delta-method standard error, and the implied elasticity is the log effect over the log change of the price, 0.101 log points, as in figure 10. Radical enlightenment had no shipments to France before 1775 and a counterfactual below one transaction a year, so these two rows are not reported for it. The pre-treatment mean is that of France, 1769–1774. Standard errors in parenthesis. Significance stars are adjusted for multiple testing across the genres of the table by the Bonferroni method, as the intervals of figure 12: *** denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level after adjustment.

G False imprints in *La France littéraire*

Books without a privilege were often printed inside France under the name of a foreign town. Quérard describes the practice for Voltaire's *Éléments de la philosophie de Newton*. The chancellor refused the privilege but granted a tacit permission "de le réimprimer en France, mais sous le nom d'un pays étranger [...] Son édition porta la rubrique de Londres" (Quérard, 1827-1839, vol. 10, p. 296). Where Quérard knew the actual place of printing, he gives it in brackets behind the place of the title page. Voltaire's *Singularités de la nature*, for example, appeared in "Bâle, 1768; Amsterdam (Paris), 1769; et Londres, 1772" (Quérard, 1827-1839, vol. 10, p. 297).

We count these entries. Table A7 reports, for every place outside France with at least 25 imprints in 1751–1782, the titles whose imprint names this place alone, the titles among them for which Quérard gives another place of printing, and the titles among those that he assigns to a place in France. Quérard exposes between 14% and 36% of the imprints of Cologne, London, Amsterdam, The Hague, Geneva and Brussels, and 88% of these 440 titles were printed in France. For Berlin the share is 7% and for Lausanne 3%. The shares are lower bounds, since Quérard could expose only the imprints of which he knew the origin.

A title that was printed in France under a foreign imprint bore the paper tax. Counted for the land of its imprint, it is a treated title in the control group and biases the estimate towards zero. In Section 7.1 we therefore leave out all titles with the imprint of a place abroad for which Quérard exposes more than 10% of the imprints, and at least ten imprints, as false. These are the six places in the upper part of Table A7, with 1,279 titles. A title for which Quérard gives the actual place of printing stays in the panel and counts for the land of that place. Places with a share above 10% but fewer than ten exposed imprints, such as Rome, also stay, because their share rests on a handful of cases. A land enters the panel with at least five titles in 1769–1770. Without the excluded imprints, Great Britain and Ireland and the Southern Netherlands fall below this number and do not enter the donor pool. The donor lands are the German lands, the Italian states, the Swiss lands and the United Provinces.

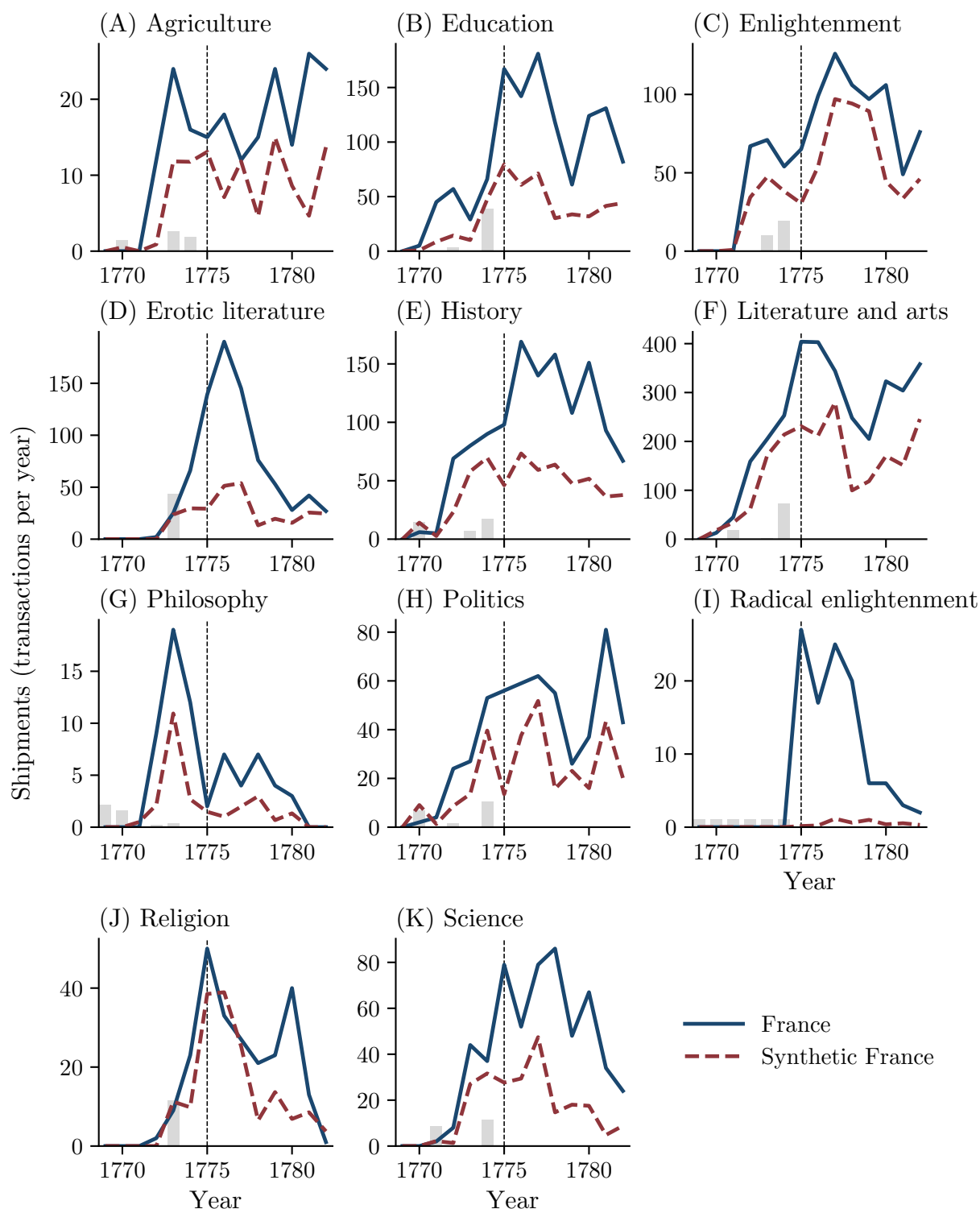


Figure A4: Synthetic difference-in-differences by genre

Notes: Synthetic difference-in-differences estimates (Arkhangelsky et al., 2021) on the STN sales ledgers, 1769–1782. Every panel plots, for one genre, the number of transactions of the genre to France against synthetic France. The vertical line marks the edict of 23 April 1775, and the bars at the bottom show the weights of the years before the edict.

Table A7: Imprints of places abroad that Quérard exposes as false, 1751–1782

Imprint	Land	Imprints	Exposed	In France	Share (%)
<i>Left out of the panel</i>					
Cologne	German lands	28	10	10	35.7
Londres	Great Britain and Ireland	456	158	118	34.6
Amsterdam	United Provinces	638	181	173	28.4
La Haye	United Provinces	234	41	39	17.5
Genève	Swiss lands	233	34	32	14.6
Bruxelles	Southern Netherlands	114	16	16	14.0
<i>Kept in the panel</i>					
Rome	Italian states	29	3	1	10.3
Dresde	German lands	35	3	3	8.6
Vienne	German lands	55	4	4	7.3
Berlin	German lands	267	19	16	7.1
Utrecht	United Provinces	30	2	2	6.7
Leyde	United Provinces	34	2	2	5.9
Yverdon	Swiss lands	39	2	1	5.1
Bâle	Swiss lands	27	1	1	3.7
Copenhagen	Denmark	30	1	0	3.3
Lausanne	Swiss lands	140	4	3	2.9
Leipzig	German lands	41	1	1	2.4
Francfort sur le Main	German lands	42	1	1	2.4
Neuchâtel	Swiss lands	56	1	1	1.8
Berne	Swiss lands	69	1	1	1.4
Maestricht	United Provinces	27	0	0	0.0
Mannheim	German lands	26	0	0	0.0

Notes: Own count from the entries of *La France littéraire* (Quérard, 1827-1839) for titles published in 1751–1782. The table lists every place outside France with at least 25 imprints. *Imprints*: titles whose imprint names this place and no other. *Exposed*: titles among them for which Quérard gives another place of printing in brackets, as in “Amsterdam (Paris)”. *In France*: exposed titles that he assigns to a place in the kingdom. *Share*: exposed titles in percent of the imprints. Places are named as in the imprints (Londres: London; La Haye: The Hague; Genève: Geneva; Bruxelles: Brussels). The places in the upper part are left out of the panel of Section 7.1: Quérard exposes more than 10% of their imprints, and at least ten imprints, as false.

H Synthetic difference-in-differences for *La France littéraire* in logs

Section 7.1 measures the output of each land relative to its mean before the tax. This appendix repeats the estimation with the log of new titles as the outcome. Logs also express changes in proportion to the size of a land, but they do not depend on a reference period, and they compress the strong proportional growth of the smaller donor lands. The specification is otherwise unchanged: the panel covers 1751–1782 in periods of two years, France is treated from 1771, the same imprints are left out, and the donor lands are the German lands, the Italian states, the Swiss lands and the United Provinces. Figure A5 plots France against synthetic France. We estimate an average treatment effect on the treated of -0.319 (s.e. 0.166) for 1771–1782, which implies that French output of new titles fell by 27% relative to synthetic France. The decline is smaller than in the main text, since the index gives full weight to the growth of the smaller lands, but it points in the same direction.

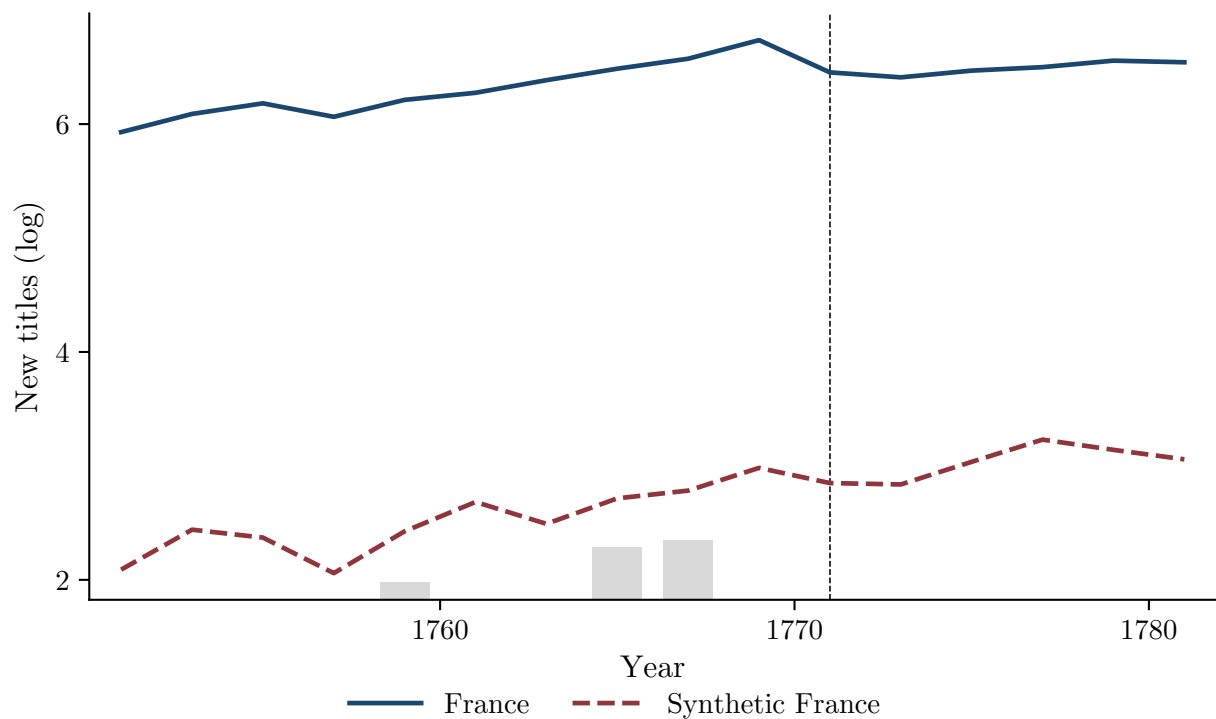


Figure A5: The paper tax of 1771 and new titles published in France, log of titles

Notes: Synthetic difference-in-differences estimates (Arkhangelsky et al., 2021) on the titles of *La France littéraire*, 1751–1782, in periods of two years. The outcome is the log of the number of new titles of a land. The figure plots France against synthetic France; the estimator allows for a constant gap between the two series. Each point marks the first year of a period, the vertical line marks the paper tax of 1771, and the bars at the bottom show the weights of the periods before the tax. The donor lands are the German lands, the Italian states, the Swiss lands and the United Provinces. The average treatment effect on the treated for 1771–1782 is -0.319 , with a placebo standard error of 0.166.

I Measuring Radical-Enlightenment Themes in Pamphlets and Books

This appendix documents the construction of figure 13, which traces four themes of the pre-revolutionary and revolutionary pamphlet literature, *desacralizing the monarchy*, *anticlericalism*, *critique of despotism*, and *political pornography*, across the years 1750–1800, and of the comparison of the same four themes across the book corpora of the paper, the illegal literature of Darnton’s corpus and Marat’s journal (tables A8 and A9). It describes the corpora and their restrictions, the sampling designs, the classification procedure, and the construction of the confidence intervals.

I.1 Corpus & Sampling

Pamphlets. The corpus is the Newberry Library’s *French Revolution Collection*, a digitised set of 38,760 catalogued French imprints with full-text OCR. The collection is dominated by the ephemeral print of the revolutionary decade: petitions, addresses, speeches, songs, and satires. Two pamphlets from the single year 1790 illustrate its range. The first is Marat’s *C’en est fait de nous* (“We are done for”), notorious for its reckoning that “cinq ou six cents têtes abattues”, five or six hundred heads struck off, would have secured the Revolution rest, liberty, and happiness. The second is the obscure *Arrêté des anguilles de Melun*, a mock decree in which the eels of Melun pass resolutions and the frogs send a deputation to a deputy of the National Assembly. The corpus captures the ephemeral register of revolutionary print, not the book trade.

The paper restricts the collection in four steps: (i) it excludes all works flagged as official government publications (decrees, laws, and administrative acts; 10,529 works), since the object of interest is public discourse rather than the output of the state; (ii) it keeps French-language works; (iii) it keeps works with a publication year between 1750 and 1800; and (iv) it requires the full text to be available. This leaves 24,854 pamphlets and other imprints. Each OCR text is then segmented into paragraphs at blank lines; paragraphs shorter than 12 words are dropped (titles, page furniture, OCR debris) and paragraphs are truncated at 2,000 characters. The resulting index contains 2,174,936 paragraphs.

The paper then randomly samples 150,000 paragraphs from the full corpus. The design gives every year equal evidential weight: 6,500 paragraphs are drawn uniformly at random within each publication year. All 37 years before 1787 fall below this threshold and therefore enter in full. Altogether, the classified sample contains 150,240 paragraphs from 18,243 distinct works, roughly two in five of these paragraphs predate 1787.

La France littéraire. The LTF corpus holds the works of *La France littéraire* first published in 1764–1800 that the classifier of section B.4 assigns to the Enlightenment, the Radical Enlightenment or erotic literature: 1,715 works. For 903 of them (53%) a digitised copy was located by title and author in the catalogues of archive.org and Gallica; the text is the OCR of archive.org (571 works) or, for Gallica, the page images read with Tesseract (331 works). Segmented by the rules above, the index holds 1,392,890 paragraphs from 899 works. The sample draws 1,400 paragraphs at random within each class and year of first publication, cells with fewer in full: 138,958 paragraphs from 868 works.

STN books. The STN corpus holds the works of the *STN* catalogue in the classes enlightenment, radical enlightenment and erotic literature of appendix A.1: 356 works, for 274 of which a digitised copy was located. The text is the text layer of the scan or, where it is missing, the page images read with Tesseract. The index

holds 277,974 paragraphs from 274 works. The sample draws 1,400 paragraphs within each class and year of the edition in the catalogue, undated works excluded: 65,103 paragraphs from 156 works published in 1752–1791.

Illegal literature. The corpus of clandestine literature of Darnton (1995), section 3.3, lists 719 titles. 169 of them have a text in the two corpora above or in the ARTFL editions of d’Holbach’s works. For the remaining 550 titles the catalogues of archive.org and Gallica were searched by title and author. A record counts as a match when its title agrees with Darnton’s (token-set score of at least 70 and agreement of the first title words; for titles of three words or fewer the author or the year must agree as well), and every match was checked by eye. This adds 312 texts, 207 from the OCR of archive.org and 105 from Gallica page images read with Tesseract, one volume per work. In all, 481 titles (67% of the corpus) have a text; they account for 89% of the copies Darnton counts in the *STN*’s orders and 82% of his police confiscations. The sample draws up to 400 paragraphs per title: 166,793 paragraphs, of which 18,421 had been classified in the LTF and STN runs and were not sent again.

Marat. *L’Ami du peuple* in the ARTFL edition: 707 issues of 1789–1793, all 18,729 paragraphs classified.

All samples are drawn with seed 1234.

I.2 Classification

Each sampled paragraph was classified independently by a gpt-5-mini model (pinned snapshot gpt-5-mini-2025-08-07, reasoning effort *low*), with the output constrained to a strict JSON schema of four Boolean fields. Each classification call consists of two messages: A system prompt that fixes the model’s role, and a user prompt that carries the category definitions and the paragraph to be classified. Both are reproduced verbatim below. The system prompt instructs the model to act as a careful historical annotator and to classify the *content* of the paragraph, not to evaluate its claims:

SYSTEM PROMPT
You are a careful historical annotator analysing paragraphs from 18th-century French texts: pamphlets, periodicals and ephemera from the Newberry Library's French Revolution Collection (1750-1800). Classify the CONTENT of each paragraph on four categories concerning attacks on the traditional pillars of authority (throne, altar, arbitrary power), not whether you agree with its claims. Return only JSON matching the given schema.

The book corpora, the illegal literature and Marat were classified with the same model, user prompt and schema. Only the first sentence of the system prompt names the texts: “books published or traded by the Societe Typographique de Neuchatel, books listed in La France litteraire (Enlightenment, Radical Enlightenment, erotic literature), and revolutionary journalism by Jean-Paul Marat” in place of the Newberry collection.

The user prompt supplies the four category definitions:

{paragraph}:

USER PROMPT (TEMPLATE)
Classify the content of the following paragraph from an 18th-century French text (text is in French, OCR may be imperfect). Definitions:

- `desacralizing_monarchy`: mocks, ridicules, degrades, sexualizes, or otherwise strips of dignity the French king, the queen, the royal family, the court, or the sacred / divinely ordained authority of monarchy. Includes scandalous anecdotes about the private life of royals and portrayals of kings as weak, vicious, or ridiculous. Respectful mention of kings, or loyal criticism of a policy that leaves royal dignity intact, is NOT enough.
- `anticlerical`: attacks, mocks, or discredits the Catholic Church, the clergy, monks or nuns, religious dogma, or religious practice -- e.g. clerical hypocrisy, greed, or lust; ridicule of superstition, miracles, or devotion; philosophical argument against Church doctrine or priestly power. Neutral description of religious life or sincere devotional content is NOT enough.
- `despotism_critique`: denounces arbitrary or tyrannical exercise of power -- despotism, tyranny, ministerial abuse, lettres de cachet, the Bastille or arbitrary imprisonment, censorship, slavery to a despot's will -- whether aimed at named ministers, the government in general, or despots and tyrants as a class. Mere description of how government works, without condemnation of arbitrariness, is NOT enough.
- `political_pornography`: sexual or obscene content that TARGETS an identifiable political or public figure (a king, queen, prince, minister, courtier, named prelate, or other public person), using sex to attack or degrade them. Generic erotic or obscene content with no identifiable public target must be false.

Paragraph:

```
""{paragraph}""
```

Return JSON with all 4 fields populated.

I.3 Estimation and confidence intervals

For each year t , the paper computes the share of sampled paragraphs flagged for each category, pooled over a three-year centred window $\{t-1, t, t+1\}$ and weighted by the number of sampled paragraphs per year; the plotted line is the ratio of pooled flagged paragraphs to pooled sampled paragraphs.

The construction of the confidence intervals starts from an observation about the data: Paragraphs within the same work are not independent. A single pamphlet can be wall-to-wall denunciatory, and a legal treatise can contain nothing at all, so the effective sample size is closer to the number of documents than to the number of paragraphs. Naïve binomial intervals would therefore severely understate uncertainty. The shaded bands are instead 95% cluster-bootstrap confidence intervals at the document level: within each window, whole works are resampled with replacement ($B = 1,000$), the pooled share is recomputed on each replicate, and the band spans the 2.5th to 97.5th percentile of the replicates. Years with fewer than 50 sampled paragraphs in a window are masked. The median year contributes roughly 20 distinct works before 1787 and several hundred thereafter, the bands narrow accordingly as the Revolution approaches.

For the comparison across corpora, table A8 pools the sampled paragraphs of each group and reports the share flagged, with the same document-level cluster bootstrap. The book trade is compared like with like, on works first published in 1764–1788: the LTF sample without the texts that stand for an entry of Darnton’s corpus, the STN sample without the works in the corpus, and the illegal titles, also split by whether the STN’s ledgers record a sale. The pamphlets of 1764–1788 join them; the pamphlets of 1789–1800 and Marat stand for the Revolution. Table A9 reports all illegal titles with a text, with the share of each title weighted by the copies the STN sold,

or by Darnton’s counts of police and customs confiscations, the bootstrap resampling titles with their weights, and by period of first publication. The category *sexualized political* is `political_pornography` in the classifier’s schema.

Table A8: Radical-Enlightenment themes across corpora

Group	Titles	Paragraphs	Desacral. monarchy	Anticlerical	Despotism	Sexualized political
LTF books, 1764–1788	498	88,657	1.1 [0.8, 1.6]	4.4 [3.5, 5.6]	2.8 [2.4, 3.3]	0.6 [0.3, 0.9]
STN books outside the corpus, 1764–1788	93	39,430	1.0 [0.6, 1.5]	4.7 [3.1, 6.5]	1.8 [1.3, 2.3]	0.4 [0.2, 0.6]
Illegal titles, 1764–1788	297	101,857	3.4 [2.9, 3.9]	12.1 [10.4, 13.7]	9.8 [8.5, 11.1]	1.3 [1.0, 1.7]
not sold by the STN	102	33,066	2.8 [2.1, 3.5]	13.9 [11.0, 17.2]	8.1 [6.5, 10.0]	1.2 [0.8, 1.7]
sold by the STN	195	68,791	3.6 [3.0, 4.3]	11.2 [9.2, 13.3]	10.6 [8.9, 12.3]	1.4 [1.0, 1.9]
Pamphlets, 1764–1788	1,508	59,152	1.4 [1.1, 1.6]	3.4 [2.5, 4.8]	11.0 [9.2, 13.0]	0.2 [0.2, 0.3]
Pamphlets, 1789–1800	16,615	78,000	3.2 [3.1, 3.4]	3.6 [3.4, 3.9]	16.7 [16.1, 17.3]	0.3 [0.3, 0.4]
Marat, <i>L’Ami du peuple</i> , 1789–1793	707	18,729	10.2 [9.3, 11.0]	2.9 [2.5, 3.3]	43.9 [42.6, 45.1]	1.2 [1.0, 1.4]

Notes: Share of sampled paragraphs flagged in each category, in per cent, with 95% document-level cluster-bootstrap intervals in brackets ($B = 1,000$). Illegal titles are the titles of Darnton’s corpus with a text, first published in 1764–1788; sold by the STN means that its ledgers record at least one sale. Years of the books are years of first publication, for the STN the year of the edition in its catalogue.

Table A9: Radical-Enlightenment themes in the illegal literature

Illegal titles	Titles	Paragraphs	Desacral. monarchy	Anticlerical	Despotism	Sexualized political
<i>Weighting</i>						
All illegal titles, by title	481	166,793	3.0 [2.6, 3.4]	11.3 [10.1, 12.8]	7.6 [6.8, 8.5]	1.4 [1.2, 1.7]
Titles the STN sold, by copies sold	288	102,186	3.5 [2.0, 5.0]	9.4 [7.3, 11.8]	9.5 [7.3, 11.2]	1.2 [0.9, 1.6]
Confiscated titles, by confiscations	326	115,473	3.3 [2.7, 3.9]	14.2 [11.8, 16.7]	7.5 [6.3, 8.8]	1.7 [1.2, 2.5]
<i>Period of first publication, by title</i>						
Before 1750	92	33,101	3.0 [2.1, 3.9]	9.5 [7.3, 12.3]	3.4 [2.4, 4.5]	2.0 [1.4, 2.8]
1750–1769	163	56,371	2.0 [1.6, 2.4]	15.6 [13.1, 18.2]	5.8 [4.9, 6.9]	1.0 [0.8, 1.2]
1770–1779	148	50,156	3.7 [2.9, 4.5]	9.6 [7.8, 11.4]	10.9 [9.0, 13.2]	1.1 [0.8, 1.4]
1780–1789	59	21,026	4.8 [3.6, 6.2]	6.6 [4.6, 9.2]	11.8 [9.0, 15.1]	2.7 [1.5, 4.3]

Notes: Share of paragraphs flagged, in per cent, with 95% cluster-bootstrap intervals over titles in brackets. By title: all sampled paragraphs pooled. By copies sold: mean of the titles’ shares weighted by the copies the STN sold, titles with a sale only; the ten largest titles hold 53% of the 79,824 copies. By confiscations: weighted by Darnton’s counts of police and customs confiscations, confiscated titles only. Period: year of first publication as given by Darnton; 19 titles have none.

J Illegal Literature and the Revolution - Causal Identification

For Darnton, there exists a clear link between the Revolution of 1789 and the enlightenment book trade. “[L]ike the drip drip of water on a stone” the inflowing books “wore away the layer of sacredness that made the monarchy legitimate [...]” (Darnton, 1996, p. 216). In section 8, we can only show suggestive evidence for this thesis. This

appendix outlines why several attempts to arrive at causal evidence regarding the effect of this literature on the intensity of the Revolution fail.

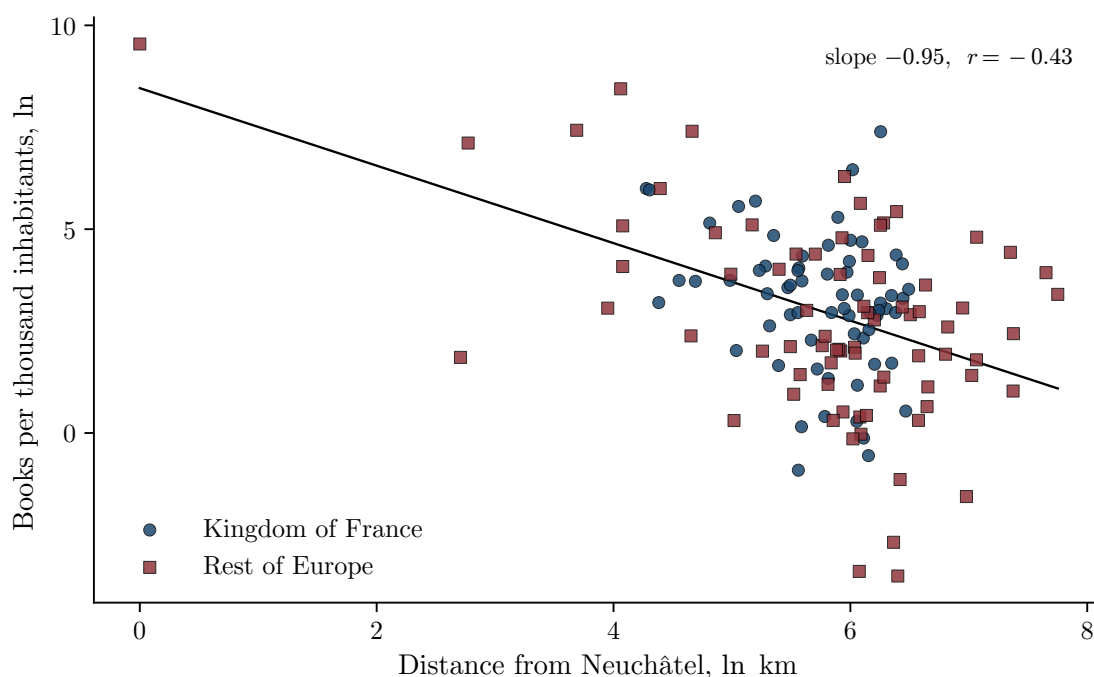
J.1 Distance as Instrumental Variable

Distance instruments have been used extensively in economic history (Becker and Woessmann, 2009; Dittmar, 2011; Nunn, 2008; Cantoni and Yuchtman, 2014; Rubin, 2014; Ashraf and Galor, 2013; Franck and Galor, 2021). In an era of high transport costs, slowly traveling information, and a fragmented political environment, the idea of using distance as exogenous variation is sensible. This applies to the book trade as well. Transport costs were substantial and Vergennes' crackdown was so successful also because shipping books to Paris for inspection was prohibitively expensive.

J.1.1 Distance to Neuchâtel as Instrumental Variable

The obvious candidate for a distance instrument is distance to Neuchâtel. In a time when transportation costs were very high and constituted a significant share of the final resale price, cities closer to Neuchâtel would exogenously receive more books from the *Société Typographique de Neuchâtel*. Indeed, distance to Neuchâtel is strongly correlated with *STN* book inflows (see figure A6).

Figure A6: Distance to Neuchâtel and *STN* Book Sales



Using distance to Neuchâtel as an instrument for *STN* book inflows is problematic for two reasons, however. First, distance to Neuchâtel is effectively equivalent to the distance to the Swiss border. This is correlated with a plethora of cultural, geographic and economic variables - all potential confounders. Table A10 shows that longitude alone explains 61% of log distance to Neuchâtel. Another, more serious problem becomes apparent

in table A12. Distance to Neuchâtel already predicts conflict³⁹ in 1740–1774, which is before the shock of 1775, though this does not survive the inclusion of controls.

Table A10: The distance instruments as functions of geography

	(1)	(2)	(3)	(4)	(5)
	Neuchâtel	Neuchâtel	Neuchâtel	Crescent	Pred. inflow
lon	-0.222*** (0.0192)	-0.224*** (0.0195)	0.470 (0.549)	-2.671*** (0.783)	1.181 (1.543)
lat		0.0201 (0.0231)	-1.708** (0.780)	4.886*** (1.111)	-7.508** (2.940)
lat2			0.0190** (0.00859)	-0.0548*** (0.0122)	0.0818** (0.0314)
lon2			-0.0194*** (0.00694)	-0.0294*** (0.00989)	0.0173 (0.0213)
latlon			-0.0122 (0.0119)	0.0532*** (0.0169)	-0.0242 (0.0331)
constant	6.414*** (0.0841)	5.472*** (1.083)	44.54** (17.68)	-102.4*** (25.17)	177.9** (68.88)
N	88	88	88	88	63
R-squared	0.607	0.610	0.683	0.690	0.240

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

³⁹We use the HISCoD database (Chambru and Maneuvrier-Hervieu, 2022). This data has been used as a measure of revolutionary intensity by Ottinger and Rosenberger (2023), Chambru, Henry and Marx (2024), and Stewart (2025).

Table A11: Balance of pre-determined covariates

	(1)	(2)	(3)	(4)	(5)
	ln(town population)	dist. to prov. guild	distance to Paris	pre-conflict (any)	HISCoD tax riots
Predicted Inflows	0.557*** (0.108)	-9.661* (5.196)	-12.86 (20.87)	2067.2*** (426.0)	2.995 (11.45)
N	63	63	63	63	61
R-squared	0.302	0.0536	0.00619	0.279	0.00116

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A12: Placebo: conflict before the shock, 1740–1774

	(1)	(2)	(3)	(4)	(5)	(6)
	All	All	All	All	Tax riot	Food riot
ln(dist. to Neuchâtel)	1528.3** (585.3)	641.6 (757.6)				
predicted ln(inflows)			2067.2*** (426.0)	1179.0** (480.8)	71.52 (84.35)	-925.0** (391.7)
N	88	63	63	63	63	63
R-squared	0.0735	0.344	0.279	0.398	0.0505	0.207

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Second, Neuchâtel was only one major center of the clandestine book trade. As can be seen in figure 1, the Kingdom of France was surrounded by a *Fertile Crescent* of clandestine publishing. A clandestine bookseller in Lille would not receive their merchandise from Neuchâtel but from one of the many dealers in the Low Countries. Their colleagues in Marseilles or Toulon would only receive small shipments from the *STN* and get their supply from the clandestine printers in the Papal exclave of Avignon. Low exposure to *STN books* does therefore not necessarily imply low exposure to clandestine literature *overall* and the correlation visible in figure A6 is likely as much due to transportation costs as it is due to different suppliers serving different cities.

J.1.2 Distance to the Fertile Crescent as Instrumental Variable

As indicated in section 3.1, we don't have data on other publishing houses of the Fertile Crescent. It is safe to assume that a similar relationship between distance and trade volume existed for all other major centers of the fertile crescent, a relationship that could be described with a gravity equation. If we assume that the gravity equations and supply constraints are similar for other enlightenment publishing houses, we could predict total increased inflow via estimating:

$$\ln(\text{copies}) = \alpha + \beta \ln(\text{dist. Neuchâtel}) + \gamma \text{pop} \quad (10)$$

And then apply $\hat{\beta}$ and $\hat{\gamma}$ to the distance to the nearest city of the Fertile Crescent. As can be seen in table A13, the predicted inflows are not correlated with *STN* total inflows or *STN* illegal inflows. But it is significantly correlated with *Encyclopédie* subscriptions from the so-called Duplain list.⁴⁰

⁴⁰Joseph Duplain was a provincial bookdealer from Lyon who specialised in selling pirated works, mostly erotic or philosophical literature, printed in the *fertile crescent*. In 1776, he launched the project of publishing a quarto, meaning a quarter of a folio, edition of the *Encyclopédie* that would - due to its lower price - be accessible to wider parts of society. The *Duplain* list records all booksellers across Europe who subscribed to the *quarto* edition of Diderot's *Encyclopédie*. As documented in Darnton (1973), this small and relatively cheap edition of the

We can see in table A13 that, conditional on population and geography, predicted inflows no longer predict *STN* inflows in logs, total or illegal.⁴¹ They remain significantly correlated with *Encyclopédie* subscriptions from the Duplain list. A positive correlation would indicate that the predicted inflows capture something about the access to books that certain cities enjoyed. The correlation is negative, however. Conditional on population, however, proximity to the Fertile Crescent is associated with *fewer* *Encyclopédie* subscriptions. The Alsatian town of Colmar, sixty kilometers from a clandestine press, featured one single subscription, while Rennes and Bordeaux, more than four hundred kilometers away, had 203 and 241 respectively. The relationship is not driven by Paris. This indicates that predicted inflows using the approach outlined above are not a reliable measure of actual total inflows. Additionally, predicted inflows too already predict *HISCoD* conflict in 1740–1774. In this case, the relationship remains significant even with the full control set. Moreover, the sign of the relationship is not stable across types of conflict and unrest. The same instrument that predicts more conflict overall also predicts fewer food riots. This reversal of effects across outcomes indicates that the instrument is capturing regional characteristics rather than a genuine mechanism.

Table A13: Falsification: a legal book flow

	(1)	(2)	(3)	(4)
	ln STN copies	ln illegal	ln <i>Encyclopédie</i>	Share illegal
predicted inflows	0.0855	-0.0266	-0.376**	0.0137
(dist. to fert. crescent)	(0.253)	(0.224)	(0.184)	(0.0253)
N	63	63	36	63
R-squared	0.307	0.120	0.545	0.110

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Encyclopédie, was the most commercially successful publishing venture of the late eighteenth century, and the quarto copies represent about half of the 14,000-16,000 copies of the *Encyclopédie* that existed in France before 1789 (Darnton, 1973, p. 1345). Squicciarini and Voigtländer (2015) use this source as an indicator for “upper tail human capital”. We digitise the original Duplain list of *Encyclopédie* subscribers from the municipal library of Neuchâtel and match 130 of 131 subscription entries to the STN town list, identifying 59 French towns with *Encyclopédie* subscribers.

⁴¹The instrument retains a strong first stage in levels, which is the specification used in section 8.

Table A14: First Stage: Encyclopédie Subscriptions → STN Copies Sold

	(1)	(2)	(3)	(4)	(5)	(6)
	Bivariate	Controls	Controls+FC	Extensive	Booksellers	Horse race
ln(Encyclopédie subscriptions + 1)	0.388*** (0.089)	-0.025 (0.118)	-0.059 (0.150)			0.401*** (0.097)
ln(town population)		0.848*** (0.268)	0.865*** (0.283)	0.910*** (0.252)	0.783** (0.295)	
distance to prov. guild		-0.008 (0.006)	-0.009 (0.006)	-0.009 (0.006)	-0.008 (0.006)	
distance to Paris		0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	
ln(dist. fertile crescent)			0.180 (0.302)			-0.094 (0.225)
Has Encyclopédie subscriptions				-0.411 (0.467)		
Number of booksellers (Duplain)					0.059 (0.143)	
R-squared	0.146	0.307	0.314	0.315	0.307	0.148
Observations	88	63	63	63	63	88

Table A15: Duplain Subscriptions and Illegal/Subversive STN Inflows

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Illegal	Illegal	Shr Ill	Shr Ill	Subv	Shr Subv	Ill p.c.	Subv p.c.
ln(Encyclopédie subscriptions + 1)	0.278*** (0.068)	0.127 (0.099)	-0.009 (0.009)	0.022** (0.010)	0.169 (0.162)	0.072** (0.035)		
ln(town population)		0.320 (0.212)		-0.064** (0.029)	0.745** (0.345)	-0.081 (0.062)		
distance to prov. guild		-0.002 (0.005)		0.000 (0.000)	-0.003 (0.007)	0.002 (0.001)	0.002 (0.002)	-0.002 (0.004)
distance to Paris		-0.000 (0.001)		-0.000** (0.000)	-0.001 (0.002)	-0.001** (0.000)	-0.000 (0.001)	-0.001 (0.001)
ln(Encyclopédie subs per 1000 pop. + 1)							0.080 (0.128)	0.418 (0.278)
R-squared	0.140	0.139	0.007	0.150	0.175	0.124	0.012	0.051
Observations	88	63	88	63	63	63	63	63

J.2 Shift-Share Instrument

Another possible strategy to arrive at causal identification would be to make use of a shift-share, or Bartik, instrument (Bartik, 1991; Blanchard et al., 1992; Goldsmith-Pinkham, Sorkin and Swift, 2020). Shares of illegal literature sold by French book dealers prior to the tax shock reflected pre-existing demand for radical ideas. There was considerable variation in the extent of the shift towards illegal literature after the tax shock, however. This variation can be exploited as exogenous to pre-existing demand.

The instrument takes the following form:

$$Z_i = \sum_g s_{i,g} \Delta S_g \quad (11)$$

Where $s_{i,g}$ is the share of genre g in town i 's book trade before the tax shock and ΔS_g is the aggregate change in supply of genre g after the shock in 1775. The shifts ΔS_g are common to the whole sample. Cross-sectional variation in the instrument thus exclusively comes from the pre-period shares interacting with them. Identification can be based on the exogeneity of the shares (Goldsmith-Pinkham, Sorkin and Swift, 2020) or alternatively on exogeneity of the shifts (Borusyak, Hull and Jaravel, 2022). Because our *STN* data consists of a single aggregate time series, we have to rely on the first of these two approaches. Meaning that a town's genre mix before the shock in 1775 must not be correlated to its revolutionary intensity.

J.2.1 Shift-Share Instrument with *Société Typographique de Neuchâtel* Data

Some aspects of the data make our case seem well-suited for the use of a shift-share instrument. Exports in the pre-period are reasonably wide-spread geographically and Paris only accounts for 16.9% of exports, there is a real dispersion when it comes to the share of illegal literature in the genre mix, which averages at 7.7% with a standard deviation of 5.6%, and the genre mix is *not* correlated with distance to Neuchâtel.

The problem is, however, that only 26 French towns imported enough *STN* books to before 1775 to have a measurable genre mix. Figure A7 reveals another problem: The shift-share instrument is correlated strongly with population and the strongest shifts towards radical literature were experienced in small towns like Thionville, Roanne, or Mende, while Paris experienced almost no shift. As can be seen in the figure, these are also precisely the cities which would never have a Jacobin club, as they were just too small. The same is true for other measures of revolutionary intensity. This leads us to find results with a counterintuitive sign, indicating that towns with a larger shift towards radical literature were *less* revolutionary.

Figure A7: Shift Share Instrument and Population

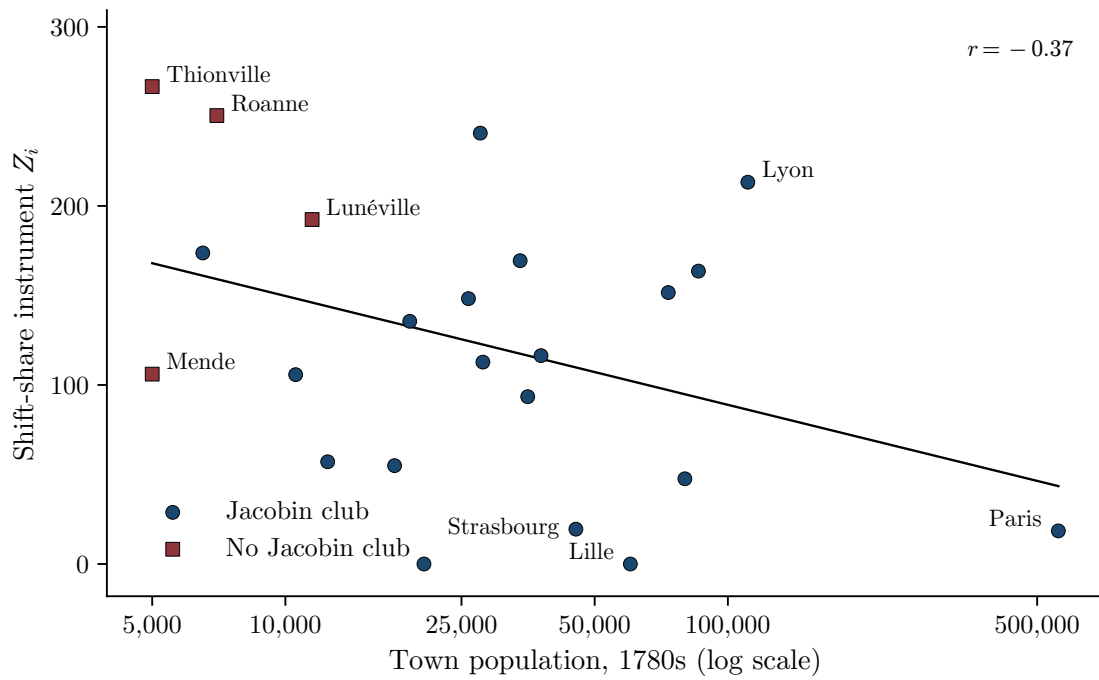


Table A16: Shift-share first stage

	(1)	(2)	(3)	(4)
	Subversive	Subversive	+ pre volume	All copies
z subversive	-6.468 (9.020)	6.422** (2.560)	4.225 (2.488)	12.13* (6.546)
N	23	21	21	21
R-squared	0.0239	0.957	0.968	0.943
F	0.514	88.99	90.18	66.06

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

J.2.2 Shift-Share Instrument with Suppliers from *La France Littéraire*

The final possibility to arrive at causal evidence would be to construct pre-period shares from not from the *STN* import data but by looking at the output of printers in different cities using the data from *La France Littéraire Quérard* (1827-1839). Shares constructed from output of local printers are a supply-side measure. They are therefore less obviously contaminated by pre-existing local demand for radical ideas.

The approach fails because there is almost no variation in the shares. *La France Littéraire* records where a work was printed, not where it was read, and printing - especially the kind of official printing more likely to be captured

by Quérard (1827-1839) was overwhelmingly centralised in Paris. Of the pre-1771 titles, 10,058 or 84% have a Paris imprint - against 429 for Lyon, the second-most represented city.

Additionally, the genres that we are interested in barely existed in before the shock in the output of the printers. The pre-shock share of erotic literature averages 0.3%, while the share of radical Enlightenment works averages 0.02%. This is not surprising. As has been shown in this paper, these genres emerged only after 1775 and were not printed domestically.

Table A17 shows what this means for a potential shift-share instrument. The instrument has a coefficient of variation of 0.215, which is less than a third of the 0.675 obtained from the *STN* shares, and no first stage.

Table A17: Neither shift-share design can be identified

Design	Towns	CV of Z	First-stage F	$r(Z, \text{pop.})$
<i>Shares from La France littéraire</i> (place of printing)				
all genres, 38 towns	38	0.215	0.74	+0.042
<i>Shares from STN purchases</i> (what towns bought)				
baseline, ≥ 100 copies	26	0.675	–	-0.299
restricted to ≥ 250 copies	18	0.595	–	-0.457
restricted to ≥ 500 copies	10	0.573	–	-0.701
shares shrunk to the mean	26	0.496	–	-0.401
aggregated to département	24	0.713	–	-0.266

Notes: $Z_i = \sum_g s_{i,g} \Delta S_g$. The first design takes shares from where a title was printed before 1771 and fails for want of variation. The second takes them from what each town bought from the *STN* in 1769–1774; the shares vary, but a share taken on a small basket is extreme while a large basket is pulled toward the mean, so Z ranks small towns high. Restricting on basket size, shrinking the shares and aggregating to département all leave that correlation in place or worsen it. First-stage F is reported where the instrument is used directly; see table A16.