

Cultural Exception? The Impact of Price Regulation on Prices and Variety in the Market for Books¹

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Abstract

Fixed book price (FBP) agreements are a form of resale price maintenance applied to books in various countries. FBP restricts retail price competition with the aim of promoting book variety. Despite their widespread use, there is limited empirical evidence on their effects. We offer systematic evidence on the impact of FBP using a comprehensive dataset covering the entire market for books in Italy, before and after the introduction of FBP. We find that FBP raises prices without significantly affecting the number of new titles published. However, it expands the variety of books actually bought, especially from independent bookstores. We estimate a structural demand model that accounts for both price and variety effects, finding that consumers overall benefit from the regulation. Additional evidence from consumer reviews and employment data supports the view that FBP shifted competition from price toward service quality. Our findings offer broader implications for resale price maintenance policies.

JEL: L1, L4, L5, Z1

Keywords: Cultural goods, resale price maintenance, book market, ex-post policy evaluation

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1. Introduction

Books are cultural products that bring benefits to society. Educational books, scientific books, recreational books: each add value at the societal level. Hence, it is not surprising that governments have not left the production and consumption of books to markets alone but have intervened in various ways, from subsidizing libraries to offering grants for authors and publishers, and tax reliefs for the book sector.

Yet books are produced and sold in the marketplace, typically through a vertical chain that involves publishers upstream and distributors downstream (booksellers). One of the most common, and controversial, interventions in this chain has been the so-called fixed book price (FBP) regulation. This is a form of resale price maintenance (RPM) that allows publishers to pre-determine, or influence to a large extent, the retail price at which a book can be sold to the public.

FBP is widespread. At the time of this writing, at least 13 European countries had various forms of FBP regulations in place. FBP is formally exempt from EU competition rules as books are deemed “objects of culture”. Moreover, this regulation is also present in Argentina, Japan, Mexico, and South Korea, while Israel abandoned it in recent years. Australia is currently discussing its re-introduction, after having repealed it in 1972. Famously, the UK – home to some of the most important publishers worldwide – had a similar agreement (called Net Book Agreement) for a whole century, from 1899 until it was rescinded in 1997. The US discussed its introduction at various times in history but never adopted it.⁵

The rationale mentioned by policy makers that champion FBP is variously articulated around the promotion of a greater variety of books, and the protection of smaller publishers as well as independent bookshops, especially in light of the disruptive impact of e-commerce (Amazon). FBP is meant to ensure that booksellers have a guaranteed margin on blockbusters, which may encourage the supply of better services to readers and the promotion of more diverse books rather than only concentrating on and catering to readers of blockbusters. More titles could be published, the argument goes, and more bookshops could carry a varied assortment of popular and less popular books that address smaller markets or specialist readers that otherwise would not be commercially viable. By shielding margins, book price regulation could protect small local independent bookstores from the competition of big bookstore chains and online retailers. At the

⁵ https://en.wikipedia.org/wiki/Fixed_book_price.

same time, FBP is a clear direct impediment to price competition, with a corresponding reduction in the volumes of books sold. This hurts the interest of book buyers.

In this paper, we look at the case of Italy. We exploit changes in the law that, in September 2011, introduced FBP (the “Levi Law”). More specifically, the law imposed a cap on the maximum discount that bookshops could offer on the recommended cover price set by the publisher. We observe aggregate monthly data on all the books sold in the country over the period 2009-2014, including the titles published, their recommended cover prices set by the publishers, and the discounts offered by each retail channel. We concentrate on the most important variables that are impacted by FBP and that emerge directly from the literature and the policy discussion: book prices and variety. Our dataset is particularly interesting as it distinguishes sales by different retail channels. In Italy, books are sold mostly by large chain bookstores and by independent bookstores. Most of the largest publishers directly own a (different) retail chain. E-commerce was still in its infancy at the time.⁶ The biggest impact of Amazon, which entered the Italian market also in late 2011, was most likely to accelerate the legislative process that led to the adoption of the Levi Law.

The main empirical challenge for a law that applied nationwide is to find a suitable control group. Fortunately, Italian is also one of the official languages of Switzerland, besides Italy (and no other country worldwide), and Switzerland had no FBP during the period we cover. Therefore, we can compare similar books, sold in Italy and Switzerland, before and after the introduction of FBP in Italy alone. Relying on this comparison, we first establish a series of facts on the causal impact of FBP in a set of reduced-form regressions, using a difference-in-differences methodology. Concentrating first on price, we find that, on average, FBP increased book prices only slightly (+1.4%), but this average effect hides a large heterogeneity. Independent bookshops increased their prices (+7.8%), while chain bookstores left their prices mostly unchanged (-0.6%). Upstream, book publishers did not change their recommended cover prices, with no difference between small and large publishers. Since the actual selling price is the difference between book cover price and retailer’s discount, all the price effects therefore come from a change in the discounts offered by bookshops (it is this discount that is capped by the law).

⁶ During the period covered, books were also sold via supermarkets and e-commerce. We do have data about these channels as well, but they played a more limited role over the period. Hence, we conflate them with large chain bookstores in the main analysis and further consider them in a robustness check. See also Section 2.2 below for further discussion.

When it comes to book variety, we find again a stark distinction between upstream publishers and downstream bookshops. As with cover prices, we find no evidence of any impact on publishers: there is no change in the number of new book titles published in Italy before and after the regulation. Instead, we find a significant impact on the number of titles that are sold by bookshops. Books are very heterogeneous in terms of sales, with a limited number of titles capturing most sales, and a very long tail of books that are published but sell nothing or very little. We find that an effect of the law was to turn many of these zero or near-zero sales into positive sales, thus reducing the concentration of sales of published books. We therefore document, for the first time, that a larger variety of books was actually bought, although not produced, as a result of FBP. This effect is particularly strong among independent bookshops.

Endowed with these stylized facts on prices and book variety sold by different channels, in the second part of the paper we structurally estimate the demand for books in Italy to quantify the impact of FBP on readers. Our analysis centers on consumer demand, as we possess very detailed data on book sales across retail channels. The difference-in-differences (DiD) analysis provides evidence of significant downstream changes. Conversely, publishers operating upstream, do not appear to adjust either pricing strategies or the diversity of book offerings in response to regulatory changes. Moreover, we lack visibility into the contractual arrangements between publishers and booksellers, as well as access to data at this granular supply level. Therefore, we concentrate on the demand side and follow the literature on discrete choice models by estimating nested logit models (where the nest is either the book or the book genre). Our price elasticity estimates suggest that FBP – ignoring variety effects – has reduced consumer welfare by about [39 – 52] million euros in the two years after the introduction of the law (depending on the specification), and it is concentrated among independent bookshops, who reduced considerably the discounts they offered. However, we also estimate that post-FBP, demand expanded, especially for independent bookshops. We attribute this demand expansion to greater service effort post-reform: before the reform, service effort suffered from a free riding problem as readers could get advice from a bookshop, but then buy the book elsewhere at a cheaper price. This effect increased consumer welfare by almost [108 – 245] million euros. The net effect is positive, around [68 – 192] million euros, for the two years following the adoption of FBP.

These results suggest that the law muted and much reduced the role of price competition among booksellers. But competition was still at work and turned to non-price aspects that overall seem to

have benefited readers in the Italian book market. We corroborate this interpretation by providing three additional pieces of evidence that help shed light on the mechanisms. First, we refer to surveys among bookshops that mention explicitly the services they provide to their readers. Second, readers talk about and appreciate those services: we assemble and analyze a large set of 500,000 Google reviews and ratings about bookshops in Italy. Ratings of bookshops are generally very positive, especially those of independent bookshops. Employing machine learning, we classify reviews around topics and the sentiment about them. Book buyers who left reviews are generally positive about topics that lie at the core of the service effort mechanism: readers appreciate book discovery, suggestions from staff, and events organized by the bookshops. The sentiment is significantly larger for independent bookshops when compared to chain bookshops. Last, we look at employment. We find that FBP regulation is associated with higher levels of employment in bookshops – this effect is limited though to very small bookshops with a couple of employees – which are the archetypical independent bookshops in Italy.

To summarize, this paper is one of the first to show the causal effects of an RPM policy that is widely diffused in several countries but rarely assessed. In fact, our results apply beyond books as RPM is exempted from antitrust laws in several countries also for CDs, magazines, newspapers, and certain non-prescription drugs (OECD, 2009). Methodologically, we contribute to a growing literature for policy evaluation that combines retrospective analysis and prospective structural modelling. Methodological integration of reduced-form evidence and structural approaches can shed light on the mechanisms driving outcomes and provide important insights.⁷

The remainder of the paper is organized as follows. Section 2 details the Italian FBP regulation, and relates our work to the existing literature. Section 3 describes our datasets. Our empirical strategy then proceeds in two steps. First, in Section 4, we identify the regulation’s effect on book prices and variety using reduced-form approaches. We distinguish there between effects upstream (among publishers) and downstream (among bookshops). Then, in Section 5, we estimate a structural model of demand which allows us to conduct a welfare assessment of the impact of FBP regulation. Section 6 discusses the mechanisms that could generate our results. Section 7 concludes and suggests policy implications for our findings.

⁷ Recent advances in this direction exist, especially in the context of the evaluation of consummated mergers, see, e.g., Miller and Weinberg (2017), Igami and Suraya (2022), Aryal et al (2025), Bruegge et al (2025).

2. Background

2.1 FBP regulation and the Levi Law

The Italian FBP regulation, known as “Legge Levi” (Levi Law), came into effect on September 1st, 2011.⁸ The law states two main objectives. The first one is to support the production of books, thus increasing book variety in the marketplace. The second one is to foster the diffusion of book titles through a widespread network of brick-and-mortar bookstores. These should then stimulate book readership, literature diffusion, and information pluralism, thereby generating positive spillovers for society as a whole. The main provision of the regulation imposes a *maximum* discount retailers can deduct from book cover price, which is set in advance by the book publisher. In particular, retailers cannot charge a discount higher than 15% off the cover price. This rule applies to all printed books.

FBP has received mixed responses from its introduction. Those in favor of the Levi Law emphasize the importance of FPB in fostering book readership and cultural variety. The public debate has mainly focused on the protection of independent brick-and-mortar bookstores against the increased competition from online retailers. In particular, the main threat came from Amazon, which opened its Italian website in November 2010. An Italian Senator claimed, during a public debate at the time of the approval of the law, that the loss of independent booksellers would be a damage to culture. Publishers, both large and small, represent a well-organized lobby and have typically been in favor of the law.⁹ On the contrary, the opponents of the FBP regulation have pointed out the damage for consumers from reduced retail price competition in the book market. This would increase prices, reduce sales, and possibly innovation in the book retail sector. Accordingly, the regulation would lessen book diffusion and readership, thus achieving the opposite effect as intended by the law. The Italian Competition Authority was critical of the FBP regulation from its inception.¹⁰

A draft of the law was first approved by the upper house of the Italian Parliament (Senato) in March 2011 and then confirmed by the lower house (Camera dei Deputati) in July 2011. The law entered into full force on September 1st, 2011. In our data, we code as “post” intervention, all data after September 2011, and as “before” data, all those before March 2011. Since the first reading

⁸ <https://www.gazzettaufficiale.it/eli/id/2011/08/05/011G0168/sg>. Levi was the Italian MP who proposed the law.

⁹ See, e.g., [Piccoli e grandi editori uniti «Gli sconti fanno male ai libri» - Corriere.it](#). This article was published in the largest Italian newspaper, which is owned by the largest Italian publisher.

¹⁰ See, e.g., the [proposed reforms](#) by the Italian Competition Authority (pages 24 and 25).

approved by the Senate was already a strong signal that the law would be eventually approved, we also further distinguish as a “mid” (interim) period all observations between March and September 2011, to check for any anticipatory effects the law might have produced.

Despite the controversy around FBP, the Italian Government has recently decided to further restrict retail price competition in the book market. An amendment to the 2011 Law has come into effect in March 2020, and limits book discounts to at most 5% off the cover price. These latest developments are not covered in our dataset.

2.2 Amazon, e-commerce and e-books

The remarkable rise of e-commerce is a global phenomenon. Amazon famously started its journey by selling books online. This success story has occurred at a different pace in different parts of the world. It is thus important to clarify at the outset the impact that e-commerce and related digital products might have had in the specific context of the market we study. We argue that, during the period covered by our analysis, e-commerce generally and Amazon specifically, did not play a particularly relevant role in the case of books in Italy, which were still a product largely sold via brick-and-mortar stores.

We do have information about sales via e-commerce in our dataset, which covers the universe of book sales in Italy over 6 years (2009-2014) centered around the introduction of the Levi Law. This channel, which includes Amazon, represents around 10% of sales over the period, with an increasing trend over time but still, the majority of sales were done through traditional channels rather than online ones. The website *Amazon.it* was launched late in 2010, and Amazon opened its first distribution site in October 2011. As we mentioned in the Introduction, the success of e-commerce and Amazon in other countries was anticipated by the industry players and the regulators, and it is very likely to have triggered the introduction of FBP and retard the impact of e-commerce – which did eventually happen, but with a lag with respect to other countries.

In Switzerland, which we employ as a control group, Amazon’s entry happened even much later (2018), well outside our period of investigation. Books sold via e-commerce in Switzerland were limited to the extent that the data provider does not collect sales from this channel separately.

Similarly, sales of e-books were on the rise but did not represent a material phenomenon that can affect our analysis. E-book sales represented 0.1% of total sales in 2010, increasing to 3.4% in 2014. The question as to whether RPM-type regulations could have affected the shift from

physical books towards other digital formats, or impacted the speed of e-commerce growth, is a very interesting one that we do not address in this paper as our data show that Italy was still in an early phase of its e-commerce development.

2.3 Relation to the literature

The question of the regulation of book prices has received attention both in policy and in economics for a long time. As early as 1915 one can find an article published in the *Quarterly Journal of Economics* discussing the diverging paths taken at the time by England and Germany on one side, as opposed to the US, where the former relied on FBP but not the latter (Tosdal, 1915).¹¹ In the US, attempts to maintain prices reached the Supreme Court that, in 1913, declared them contrary to the Sherman Act: copyright by publishers over a book did not give them the power to fix their resale price. In England, formal book trade associations existed since 1802, and in 1850 trade regulations were issued to prevent booksellers from granting discounts to readers over 10 percent. The Net Book Agreement between the Publishers Association and booksellers operated from 1899 until it was repealed in 1997 and then it was ruled illegal.

This intense policy debate was recognized by academic economists who studied the pros and cons of a system of resale price maintenance (RPM) between a manufacturer and a reseller. In the early literature, Taussig (1916) connected RPM to attempts to contrast “irrational” consumer behavior that associates price with quality. Silcock (1938) made several insightful points, including that RPM can reduce the temptation of consumers to shop around. Basil Yamey, one of the most prominent industrial economists in Britain in the 50s and 60s, wrote an influential book on the economics of RPM making several references to FBP (Yamey, 1954). The discussion that ensued included heated responses (see, e.g., Andrews and Friday, 1962). Yet, all these contributions were not formalized using economic modelling, by modern standards. With the Chicago School, and in particular with Telser (1960), we encounter a first – still rudimentary – model of the impact of RPM. Telser (1960) introduced the “service effort” argument. By limiting downstream competition over prices, RPM can generate positive effects on consumer demand by giving additional incentives to retailers to put effort and supply more customer services. We anticipate this important effect here as it will play a central role in our empirical analysis.

¹¹ Harry Tosdal was an eminent economist who taught both at MIT and Harvard for 40 years in the first half on the 20th century. He was also the founding editor of the *Harvard Business Review*.

The theoretical literature burgeoned in the 80s with the advent of applied game theory. As mentioned above, FBP is an example of RPM, a form of vertical restraint, in a context where a good is sold through a vertical chain. RPM is a contract in which an upstream manufacturer and a downstream distributor (a retailer) agree to a minimum or maximum price the retailer will charge its customers (see, e.g., Mathewson and Winter, 1988). There is a very rich literature in Industrial Organization on vertical restraints generally, and RPM specifically (see Rey and Tirole, 2007, for a survey). On the positive side for welfare, RPM can be used to elicit effort to avoid a “free riding” problem among distributors (Marvel and McCafferty, 1984): since demand can be affected by retail services (e.g., pre-sale display, product-specific information, post-sale service), a manufacturer may use RPM to ensure that reputable retailers – those who help the manufacturer build and maintain a good reputation for its brand – carry its brand by affording those retailers protection from free-riding discounters. RPM can also lead to increased inventories under demand uncertainty (Deneckere et al., 1996). On the negative side, RPM eliminates or constrains price competition and is a practice that facilitates horizontal agreements, such as the formation and maintenance of cartels among manufacturers (Mathewson and Winter, 1998; Jullien and Rey, 2007, Rey and Vergé, 2010). RPM can also have exclusionary effects that act against the entry of competing manufacturers (Asker and Bar-Isaac, 2014).

This literature is largely theoretical. We contribute by providing empirical evidence on the impact of a particular form of RPM on prices and variety in a relevant market in a large country. Existing empirical work is scarce. Earlier work includes Ippolito (1991) who analyzed 206 public and private legal RPM cases brought between 1976 and 1982 in the US. More recently, Bonnet and Dubois (2010) estimate a demand model for bottled water in France and conduct tests that support the presence of RPM contracts.¹²

Focusing more specifically on FBP, the argument that it would incentivize publishers to produce a larger variety of books, both the theoretical and empirical support is weak. FBP proponents argue that higher and more predictable revenues would encourage publishers to print more specialty publications. However, Caves (2000) describes the book business as an industry in which “nobody knows anything” about which products will succeed with readers at the time when investments are made. Assuming that the popularity of new publications is unpredictable, the idea

¹² Ongoing work include MacKay and Smith (2014) who exploit a 2007 US Supreme Decision (*Leegin*) that resulted in state-by-state variation in the treatment of RMP, and Xia (2025) who studies an antitrust case in the Chinese pharmaceutical industry whereby one specific company used RPM to fix prices of drugs sold in retail pharmacies.

that publishers operate as culture gatekeepers rather than profit maximizers is unconvincing.¹³ To the best of our knowledge, we are unaware of existing empirical evidence that FBP promotes the publication of a wider range of books. As anticipated in the Introduction, several countries have experimented with various forms of FBP. Indeed, studies exist documenting some national experiences, especially those that went through changes in the pricing regime, or relying on fairly aggregate cross-country comparisons among countries with different regimes (Overstreet, 1983; Bittlingmayer, 1988; Utton, 2000; Appelman, 2003; Canoy et al., 2006; OFT, 2008; Løyland and Ringstad, 2012; Williams, 2024). Probably due to the lack of good microdata, and the difficulty of finding a suitable control group, these studies and reports, though, are more limited in scope and fall short of determining the causal impact of FBP. To our knowledge, ours is the first study to assess the causal impact of FBP on book prices and variety, and to compute the overall welfare effect on book buyers.¹⁴

Last, our paper belongs to the wider field of the economics of culture (see, e.g., Thorsby, 2001, and the two volumes of the Handbook of the Economics of Art and Culture, Ginsburgh and Thorsby, 2006 and 2013). We look specifically at the economics of books. Despite being narrower in scope, this is also an active area of research among economists; see for instance the review by Canoy et al. (2006). Waldfogel (2017, 2018) considers several cultural goods, including books, in the more recent digital era. He argues that digital technologies have created a renaissance of new cultural products that consumers enjoy and that would not have been created otherwise.¹⁵ In this work, we discuss how regulation in the market for books affects the balance of competition between price and non-price aspects, and how this balance depends on the sales channels.

3. Data

3.1 Dataset construction

Our main dataset comes from GfK Point of Sales (POS) which tracks and collects monthly retail data for the universe of books traded in Italy from January 2009 to December 2014, while the Levi Law was introduced in 2011. For each book title – identified by a unique ISBN code –

¹³ Waldfogel (2017) provides evidence and discussion on the investment unpredictability across cultural products due to digitization, with Waldfogel and Reimers (2015) focusing on books and Aguiar and Waldfogel (2018) on music.

¹⁴ Daljord (2022) exploits Norway’s FBP to identify consumers’ discount factor for books seen as a durable good. His interest, however, does not lie in estimating the impact of FBP itself.

¹⁵ Reimers and Waldfogel (2021), and Peukert and Reimers (2022) study books in contexts different from ours. The first looks at the impact of book reviews on demand, and the second at book publishing deals between publishers and authors.

we observe quantity of sales and average retail prices by retail channel. Retail channels include: independent bookstores, vertically integrated chain bookstores, e-commerce, and supermarket chain stores. For each ISBN, we also observe time-invariant characteristics such as recommended cover price, book title, author, publisher, format (hardcover vs. paperback edition), and the date of publication.

As we can distinguish between the actual retail price of a book and its recommended cover price, we are able to compute the average book discount at each point in time, by retail channel. Moreover, given the book date of publication, we can derive a monthly measure of book age, defined as the difference between the date of sale and the date of publication. Finally, GfK allocates ISBNs over three-digit categories identifying the genre of the book. The upper level (Genre I) consists of four categories, while the middle (Genre II) and lower (Genre III) levels collect 25 and 97 sub-genres, respectively.

To assess the causal impact of FBP on prices and variety, we complement these data with GfK POS tracking data from the Swiss market, which provides an ideal control for three reasons. First, Italian is one of the three main official languages of the Swiss Federal Republic, alongside French and German. Second, and relatedly, a sizable number of titles are sold both in Italy and Switzerland. Hence, we also gather monthly retail data for the universe of books traded in Switzerland, from January 2009 to December 2014. Third, Switzerland does not apply any form of FBP regulation. An attempt to introduce FBP was rejected by a referendum in March 2012, while Italy approved the regulation a year earlier. This suggests the two markets shared a similar institutional background, with Switzerland taking a different regulatory path compared to Italy. Also in this case, for each ISBN code, we observe quantity of sales and average retail prices by retail channel, as well as the time-invariant characteristics previously discussed.

There are two main differences between the Italian and the Swiss data. First, while in Italy sales quantity and prices are disaggregated into four retail channels, in the Swiss data we have just two channels, namely independent bookstores (denoted as IB) and an aggregate channel including brick-and-mortar chain bookstores, supermarkets, and e-commerce (denoted as CB+EC). Therefore, to match the retail channels in the two datasets we aggregate prices and quantities in Italy outside the IB retail channel.¹⁶ Second, the three-digit genre categories are slightly different

¹⁶ In particular, we computed aggregate quantities and average prices (weighted by quantity of sales in each retail channel) across e-commerce, vertically integrated chain bookstores, and supermarket stores. We then collapsed the data to obtain a dataset for the Italian market with two retail channels (IB and CB+EC) that is comparable with the Swiss one. In our dataset, IB represents about 35% of sales revenues in Italy, and CB 45%. E-commerce instead

in the two markets. We deal with this issue by generating a classification (Genre IV) that is homogeneous across the two datasets and includes 29 categories. We will use this genre classification in our empirical analysis.

3.2 Summary statistics

Books are experience goods with highly uncertain demand. They are very heterogeneous in many dimensions. They differ by genre of course, but even within each genre, there are very few titles that command large sales and a long tail of books that are published but hardly read. A lot of manuscripts are written, and a sizable fraction of these are published, but only very few books enjoy considerable success. The success of a book is largely unpredictable.

For a publisher, publishing a book involves sizable upfront fixed costs, mostly sunk, which are necessary to create the book concept, including the acquisition of property rights, editing, reviewing, and possibly translating. Variable publishing costs instead represent a smaller share and have been declining over time. For a brick-and-mortar bookshop, the technology is relatively simple: a shop and an employee represent the minimum scale to run the business.

On the supply side, the Italian market is not particularly concentrated, neither upstream nor downstream, but there is substantial heterogeneity. Upstream, there are six main publisher groups (Mondadori, Giunti, Feltrinelli, RCS, GeMS, and DeAgostini) and a myriad of small independent publishers (about 5,000). The top 6 publishers roughly constitute 60% of sales over our period.¹⁷ Four of the main publishers (Mondadori, Giunti, Feltrinelli, and GeMS) also own downstream book chains (where, however, books of all publishers can be found).¹⁸ Downstream, as anticipated in the previous Section, Italy is characterized by two main sales channels: IB and CB. IB are more numerous in terms of point of sales (3,900 bookshops in 2012), compared to around 700 stores for CB. The former are small, are more diffuse, and employ typically 1 or 2 employees – often the owner of the bookshop. The latter are much bigger, are located in larger cities, and have higher employment levels as well as sales. Table 1 reports basic summary statistics of our Italian dataset.¹⁹

accounts for 10% of revenues sales, and supermarkets the rest. In Section 5, where we conduct a structural estimation of demand in the Italian market that does not require the Swiss control group, we show that our results are robust to further disaggregating the retail channels.

¹⁷ Notably, a merger between Mondadori and RCS was approved by the Italian Antitrust Authority in 2016, after the period we consider. The transaction led to creation of the largest publishing group in the Italian market.

¹⁸ Independent department stores selling books, like Fnac in France, are not present in Italy.

¹⁹ Summary statistics for the Swiss dataset can be found in Appendix B.

The average book sells just above 35 copies per month in the period we cover (slightly more in CB+EC, and slightly less in IB). But there is a large heterogeneity, with a few bestsellers selling tens of thousands of copies per month. About one-third of the titles are published by one of 6 big publishers (in terms of sales, the share is higher at 60%). IB and CB+EC sell fairly similar types of books: the average cover price is the same between channels, though CB+EC sell a larger variety of titles (73% of titles from CB+EC are also sold by IB, while 90% of titles from IB are sold by CB+EC as well). Their age (time from publication) is similar between channels, as is the share of books published by the big publishers. Instead, the average discount is much larger among CB+EC than among IB (10% vs 1%).²⁰ Correspondingly, the actual average book price is more expensive in IB than in CB+EC.

About 70% of the book titles sold in Italy are written by Italian authors. This fraction reduces to 63% in terms of sales, as some blockbusters are written by foreign authors. However, even foreign authors are translated into Italian: the share of foreign books written in their original language and not translated into Italian is just 2% (1% in terms of sales).

Our first broad cut of the data is by looking at age effects. Each book is different, in a way that has many close, but no perfect substitutes. Although we do not have information on the characteristics that predict success (no one has), books share similar trends over their lifetime. Figure 1 shows the evolution of average unit sales (Panel A) and price discounts (Panel B) in Italy over the book (monthly) age. Each diagram reports three series related to the distribution of unit sales and discounts: top 10%, mean, and bottom 10%. The largest sales happen the first month after publication; demand then declines. Most sales of any book arise in the first two years after publication (Panel A). Reflecting that sales are declining over time, there is a rise in discounts applied by bookshops on the cover price (Panel B), which typically also implies lower retail prices. Books then remain in the market with low volumes for a long time after the initial publication.

In our analysis, we will control for ISBN-specific fixed effects, which capture unobservable heterogeneity due to time-invariant characteristics such as author, title, edition, genre, and length. We will also account for the age effects on both prices and quantities.

²⁰ The discount is computed as $\text{Discount} = (\text{Cover price} - \text{Price}) / \text{Cover price}$. Hence a value of 1 implies the book is given out for free, while -1 means that a book is actually sold at double the cover price (we used -1 as a cut-off point).

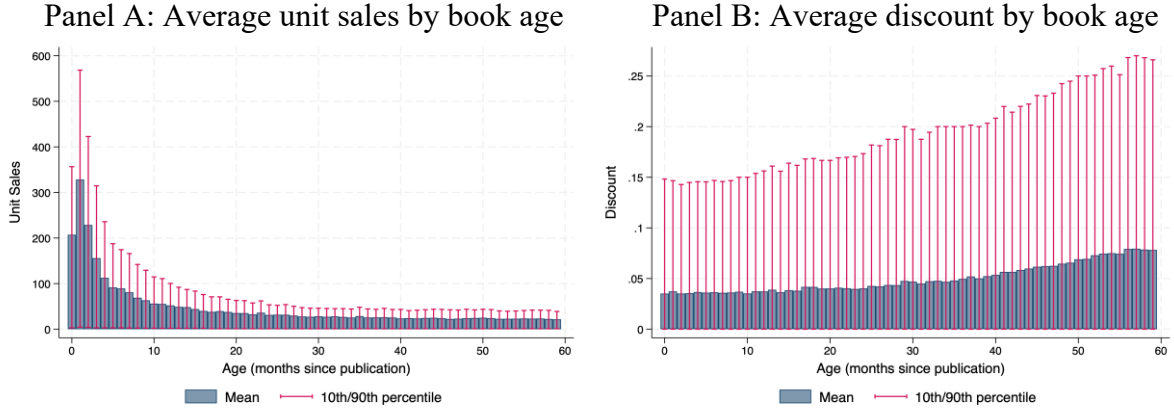
TABLE 1: SUMMARY STATISTICS FOR BOOK SALES IN ITALY

	Mean	Std. Dev.	Min	Max	Obs
All data					
Unit sales	35.722	419.826	1	291,208	15,178,193
Price	15.320	12.472	0.010	500	15,178,193
Cover price	16.520	13.306	0.010	1000	15,178,193
Discount	0.068	0.141	-1	0.999	15,178,193
Age (monthly)	55.957	53.711	0	299	15,178,193
Big publisher	0.331	0.471	0	1	15,178,193
Paperback	0.146	0.353	0	1	15,178,193
Debut works	0.285	0.451	0	1	15,178,193
Italian author	0.695	0.460	0	1	15,178,193
CB+EC					
Unit sales	39.502	504.336	1	291,208	9,829,237
Price	14.882	11.963	0.010	500	9,829,237
Cover price	16.610	13.193	0.010	1000	9,829,237
Discount	0.100	0.149	-1	0.999	9,829,237
Age (monthly)	58.640	54.087	0	299	9,829,237
Big publisher	0.318	0.466	0	1	9,829,237
Paperback	0.131	0.338	0	1	9,829,237
Debut works	0.298	0.458	0	1	9,829,237
Italian author	0.699	0.459	0	1	9,829,237
% of book titles also sold in IB	73%				
IB					
Unit sales	28.776	180.723	1	60,656	5,348,956
Price	16.125	13.318	0.010	500	5,348,956
Cover price	16.354	13.509	0.010	1000	5,348,956
Discount	0.010	0.100	-1	1	5,348,956
Age (monthly)	51.027	52.657	0	299	5,348,956
Big publisher	0.357	0.479	0	1	5,348,956
Paperback	0.173	0.379	0	1	5,348,956
Debut works	0.260	0.439	0	1	5,348,956
Italian author	0.688	0.463	0	1	5,348,956
% of book titles also sold in CB+EC	90%				

Notes: The table reports summary statistics of our dataset on book sales in Italy (overall, and by distribution channel). Data are at the ISBN, time (monthly), and channel level (independent bookstores denoted as IB and an aggregate channel including brick-and-mortar chain stores, supermarkets, and e-commerce denoted as CB+EC).

Source: Authors' calculations based on the GfK POS data.

FIGURE 1: EVOLUTION OF SALES AND PRICES BY BOOK AGE



Notes: The figure shows the mean, 10th, and 90th percentiles for unit sales (Panel A) and price (Panel B) by book age before the introduction of FBP. Age is measured by the number of months since book publication.

Source: Authors' calculations based on the GfK POS data.

4. Reduced form: empirical methodology and results

Our empirical methodology develops in two steps. First, we identify the causal impact of FBP on price and variety within a quasi-experimental setting in which we compare outcomes between two different geographical markets, Italy and Switzerland, before and after the introduction of the Italian FBP in September 2011. In the second step, we develop a structural model, inspired by the previous findings, to quantify the impact on consumer welfare of these changes. In the Section that follows, we first consider the impact on prices and then follow with the impact on book variety.

4.1 Impact on prices

There are two sets of prices of interest: the final price paid by customers, and the recommended book cover price set by publishers upstream. The difference between the two is the retail discount set by the bookshops downstream, which is directly subject to FBP regulation.

4.1.1 Impact of FBP regulation on retail prices

We estimate the impact of FBP on final book prices, within a difference-in-differences (DiD) framework in which the Swiss market acts as the control group. There are three main empirical challenges in this experiment. First, books are very heterogeneous, both in terms of (observable) characteristics and (unobservable) determinants of their success and pricing. We deal with this issue by controlling for ISBN-specific fixed effects, which capture time-invariant book

characteristics. We also account non-parametrically for the age of books by including age-specific fixed effects.

Second, since book demand concentrates on a few successful titles, many books are characterized by a limited amount of sales and/or discontinuity in sales, both in Italy and Switzerland. As a consequence, some books appear and disappear around the regulation without a clear pattern, making the estimation on prices problematic given ISBN fixed effects. We then select, in the two markets, books characterized by some degree of regularity in sales. In our baseline estimation, we select books with continuous sales in 80% of the cases from their date of publication – that is, books that sell at least one unit for 80% of the months since its publication date. This allows us to generate a panel of comparable books for which we observe prices in both markets before and after the introduction of the FBP regulation.²¹ Moreover, we also exploit the presence of books sold in the two markets by restricting the sample to identical book titles sold both in Italy and Switzerland, as well as in the same retail channels. This allows us to compare retail prices for the same books (identified by ISBN) in treatment and control markets around the introduction of FBP.

Finally, most books in Switzerland are imported from Italy, France, and Germany (and Austria). Hence, their prices depend on the exchange rate (ER) Euro/CHF pass-through. The price of books published in Switzerland may depend on the ER as well because production inputs may come from other countries. Since there are swings in ER during the time frame of the analysis, we need to account for this. In this context, we follow the literature on ER pass-through by including the contemporaneous ER together with 9-month lags of ER (Campa and Goldberg, 2005),²² all interacted with channel-specific dummies to account for potentially heterogeneous pass-through across retail channels.

In a standard DiD setting, one would like to compare the average residual variation of price in the treated and untreated market around the introduction of the FBP regulation. In principle, this can be done by estimating coefficients associated with market-specific time dummies in a price regression model that controls for the main sources of book heterogeneity, namely book fixed effects, book age, and ER pass-through. However, due to multicollinearity, we cannot identify the ER pass-through and time dummies in the Swiss market in a single equation. For this reason, we

²¹ To ensure that results are not driven by the sample selection, we also run the empirical analysis on different samples of books. See Section 4.2.3 below.

²² Further increasing the number of lags does not impact the results.

employ a two-step procedure in which we first control for time-invariant book and channel characteristics, age effects, and ER pass-through.²³ That is, we estimate the following equation for Switzerland:

$$\log p_{ict} = \alpha_i + \alpha_c + \sum_{j=0}^9 \rho_{cj} f(\log ER_{t-j}) + \sum_{k=2}^{48} \theta_k Age_{it}^k + e_{ict}, \quad (1)$$

where p_{ict} is the price of book (ISBN) i , in retail channel c , and at time (monthly frequency) t . α_i and α_c are ISBN and retail channel fixed effects, respectively, while $f(\log ER_{t-j}) = \log ER_{t-j} + (\log ER)_{t-j}^2 + (\log ER)_{t-j}^3$ allows us to control flexibly for the ER pass-through. We also account for the age Age_{it}^k of each book, up to 48 months after the publishing date.²⁴ For Italy, we estimate the following equation:

$$\log p_{ict} = \alpha_i + \alpha_c + \sum_{k=2}^{48} \theta_k Age_{it}^k + e_{ict}. \quad (2)$$

We are interested in the residual variation $\hat{e}_{ict}$, which can be interpreted as the price for a book after controlling for age effects, unobservable time-invariant characteristics, and ER pass-through.

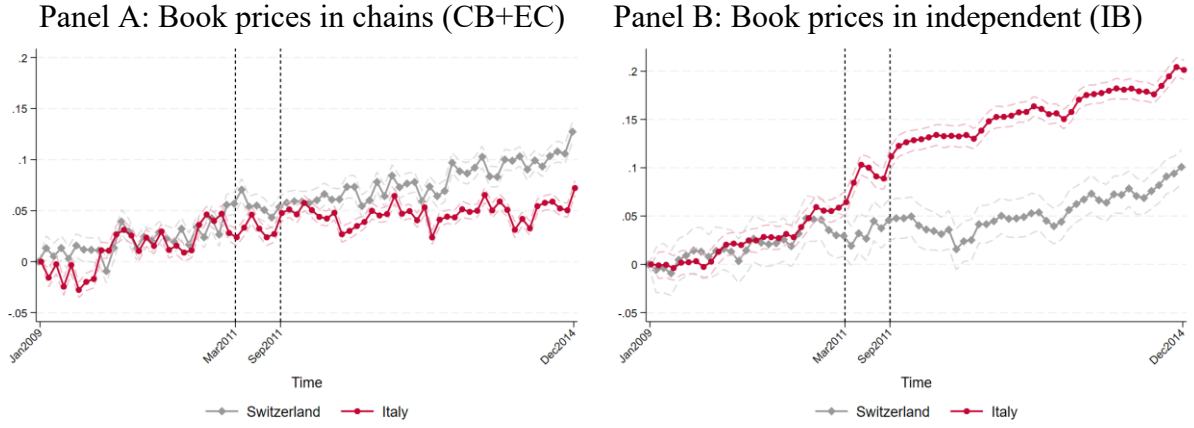
To validate our DiD research design, we first plot the normalized average $\hat{e}_{ict}$ for each period and separately for each retail channel and market to check for parallel trends before the introduction of the FBP regulation. Figure 2 shows that the residual price variation is comparable across the two markets before the introduction of FBP. The post-treatment period exhibits a significant price increase in the Italian IB channel (Panel B) compared to the Swiss market, while in CB+EC prices slightly decrease (Panel A). What is more, there is some anticipation effect for IB: although the regulation entered into force in September 2011, the price effect materializes a few months before, when the regulation was first approved by the upper house (Senate) of the Italian Parliament.²⁵

²³ A similar two-step procedure is commonly used in the price dispersion literature, where the outcome of interest is derived from a regression of price on observable characteristics and fixed effects. The resulting residuals provide “clean” prices for the assessment of the degree of price dispersion across markets and/or products. See Lach (2002), Lewis (2008), and Pennerstorfer et al. (2020), among others.

²⁴ The age dummy associated with 48 is equal to one if the book age is greater or equal to 48 months, thus capturing an average price variation for books older than 4 years. Recall that most sales happen in the first 24 months.

²⁵ Appendix Tables A1 and A2 provide statistical tests for parallel trends before the approval of FBP. Table A1 focuses on the assessment of linear parallel trends between the two markets, while Table A2 estimates time dummies interacted with the treatment identifier to test for parallel trends non-parametrically.

FIGURE 2: EVOLUTION OF BOOK RETAIL PRICES IN ITALY & SWITZERLAND



Notes: The figure shows the average monthly residuals by channel for Italy (red) and Switzerland (grey) standardized to the first period (January 2009), together with the corresponding 95% confidence interval. The sample for estimation includes books selling at least one unit for 80% of the months since its publication date. Bootstrapped standard errors (100 replications).

Source: Authors' calculations based on the GfK POS data.

We quantify the effect of FBP regulation on retail prices by estimating the following equation:

$$\hat{e}_{imct} = \alpha_t + \alpha_m + \beta_1 Mid_t \times Treated_m + \beta_2 Post_t \times Treated_m + u_{imct}, \quad (3)$$

where $\hat{e}_{imct}$ is the residual price variation for book i , in market m (Italy or Switzerland), channel c , at time t . α_t and α_m are time and market fixed effects, respectively. Mid_t identifies the period between the first approval of the FBP regulation (March 2011) and its actual implementation. $Post_t$ is a dummy identifying the post-implementation period starting from September 2011. $Treated_m$ identifies books sold in the Italian market. Finally, u_{imct} is a mean-zero error term. The interaction terms $Mid_t \times Treated_m$ and $Post_t \times Treated_m$ identify the causal impact of FBP announcement and later implementation, respectively.

Table 2 shows the results from our DiD regression. The first column points to a negligible average effect on price induced by FBP. Such a mean null effect hides important heterogeneities across the two channels. Consistent with Figure 2, we observe a very small price reduction in CB+EC (column 2), counteracted by a sizeable price increase in IB (column 3). Both effects materialize from the approval of the regulation and are increasing in the long run. In columns 4-6, we include ISBN fixed effects to identify causal effects only through books sold both before and after FBP introduction. In this case, we observe a moderate price increase (column 4), both in the short (+0.5%) and long run (+1.4%). This average effect comes from two opposing results. Prices rise significantly in the IB channel (+7.8%, column 6), while narrowly decrease in the CB+EC retail channel (-0.6%, column 5). An analogous heterogeneity arises when focusing on identical

books sold both in the Italian and Swiss markets (see Appendix Table A3), with an average increase of about 5% in the IB channel, while results from the CB+EC channel suggest a small effect (either negative or positive) from the introduction of FBP in the long run. It is the differential effect between the two channels that we consider as a rather robust result, as well as the price increase among IB, while for CB+EC the effect is generally limited.

TABLE 2: IMPACT OF FBP REGULATION ON BOOK RETAIL PRICES

Sample	(1) All data	(2) CB+EC	(3) IB	(4) All data	(5) CB+EC	(6) IB
Mid × Treated	-0.003** (0.001)	-0.017*** (0.002)	0.052*** (0.004)	0.005*** (0.000)	-0.009*** (0.000)	0.054*** (0.001)
Post × Treated	-0.002*** (0.001)	-0.029*** (0.001)	0.099*** (0.002)	0.014*** (0.000)	-0.006*** (0.000)	0.078*** (0.000)
Time FE	YES	YES	YES	YES	YES	YES
Market FE	YES	YES	YES	YES	YES	YES
ISBN FE				YES	YES	YES
Observations	8,562,293	6,524,442	2,037,851	8,562,293	6,524,442	2,037,851

Notes: This table presents the effects of FBP on retail prices. The treatment group includes books sold in Italy, whereas the control group includes books sold in Switzerland. The sample used for estimation consists of books that sell at least one unit for 80% of the months since its publication date. Columns 1 and 4 analyze the market as a whole, whereas columns 2 and 5 examine chain bookstores and e-commerce, while columns 3 and 6 analyze independent bookstores separately. Columns 4-6 include ISBN fixed effects to identify causal effects through books that were selling units both before and after the introduction of FBP. Bootstrapped standard errors (100 replications) in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Authors' calculations based on the GfK POS data.

The dynamics of the treatment effects confirm the different price reactions in response to FBP introduction across the channels. Appendix Figure A1 plots estimated coefficients from event study models in which the treatment identifier is interacted with time dummies, separately for the two channels. We observe a clear upward shift in price induced by FBP in the IB channel. The price variation materializes between the approval of the regulation (March 2011) and its entry into force (September 2011). It persists in the long run. As for CB+EC, we observe a very small effect just below zero, both in the short and in the long term.

A further look at the prices reveals interesting patterns (see Appendix Figure A2 for the plots). Generally, we witness a phenomenon of “price and discount convergence”.²⁶ Before the regulation, there was a considerable heterogeneity in discounts and retail prices among books. The mean difference between the most discounted and the least discounted books was above 20% of the

²⁶ The phenomenon of convergence is also found by Biscour et al. (2013) in the context of French supermarkets when a regulation (“Loi Galland”) banned products from being sold below cost.

cover price in both channels. After the regulation, towards the end of our period, this difference shrinks to less than 10%. Among IB, the discount post-FBP converges around zero on average. Among CB+EC, it converges to a higher level (10% on average), but still below the direct cap of the regulation (15%). This pattern in discounts has an almost exact counterpart to the pattern of retail prices. Hence, the regulation hit the retail price of most books, even those that – in principle – were not directly subject to the cap.

In sum, there is robust evidence that FBP affected the discounts and prices not only of the heavily discounted books that were specifically covered by the regulation but also of almost every other book. The intensity of price competition was greatly reduced especially among IB, the heterogeneity of discounts compressed, and the industry converged on a narrower set of focal discounts.

4.1.2 Impact of FBP regulation on cover prices

The previous results look at the impact on the final retail price, and the inclusion of ISBN fixed effects exploits books that were sold both before and after the introduction of FBP. A related and relevant question is whether FBP affects prices also at the upstream level, as set by the publishers. Is there a significant change in recommended cover prices, after the regulation? Notably, the cover price is a time-invariant feature of each book, as identified by its ISBN. Hence, it is fixed during the book's lifetime. If the publisher wants to change the cover price of a book title, then a new edition of the book must be issued, with an associated new ISBN. Therefore, to analyze the impact of FBP on cover price, we have to perform a slightly different experiment compared to the one conducted on retail prices. In this case, we observe different cohorts of books, each referring to a particular date of publication. Then, we compare the evolution of books' cover price published before and after the regulation, between treatment and control groups.²⁷

We estimate two different DiD models. In the first one, we compare the cover price of books published in Italy and Switzerland, around the introduction of FBP. As many books in the Swiss market are published by foreign publishers (mostly German and French), the comparison group includes only books published by Swiss publishers. Moreover, to avoid potential spillover effects between the two markets, we exclude Swiss-Italian publishers. This is because their reference

²⁷ Swiss data show an unusual upward spike in cover price at the very end of our panel (December 2014) which falsify the comparison with the Italian market. For this reason, to perform this empirical exercise we restrict our attention to a two-year window around the regulation.

market may include also Italy, hence their decisions may be affected by FBP as well. As a result, the control group includes Swiss-French and Swiss-German publishers.²⁸ In the second DiD model, we restrict the attention to the Italian market, comparing the evolution of cover prices between large and small publishers. We run this analysis because one of the intended effects of the Levi Law was to promote small publishers.

TABLE 3: IMPACT OF FBP REGULATION ON BOOK COVER PRICES

	(1)	(2)	(3)	(4)	(5)
Sample	ITALY & SWITZERLAND			ITALY	
Mid $\times$ Treated	-0.011 (0.035)	-0.029 (0.026)	-0.008 (0.016)	-0.006 (0.021)	0.001 (0.019)
Post $\times$ Treated	-0.020 (0.024)	-0.030* (0.018)	-0.021 (0.015)	-0.007 (0.022)	0.003 (0.019)
Date of publication FE	YES	YES	YES	YES	YES
Market FE	YES	YES	YES		
Genre IV FE		YES	YES		YES
Publisher FE			YES	YES	YES
Observations	216,509	216,509	216,509	198,146	198,146

Notes: This table presents the effects of FBP on cover price. The dependent variable is the logarithm of book cover price. In columns 1-3 the treatment group includes all the books published in Italy, whereas the control group includes all the books published in Switzerland by Swiss-German or Swiss-French publishers. In the last two columns, the treatment group includes books published by large publishers in Italy, whereas the control group includes books published by small publishers in Italy. Standard errors clustered by publisher in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Authors' calculations based on the GfK POS data on a two-year window around the regulation.

A simple comparison between treatment and control groups around the introduction of FBP shows that there is no significant variation in the average cover price not only between Italy and Switzerland but also between large and small publishers within the Italian market (see Appendix Figure A3 for the evolution of cover prices). This evidence is confirmed by DiD estimates in Table 3 which show no significant variation in cover price following the introduction of FBP in Italy. This holds both when we compare Italy with Switzerland (column 3) and when we compare, inside Italy alone, big and small publishers (column 5).²⁹

²⁸ In Switzerland, there exists an association of Swiss publishers for each of the three official languages of the country. [ALESI](#) is the association of Italian Swiss publishers, while [SBVV](#) and [LIVRESUISSE](#) are the German and French counterparts. We then identified publishers for each language from the list provided by each association.

²⁹ Formal tests for parallel trends are collected in Appendix Tables A5 and A6. Table A5 shows no difference in the (linear) trends of cover prices before FBP between the treatment and control groups. Table A6 provides a non-parametric test showing interaction coefficients that are generally not statistically significant in the pre-FBP period. Finally, Appendix Figure A4 displays the dynamics of the treatment effect on cover prices. It shows no difference between treatment and control groups both before and after FBP, thus validating the research design as well as the null effect on cover prices.

4.2 Impact on book varieties

We now analyze the impact of the law on book variety, distinguishing again between the upstream (publisher) and downstream (bookshop) levels.

4.2.1 Impact of FBP regulation on book variety published upstream

One rationale mentioned by those who advocate FBP is its impact on promoting book variety. We run an analysis similar to cover prices to assess whether the FBP regulation affected publishers' incentives to issue more book titles. Publishers receive many manuscripts for review and eventually decide to publish only a few of them. Did this choice change with the Levi Law?³⁰

For each date of publication (monthly), we count the number of ISBNs published in Italy and Switzerland, as well as for large and small publishers within the Italian market. Then, we compare the number of books published in the treatment and control groups before and after the introduction of the FBP regulation. Results are collected in Table 4. As shown by columns 1 and 4 (and corresponding Appendix Figures A5 and A6), we do not find any significant effect on the number of new books published in either specification.

TABLE 4: IMPACT OF FBP REGULATION ON BOOK VARIETY

	(1)	(2)	(3)	(4)	(5)	(6)
	ITALY & SWITZERLAND				ITALY	
Sample	All authors	Italian	Foreign	All authors	Italian	Foreign
Mid × Treated	-0.091 (0.263)	-0.095 (0.267)	-0.045 (0.245)	0.121 (0.203)	0.108 (0.198)	0.133 (0.206)
Post × Treated	0.084 (0.220)	0.075 (0.231)	0.120 (0.172)	0.023 (0.212)	-0.011 (0.206)	0.071 (0.211)
Date of publication FE	YES	YES	YES	YES	YES	YES
Market FE	YES	YES	YES			
Big publisher FE				YES	YES	YES
Observations	144	144	144	144	144	144

Notes: The table presents the effects of FBP on the total number of books published. The dependent variable is the log-number of books published in each month. In columns 1-3, the treatment group includes books published in Italy, whereas the control group includes books published in Switzerland by Swiss-German or Swiss-French publishers. In columns 4-6 the treatment group includes books published by large publishers in Italy, whereas the control group includes books published by small publishers in Italy. Columns 2 and 5 restrict the treatment group to books published in Italy by Italian authors, while in columns 3 and 6 the treatment group is the number of books published by foreign authors. Standard errors robust to heteroskedasticity in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' calculations based on the GfK POS data.

³⁰ It takes about 6-9 months to review a manuscript and bring it on the market, and times can be considerably shorter for writers represented by literary agents. We do not consider instead the long-run impact the Law might have had on authors' incentives to write more manuscripts.

However, one main objective of the regulation is to promote Italian culture more specifically. That is, the higher margins from FBP may be used to cross-subsidize books written by Italian authors, rather than translating foreign authors. To test this hypothesis, we first identify Italian authors in the Italian market.³¹ Then, we count the number of books published by either Italian or foreign authors and we run again our DiD estimations. We find no significant difference between the number of Italian-authored books published in Italy compared to foreign authors when we use Switzerland as a control group (columns 2-3). Nor do we find any difference between big and small publishers in the number of titles published by Italian or by foreign authors (columns 5-6).

Lastly, we examine the possibility of heterogeneous effects across book genres. For instance, the production function of fiction books may differ considerably from that of scientific publications, suggesting that treatment effects could vary by genre. We empirically assess these potential heterogeneous effects by constructing a balanced panel of 29 genres (following the Genre IV classification introduced in Section 3.1) and track the number of books published in each genre, over time, and across treatment and control groups. We then estimate the DiD specifications described above. To examine whether fiction books exhibit differential responses relative to other genres, we further interact $Mid_t \times Treated_m$ and $Post_t \times Treated_m$ with a dummy identifying fiction books. The results from this experiment, presented in Appendix Table A7, show no significant long run average variation across genres, nor between fiction and non-fiction books in terms of number of books published following the introduction of FBP.

Since we do not observe any variation in the number of books published around the regulation, we conclude that FBP had no material impact on the upstream publication decision of publishers.

4.2.2 Impact of FBP regulation on book variety sold downstream

Our results so far indicate that FBP does not affect publishers' behavior, both in terms of books published and cover price. In particular, FBP regulation does not lead to an increased variety in terms of new book titles brought to the market. Nonetheless, the intention of the regulation is also to foster the diffusion of book titles through a widespread network of brick-and-mortar bookstores. In other words, FBP may affect the variety of book titles actually *sold* in the marketplace by allowing brick-and-mortar bookstores to profitably operate in the market and/or by affecting the incentives to provide additional services to customers.

³¹ In Appendix C we explain how we identified Italian authors.

We investigate this issue by analyzing the change in title sales concentration in Italy and Switzerland around the introduction of FBP. We start by simply comparing the number of books (ISBNs) sold at each point in time across retail channels and geographical markets. Appendix Figure A7 plots the monthly total number of book titles sold in the Italian and Swiss markets by distribution channel. We observe a sharp increase in the number of book titles sold in Italy *vis-à-vis* Switzerland, particularly in the IB retail channel. The variation is significant: the corresponding DiD estimates of Table 5 suggest an average increase of about 25.5% (column 2), driven largely by a rise in the IB channel (37.9%; column 4). Moreover, the timing of the variation relates closely to what we observed for retail price, with an anticipation effect when the regulation was approved (March 2011) but not yet implemented (September 2011).

TABLE 5: IMPACT OF FBP REGULATION ON BOOK VARIETY SOLD

	(1)	(2)	(3)	(4)
Sample	All data	All data	CB+EC	IB
Mid $\times$ Treated	0.208 (0.221)	0.208*** (0.070)	0.102*** (0.037)	0.314*** (0.072)
Post $\times$ Treated	0.255** (0.125)	0.255*** (0.033)	0.132*** (0.017)	0.379*** (0.026)
Time FE	YES	YES	YES	YES
Market FE	YES	YES	YES	YES
Channel FE		YES		
Observations	288	288	144	144

Notes: This table presents the effects of FBP on the variety of books sold. The dependent variable is the log-number of book titles sold in each market (Italy or Switzerland) and channel (CB+EC or IB) every month between 2009 and 2014. The treatment group includes books sold in Italy, whereas the control group includes books sold in Switzerland. Standard errors robust to heteroskedasticity in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Authors' calculations based on the GfK POS data.

A similar result is obtained when looking at variety concentration indexes. Appendix Table A8 shows DiD results when the dependent variable is the market share of the top 100 book titles (C100) in the two markets in each distribution channel, as well as when the dependent variable is the Herfindahl–Hirschman Index (HHI). Consistently, we observe a reduction in sales concentration in Italy post FBP, mostly driven by the IB channel.

The reduction in concentration driven by the IB channel suggests a redistribution of sales towards a larger number of book titles, also compared to the CB+EC channel. However, it is unclear which types of books benefit in terms of increased sales in IB after FBP. To shed light on

this issue, we compute market shares of (i) paperbacks, (ii) books written by Italian authors, (iii) books issued by a big publisher, (iv) recent titles (i.e., books within 1 year since publication date), and (v) debut works, both over time and across the two distribution channels. We then estimate the variation of market shares in IB compared to CB+EC, before and after the introduction of FBP, to grasp the distributional effects of the regulation in the IB channel. Across those book categories, we observe a reduction in the market share of recent books, and in the share of books issued by big publishers (Appendix Figure A8). As book sales are typically concentrated within the very first months since publication, and big publishers represent a large share of the market, the evidence suggests a change in the composition of sales in the IB channel towards less traditionally popular books. The regulation seems to favor books that usually have low sales (like those from small publishers and those books that are relatively old), while best sellers are bought relatively less.

4.2.3 Further results: impact on aggregate quantity and robustness

In this Section, we first provide some additional evidence on the impact of the FBP regulation. We then conduct some heterogeneity analysis. Finally, we consider some robustness checks of the main price results.

First, using a DiD approach, we consider the impact of FBP on aggregate quantities. Results in Appendix Table A9 and Figure A9 suggest that the number of books sold in Italy decreased by 8.6% in Italy post-reform, compared to the Swiss control. This reduction in sales, however, is not led by the IB channel (which became relatively more expensive), but rather by CB+EC. There may be different reasons for this apparent discrepancy. One reason is that there could be substitution across channels, especially in case of a differential effect on service effort. If IB exert more effort than CB+EC, there will be an increase in demand for the former that can compensate for the reduction in demand due to their higher price. We study this with a structural model in Section 5. Another reason is that the average price reduction that we detected for the CB+EC channel (Table 2) is a simple mean across ISBN, unweighted by sales. Hence, we look next at the heterogeneous impact on prices of different books across channels.

We consider the differential effect on paperback vs hardcover books, Italian vs foreign authors, small vs big publishers, debut works vs the rest, and recently published books vs the rest. We study these differences across channels. Results are shown in Appendix Table A10 and Appendix Figure A10. In general, we observe that our main finding of prices increasing in IB and either slightly

decreasing or not changing much in CB+EC is extremely robust across all these categories.³² As for heterogeneous effects, paperbacks became relatively more expensive than hardcover books (suggesting that intertemporal price discrimination became more muted post-reform), and small publishers became relatively cheaper compared to big publishers. As for the other dimensions (Italian vs foreign authors, debut works vs the rest, and recently published vs older books), given our large sample size we do detect some differences but they are all very small in size.

Finally, we conclude this Section by turning to the robustness of our main finding on book prices in Table 2. Results in Table 2 derive from having selected books with continuous sales in 80% of the cases from the date of publication. We consider alternative selection criteria. Notably, we select (i) books with a sufficient amount of sales throughout the book lifetime (similar to Ashenfelter et al., 2013), (ii) books with continuous sales within a one-year window around the regulation, and (iii) books with continuous sales from the date of publication. Results from all these different selections are comparable with the baseline and are presented in Appendix Table A4. In all cases, we observe a clear price increase driven by IB. Moreover, we also detect modest price effects in the CB+EC channel.

5. FBP and consumer welfare

A few facts emerge from the reduced-form evidence presented in the previous Section. Publishers upstream are largely unaffected by FBP, irrespective of their size. Book cover prices do not change, and publishers do not alter the number of titles they publish in their catalogues. Instead, FBP has several effects on booksellers downstream. This is to some extent expected as the Levi law itself was directed at affecting the margins made downstream, by capping the maximum discounts that retailers could offer.³³

We also found that downstream effects are heterogeneous. In particular, IB react by reducing their discounts (and hence the final price to readers increases), but they sell a wider variety of titles post-regulation. There seems to be a re-direction of demand towards books that also existed before the change in regulation but were not getting the same attention from the readers. Instead, the reaction from CB+EC is more muted, both for prices and for the variety of books sold.

³² The only exception is the price of paperbacks that increased everywhere, also in CB+EC. Since this channel sells large volumes of paperbacks, this could be one reason for the observed reduction in total sales in CB+EC post-reform.

³³ However, note that since we do not observe wholesale contracts between publishers and bookshops, we are not in a position to comment on which side has benefited the most and how relative incentives changed as a reaction to FBP.

Post reform, IB seem to exert more “effort” relative to the other distribution channels, in a way that could directly affect the utility of consumers and prompt them into buying a larger variety of books. This is in line with the “service effort” argument that has a long history in the economics of FBP and RPM more generally, since at least the work of Telser (1960) who argued that RPM promotes retail services. Without RPM, consumers may free ride by getting premium services and advice in high-quality stores but then purchasing from discount stores. Eventually, this leads to a bad equilibrium where stores have a disincentive to put any effort into providing valuable services. With RPM instead, the focus of competition shifts from price to service effort. In the case of books, this increased effort can take practically many forms: from cultural events in store to increased individual customer care, to promotion of specific authors or books, to local advertising, etc. In all these cases, the result is that a wider variety of books is ultimately bought by readers. While we cannot observe effort directly, in Section 6 we will return to the discussion of this mechanism. The lower impact on price and book variety sold by CB compared to IB is probably expected because CB are vertically integrated with a main publisher, and hence are less affected by FBP which tries to regulate the wholesale margin (though this internalization is not complete, as CB also sell books from other publishers).

In Appendix E, we sketch a very simple model of RPM to make these points more explicit. We consider an upstream publisher that sells its books downstream via two bookshops: an independent IB and an integrated CB. Demand for books depends on their prices but also on non-contractible service effort. In the absence of RPM, each bookshop sets its price and sales effort independently. With RPM, instead, book prices are determined by the upstream publisher, while effort is still set downstream. As we show in the Appendix, RPM can result in an increase in both the retail price and the service effort of an IB, compared to the absence of RPM. Also, the effects of RPM are instead more muted for the integrated CB. One expects small reductions, both in prices and in service effort, but not always – though the magnitudes are always fairly modest compared to the changes for the IB. These are the possible trade-offs that we bring to a test with a structural model.

With these facts in mind, we now propose a demand model that is then utilized to analyze the welfare impact on readers of the introduction of FBP regulation across distribution channels.

5.1 Structural demand model and identification

Consumers in this market can choose a book among a large number of differentiated products. We specify a standard discrete choice model as applied to aggregate market-level data (McFadden,

1981; Berry, 1994; Berry et al., 1995; Verboven, 1996), and we add a twist.

We begin by assuming that the utility of consumer i , for book j , in channel c , at time t is

$$u_{ijct} = \underbrace{X'_{jct}\beta - \alpha p_{jct} + \xi_{jct}}_{\delta_{jct}} + \zeta_{igc} + (1 - \sigma)\epsilon_{ijct}, \quad (4)$$

where the first part, δ_{jct} , is the mean utility for product j in channel c and depends on a K -dimensional vector of the observed product characteristics, X'_{jct} , on the retail price, p_{jct} , and on unobserved by the econometrician product quality ξ_{jct} . The second part is the individual specific deviation of utility from the mean, modeled as a weighted sum of two variables: ζ_{igc} is a common valuation across products in the same group g , and ϵ_{ijct} is a mean-zero idiosyncratic taste stochastic term.

To model the impact of FBP regulation, we expand the mean utility, δ_{jct} , by adding the following terms: $\gamma_1 Post_t \times IB_{jc} + \gamma_2 IB_{jc} + \gamma_4 Post_t$, where $Post_t$ is an indicator variable that takes the value of one after the implementation of regulation and IB_{jc} is an indicator variable for the independent bookstore channel. The interaction term captures the idea that, following the FBP regulation and the subsequent reduction in price competition, IB may put more effort and services relative to the other channels. This, in turn, could lead customers to purchase a wider variety of books. These services are expected to increase the mean utility of books, but of course, the critical question is the empirical magnitude of this effect.

As standard in this literature, assuming that ϵ_{ijct} is identically and independently distributed across products and consumers according to the “type I extreme value” distribution, then the market share of product j is given by

$$s_{jct}(\delta) = \frac{e^{\delta_{jct}/(1-\sigma)}}{I_g} \frac{I_g^{1-\sigma}}{\sum_g (I_g^{1-\sigma})}, \quad (5)$$

where: $I_g = \sum_{j \in g} e^{\delta_{jct}/(1-\sigma)}$. Since the utility of the outside good is zero, then δ_0 and I_0 are equal to zero and one respectively. We assume that the potential market size, M , is the whole adult population in Italy, and hence the market shares can be calculated as $s_{jct} = q_{jct}/M_t$ and $s_{0ct} = (M_t - \sum q_k)/M_t$.

We consider several different possibilities for the nesting parameter, σ . First, we assume that each book is a separate nest, reflecting the perception that every book is slightly differentiated

even among books of the same genre. Reimers and Waldfogel (2021) utilize a similar model in their demand calibration exercise for the US book market. Second, we assume that books belonging to the same genre are closer substitutes. We test this possibility using three different aggregation levels of genres, from the most general one (Genre I, four different categories) to Genre II (25 categories), and Genre IV (29 categories). Third, we also test whether consumers first select the distribution channel before selecting a particular book.³⁴

Identification of the coefficients on price and within group market shares is based on a vector of instrumental variables. Interestingly, the typical Berry et al. (1995) aggregate level instruments of the number of own and rival books for each publisher (and/or genre) are ineffective empirically in this market for the simple reason that there are “too many” products available at each point in time. Instead, we borrow the approach of Reimers and Waldfogel (2021) and compute the number of books that were originally released in the past month, in the past two months, and so on, up to six months. These instruments capture the notion that, for the vast majority of books, most of their sales take place early in their lifecycle and they are more strongly affected by the number of other books available in their cohort, rather than the number of books available in general in the market.

5.2 Demand results

Table 6 summarizes the results from estimating the simple logit and the nested logit demand models using different nests. All regressions include year (5), month (12), and genre (29) fixed effects. Standard errors are clustered at the book ISBN level to control for autocorrelation and heteroskedasticity. Columns 1 and 2 estimate the logit model without and with the instruments. The price coefficient increases substantially after instrumenting, resulting in elastic demand for most books, while the first stage F-test is high and strongly significant in column 2, indicating that the instruments are correcting for the price endogeneity. The rest of the coefficients have the expected signs, with age having a negative coefficient and large publishers a positive one. The interaction of the indicator for independent bookstores with the post dummy is positive and significant, highlighting a positive utility effect of this channel after the reform.

Column 3 estimates a nested logit model based on a nest for each book exploiting the variation across retail channels. The nesting parameter, σ , is above one indicating high substitutability

³⁴ We also estimated a two nests nested logit, combining these nests in every ordering, but empirical results rejected these models.

among books or, otherwise, rejecting the hypothesis that each book can be considered a distinct product. Hence, this specification does not make much sense economically. Column 4 examines the case of consumers first selecting the channel from which they buy, before selecting their books. Results indicate that there is limited substitutability ($\sigma = 0.388$) between distribution channels, while the rest of the coefficients have similar signs and significance to those in column 2.

TABLE 6: DEMAND ESTIMATION RESULTS

	(1)	(2)	(3)	(4)	(5)
Model	OLS Logit	IV Logit	NL book	NL channel	NL genre
Dependent variable	$\ln(S_{jt}) - \ln(S_{0t})$	$\ln(S_{jt}) - \ln(S_{0t})$	$\ln(S_{jt}) - \ln(S_{0t})$	$\ln(S_{jt}) - \ln(S_{0t})$	$\ln(S_{jt}) - \ln(S_{0t})$
Price	-0.009*** (0.000)	-1.432*** (0.061)	-1.348*** (0.060)	-0.631*** (0.043)	-0.586*** (0.040)
Group segment parameter (σ_g)			1.383*** (0.321)	0.388*** (0.014)	0.426*** (0.013)
Book age	-0.017*** (0.000)	-0.038*** (0.001)	-0.040*** (0.001)	-0.020*** (0.001)	-0.018*** (0.001)
Paperback edition	3.352*** (0.026)	-6.681*** (0.439)	-6.198*** (0.429)	-2.359*** (0.273)	-2.169*** (0.253)
Big publisher	2.476*** (0.015)	3.278*** (0.094)	3.710*** (0.139)	1.868*** (0.066)	1.748*** (0.062)
Post × IB indicator	0.216*** (0.005)	1.000*** (0.043)	1.067*** (0.048)	0.429*** (0.030)	0.445*** (0.027)
Post	0.054*** (0.006)	-0.210*** (0.021)	-0.256*** (0.024)	-0.089*** (0.011)	-0.102*** (0.010)
IB channel indicator	-1.362*** (0.005)	0.510*** (0.087)	3.321*** (0.678)	-0.356*** (0.054)	-0.019 (0.043)
Observations	29,053,247	29,053,247	29,053,247	29,053,247	29,053,247
Clusters (ISBN)	522,017	522,017	522,017	522,017	522,017
Instruments		Number of books released each month for the last 5 months	Number of books released each month for the last 5 months	Number of books released each month for the last 5 months	Number of books released each month for the last 5 months
First stage F-test (price)		226.5	117.36	114.43	113.31
p-value		[0.000]	[0.000]	[0.000]	[0.000]
First stage F-test (segment)			30.19	200.09	203.38
p-value			[0.000]	[0.000]	[0.000]
Number of books with inelastic demand	99.55%	0.03%	67.62%	0.05%	0.05%

Notes: All regressions include a full set of year, month, and genre fixed effects. Sanderson-Windmeijer multivariate F test of excluded instruments with the p-values in square parentheses below are reported. Standard errors clustered at the book level to control for autocorrelation and heteroskedasticity are reported in parenthesis below coefficients: *significant at 10%; **significant at 5%; ***significant at 1%.

Source: Authors' calculations based on the GfK POS data.

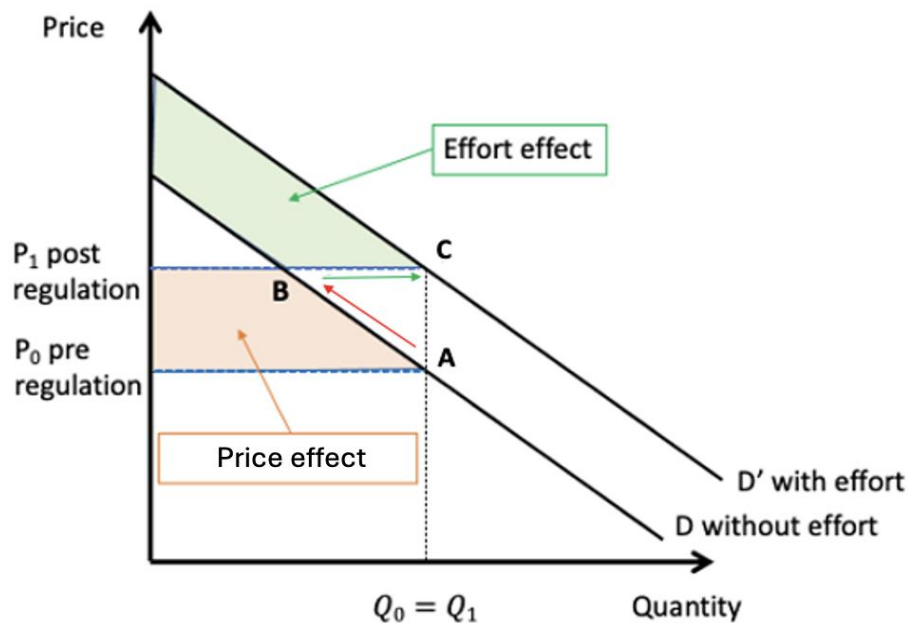
In the final column 5, we assume that consumers first choose the book genre and then a book within that genre. The coefficient on the nesting parameter is 0.426, indicating some limited

substitutability across genres.³⁵ Average own price elasticity is high.³⁶ The interaction term of the independent bookstores with the post indicator, although half in magnitude compared to column 2, is positive and significant.³⁷

5.3 Consumer welfare analysis

Based on the estimated demand model, we proceed now to calculate the welfare impact of the FBP regulation. Figure 3 visually depicts the overall effect (going from point A to point C) split down into two opposing effects.

FIGURE 3: GRAPHICAL REPRESENTATION OF WELFARE COUNTERFACTUALS



Notes: The figure depicts the “price effect” (in red) as a movement from point A to point B due to the introduction of FBP regulation which resulted in higher prices and the “effort effect” (in green) as a movement from point B to point C due to the higher effort exerted post regulation from the independent bookstores. The figure extends Figure 1 in Telser (1960).

Imagine, pre-reform, that the market for books is in equilibrium at point A. On the one hand, as we documented in Section 4, the introduction of FBP regulation meant a reduction in discount

³⁵ Results are consistently robust if we aggregate at different genre levels (genre I with four different categories, or genre II with 25 categories).

³⁶ The average own price elasticity is estimated between -15 and -18. Estimates in the literature vary widely from inelastic (Reimers and Waldfogel, 2017, 2021) to -3 (Bittlingmayer, 1992). The high value of our estimated elasticities is expected because we have high frequency data on all the books sold in Italy and our unit of observation is at the ISBN and channel level. Our baseline assumption is that the potential yearly market is the whole population of Italy. Altering any of these data characteristics and assumptions reduces the value of estimated elasticities (Goeree, 2008).

³⁷ Appendix Figure D1 plots the residuals from Table 6, column 5, aggregated by channel (IB vs. CB+EC). There is a clear shift in unexplained utility from CB to IB beginning in March 2011, strongly suggesting that incoming FBP regulation changed the market reaction and influenced consumer preferences in favour of the IB channel.

competition which resulted in higher prices for readers. We call this the “price effect” as the price increased from P_0 to P_1 and readers suffer from the more expensive price. This is illustrated in Figure 3 as a movement from point A to point B. Absent the regulation, prices would have been lower along the pre-regulation demand curve. We use the estimated demand coefficients of Table 6 for the period prior to FBP regulation, and we change prices, differently for two channels, based on the DiD estimates of Section 4.1.1 (Table 2). The loss in consumer welfare due to the regulation corresponds to the red-shaded area.

On the other hand, we argued that IB seem to exert more effort post-regulation resulting in higher utility. In our demand model, the interaction term between independent bookstores and the post indicator is positive and significant, pushing the demand curve out (from point B to point C), at given prices, as indicated by the green area in Figure 3. We call this the “effort effect” and we calculate its welfare magnitude as the difference between the demand with and without effort (by switching off the interaction coefficient). The gain in consumer welfare due to regulation corresponds to the green-shaded area.

The final effect on consumer welfare is the difference between the green and red areas. In principle, the net effect can go either way. Notice that simply comparing the quantity purchased before (Q_0) and after (Q_1) the regulation could not tell the net change in consumer welfare. In Figure 3, for instance, we draw a case where the overall quantity does not change ($Q_0 = Q_1$) while the welfare change can be either positive or negative, depending on the size of the shaded areas.

We compute the variation in consumer welfare using the results of Small and Rosen (1981). Omitting the constant for simplicity, consumer welfare in the nested logit model is given by³⁸

$$CS = \frac{M}{\alpha} \ln \left(\sum_g \left(\sum_{j \in g} \exp \left(\frac{\delta_j}{1-\sigma} \right) \right)^{(1-\sigma)} \right). \quad (6)$$

Table 7 summarizes the results for the models estimated in Table 6 (columns 2, 4, and 5). For all models, the negative impact of the price effect due to the price increases³⁹ is counterbalanced by the larger increase in demand⁴⁰ due to the effort effect such that the net welfare impact is positive (ranging from 68 to 192 million euros). In other words, despite the fact the FBP regulation

³⁸ Consumer welfare from the logit model can be derived by setting $\sigma = 0$.

³⁹ We used the estimated heterogeneous causal effect on prices from Table 2: column 4 for the CB+EC retail channel (-0.6%) and column 5 for the IB channel (+7.8%).

⁴⁰ The coefficient on $Post \times IB$ from Table 6 depending on the model.

increased prices due to a reduction in discount competition, it possibly led to significant competition in services that increased the consumers' utility. In the case of the simple logit the welfare calculations indicate that the consumer surplus was increased by 4%, whereas for the nested logit models the overall increase was in the range 1.2-1.5%.

TABLE 7: OVERALL WELFARE CALCULATIONS (in € m)

Model		(1) Observed	(2) Counterfactual	(3) Δ	(4) $\Delta\%$
Logit (IV)	Price effect only	2,310	2,362	-52	-2.3%
	Effort effect only	2,554	2,310	245	9.6%
	Total welfare effect	4,864	4,671	192	4.0%
Nested Logit (channel)	Price effect only	2,223	2,263	-40	-1.8%
	Effort effect only	2,331	2,223	108	4.6%
	Total welfare effect	4,555	4,487	68	1.5%
Nested Logit (genre)	Price effect only	3,158	3,197	-39	-1.2%
	Effort effect only	3,274	3,158	116	3.5%
	Total welfare effect	6,432	6,355	77	1.2%

Notes: The numbers in the table represent the calculation of consumer welfare (in € m) under different counterfactual scenarios as discussed in Section 5.3. The different rows correspond to columns 2, 4 and 5 of Table 6.

Source: Authors' calculations based on the GfK POS data and the estimated results from Table 6.

TABLE 8: WELFARE CALCULATIONS BY CHANNEL (in € m)

Model		(1) Observed	(2) Counterfactual	(3) Δ	(4) $\Delta\%$
IB ONLY	Price effect only	2,124	2,330	-206	-9.7%
	Effort effect only	2,520	2,124	396	15.7%
	Total welfare effect	4,645	4,454	191	4.1%
CB+EC ONLY	Price effect only	2,989	2,973	16	0.5%
	Effort effect only				
	Total welfare effect	2,989	2,973	16	0.5%

Notes: The numbers in the table represent the calculation of consumer welfare (in € m) under different counterfactual scenarios for the independent bookstores (top panel) and the chain bookstores, supermarkets and e-commerce (bottom panel) based on the estimates of column 5, Table 6. We use the same estimated coefficients for both channels but sum over the books sold in each channel separately.

Source: Authors' calculations based on the GfK POS data for the universe of books traded in Italy from January 2009 to December 2014 and the estimated results from Table 6.

In Table 8 we use as our benchmark model the nested logit based on genre IV (Table 6, column 5) and we break down the welfare calculations by distribution channel. The top panel shows that, for independent bookstores only, although the negative price effect from the price increase was the largest (-9.7%), the countervailing increase in utility was also strong (15.7%) leading again to a net positive consumer surplus. In contrast, for the CB+EC channel, there is a slight decrease in prices due to regulation that increases the consumer surplus. Moreover, since there we assumed no

effort effect for this channel, this is also the overall effect of the introduction of regulation. See the bottom panel of Table 8 for the results.

These findings highlight the significant heterogeneity across distributional channels and also emphasize that the positive net welfare impact is observed for each channel independently as well.

5.4 Demand and welfare robustness

In this Section, we perform a number of alternative estimations to gauge the robustness of our previous results.

As an initial step, we check the robustness of our instruments in the demand estimation. In our main specification (Table 6) we use the number of books that were released in recent months. We also used a variation on these, where we measure the number of books released in the past month(s) that are in the top 100 in sales across Italy. The idea here is to capture the intensity of competition among successful new book releases, instead of just new releases in general. The higher the number of successful new books released, the harder would be for a new book to get shelf space in the bookstore, to be reviewed, to hold an event with the author, and so forth. Results are reported in Appendix Table D1 and show very similar patterns to Table 6. The instruments significantly move the price coefficient (column 2), while the nested logit specification based on each book (column 3) is again rejected. The last two columns which are based on the channel or nests for each genre provide the most sensible results, both in terms of the nesting coefficient and the positive and significant interaction of IB with the post-regulation indicator.

Then, we assess the robustness of the baseline demand specification by incorporating book fixed effects. While books span various genres and subcategories, it is reasonable to posit that each book exhibits a degree of uniqueness, not fully captured by observable product characteristics. To account for unobserved, book-specific quality factors that may systematically influence consumer utility, we re-estimate the demand model, including a full set of book level (ISBN) indicators. This is a fairly demanding specification that allows only for variation across channels for each book, yet the resulting demand coefficients, presented in Appendix Table D2, remain closely aligned with those reported in Table 6. The interaction term between the IB variable and the post-regulation indicator, that is now estimated solely based on the variation of books that existed before and after the regulation, is slightly attenuated but remains positive and statistically significant.

We next turn to the robustness of our welfare results. In all these experiments we use as our benchmark the nested logit based on genre IV (Table 6, column 5). The idea of these robustness exercises is to demonstrate that no particular genre or type of book drives these results, so if we truncate randomly the data the conclusions remain unchanged. First, we randomly truncate the data by dropping books whose last ISBN digit is even, one by one. Appendix Table D4 reports the welfare calculations (see also Appendix Table D3 for the demand estimation results). No significant differences are observed. Second, we randomly drop different genres from the genre IV categorization. Appendix Table D6 shows that the welfare calculations remain unchanged also in this case (see Appendix Table D4 for the corresponding demand estimation results).

Then, we examine more carefully the issue of books not reporting any sales in a given month. Given that we track every book sold in Italy, many of these books are not sold in many periods. On aggregate, almost two-thirds of the observations report zero sales, while this number is decreasing over time. Following the literature (see, for example, Reimers 2019), in all previous specifications we add a small constant (0.0001 units) to each book's monthly unit sales. While this is necessary given the logit structure of the demand model, the constant selection is arbitrary. Hence, we re-estimate our benchmark demand model by adding different constants (from 0.00001 to 1, see Table D7 for the demand estimation results). As we can see from Table Appendix Table D8, while adding a larger constant affects the level of welfare overall, the qualitative results of the welfare calculations do not depend on the constant added.

In addition, in Table 9 we address the books reporting zero sales using the bounds approach by Gandhi et al. (2023). The innovation of their paper is to use moment inequalities to control for the zeros, while using the variation in the remaining data to estimate demand. They show how to construct upper and lower bounds for the conditional expectation of the inverse demand. These bounds are used to construct moment inequalities, which are valid in the presence of zeros. As the authors demonstrate, this estimator works well even when the fraction of zeros is 95%. Their point estimator is explicitly created for aggregate market level data and it is consistent so long as the number of consumers in the market in question is large. Both these features match our working environment and their estimator is particularly suited given that our potential market is the whole of Italy. We estimate two versions of their model, one for logit and one for our benchmark nested logit (Appendix Table D9 contains the corresponding demand estimation results). Table 9 reports the welfare calculations based on these estimates. Results remain qualitatively unchanged.

TABLE 9: ROBUSTNESS OF WELFARE CALCULATIONS (BOUNDS APPROACH, in € m)

Model		(1) Observed	(2) Counterfactual	(3) Δ	(4) $\Delta\%$
IV Logit (bounds approach)	Price effect only	9,499	9,529	-30	-0.3%
	Effort effect only	9,587	9,499	88	0.9%
	Total welfare effect	19,086	19,028	58	0.3%
IV Nested Logit genre level (bounds approach)	Price effect only	1,180	1,207	-27	-2.3%
	Effort effect only	1,249	1,180	69	5.5%
	Total welfare effect	2,428	2,387	42	1.7%

Notes: The numbers in the table represent the calculation of consumer welfare (in € m) under different counterfactual scenarios as discussed in Section 5.3. The different rows correspond to columns 1 and 2 of Table D8.

Source: Authors' calculations based on the GfK POS data and the estimated results from Table D8.

The next robustness exercise relates to the interaction term of the independent bookstores with the post indicator. In our benchmark model in Table 6, we bundled together all the other channels, except for the independent bookstores, so that the data matched the equivalent one from Switzerland that we had used earlier in the reduced-form approach. Since Swiss data are not needed for the structural estimation, we now re-run our demand estimates, by unbundling the chain bookstores from the rest (supermarkets and e-commerce). Both these channels are not customer-facing and hence they are not organized to provide or compete in customer services. We would expect a zero “effort effect” for supermarkets and e-commerce. Instead, there could be some effect not only for IB but also for CB. Hence we run a more flexible specification where we further expand the mean utility, δ_{jct} , by adding both the interaction $\gamma_1 Post_t \times IB_{jc}$ (as before) and a new term $\gamma_4 Post_t \times CB_{jc}$. As we can see from Table 10, the coefficient on the interaction of IB with the post indicator is always positive and significantly larger than the one on CB. Therefore, even if chain bookstores also respond to the change in regulation and provide some additional services, their level seems to be significantly smaller than that supplied by independent bookstores. We do not conduct a welfare assessment of FBP because, strictly speaking, we do not have a price change due to the regulation in the CB channel alone. But we conjecture that welfare results would be rather similar to our main specification, or possibly even further reinforced since now we do have a positive effort effect for CB as well.

Appendix Table D10 reports the estimated demand results for several alternative specifications and Appendix Table D11 reports the welfare calculations for selected columns. Columns 1 and 2 reduce the potential market size by 10% and 20% respectively. Welfare results remain fairly similar to the baseline specification. In column 3 we experiment with a more flexible specification by adding a triple interaction with the largest publishers in Italy. In line with the earlier reduced

form results, we find that the largest publishers experience a reduction in their market shares post-regulation in the IB channel, but this has a minimum impact on the welfare calculations.

TABLE 10: DEMAND FOR BOOKS ROBUSTNESS (WITH SUPER MARKETS & E-COMMERCE AS BASELINE)

	(1)	(2)	(3)	(4)
Model	OLS Logit	IV Logit	NL channel	NL genre
Dependent variable	$\ln(S_{jt}) - \ln(S_{0t})$	$\ln(S_{jt}) - \ln(S_{0t})$	$\ln(S_{jt}) - \ln(S_{0t})$	$\ln(S_{jt}) - \ln(S_{0t})$
Price	-0.008*** (0.000)	-1.500*** (0.237)	-0.148*** (0.025)	-0.661*** (0.101)
Group segment parameter (σ_g)			0.875*** (0.005)	0.874*** (0.019)
Book age	-0.010*** (0.000)	-0.012*** (0.001)	-0.002*** (0.000)	-0.002*** (0.000)
Paperback edition	3.058*** (0.026)	-8.276*** (1.805)	-0.757*** (0.187)	-4.628*** (0.762)
Big publisher	1.956*** (0.014)	2.880*** (0.180)	0.248*** (0.014)	0.655*** (0.090)
Post × IB indicator	-0.021*** (0.006)	1.437*** (0.235)	0.151*** (0.025)	0.641*** (0.100)
Post × CB indicator	-0.538*** (0.008)	0.742*** (0.207)	0.062*** (0.021)	0.483*** (0.087)
Post	0.233*** (0.006)	-0.525*** (0.123)	-0.092*** (0.012)	-0.341*** (0.052)
IB channel indicator	1.599*** (0.007)	-0.102 (0.275)	0.003 (0.033)	-0.543*** (0.116)
CB channel indicator	0.279*** (0.006)	-1.980*** (0.363)	-0.175*** (0.035)	-0.965*** (0.154)
Observations	32,413,012	32,413,012	32,413,012	32,413,012
Clusters (ISBN)	645,018	645,018	645,018	645,018

Notes: All regressions include a full set of year, month, and genre fixed effects. We did not estimate a nested logit model based on each book as a segment because such model was rejected in Table 6. Sanderson-Windmeijer multivariate F test of excluded instruments with the p-values in square parentheses below are reported. Standard errors clustered at the book level to control for autocorrelation and heteroskedasticity are reported in parenthesis below coefficients: *significant at 10%; **significant at 5%; ***significant at 1%.

Source: Authors' calculations based on the GfK POS data.

Given that IB tend to be smaller than CB stores, one might wonder whether the variety of books on offer is the same across these two channels. In addition, recent work (Argentesi, et al., 2021; Ozhegova, 2023) has demonstrated that, particularly when prices are fixed, firms may use product variety strategically. Given the aggregate nature of our data, we cannot examine whether the books on offer or the book display vary across individual stores. To alleviate this concern, we can however run two experiments. First, we focus attention on new publications, under the reasonable assumption that all stores would carry and display those new books. In Appendix Table D10, column 4 we estimate our demand model restricting the sample to new books only (during their

first year of publication). The interaction term of IB with the post indicator remains positive and significant and the welfare measures (Appendix Table D11) are qualitatively similar to our baseline specification. Second, we restrict our sample to the top selling books (above average sales) in each year in column 5. The argument is similar to the previous experiment in that we would expect all shops to carry and sell those books. Again, we see a very similar behavior for this sample as well.

In the last two columns of Appendix Table D10, we use Switzerland as a placebo experiment and estimate a logit and a nested logit model, corresponding respectively to column 2 and column 6 of our main result in Table 6. The interaction term of IB and the post indicator is statistically significant given the large dataset size (more than 43m observation). But it is approximately 20 times smaller in size than the one in our baseline specification for Italy and economically not significant, indicating that the change in regulation in Italy was the root cause of the change in conduct in Italian independent bookstores.

6. Insights into the mechanisms

Our reduced form estimates suggest that the introduction of FBP is associated with an increase in the variety of book titles sold and a reduction in sales concentration in the market, mostly driven by the IB channel. Consistently, the estimates from the structural demand model show an upward shift in consumers' mean utility from IB induced by the FBP regulation.

In this section we attempt to shed light on the possible mechanisms at work that could explain our findings. We provide three pieces of information. First, we look at available evidence of what bookshops actually do, referring to industry reports. Second, we collect extensive information about what readers talk about when they discuss and rate bookshops. Third, we look at the impact of employment in bookshops after the adoption of FBP. None of these pieces is meant to indicate causal evidence, but they are collectively consistent with the idea that service effort matters in the industry. As suggested by the by the extant literature, bookstores could react to FBP by exerting more effort, in a way that directly affects the utility of consumers and prompt them into buying a larger variety of books.

Starting with the first, the Italian Association of Independent Booksellers (ALI) is part of the Italian Chambers of Commerce and published a survey in 2022 on bookshops. This date is posterior to the FBP regulation. However, recall that Italy not only kept FBP in place since its

inception, but further tightened it in 2020 reducing the maximum discount to 5%. Hence, the mechanism at work (reduced price competition but increased service effort competition) would still be in place in recent years. As part of the survey, bookshops were asked to report the main initiatives they were involved in during the past year. The most cited item (60% of bookshops) was author's talks in store, followed by educational activities in store (41%), and organization of seminars and literary festivals (31%). These activities are consistent with bookstores putting effort and resources into providing services for their readers. See Appendix Figure B1 for the survey results.

Second, we investigate readers' satisfaction with their book purchase by collecting a large sample of readers' comments on bookstores. We search Google Reviews in the period 2016-2024. Google Review launched in Italy only in 2014, so we cannot conduct an analysis during the period of the introduction of FBP. As with the previous survey, however, FBP regulation was still in place in recent years (and further strengthened) so the reviews are possibly indicative of a similar climate among readers. We assemble a dataset that covers more than 2,250 bookshops in Italy, including both CB and IB. For each bookshop, we collect all the ratings and possible reviews that customers left over time. Overall, we have a dataset with more than 500,000 observations. We are aware of selection issues of ratings and reviews, as not every customer leaves them. However, here we are mostly interested in the possible *differences* between IB and CB, as we argued earlier that service effort should be particularly pronounced among IB. Hence selection should be less problematic as – if it exists – it would affect both types of stores. When it comes to reviews, we have employed machine learning techniques to analyze texts automatically and group reviews into main topics, as well as attribute a sentiment (positive/neutral/negative) to each one of them. See Appendix B and C for more details on the dataset and on the machine learning technique we used.

Table 11 summarizes the results. The first row shows that reviews of bookstores are generally positive, particularly so for IB compared to CB. The difference in review ratings between the two types of shops is statistically significant and, as we show in Appendix Figure B2, persistent over time in a period when FBP regulation was in place. The other rows contain our findings on topics and their sentiment. There are two main takeaways. First, most of the comments that are left concern the friendliness of the staff (46% of the total comments; a reviewer can leave multiple comments), followed by product discovery (25%), product assortment (16%), and organization of events (7%). Prices are less prominent in the discussion (6% of the comments). Second, we find

that there are statistically significant differences between IB and CB, with more favorable sentiment for IB when it comes to topics that concern friendly staff, product discovery, book assortment, and events organized by the bookshop. All this evidence is consistent with a higher effort being put by IB compared to CB. The only category where we find a narrow difference in absolute value between CB and IB is when reviews talk about price. Notice that also the sentiment value attached to prices is generally much less positive compared to the other topics. This is expected in a period when competition over price was restricted by the regulation.

TABLE 11: BOOKSHOPS' REVIEWS

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Obs	Topic freq.	IB Obs	Mean	CB Obs	Mean	Mean diff.	s.e.	p-value
Review ratings									
Rating	548,421		272,186	4.543	276,235	4.319	0.224	0.002	0.000
Sentiment score									
Staff	473,003	46%	257,519	0.861	215,484	0.754	0.106	0.002	0.000
Product discovery	261,241	25%	133,664	0.766	127,577	0.613	0.153	0.002	0.000
Product assortment	164,604	16%	86,561	0.824	78,043	0.701	0.123	0.003	0.000
Organization of events	76,569	7%	39,167	0.544	37,402	0.256	0.289	0.006	0.000
Pricing	55,553	6%	25,074	0.380	30,479	0.354	0.026	0.007	0.000

Notes: The table shows summary statistics and mean differences between IB and CB for review ratings and sentiment score across topics. Review ratings range from 0 to 5, while sentiment score takes either value -1 (negative), 0 (neutral), or 1 (positive).

Source: Authors' calculation from Google Reviews on a sample of more than 2,250 bookshops in Italy.

The last evidence we can supply is related to the observation that bookstores may need more employees to provide these additional services which are associated with FBP. Another possibility is the entry of new bookshops following the introduction of FBP. With higher retail margins, more bookshops could enter the market, thus increasing the diffusion of book titles in the market through a widespread network of brick-and-mortar stores. These mechanisms are not mutually exclusive: FBP may affect both in-store effort and new entry.

We empirically investigate this issue by gathering information both on employment and number of firms in the Italian book sector from the Italian Chambers of Commerce. We obtained yearly data on the number of employees and operating firms in the book retail sector, as identified by the ATECO code,⁴¹ for the period 2009-2014. The data are further disaggregated by firm size,

⁴¹ The ATECO code is an industry standard classification system adopted by the Italian Statistical Office (ISTAT). It is essentially the Italian version of Eurostat's NACE. Bookstores are identified by the code 47.61. Notably, it excludes second-hand retailers, which are identified by a different code (47.79). This is relevant since the FBP regulation does not apply to second-hand books.

as measured by the number of employees. There are four size classes: 1 employee, 2-5 employees, 6-9 employees, and > 9 employees. To control for unobservable shocks that might confound the effect of FBP introduction, we gather the same data for a comparable sector not affected by the FBP regulation. We obtained information on employment and operating firms for stationery stores, which allows us to control for unobserved macroeconomic trends in a comparable Italian retail sector.⁴² Then, we can compare the evolution of employment and number of firms for bookshops *vis-à-vis* stationery stores around the introduction of the FBP regulation through a simple DiD regression in which treatment starts from 2011, accounting for year and sector-size fixed effects.⁴³

Table 12 collects the results from such an experiment for the log-number of employees (columns 1-2) and log-number of operating firms (columns 3-4). Columns 1 and 3 point to an average increase in employment (+7.3%) in bookshops, with negligible effects on the number of operating firms. When we disentangle treatment effects by size classes, we observe employment rises everywhere except for bookshops with just one employee. Both pieces of evidence suggest that FBP regulation has no material impact on firm entry. On the contrary, it affects overall employment.⁴⁴ Focusing on the number of operating firms (column 4), we observe a significant increase only for bookshops with 2 to 5 employees. This is most likely not new entry, but it simply captures the mechanical change from the lowest class size (1 employee) to the next class when there are additional hires.

These results should be read against a background of dwindling retail shops in general due to the rise of e-commerce. The reduction in price competition due to FBP seems to have allowed smaller bookshops to survive over and above this general trend: as competition got less tough, less efficient firms could survive in the industry for longer.

⁴² Stationery stores are identified by the ATECO code 47.62. They share with bookshops the same broad category 47.6, defined as “cultural recreational products retail”. Moreover, they are organized within the same union ([SIL](#)).

⁴³ Summary statistics are provided in Appendix Table B2. We drop from the estimation cells for sizes higher than 50 employees per firm as they show very little variation in the bookshop sector.

⁴⁴ Coefficients associated with the interaction terms of 2-5, 6-9, and > 9 employees are not statistically different from each other. The F-test associated with the null hypothesis of equality across these coefficients is 1.09.

TABLE 12: EMPLOYMENT AND NUMBER OF FIRMS IN THE BOOK MARKET

Dependent variable	(1) EMPLOYMENT	(2)	(3) NUMBER OF FIRMS	(4)
Post × Treated	0.073** (0.030)		0.038 (0.031)	
Post × Treated × I{1 Employee}		0.005 (0.058)		-0.007 (0.064)
Post × Treated × I{2-5 Employees}		0.090** (0.040)		0.072** (0.032)
Post × Treated × I{6-9 Employees}		0.078** (0.036)		0.050 (0.051)
Post × Treated × I{>9 Employees}		0.119*** (0.025)		0.037 (0.036)
Observations	48	48	48	48

Notes: This table presents the effects of FBP on employment and the number of bookstores. The dependent variable is either the log-number of employees (columns 1-2) or the log-number of operating firms (columns 3-4). The treatment group includes bookstores, whereas the control group includes stationary stores in Italy. Data are at the year (2009-2014), sector (bookshops and stationery stores), and firm size (4 classes) level. Post dummy takes value one from 2011 onwards. Standard errors robust to heteroskedasticity in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' calculation from the Italian Chambers of Commerce.

7. Conclusions

We offer systematic evidence of the impact of FBP on the prices and variety of books. We study the universe of the books sold in Italy, before and after the introduction of a FBP law, and use Switzerland as a relevant control as Italian books are sold there too over the same period, but with no FBP law in place.

We find that the regulation had an impact only downstream, among booksellers, but not upstream among publishers. The effects downstream are heterogeneous, with large differences between small independent bookstores and larger chain bookstores.

After the reform, bookstores reduced considerably the intensity of competition over the discounts they offer, over and above what was required by the reform: discounts decreased well below the maximum allowed discount that was directly capped by the law. But the story does not end there, as bookshops seem to have then turned to non-price aspects, possibly shifting towards services and effort when competing for customers. Book titles that were in the catalogue before, but hardly commanded any sales, after the reform started being bought by readers.⁴⁵

⁴⁵ Quoting Paul Krugman on X (formerly Twitter): “Why I still visit physical bookstores. I can find anything I'm looking for on Amazon. Bookstores are where I find what I wasn't looking for.” <https://x.com/paulkrugman/status/1692157523728437476?s=20>

Through the estimation of a structural demand model, where consumers are penalized by price increases but enjoy variety, we estimate that, overall, the reform seems to have benefited readers in the Italian book market.

The policy implications of our findings are nuanced. FBP reduces price competition, which is detrimental to consumers. If that was the only aspect of competition in a market, the policy stance on FBP would be clear. But in industries where it is conceivable that competition occurs also on non-price aspects, trade-offs emerge. In particular, in sectors where the “service effort” argument is credible, *and* the industry is fairly competitive, it would be not very plausible that the extra profits accruing from higher prices could be kept by competing retailers. Rather, they would have to shift their competitive focus to those other non-price dimensions. Hence the trade-off: consumers lose on price but can gain over non-price dimensions. In our context, these features are quite compelling: the downstream market structure is fragmented (4,600 bookshops, of which 3,900 are independent), and the service free-riding aspect has a long history of being relevant. In other industries where, instead, the downstream structure is more concentrated, or the non-price aspects are less convincing, the trade-off may well tilt in other directions.

We hope that our results contribute to the understanding of RPM-type regulations in markets generally, and the impact that price reforms might have on non-price market aspects. Cultural products, such as books, capture well both features.

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