Exploring the impact of Fixed Book Price regulation on book diversity

C. Genakos & S. Kalfas
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Fixed book price

- Fixed Book Price (FBP) is a form of regulation through which the publishers control the final price
- Books are important for historical, cultural, scientific and several other reasons and often claimed that carry mixed utility; private and social
- Experienced goods with informational externality
- A typical course from enforcement to abolishment of FBP provided by Great Britain from 1900 to 1997
- In Germany public debate led to mandatory FBP in 2002, replacing the mutual agreement between publishers and booksellers since 1888
- Overall, still have RPM in the book sector Spain from 1975, France from 1981 and Portugal initiated in 1996. Sweden and Finland early enough prohibited FBP and more lately Hungary (2007), Denmark (2011) and Switzerland in March 2015

Fixed book price: key arguments for and against

- Some procompetitive theories claim FBP will lead to non-price competition (such as a knowledgeable employee or cultural events) and alleviate informational externality
- FBP can be considered as a system of cross subsidies from the blockbusters to the books that are not promising in commercial terms but considered high cultural products and it is advocated that through some channels of economic reasoning FBP will lead to a denser network of bookshops with more and diverse titles
- The opponents argue foremost that any regulatory interference artificially increases the prices for books

Legal history of Greece

- The first article of law 2557/1997 introduced FBP in Greece for the first time and allowed retailers to offer discounts up to a maximum of 10% of the proposed value for a two-year period (biennium)
- The new piece of legislation 4524/2014 attempted to liberalise the market up to the extent that Fixed Book Price provisions would be imposed exclusively on literature/literative books and only on their first publication for a biennium as well
- The last law 4549/2018 restored the enforcement to all books and not only to literature/literative ones for their first publication and the duration of the law validity declined from two years to one and a half year of the first publication. The 10% permitted discount rate remained but came along with the supplementary provisions of Paragraph 9

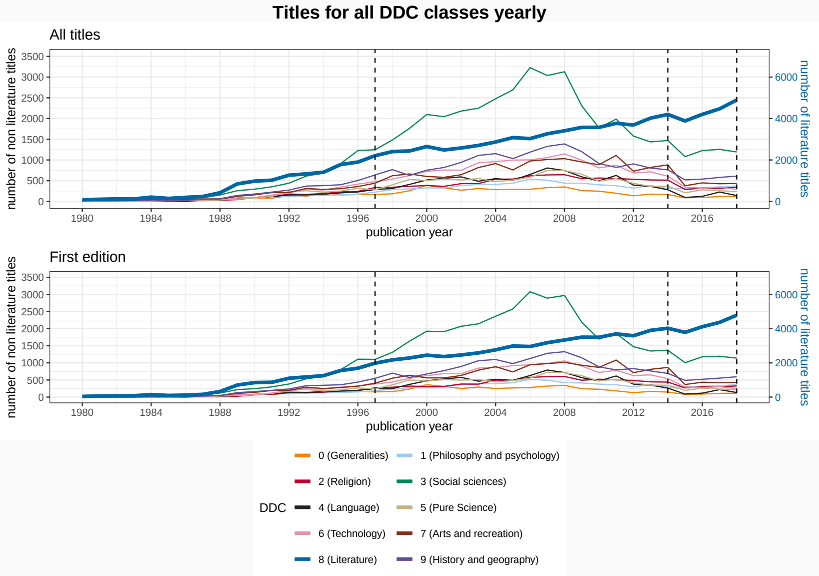
Book statistics

- In 2009 UNESCO released a guidance for research in the sector. *'The lack of reliable – or even broadly realistic – data and analysis on the world's book culture and publishing markets has been deplored time and again. Yet, the gap has not been bridged.'*
- The shortage of standard definitions for book, publisher or book seller compounds the problem of attainable data
- UNESCO back to 1964 issued a resolution enclosing the definition of a book: *"A book is a non-periodical printed publication of at least 49 pages, exclusive of the cover pages, published in the country and made available to the public"* and also *"A title is a term used to designate a printed publication which forms a separate whole, whether issued in one or several volumes"*. A new title is the first edition of a title
- In Greece after the collapse of National Center of Book (EKEBI) there are no periodical surveys for publishing since 2013

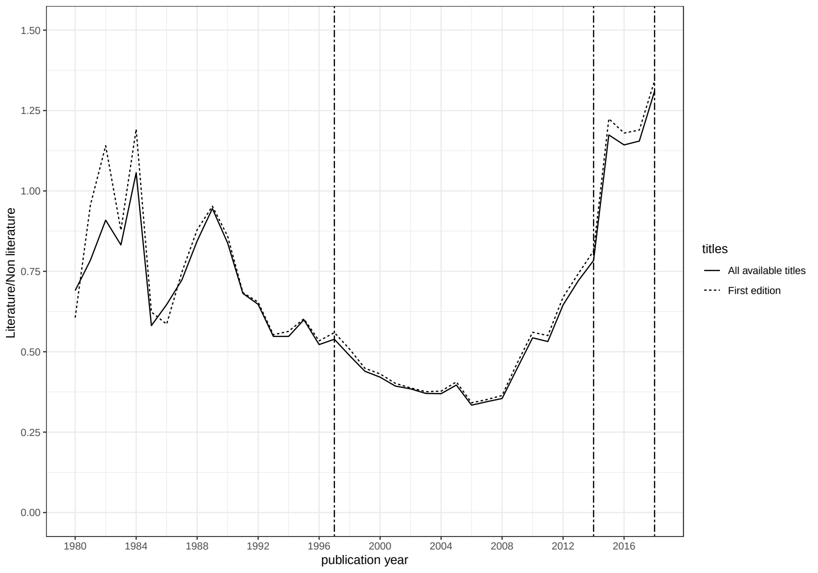
Data

- ‘Repository of National Heritage’, which is held by National Library of Greece (NLG) in UNIMARC format
- “Biblionet” is a well known database which is also stated as a proof element of the declared publication date in the most recent piece of legislation (Law 4549\2018)
- The ISBN database provided us additional supplementary information in this enlarged dataset (left join from our new base to ISBN list)
- To the best of our knowledge this dataset is unique and it consists of 267.521 ISBNs covering the enlisted book production in Greece from 1812 to 2018
- Applying the rules of UNESCO drove us to 252.102 titles and 235.019 new titles and the columns provide information about the year of publication, DDC number, volume, electronic format, cover binding, self-publication mode etc.

Greek book production: number of titles



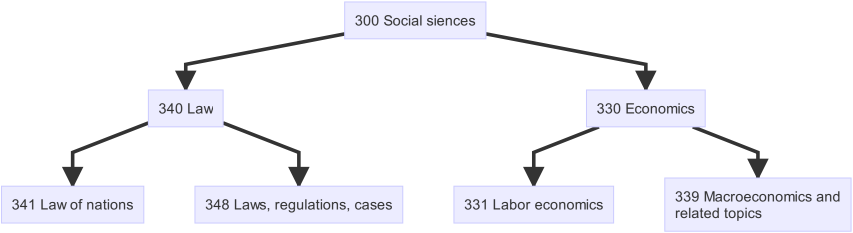
Greek book production as proportion of Literature-Non Literature



DDC

- Dewey Decimal Classification (DDC) is a 3-digit library classification system with hierarchical, top-down structure arranged by discipline
- It is structured around ten main categories covering the entire spectrum of knowledge
- Each main category is furthered structured into ten hierarchical divisions, each clustered again into ten sections in a higher specificity context
- The full classification includes 10 main classes, 100 divisions and 1000 sections

DDC: an example



Diversity indices

We select to decompose Shannon-Wiener entropy and Gini-Simpson index into additive components consisting of the contribution in bibliodiversity of each DDC category:

$$\mathrm{Entropy}_{it} = \sum_{i=0}^{9} \mathrm{p}_{it} \ln \frac{1}{\mathrm{p}_{it}} = -\mathrm{p}_{0t} \ln \mathrm{p}_{0t} - \mathrm{p}_{1t} \ln \mathrm{p}_{1t} - \cdots - \mathrm{p}_{9t} \ln \mathrm{p}_{9t} \quad (1)$$

$$\text{Gini-Simpson}_{it} = \text{1-HHI}_{it} = 1 - \sum_{i=0}^{9} \mathrm{p}_{it}^2 = 1 - \mathrm{p}_{0t}^2 - \mathrm{p}_{1t}^2 - \cdots - \mathrm{p}_{9t}^2 \quad (2)$$

p_{it}= the probability or the investment share of publishers of each main DDC category yearly

Check for pre-trends

$$ln(Y_{it}) = \alpha_i + \beta_1 \times t + \beta_2 \times t \times \text{Treatment}_i + \epsilon_{it} \tag{3}$$

- Time window: 1997-2014.
- α_i : time invariant effects across DDC main categories
- Y_{it} : the dependent variable of number of new titles or the summands of Entropy or HHI
- We examine only *new titles* and for each regression we use Literature (control) with another category (Treatment)
- t :trend variable

Check for pre-trends with Dependent v. ln(# new titles)

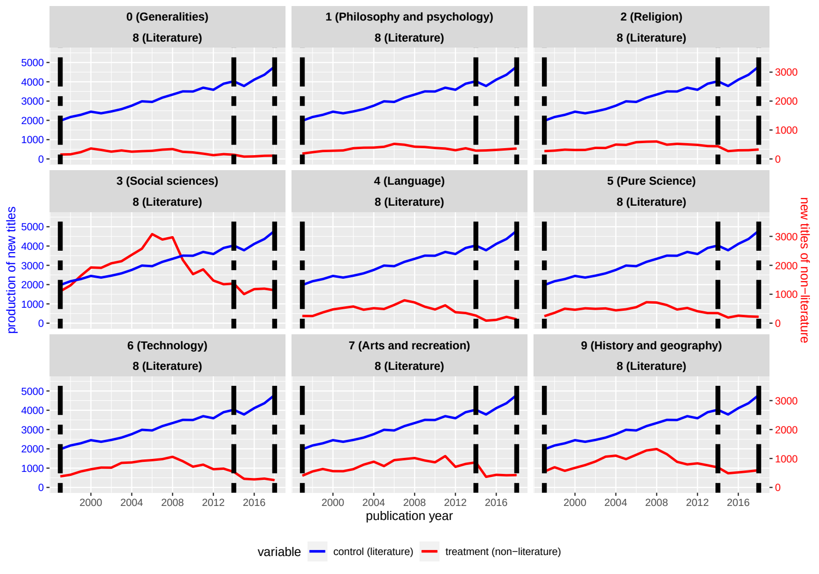
	DDC								
	0 & 8	1 & 8	2 & 8	3 & 8	4 & 8	5 & 8	6 & 8	7 & 8	9 & 8
HC1 robust s.e.									
Treatment x t	-0.058***	-0.017	-0.004	-0.036**	-0.028	-0.031*	-0.020	-0.003	-0.023*
s.e.	(0.017)	(0.012)	(0.008)	(0.016)	(0.020)	(0.016)	(0.014)	(0.009)	(0.012)

HC2 robust s.e.									
Treatment x t	-0.058***	-0.017	-0.004	-0.036**	-0.028	-0.031*	-0.020	-0.003	-0.023*
s.e.	(0.018)	(0.013)	(0.008)	(0.016)	(0.021)	(0.016)	(0.015)	(0.010)	(0.013)

HC3 robust s.e.									
Treatment x t	-0.058***	-0.017	-0.004	-0.036*	-0.028	-0.031*	-0.020	-0.003	-0.023
s.e.	(0.020)	(0.014)	(0.009)	(0.018)	(0.023)	(0.018)	(0.017)	(0.011)	(0.014)

Note:
'*'=0.1,'**' = .05, '***' = .01

number of new titles per DDC category

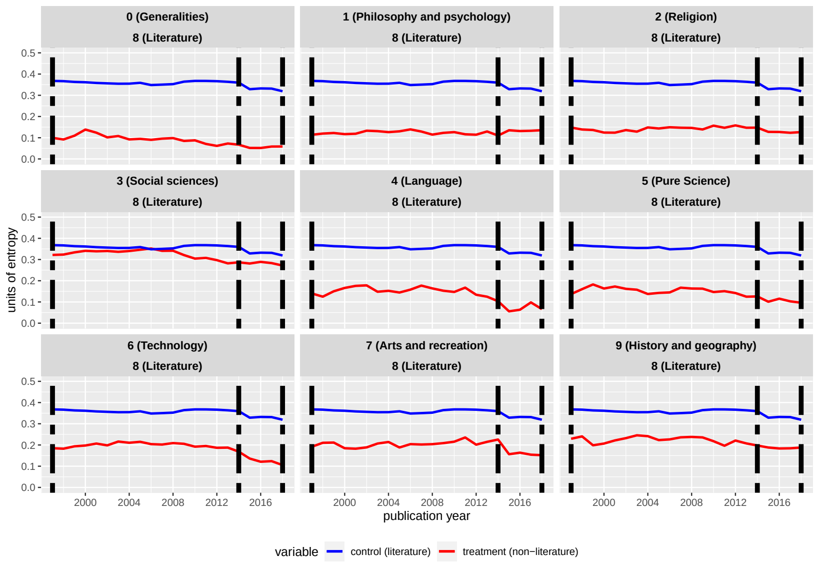


Check for pre-trends with Dependent v. ln(summands of Entropy)

	DDC								
	0 & 8	1 & 8	2 & 8	3 & 8	4 & 8	5 & 8	6 & 8	7 & 8	9 & 8
HC1 robust s.e.									
Treatment x t	-0.031***	-0.001	0.008**	-0.008***	-0.009	-0.010**	-0.003	0.007**	-0.004
s.e.	(0.007)	(0.003)	(0.003)	(0.003)	(0.008)	(0.005)	(0.004)	(0.003)	(0.003)
HC2 robust s.e.									
Treatment x t	-0.031***	-0.001	0.008**	-0.008***	-0.009	-0.010*	-0.003	0.007**	-0.004
s.e.	(0.007)	(0.003)	(0.003)	(0.003)	(0.008)	(0.005)	(0.004)	(0.003)	(0.004)
HC3 robust s.e.									
Treatment x t	-0.031***	-0.001	0.008**	-0.008**	-0.009	-0.010*	-0.003	0.007**	-0.004
s.e.	(0.008)	(0.004)	(0.003)	(0.003)	(0.009)	(0.006)	(0.004)	(0.003)	(0.004)

Note:
'*'=0.1,'**' = .05, '***' = .01

Entropy per DDC category figures



Check for pre-trends with Dependent v. ln(summands of HHI)

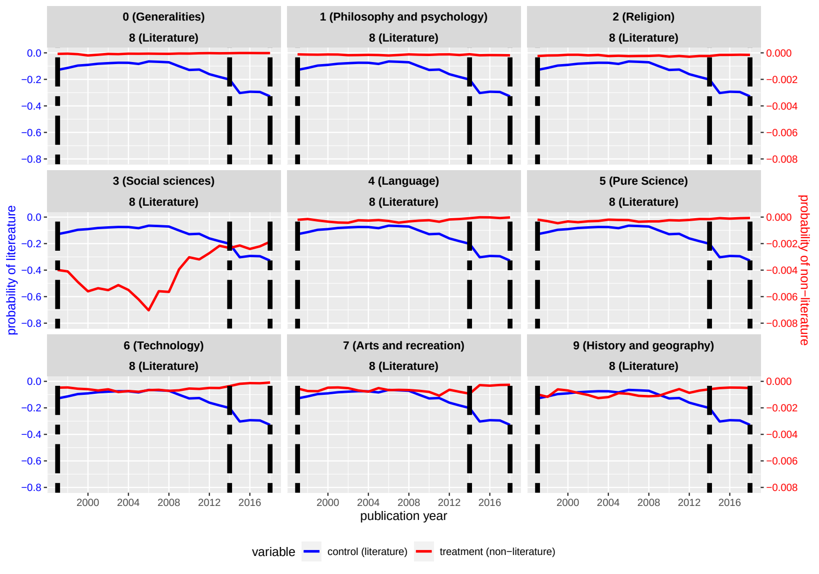
	DDC								
	0 & 8	1 & 8	2 & 8	3 & 8	4 & 8	5 & 8	6 & 8	7 & 8	9 & 8
HC1 robust s.e.									
Treatment x t	-0.115***	-0.034*	-0.008	-0.072***	-0.056*	-0.062***	-0.039*	-0.006	-0.046**
s.e.	(0.025)	(0.018)	(0.018)	(0.021)	(0.029)	(0.022)	(0.020)	(0.018)	(0.020)

HC2 robust s.e.									
Treatment x t	-0.115***	-0.034*	-0.008	-0.072***	-0.056*	-0.062**	-0.039*	-0.006	-0.046**
s.e.	(0.026)	(0.019)	(0.019)	(0.022)	(0.030)	(0.023)	(0.021)	(0.019)	(0.020)

HC3 robust s.e.									
Treatment x t	-0.115***	-0.034	-0.008	-0.072***	-0.056	-0.062**	-0.039*	-0.006	-0.046**
s.e.	(0.029)	(0.021)	(0.021)	(0.024)	(0.033)	(0.025)	(0.023)	(0.021)	(0.022)

Note:
'*'=0.1,'**' = .05, '***' = .01

Figures of -HHI summands



Diff in diffs

The two-way fixed effects model

$$ln(Y_{it}) = \alpha_i + \lambda_t + \beta \times \text{Post}_t \times \text{Treatment}_i + \epsilon_{it} \tag{4}$$

- Time window: 1997-2018.
- α_i : time invariant effects across DDC main categories
- λ_t : time effects
- Y_{it} : the dependent variable of number of new titles or the summands of Entropy or HHI
- We examine only *new titles* and for each regression we use Literature (control) with another category (Treatment) and also the categories that survived the pre-trends test combined

Diff in diffs results for the two-category models with Dependent v. ln(# new titles)

	DDC						
	1 & 8	2 & 8	4 & 8	5 & 8	6 & 8	7 & 8	9 & 8
HC1 robust s.e.							
Post × Treatment	-0.473***	-0.660***	-1.528***	-1.044***	-1.190***	-0.829***	-0.825***
s.e.	(0.053)	(0.091)	(0.199)	(0.121)	(0.155)	(0.157)	(0.082)
HC2 robust s.e.							
Post × Treatment	-0.473***	-0.660***	-1.528***	-1.044***	-1.190***	-0.829***	-0.825***
s.e.	(0.053)	(0.095)	(0.210)	(0.126)	(0.164)	(0.166)	(0.084)
HC3 robust s.e.							
Post × Treatment	-0.473***	-0.660***	-1.528***	-1.044***	-1.190***	-0.829***	-0.825***
s.e.	(0.077)	(0.149)	(0.329)	(0.195)	(0.257)	(0.262)	(0.128)

Note:
'*'=0.1,'**' = .05, '***' = .01

Diff in diffs results for the two-category models with Dependent v. ln(summands of Entropy)

	DDC				
	1 & 8	4 & 8	5 & 8	6 & 8	9 & 8
HC1 robust s.e.					
Post × Treatment	0.116*	-0.634***	-0.277***	-0.355***	-0.099***
s.e.	(0.058)	(0.108)	(0.039)	(0.058)	(0.023)
HC2 robust s.e.					
Post × Treatment	0.116*	-0.634***	-0.277***	-0.355***	-0.099***
s.e.	(0.061)	(0.115)	(0.041)	(0.062)	(0.023)

HC3 robust s.e.					
Post × Treatment	0.116	-0.634***	-0.277***	-0.355***	-0.099***
s.e.	(0.096)	(0.181)	(0.062)	(0.097)	(0.035)

Note:
'*'=0.1,'**' = .05, '***' = .01

Diff in diffs results for the two-category models with Dependent v. ln(summands of HHI)

	DDC				
	1 & 8	2 & 8	4 & 8	6 & 8	7 & 8
HC1 robust s.e.					
Post x Treatment	-0.947***	-3.057***	-0.277***	-2.380***	-0.099***
s.e.	(0.106)	(0.398)	(0.039)	(0.311)	(0.023)
HC2 robust s.e.					
Post x Treatment	-0.947***	-3.057***	-0.277***	-2.380***	-0.099***
s.e.	(0.105)	(0.420)	(0.041)	(0.328)	(0.023)
HC3 robust s.e.					
Post x Treatment	-0.947***	-3.057***	-0.277***	-2.380***	-0.099***
s.e.	(0.154)	(0.658)	(0.062)	(0.514)	(0.035)

Note:
'*'=0.1,'**' = .05, '***' = .01

Diff in diffs results for the combined categories

	Different dependent variables		
	ln(#titles)	ln(Entropy)	ln(HHI)
HC1 cluster-robust s.e.			
Post × Treatment	-0.936***	-0.250*	-1.872***
s.e.	(0.142)	(0.133)	(0.401)

bootstrapping webb cluster-robust s.e.			
Post × Treatment	-0.936***	-0.250**	-1.872***
s.e.	(0.121)	(0.113)	(0.325)

bootstrapping wild-mammen cluster-robust s.e.			
Post × Treatment	-0.936***	-0.250**	-1.872***
s.e.	(0.119)	(0.109)	(0.318)

Note:
'*'=0.1,'**' = .05, '***' = .01

Portions of self publishing and traditional publishing

s_p	1997	1998	1999	2000	2001	2002	2003	2004	2005
self-publishing	0.0395071	0.0382768	0.0303441	0.0295058	0.0311289	0.0395871	0.0352083	0.0423821	0.0438147
traditional publishing	0.9604929	0.9617232	0.9696559	0.9704942	0.9688711	0.9604129	0.9647917	0.9576179	0.9561853

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
0.046073	0.0445698	0.0472649	0.0510797	0.0297955	0.0763909	0.0821029	0.0773601	0.070903	0.0218372
0.953927	0.9554302	0.9527351	0.9489203	0.9702045	0.9236091	0.9178971	0.9226399	0.929097	0.9781628

2016	2017	2018
0.0213298	0.0214063	0.0222621
0.9786702	0.9785937	0.9777379

Check for pre-trends for the number of new titles (logarithm) of traditional publishers

	DDC								
	0 & 8	1 & 8	2 & 8	3 & 8	4 & 8	5 & 8	6 & 8	7 & 8	9 & 8
HC1 robust s.e.									
Treatment × t	-0.060***	-0.017	-0.007	-0.037**	-0.027	-0.033*	-0.020	-0.002	-0.025*
s.e.	(0.018)	(0.013)	(0.008)	(0.016)	(0.021)	(0.017)	(0.015)	(0.009)	(0.013)
HC2 robust s.e.									
Treatment × t	-0.060***	-0.017	-0.007	-0.037**	-0.027	-0.033*	-0.020	-0.002	-0.025*
s.e.	(0.018)	(0.014)	(0.008)	(0.017)	(0.022)	(0.018)	(0.016)	(0.010)	(0.013)
HC3 robust s.e.									
Treatment × t	-0.060***	-0.017	-0.007	-0.037*	-0.027	-0.033	-0.020	-0.002	-0.025
s.e.	(0.020)	(0.015)	(0.009)	(0.018)	(0.024)	(0.020)	(0.018)	(0.011)	(0.015)

Note:
'*'=0.1,'**' = .05, '***' = .01

Decomposition of entropy index

Applying decomposition:

$$\begin{aligned} H_t(AB) &= -\sum_{i=1}^{a} p_{i,t} \sum_{j=1}^{b_i} p_{ij,t} (\ln p_{i,t} + \ln p_{ij,t}) \\ &= -\sum_{i=1}^{a} p_{i,t} \ln p_{i,t} - \sum_{i=1}^{a} p_{i,t} \sum_{j=1}^{b_i} p_{ij,t} \ln p_{ij,t} \end{aligned} \tag{5}$$

$$= H_t(A) + H_{A,t}(B)$$

- We choose the second term as a dependent variable since it captures the diversity effects given publishing mode
- HHI is not decompoasable in a direct way as Entropy

Check for pre-trends with Dependent v. ln(summands of conditional Entropy of traditional publishers)

	DDC								
	0 & 8	1 & 8	2 & 8	3 & 8	4 & 8	5 & 8	6 & 8	7 & 8	9 & 8
HC1 robust s.e.									
Treatment x t	-0.032***	-0.001	0.006*	-0.008***	-0.007	-0.011*	-0.003	0.009***	-0.005
s.e.	(0.007)	(0.003)	(0.003)	(0.003)	(0.008)	(0.006)	(0.004)	(0.003)	(0.004)
HC2 robust s.e.									
Treatment x t	-0.032***	-0.001	0.006*	-0.008***	-0.007	-0.011*	-0.003	0.009***	-0.005
s.e.	(0.007)	(0.003)	(0.003)	(0.003)	(0.009)	(0.006)	(0.004)	(0.003)	(0.004)
HC3 robust s.e.									
Treatment x t	-0.032***	-0.001	0.006*	-0.008***	-0.007	-0.011	-0.003	0.009***	-0.005
s.e.	(0.008)	(0.004)	(0.004)	(0.003)	(0.010)	(0.007)	(0.005)	(0.003)	(0.004)

Note:
'*'=0.1,'**' = .05, '***' = .01

Diff in diffs results for the two-category models with Dependent v. ln(# new titles) for traditional publishers

	DDC						
	1 & 8	2 & 8	4 & 8	5 & 8	6 & 8	7 & 8	9 & 8
HC1 robust s.e.							
Post x Treatment	-0.494***	-0.639***	-1.577***	-1.071***	-1.207***	-0.840***	-0.845***
s.e.	(0.054)	(0.087)	(0.203)	(0.115)	(0.156)	(0.161)	(0.079)
HC2 robust s.e.							
Post x Treatment	-0.494***	-0.639***	-1.577***	-1.071***	-1.207***	-0.840***	-0.845***
s.e.	(0.054)	(0.091)	(0.214)	(0.119)	(0.164)	(0.170)	(0.080)
HC3 robust s.e.							
Post x Treatment	-0.494***	-0.639***	-1.577***	-1.071***	-1.207***	-0.840***	-0.845***
s.e.	(0.079)	(0.143)	(0.336)	(0.184)	(0.257)	(0.269)	(0.121)

Note:
'*'=0.1,'**' = .05, '***' = .01

Diff in diffs results for the two-category models with Dependent v. ln(summands of conditional Entropy of traditional publishers)

	DDC					
	1 & 8	2 & 8	4 & 8	5 & 8	6 & 8	9 & 8
HC1 robust s.e.						
Post × Treatment	0.109*	0.010	-0.659***	-0.288***	-0.359***	-0.105***
s.e.	(0.058)	(0.023)	(0.111)	(0.037)	(0.060)	(0.024)

HC2 robust s.e.						
Post × Treatment	0.109*	0.010	-0.659***	-0.288***	-0.359***	-0.105***
s.e.	(0.061)	(0.023)	(0.117)	(0.037)	(0.064)	(0.025)

HC3 robust s.e.						
Post × Treatment	0.109	0.010	-0.659***	-0.288***	-0.359***	-0.105**
s.e.	(0.096)	(0.035)	(0.184)	(0.057)	(0.100)	(0.037)

Note:
'*'=0.1,'**' = .05, '***' = .01

Check for pre-trends for self-publishers ln(# new tiles) and ln(summands of conditional Entropy)

	Dependent variable	
	ln(# titles)	ln(H(A/B))
HC1 cluster-robust s.e.		
Treatment x t	-0.007	0.000
s.e.	(0.008)	(0.006)

bootstrapping webb cluster-robust s.e..		
Treatment x t	-0.007	0.000
s.e.	(0.008)	(0.005)

bootstrapping wild-mammen cluster-robust s.e.		
Treatment x t	-0.007	0.000
s.e.	(0.007)	(0.006)

Note:
'*'=0.1,'**' = .05, '***' = .01

Diff in diffs for self-publishers (ln# new tiles) and ln(summands of conditional Entropy)

	Dependent variable	
	ln(# titles)	ln(H(A/B))
HC1 cluster-robust s.e.		
Post x Treatment	-0.196***	-0.015
s.e.	(0.060)	(0.037)

bootstrapping webb cluster-robust s.e..		
Post x Treatment	-0.196***	-0.015
s.e.	(0.053)	(0.032)

bootstrapping wild-mammen cluster-robust s.e.		
Post x Treatment	-0.196***	-0.015
s.e.	(0.053)	(0.033)

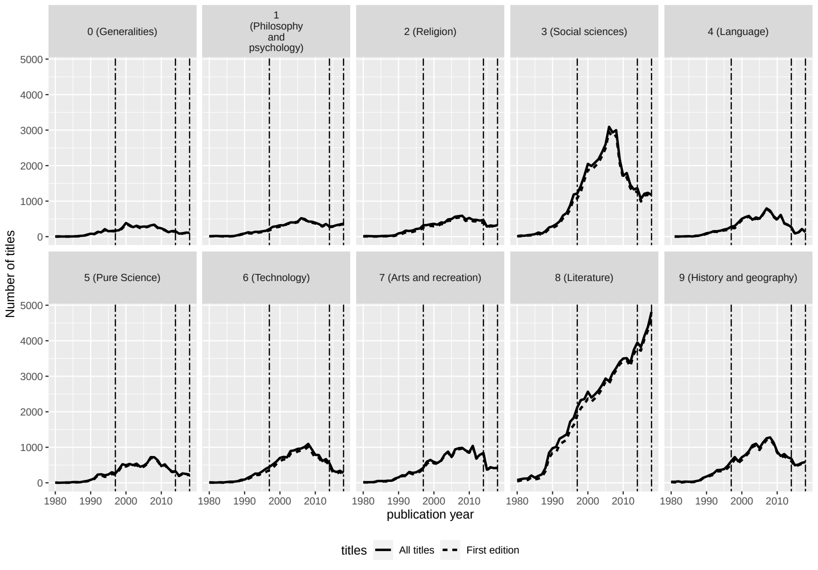
Note:

'*'=0.1,'**' = .05, '***' = .01

Findings

- Group 0 (Generalities) and 3 (Social sciences) of DDC do to not move with group 8 (Literature) in the period prior to the amendment (1997-2013) regardless of the classification or choice of the dependent
- The partial liberalisation of the Greek book market (2014-2018) had a negative effect on the diversity in terms of number of books and indices
- This outcome holds when we explore the effect either with the classification of self-publishers or not
- Further analysis to induce the impact of the law on diversity in the book investment conducted by big and small publishers

Appendix-1.Traditional publishing figure



Appendix:2.Self-Publishing figure