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SUPPLY-SIDE MODEL OF ACADEMIC PUBLISHING IN CROATIA (2012–2018)

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Abstract. *The paper examines and presents the scale and structure of recent (2012–2018) academic publishing in Croatia, with a focus on academic books and journals, the participation of institutions and publishers, scientific fields and disciplines, and invested financial means. As Croatian academic production to a large extent depends on subsidies, the paper is based on the analyses of data from seven years of subventions, which the Croatian Ministry of Sciences and Education allocates to national academic publishers, regardless if they are academic institutions or privately owned publishers. Conducted analyses provide detailed insight into the model of supply-side academic publishing and into national academic publishing in general. The topics – academic publishing and system of subsidies – have rarely been addressed in recent research. Thus, this paper offers new insights for researchers (e.g. providing knowledge about the scale and structure of academic publishing), provides evaluation possibilities for policymakers (e.g. to design the tools for monitoring and improving the system of public subsidies), and provide comparable perspective for national academic publishing in the context of European academic publishing setting.*

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Keywords: *academic publishing, supply-side publishing, book publishing, journal publishing, publishing chain, Croatia.*

Išteklių tiekimo modelis Kroatijos akademinėje leidyboje (2012–2018)

Santrauka. *Straipsnyje pristatomi ir aptariami pastarųjų metų (2012–2018)*

Kroatijos akademinės leidybos mastai ir struktūra, susitelkiant į akademines knygas ir žurnalus, į institucijų ir leidėjų įsitraukimą, reikšmingiausias mokslines sritis bei disciplinas ir investuotas lėšas. Kadangi Kroatijos akademinė produkcija daugiausia kliaujasi valstybinėmis subsidijomis, straipsnyje remiamasi duomenų tyrimu, aprėpiančiu septynerių metų laikotarpį, per kurį Kroatijos mokslo ir švietimo ministerija dalijo dotacijas šalies akademiniams leidėjams nepriklausomai nuo to, ar jie yra švietimo institucijos, ar privačios įmonės. Atlikti tyrimai leidžia giliau suvokti taikomą akademinės leidybos išteklių tiekimo modelį ir nacionalinius akademinės leidybos ypatumus. Akademinės leidybos ir subsidijų sistemų temos yra mažai tirtos pastaruosiu metu. Straipsnyje pateikiamos išvados bus naudingos mokslininkams, siekiantiems sukurti viešųjų subsidijų sistemos stebėsenos ir tobulinimo įrankius, ir suteiks galimybę palyginti nacionalinę akademinę leidybą platesniame Europos akademinės leidybos kontekste.

Reikšminiai žodžiai: *akademine leidyba, išteklių tiekimo modelis leidyboje, knygų leidyba, žurnalų leidyba, leidybos grandinė, Kroatija.*

INTRODUCTION¹

The Croatian academic publishing ecosystem extensively depends on subsidies which the Ministry of Sciences and Education every year, according to results of public call submissions and according to designated criteria, grants both to privately owned publishing houses and to educational and scientific institutions that publish academic monographs and/or journals. Reports on granted subsidies for both journals and books are available in clearly structured documents,² providing data about publisher, author or editor, publication title, and granted finances, meaning that they offer possibility to analyze and reconstruct the scope of national academic book and journal publishing, partic-

- 1 Preliminary and abridged version of this research has been presented at *The 6th Conference on Scholarly Publishing in the Context of Open Science* (PUBMET2019) held at the University of Zadar, September 18–20, 2019.
- 2 Ministry of Science and Education [accessed 17 December 2019]. Accessed through Internet: <<https://mzo.gov.hr/rezultati-pretrazivanja/49?tag=146>>.

ipation of institutions and publishers, included scientific fields and disciplines, quality and visibility of output, and invested financial means. In other words, such analyses contributes to the understanding of the national academic publishing landscape in general.

Calls for subventions in book publishing are usually announced in April, with a deadline in May, and the results published in September. Grants are allocated to publishers usually until the end of the year. Subsidies are granted to scientific books and university textbooks. The category of scientific books includes monographs written by one or more authors, edited volumes of academic papers, references (dictionaries, lexicons, grammar books etc.), edited and commented reprints of editions with special importance on the national language, culture or history, and at the end books for the promotion of science. In all cases, manuscripts should be submitted together with two reviews. An independent committee appointed by the Ministry evaluates all applications and decides about grant distribution.³

Regarding journals, calls are mostly published in March, with a deadline in May. The results are usually published in August. Subsidies are granted to scientific journals and in much lesser extent to journals for the promotion of science. A set of six basic criteria is applied for the evaluation of journal quality and consequently for financial support: 1) it should be published on a regular basis, 2) consist of peer-reviewed content, 3) be indexed in at least one journal database such as CC, Medline, WOS, or Scopus, 4) be available at Hrčak (portal of Croatian scientific journals),⁴ 5) at least 15% of papers should be authored or co-authored by an author with a permanent address in Croatia, and finally, 6) the journal should be edited according to the instructions provided by the Ministry.⁵ Again, an independent committee appointed by the Ministry evaluates applications and distributes grants.

3 Ministry of Science and Education [accessed 10 January 2019]. Accessed through Internet: <<https://mzo.gov.hr/istaknute-teme/znanost/znanstvena-infrastruktura/znanstvenozdavacka-djelatnost/146>>.

4 Hrčak (meaning hamster), a central portal of Croatian scholarly journals. With the requirement to include journal, if it opts for subsidy, in Hrčak, evaluation committee highly raised visibility of Croatian academic production. This has been one of the most positive outcomes of the system of subsidies considered here [accessed 10 January 2019]. Accessed through Internet: <<https://hrcak.srce.hr/>>.

5 A set of documents such as instructions for editing and designing the journal, standard for editors, their rights and obligations, instructions for ethical procedures and issues etc. are available at the web page of the Ministry [accessed 10 January 2019]. Accessed through Internet: <<https://mzo.gov.hr/istaknute-teme/znanost/znanstvena-infrastruktura/znanstvenozdavacka-djelatnost/146>>.

The described model, in which costs of publishing are partly or completely covered by public institution – in this case the Croatian Ministry of Science and Education – and publishers do not take any financial risk (or at least minimize the risk), is defined as the supply-side model of publishing.

The supply-side model is conceived as an opposition to the model of demand – where the publisher invests in the publication at their own risk. In a supply-side model, the publication is pre-financed and thus, factually, is in no relation towards production quality, sales, and marketing. The costs could be covered by the authors, their sponsors, or public institutions such as agencies, universities, or foundations – “and the resulting product may be given away for free or charged for, but usually at a low price.”⁶ Giles Clark and Angus Phillips provide few examples of the supply-side model. E.g. “ministries of education pay publishers to produce textbooks for schools: the publishers earn their profit from the service provided. Universities subsidize the publication of scholarly works through their own presses.”⁷ Michael Jubb’s research also shows that “many US university presses are operating at a loss, and depend in significant part on subsidies from their universities rather than contributing revenues to them.”⁸ With the growth of digital technologies, more and more authors pay for publishing through different self-publishing models, and in academic publishing either authors or different institutions are willing to pay for free access to scholarly works under, e.g., the gold open access model. It is worthy to notice that most of the current supply-side publishing models where governmental bodies, foundations, or universities pay the costs are directed towards developing and publishing open access content,⁹ which is not the case with the book subsidizing model considered in this paper, while the model developed for journal publishing resulted in almost 100% of the content available in open access.

With no doubt, such a form of the supply-side publishing model should be understood in broader terms of public subsidies aimed at the promotion of national culture and science. In the words of Elizabeth Le Roux, in every society “books are seen as having a special status that distinguishes them from other kinds of products.”¹⁰ Consequently, at both national and international levels,

6 CLARK, Giles; PHILLIPS, Angus. *Inside Book Publishing*, 5th edition. London, New York: Routledge, 2014, p. 3.

7 Ibid, p. 4.

8 JUBB, Michael. *Academic Books and their Future: A Report to the AHRC and the British Library*. London, 2017, p. 46.

9 Ibid, p. 79–81.

10 LE ROUX, Elizabeth. “Publishing and Society”. In *The Oxford Handbook of Publishing*, ed. Michael Bhaskar and Angus Phillips. Oxford: Oxford University Press, 2019, p. 86.

support to publishers and their operations is usual and generally welcomed. The best example for the second is UNESCO's campaign after World War 2, seen as a contribution to peace-building and the promotion of mutual understanding among nations. UNESCO considered books as essential aid to social progress, enabling societies to develop faster, especially economically, and thus to elevate people's education and well-being. UNESCO argued strongly that "[a] sound publishing industry is essential to national development' on the basis that cultural development would lead to other forms of development (Barker and Escarpit 1973: 138)."¹¹ At national levels support is regular – examples come from France and Germany,¹² but also from the UK, USA, Netherlands, Japan, China or Australia, where, e.g., the push towards Open Access is helped by policy.¹³ A shift towards Open Access is also visible from the policies of the Croatian Ministry of Science and Education.

The paper consists of two parts. The first gives the analyses of granted subsidies, providing a detailed picture of the Croatian academic publishing landscape. Collected and analyzed data are telling about the total allocated financial means (which are growing year after year), rise of the output, distinctions in subventions to academic books and academic journals (which are roughly equal, in contrast to the general perception of rise of the journals on cost of the academic monographs),¹⁴ differences in subventions to publications from different academic fields and disciplines (paradoxically, in regard to STEM promotion policies, the highest subsidies go to humanities and social sciences), about publishers (public institutions and private enterprises) involved in the academic field, including clear insight into the publishing programs of the most prolific players in the field etc. Additionally, subsidized academic journals are analyzed in relation to access policies, substrate (electronic or printed), and presence in relevant databases. The results show continuous growth both in the amount of subsidies and in published titles. E.g., in 2016, subsidies for books doubled in relation to 2012. For books, publications from humanities and social sciences received the biggest support, followed by technical sciences, biomedicine, natural sciences, biotechnical sciences and arts. For journals, no such differences are noticed. Most of the subsidies for books are granted to private publishers, while

11 Ibid, p. 90.

12 Ibid, p. 91.

13 RAYNER, Samantha J. "Academic publishing". In: *The Oxford Handbook of Publishing*, ed. Michael Bhaskar and Angus Phillips. Oxford: Oxford University Press, 2019, p. 262.

14 Compare THOMPSON, John B. *Books in the Digital Age, The Transformation of Academic and Higher Education Publishing in Britain and the United States*. Cambridge: Polity Press, 2005.

institutions have a prelate in journal publishing. Two biggest players – publishers that received highest financial support – are the Medicinska naklada and the Croatian Academy of Arts and Sciences. Geographically, almost all of the Croatian academic publishing is concentrated in Zagreb. The Ministry preferred to subsidize journals indexed in relevant databases and published both in electronic and print format.

The second part of the paper provides a discussion and set of resulting conclusions based on the conducted analyses with accents on trends, shortages, and challenges. It also compares the efficacy of the analyzed model of subsidies with a distinctive academic book publishing chain, dependent on rigorous timetable, deadlines, quality assurance, sales, and similar.

The topics addressed by this research – academic publishing and the system of subsidies – have rarely been subjects of research in Croatia.¹⁵ Thus, this research offers new insights to researchers (e.g. providing knowledge about the scale and structure of academic publishing), gives evaluation possibilities for policymakers (e.g. to design tools for monitoring and improving the system of public subsidies), and provide a comparable perspective for national academic publishing in the context of the European academic publishing setting.

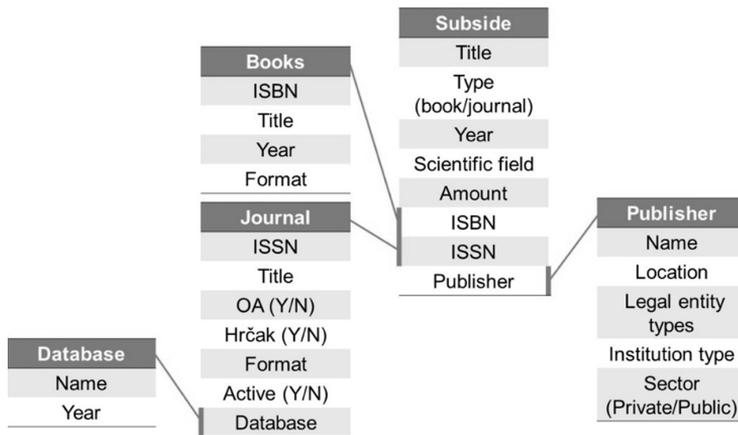
RESEARCH METHODOLOGY

As aforementioned, the subject of the research is the Croatian supply-side model of academic publishing. Model results are based on the analyses of Croatian Ministry of Science and Education subsidies, which are granted yearly to Croatian publishers for academic books and journals separately. Journals subsidies are additionally divided into scientific and popular science categories. The research was designed to identify the trends and patterns in the subsidies model during seven years, from 2012 to 2018. The num-

15 Closest to this research is presentation *Croatian scientific journals: context, impact and survival* delivered by Siniša Zrinščak and Marija Tomečak at PUBMET conference in Zadar in 2016 [accessed 10 January 2019]. Accessed through Internet: <https://www.researchgate.net/publication/325094399_Croatian_scientific_journals_context_impact_and_survival>. Two more papers addressed the topic of subsidies: MACAN, Bojan; STOJANOVSKI Jadranka. Analiza novčane potpore Ministarstva znanosti, obrazovanja i športa hrvatskim znanstvenim časopisima. *Kemija u industriji*, 2008, vol. 57, p. 115–122, and VELAGIĆ, Zoran; BUNJEVAC, Blanka; JOŠAVAC, Martina. Struktura financijskih potpora nakladničkoj djelatnosti baštinskih ustanova. In HASENAY, Damir; KRTALIĆ, Maja (eds.). *15. seminar Arhivi, knjižnice, muzeji: mogućnosti suradnje u okruženju globalne informacijske infrastrukture. Zbornik radova*. Zagreb: Hrvatsko knjižničarsko društvo, 2012, p. 212–228.

ber and amounts of subsidies granted to books and journals were compared, and the most subsidized scientific fields were identified. Subsidized publishers were compared based on their type and sector. Books were compared based on format (e- or p-), and journals based on format, availability in open access, indexing in major databases, and current activity. Additional analysis provides an insight into correlations between the amount of subsidies and journal impact.

The data on granted subsidies are published every year on the Ministry's website¹⁶ in the form of Excel sheets with the information on publication title, author or editor, publisher, scientific field, and the amount granted in Croatian Kuna's (HRK).¹⁷ Since additional information on books, journals, and publishers was needed to perform the required analyses, other data sources were also used. Data on books and journals were collected from the publishers' websites and library catalogues. Data on journal indexing was collected from the Web of Science, Scopus and Medline databases. Public registries for companies, non-profit organizations, and scientific institutions were also used to collect data on publishers.



PICTURE 1. Simplified database structure

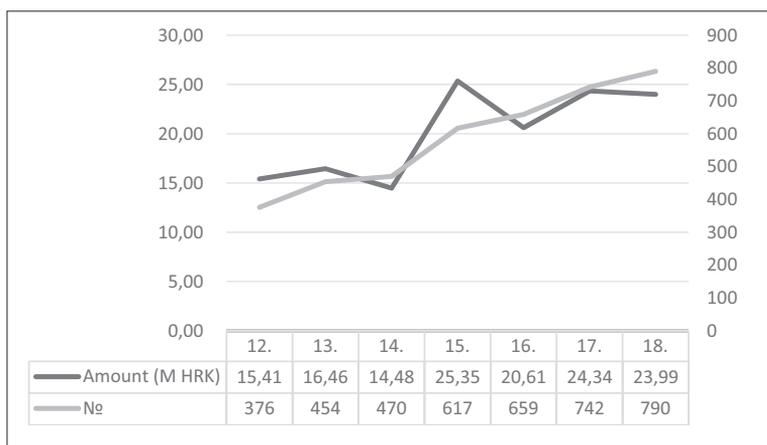
16 Ministry of Science and Education [accessed 6 January 2020]. Accessed through Internet: <<https://mzo.gov.hr/en>>.

17 An average exchange rate between Croatian Kuna and Euro in considered period was 7,522, with minimum in June 2018 (7,378) and maximum in February 2015 (7,725). European Central Bank [accessed 12 January 2020]. Accessed through Internet: <https://www.ecb.europa.eu/stats/policy_and_exchange_rates/euro_reference_exchange_rates/html/eurofxref-graph-hrk.en.html>.

All the gathered data were imported into a specially designed Microsoft Access database, in which all further analyses were performed. Picture 1 gives a simplified structure of the database.

ANALYSES

The analyses revealed that the number of subsidies rose steadily from 2012 to 2018, as shown in Graph 1. It has more than doubled in that time, from 376 subsidies in 2012 to 790 subsidies in 2018. The increase in the total amount of subsidies was not as linear. There was a significant increase in 2015 when more than 25 million HRK was granted, compared to only 14.48 million the year before. That amount stagnated or slightly decreased in the following years. The result of steady rise in seven years on one hand, and decrease in total amount granted on the other, is cut in average subsidy granted to 30,372 HRK in 2018, from 40,971 HRK in 2012 (see Table 1).



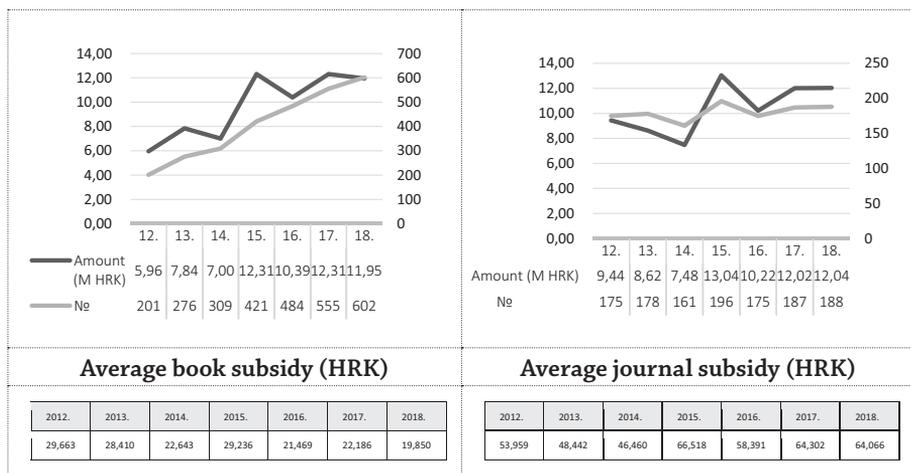
GRAPH 1. Total number and amount of subsidies granted, 2012–2018

TABLE 1. Average subsidy granted 2012–2018

Year	2012.	2013.	2014.	2015.	2016.	2017.	2018.
Average subsidy	40,971	36,264	30,802	41,080	31,274	32,799	30,372

When subsidies for books and journals are divided, clear differences are visible. The number of subsidies for books and journals follows a similar general

trend, with a significant increase in 2015, as seen in Graph 2 and Graph 3. At the same time, it is also evident that the increase in the number of total subsidies can be contributed to the increase in the number of book subsidies. Their number has risen almost three times, from 201 in 2012 to 602 in 2018. At the same time, the number of subsidies granted for journals stayed relatively similar. It varied from 161 in 2014 to 196 in 2015. That trend led to a decrease in the average book subsidy by over 33% in the analyzed period, from 29,663 to 19,850 HRK. The average journal subsidy rose at the same time from 53,959 in 2012 to 64,066 HRK in 2018.



GRAPH 2. Number and amount of book subsidies granted, 2012–2018.

GRAPH 3. Number and amount of journal subsidies granted, 2012–2018.

Since the Ministry's data for 2018 does not include any information on scientific fields, the analyses on subsidies distribution regarding scientific fields could only be conducted on data from 2012 to 2017. Also, since books for the popularization of science are shown separately in the Ministry's data, these fields are also shown separately in Table 2. The cumulative results for the analyzed years show that humanities have been the most subsidized field, with 41.26% of total subsidies granted, followed by social sciences with 20.1%. Books in humanities were granted an even larger share. They received 62.30% of subsidies amount, followed by social sciences, with 16.14%. The subsidies for journals were more evenly distributed between scientific fields. But again, humanities and social science are at the top, followed by technical sciences, bio-

medicine, natural sciences, and bioengineering. Perhaps the most surprising was that there is a growth trend of the share of subsidies granted to humanities and social sciences combined. That share rose to 68% in 2017, compared to 57% in 2012. The trend is shown in Table 3.

TABLE 2. Shares of subsidies by scientific fields, 2012-2017

Scientific field	Share		
	Total	Books	Journals
Humanities	41.26%	62.30%	21.96%
Social sciences	20.10%	16.14%	23.73%
Technical sciences	11.47%	5.34%	17.09%
Biomedicine	10.24%	8.53%	11.81%
Natural sciences	7.24%	4.45%	9.80%
Bioengineering	5.04%	0.96%	8.78%
Natural sciences (popularization)	2.57%	0.00%	4.92%
Art	0.87%	1.82%	0.00%
Technical sciences (popularization)	0.44%	0.00%	0.84%
Humanities (popularization)	0.31%	0.00%	0.59%
Interdisciplinary	0.22%	0.47%	0.00%
Social sciences (popularization)	0.13%	0.00%	0.24%
Biomedicine (popularization)	0.11%	0.00%	0.22%

TABLE 3. Shares of subsidies granted to Humanities and social sciences 2012-2017

Year	2012.	2013.	2014.	2015.	2016.	2017.
Share	57%	57%	59%	63%	62%	68%

In terms of legal entities, eight different types of publishers are identified. All the legal entities are listed in Table 4, but the most prominent were institutions, privately owned companies, and associations. Institutions were granted 43.62% of total subsidies in the analyzed period, followed by companies with 29.23%, and associations with 25.68%. There are significant differences between books and journals. Publishers registered as private companies received 54.29% of book subsidies, but only 5.92% of journal subsidies. Also, all subsidized journal publishers are registered as institutions, companies, or associations. Not a single journal publisher was registered as any other type of legal entity.

TABLE 4. Shares of subsidies by publisher's legal entities, 2012–2018

Legal entity	Share		
	Total	Books	Journals
Institutions	43.62%	29.38%	56.87%
Companies	29.23%	54.29%	5.92%
Associations	25.68%	13.29%	37.21%
Crafts	1.33%	2.76%	0.00%
Art organizations	0.07%	0.14%	0.00%
Local government	0.03%	0.07%	0.00%
Cooperative	0.02%	0.04%	0.00%
Religious organization	0.01%	0.03%	0.00%

Regarding sectors, the results showed that the private sector received 54.96% of total subsidies, while the rest was granted to public institutions. Again, there are differences between book and journal publishers. The share granted to privately owned book publishers rises to 67.87%, while they received 42.96% of journal subsidies. Shares by publishing sectors are visible in Table 5.

TABLE 5. Shares of subsidies by sectors, 2012–2018

Legal entity	Share		
	Total	Books	Journals
Public	45.04%	31.13%	57.04%
Private	54.96%	64.87%	42.96%

When the results of two previous analyses are combined, differences between shares of subsidies granted to for-profit and non-profit publishers can be analyzed. For this analysis, for-profit publishers were defined as privately owned legal entities registered as companies, crafts, or cooperatives. Those types of publishers received 29.04% of total subsidies in the analyzed period, as visible in Table 6. The difference between book and journal publishers is also visible in this regard. For-profit book publishers received 54.23% of subsidies, while for-profit journal publishers received only 5.60%. These results indicate that for-profit publishers play a significant role in Croatian academic book publishing but are almost insignificant in the academic journal publishing sector.

A publisher that received the highest amount of total subsidies was *Medicinska naklada*, a publishing company specializing in medicine – it received over 4.5 million HRK from 2012 to 2018. It is followed by *The Croatian Academy of Sciences and Arts* and the *Croatian Institute of History*. *Medicinska naklada* is

also the most subsidized book publisher, while the *Faculty of Law in Zagreb* is the most subsidized journal publisher. Table 7 (see page 72) gives a list of the top ten subsidized publishers. The lack of a for-profit journal publisher is also visible in these results, since they are not represented at all.

TABLE 6. Shares of subsidies profit/non-profit 2012–2018

Legal entity	Share		
	Total	Books	Journals
For-profit	29.04%	54.23%	5.60%
Non-profit	70.96%	45.77%	94.40%

The results also showed that most of the subsidies were granted to publishers registered in Zagreb, the Croatian capital; 242 publishers with headquarters in Zagreb (73.11%) are granted as much as 84.42% of the total amount of subsidies. They are followed by publishers from Croatia's largest centers: Split, Osijek, Rijeka, and Zadar (see Table 8). That results indicate that the Croatian academic publishing market is highly centralized, and that the publishing activity is concentrated in the country's capital.

TABLE 8. Number and amount of subsidies by publisher headquarters, 2012–2018

City	№	№ (%)	Amount (HRK)	Amount (%)
Zagreb	242	73.11%	118,720,029.30	84.42%
Split	12	3.63%	5,165,915.20	3.67%
Osijek	17	5.14%	4,140,525.20	2.94%
Rijeka	16	4.83%	3,360,884.00	2.39%
Zadar	5	1.51%	1,950,290.20	1.39%
Other (32)	39	11.78%	7,294,873.60	5.19%

To determine the format (electronic or print) of subsidized books, a comprehensive search of library catalogs and all publisher's websites was conducted. It was performed in April 2019 and included books subsidized from 2012 to 2017. Books subsidized in 2018 were not included in the search because, according to the Ministry's call for subsidies, all publishers have 12 months to publish books after receiving the subsidy. Although the books could be published and not (yet) added to catalogs or cataloged under different titles/authors than those applied for subsidies, the gathered data can also be considered as an indicator

TABLE 7. Top 10 Croatian academic subsidized publishers, 2012–2018, with number of subsidies and granted amounts

Total			Books			Journals		
Publisher	№	Amount	Publisher	№	Amount	Publisher	№	Amount
Medicinska naklada	139	4,695,954	Medicinska naklada	132	4,023,264	Faculty of Law (Zagreb)	32	2,237,815
Croatian Academy of Sciences and Arts	130	4,646,560	Školska knjiga	100	3,076,506	Croatian Academy of Sciences and Arts	50	2,000,369
Croatian Institute of History	106	3,505,482	Croatian Academy of Sciences and Arts	80	2,646,191	Croatian Society of Chemical Engineers	14	1,934,802
Faculty of Humanities and Social Sciences (Zagreb)	133	3,336,115	Croatian Institute of History	82	2,442,112	Croatian Philosophical Society	18	1,884,978
Školska knjiga	100	3,076,506	Literary Circle Split	71	2,398,775	Faculty of Forestry (Zagreb)	19	1,615,829
ELEMENT	67	2,671,820	Faculty of Humanities and Social Sciences (Zagreb)	103	2,230,845	Croatian Society of Natural Sciences	13	1,526,103
Croatian Philosophical Society	37	2,540,828	Jesenski i Turk	118	2,195,081	Faculty of Economy and Business (Zagreb)	37	1,511,989
Literary Circle Split	76	2,505,621	Hrvatska sveučilišna naklada	102	1,922,275	Faculty of Science (Zagreb)	19	1,508,961
Faculty of Law (Zagreb)	40	2,441,995	Matica Hrvatska	74	1,785,803	Croatian Philosophical Society	38	1,403,243
Jesenski i Turk	125	2,393,818	Ex Libris	65	1,711,518	Faculty of Food Technology and Biotechnology (Zagreb)	7	1,376,454

of the realization of granted subsidies. Data on book formats and number of subsidized projects with no data are given in Table 9. Subsidized books have mostly been published in print format – 2058 of them, or 91.63%. They were granted 91.41% of the total amount for book subsidies. Only 18 books are available in both formats, while 10 e-books have been published, that clearly illustrates the state of development of Croatian e-book market. For a significant number of subsidized books, 160 or 7.12%, no date of publishing was found. Some of those subsidies date from several years ago, meaning that projects are possibly not realized, as visible in Table 10.

TABLE 9. Number and amount of subsidies by book formats, 2012-2018

Format	№	№ (%)	Amount (HRK)	Amount (%)
Print	2058	91.63%	5,019,787.10	91.41%
Both	18	0.80%	316,651.00	0.57%
E-books	10	0.45%	185,460.00	0.33%
Not published	160	7.12%	4,290,420.40	7.69%

TABLE 10. Books not published (April 2019)

Year	№	Amount (HRK)
2017.	68	1,796,913
2016.	32	848,026
2015.	26	634,434
2014.	12	294,893
2013.	13	364,822
2012.	9	351,332

TABLE 11. Number and amount of subsidies by journal format, 2012/2018.

Format	№	№ (%)	Amount (HRK)	Amount (%)
Hybrid	231	92.40%	69,557,634.00	95.45%
Print	11	4.40%	2,168,587.00	2.98%
Electronic	8	3.20%	1,144,272.00	1.57%

The results are very different for journal formats. Most of the journal subsidies were granted to hybrid journals. A total of 231 hybrid journals received 95.45% of the amount of journal subsidies. The rest was divided between 11 print and 8 electronic journals. Print journals received 2.98% and electronic

just 1.57% of the total amount of subsidies, as presented in Table 11. This indicates that Croatian academic journal publishers have almost entirely adopted electronic publishing, but very few have abandoned classical, print editions.

A large share of subsidies was granted to journals in Open Access. A total of 234 journals (93.60%) were granted 95.04% of the total amount of subsidies. Data are shown in Table 12. That is not unexpected since one of the criteria for receiving a subsidy is journal availability in Open Access. Also, as explained above, journals should be available in HRČAK: the central portal of Croatian scholarly journals. A total number of 210 subsidized journals are available in HRČAK, and they received as much as 97.62% of total journal subsidies. Only 11 subsidized journals are not available there. Data on availability in HRČAK are shown in Table 13. Popular science journals are not included in the analysis since HRČAK is intended for archiving only scholarly journals.

TABLE 12. Number and amount of subsidies by Open Access, 2012–2018

Open Access	No	No (%)	Amount (HRK)	Amount (%)
Yes	234	93.60%	69,256,514.00	95.04%
No	16	6.40%	3,613,979.00	4.96%

TABLE 13. Number and amount of subsidies by availability in HRČAK, 2012–2018

HRČAK	No	No (%)	Amount (HRK)	Amount (%)
Yes	210	95.02%	66,341,938.00	97.62%
No	11	4.98%	1,613,955.00	2.38%

An analysis of subsidies granted to journals indexed in databases covered journals that were indexed in the Web of Science, Scopus, or Medline in the year before the subsidy was granted. A total of 787 subsidies were granted to these journals. That counts for 69.22% of the total number of subsidies when the subsidies for popular science journals are excluded. Data are shown in Table 14. The percentage of subsidies given to these journals is 81.95%.

TABLE 14. Number and amount of subsidies granted to journals indexed in Web of Science, Scopus, or Medline, 2012–2018

Indexed in DB	No	No (%)	Amount (HRK)	Amount (%)
Yes	787	69.22%	55,690,970.00	81.95%
No	350	30.78%	12,264,923.00	18.05%

While the indexed journals received, on average, a larger subsidy, another analysis was conducted to determine whether there is a correlation between the total amount of subsidies granted and the journal's impact. The correlation is a measure that can be used in cost/impact analysis.¹⁸ The amount granted to specific journals from 2012 to 2018 was calculated and compared to its bibliometric indicator scores in 2018. Five different indicators were chosen. Journal Impact Factor (JIF),¹⁹ Average Journal Impact Factor Percentile,²⁰ and Category Normalized Citation Impact (CNCI)²¹ are based on the Clarivate Analytics Web of Science database. SCImago Journal Rank (SJR),²² and Source Normalized Impact per Paper (SNIP)²³ are based on Elsevier's Scopus database. The Pearson Correlation was calculated in SPSS, and the results are shown in Table 15. Only for journals indexed in the mentioned databases could the correlation be calculated. The results clearly show that there is no significant correlation between the amount granted to journals and indicators based on the Web of Science database. There is also just a low positive correlation with indicators based on Scopus. At the same time, there are moderate-to-high correlations between the indicators, as visible from Table 16.

The last analysis determines what portion of the subsidized journals are still active. The results showed that 240 journals, out of a total of 250, are still active. Together they received 98.93% of the total amount of subsidies, as shown

- 18 MUQUIT, Jason Yuen Samiul; WHITFIELD, Peter C. Correlation Between Cost of Publication and Journal Impact. Comprehensive Cross-sectional Study of Exclusively Open-Access Surgical Journals. *Journal of Surgical Education*, 2018, vol. 76, p. 107–119.
- 19 All citations to the journal in the current JCR year to items published in the previous two years, divided by the total number of scholarly items published in the journal in the previous two years. Clarivate Analytics [accessed 6 January 2020]. Accessed through Internet: <<https://clarivate.com/>>.
- 20 Average of all Journal Impact Factor Percentiles, ranks in category by Journal Impact Factor transformed into a percentile value. Clarivate Analytics [accessed 6 January 2020]. Accessed through Internet: <<https://clarivate.com/>>.
- 21 Citation impact (citations per paper) normalized for subject, year and document type. Clarivate Analytics [accessed 6 January 2020]. Accessed through Internet: <<https://clarivate.com/>>.
- 22 Weight of citations based on the source they come from, the subject field, quality and reputation of the journal. SJR also normalizes for differences in citation behavior between subject fields. Scopus [accessed 6 January 2020]. Accessed through Internet: <<https://www.scopus.com/>>.
- 23 Measures contextual citation impact by weighting citations based on the total number of citations in a subject field, using Scopus data. Scopus [accessed 6 January 2020]. Accessed through Internet: <<https://www.scopus.com/>>.

in Table 17. Ten journals that are no longer active received just 1.07% of journal subsidies.

TABLE 15. Correlations between total amount granted to journals in 2012-2018 and metrics in 2018

		Total amount	JIF	AVG_JIF_P	CNCI	SJR	SNIP
Total amount granted (2012/2018.)	Pearson Correlation	1	.018	-.172	.098	.390	.343
	N	221	37	37	59	133	133

TABLE 16. Correlations between metrics

		JIF	AVG_JIF_P	CNCI	SJR	SNIP
JIF	Pearson Correlation	1	,754	,742	,788	,667
	N	37	37	37	34	34
AVG_JIF_P	Pearson Correlation	,754	1	,801	,783	,552
	N	37	37	37	34	34
CNCI	Pearson Correlation	,742	,801	1	,720	,681
	N	37	37	59	55	55
SJR	Pearson Correlation	,788	,783	,720	1	,759
	N	34	34	55	133	133
SNIP	Pearson Correlation	,667	,552	,681	,759	1
	N	34	34	55	133	133

TABLE 17. Number and amount of subsidies by current activity, 2012-2018

Active	Nº	Nº (%)	Amount (HRK)	Amount (%)
Yes	787	69.22%	55,690,970.00	81.95%
No	350	30.78%	12,264,923.00	18.05%

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

According to available data, the proportion of publishing projects subsidized by the Ministry of Science and Education in total number of academic books published in Croatia cannot be exactly determined, as no statistics provides such a data. Lobel Machala, head of the bibliographical department in the National and University Library in Zagreb, kindly assisted this research by offering unpublished data about the total book publishing output during the time span covered here (See table 18). The data gives the total number of published books, ratio of first editions and reprints, and total numbers for fiction, school textbooks and everything else, meaning all books except fiction and textbooks. Academic books and university textbooks belong to the last category, but how many of them is there compared to the plentitude of children and adults' non-fiction is impossible to determine.

TABLE 18. Books published in Croatia, 2012-2018

Year	2012.	2013.	2014.	2015.	2016.	2017.	2018.
Total number of published books	7017	6723	7320	6485	6526	6645	6318
First editions	6060	5936	6770	5710	5633	5531	5492
Reprints	957	787	550	774	893	1114	826
Textbooks (primary and secondary school)	828	727	1393	715	573	459	569
Literature (fiction)	2079	2167	2137	2147	2254	2355	2353
Non-fiction and other (all books except fiction and textbooks)	4110	3832	3790	3624	3699	3833	3401

Thus, the expected statement, such as: “out of x academic books published in Croatia y is published with the support of the Ministry of Science and Education” cannot be made in this conclusion. An informed guess – based on the poll conducted among publishers (representing top-ten companies from Table 7) in privately owned companies in the first two weeks of January 2020,

and on the inspection of available publishers catalogues for the same period²⁴ – would be that more than 70% of academic books in Croatia are published *with* the support of the Ministry of Science and Education.²⁵ Thus, the analyses conducted in this paper provide a clear picture not only about the system of subsidies, but about the national academic publishing environment in general.

The analyses identified seven important trends: 1) in total, a continuous increase of projects, and increase in subsidies; 2) an increase in the number of subsidies for books, but a decrease in the granted amount; 3) steadiness in the number of subsidies for journals, but an increase in granted amount; 4) humanities and social sciences are the most subsidized scholarly fields; 5) book publishing is mostly cultivated by privately-owned companies, while journals are coming from public institutions; 6) books are published in print form, while journals come both in print and e-form; and 7) Croatian academic publishing is geographically highly centralized and concentrated in Zagreb. Regarding the last trend, it is suffice to say that publishers with headquarters in the Croatian capital acquired 84.42% of subsidies, followed by those in Split, Osijek, Rijeka, and Zadar – all of them being important university centers.

The first three trends are interconnected and need to be discussed in more detail. Compared to the findings of Siniša Zrinščak and Marija Tomečak, subsidies totals for both journals and books during the period considered in this paper were cut down by approximately 50% compared to the period from 2001 to 2008 (with the exception of 2004), when grants amounted to more than 40 million HRK.²⁶ A steady growth, visible in this research, has started after the period of 2010-2012, when book subsidies dropped to a minimum of circa 5 million HRK per year, and journal subsidies to 8-9 million HRK. From 2013, the amount of subsidies has steadily risen and was almost equal for journals

24 Medicinska naklada, [accessed 10 January 2019]. Accessed through Internet: <<https://www.medicinskanaklada.hr/>>; Školska knjiga, [accessed 10 January 2019]. Accessed through Internet: <<https://shop.skolskaknjiga.hr/znanstvena-i-strucna.html>>; Element, [accessed 10 January 2019]. Accessed through Internet: <<https://element.hr/artikli>>; Hrvatski institute za povijest, [accessed 10 January 2019]. Accessed through Internet: <<http://www.isp.hr/biblioteka-hrvatska-povjesnica/>>; Književni krug Split, [accessed 10 January 2019]. Accessed through Internet: <<http://www.knjizevni-krug.hr/izdanja.asp>>.

25 70% is the lowest percentage mentioned by the interviewed publishers. One editor stated that, while 95% of projects get grants, approximately 40% of total costs could be covered.

26 ZRINŠČAK, Siniša; TOMEČAK, Marija. *Croatian scientific journals: context, impact and survival*, PUBMET2016, Zadar, [accessed 10 January 2019]. Accessed through Internet: <https://www.researchgate.net/publication/325094399_Croatian_scientific_journals_context_impact_and_survival>.

and books, but as the number of supported journals remained almost the same, and the number of books tripled, the distribution of grants per individual project significantly changed. For journals, it slowly rose, and for books, it was cut down by one third.

Such outcomes bring us to two important conclusions. First, the findings of this research are in line with the general trend in publishing: more titles are published, but in smaller print runs.²⁷ Namely, regarding the supply-side publishing model considered here, if the total budget for a project is reduced, and the costs of, e.g., proofreading and editing remain the same, the easiest way to spare money is to opt for a smaller print run, which is a logical decision regarding a tiny national academic market.

Second, as the number of subsidies for journals have remained roughly the same, while the total granted amount somewhat increased (for circa 8 percent in 7 years, but in a rather zig-zag-like graph), it could not be said that Croatian academic publishing, as promoted by the heading national scholarly and academic institution, contributes to and witnesses the proclaimed age of the journals.²⁸ Monographs still play a considerable role in scholarly communication, and are in no case regarded inferior to journals. They received roughly the same total amounts of subsidies, and, as aforementioned, the number of projects tripled in seven years. An overview across scientific disciplines shows that books are a superior form of communication in the humanities (62.30% of all projects), while in the technical sciences, natural sciences, and particularly in bioengineering, the predominant scholarly medium is the journal. Regarding social sciences, 16.14% of subsidies goes to books, and 23,73% to journals, meaning that the last are dominant, but not in such a significant proportion. Some recent research also negate the perceived crisis of scholarly monographs: “[...] figures gathered from Cambridge University Press, Oxford University Press, Routledge, and Palgrave

27 KOVAČ, Miha. The end of codex and the disintegration of the communication circuit of the book. Seven hypotheses on the future of trade publishing. *Logos*, 2011, vol 22/1, p. 12–24. KOVAČ, Miha; WISCHENBART, Ruediger. Globalization and publishing. In PHILLIPS, Angus; BHASKAR, Michael (eds.). *The Oxford handbook of publishing*. Oxford: Oxford University Press, 2019. p. 220.

28 THOMPSON, John B. *Books in the Digital Age, The Transformation of Academic and Higher Education Publishing in Britain and the United States*. Cambridge: Polity Press, 2005. One of the most important outcome of Thompson's analyzes of academic publishing field is exactly the rise of the journal publishing at the expense of scholarly monographs. In one of his essays, Robert Darnton, as an answer to publishers' reluctance for publishing scholarly monographs suggested development of pyramidal scholarly e-book. DARNTON, Robert. *The Case for Books. Past, Present, and Future*. New York: Public Affairs, 2009.

all showed ‘very significant growth’ in the numbers of new monographs being published (Crossick 2015: 21). Sales may be dropping, but there are new types of publication and new kinds of production which means the number of ways books are being consumed and found is increasing rapidly.”²⁹

Two more trends illustrate relations between book and journal publishing. First, it is obvious that privately owned publishing companies are not interested in journal publishing at all, while their share in monograph publishing is over 50%. The journal market is governed by scholarly institutions and associations. And second, neither private companies nor public institutions understand electronic publishing as an either lucrative business model or opportunity to increase the visibility of scholarly research. These two tendencies are interconnected. In Croatia, private entities are primarily book publishers, with no infrastructure and knowledge in journal publishing. Criteria for supporting scholarly journals, such as peer-review for every paper, database indexing, or open access availability (at least in Hrčak), must be unattractive for publishers used to an uniformed but very specific book publishing chain. Furthermore, an academic book publishing chain in Croatia, regardless of publisher, does not see e-books as a thriving outcome. Clearly, in a linguistically and geographically small market with no intention for global distribution, investment in the e-book market would not provide noteworthy improvements in doing business. Interestingly, a comparative study of three small European markets (Swedish, Lithuanian and Croatian) published by Tom Wilson in 2015³⁰ suggested that 72% of interviewed Croatian publishers have planned to start with e-book publishing. However, a closer look at academic book publishing – which could be considered as a sort of e-publishing pioneer – in Croatia indicates that 2015 plans have not been realized at all. From the other hand, making e-journals the standard of scholarly communication in Croatia has been in large extent propelled by the simple requirement of making them publicly available in pdf format at the ready made journal publishing platform Hrčak. In fact, this simple procedure required no special knowledge, and every editorial board could successfully meet such requirement. The similar platform and similar requirement for academic book publishing would perhaps be a successful tactic in enhancing the availability of scholarly e-monographs.

The goal postulated in the publishing studies concept of a supply-side model, “and the resulting product may be given away for free or charged for, but usu-

29 RAYNER, Samantha J. “Academic publishing”, p. 262.

30 WILSON, Tom. E-books: The publishers’ dilemma. *Libellarium*, 2015, vol. 1, p. 5–13.

ally at a low price,” is not achieved here. Giving “away for free” for sure means the e-form of publication, which is, as proved, not the case for academic books. Regarding charging, universal conclusions are not possible, but a view at publishers’ catalogues and their comparison with the abovementioned Ministry’s reports on granted subsidies does not point at any correlations between the granted amount and pricing policy. The reason is perhaps in estimation of publishers (results based on a poll conducted in the first half of January 2020) that some 40% of the total publishing process costs per individual project could be covered with a granted subsidy. On the other side, some institutions usually cover 100% of costs by granted subsidy, opting for a print run between 50 and 100 copies. Regarding journals, some of them add significant amounts to granted subsidies by charging considerable publication fees; for example, a social sciences journal, which in 2018 received twice the average amounts, charges a publication fee of 750 Euros.³¹ A journal from technical science, again with a doubled average grant in 2018, charges 180 Euros upon submitting the manuscript, 420 after acceptance, and an additional fee if needed. Two journals with triplicate average subsidies charge over 300 Euros. As charging publication fees is another aspect of supply-side model of publishing, such cases reveal a contradiction in the system, because one supply-side model should result with a publication given away for free or charged at a low price, and by no means with another supply-side model.

The model analyzed here and the state of Croatian academic publishing also contributes to the STEM vs. humanities and social sciences debate, but not in the expected way. Although the Croatian Ministry of Science and Education promotes STEM fields in different ways, e.g., by granting stipends to successful students enrolled in STEM programs,³² promoting STEM sectors in primary school reform³³ etc., 61.36% of the total grants go to humanities and social sciences, and, moreover, subsidies for these fields are rising throughout the seven analyzed years.

Summing up the criteria presented in the introduction, the results of the analysis, and the following discussion, further challenges of the supply-side model of academic publishing become clear; one of the biggest, regarding book publishing, is that it simply reflects the current situation with no developmen-

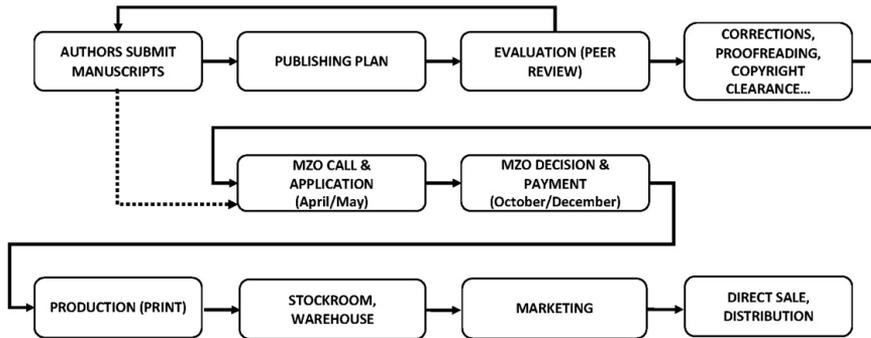
31 This journal has published 115 original scientific papers in the same years – making a profit of 86,250 Euros.

32 STEM stipendije <https://stem.mzo.hr/>

33 Ministry of Science and Education <https://mzo.gov.hr/vijesti/ministrice-divjak-postojinekriticki-otpor-prema-digitalnoj-transformaciji-u-skolama/1376>

tal intentions. In the criteria for Ministry's grants, no conditions regarding, e.g., the book output format, preferred scientific field, or after-publication politics (availability, pricing) are listed. As a result, publishers submit *what they have*, they stick along the print format, they do not lower the book price in reciprocity to the received grant, and, sometimes, they do not pay any attention to book visibility and availability. Suffice it to say – books published by some of the top-ten grant receivers are neither visible, nor available online.

Picture 2 presents the academic book publishing chain in Croatia based on the supply-side model and at the same time gives some suggestions for improving the consistency of the chain and the effectiveness of the model itself. Basically, the first four links present content providers, two second – investors or co-investors, and the rest – production, distribution, visibility, and accessibility are accomplished by either the company's own resources or (as a rule in the case of institutions) by its business partners.



PICTURE 2. Academic book publishing chain based on the supply-side model

The book publishing chain, introduced to publishing theory by John B. Thompson, rests on the premise that “each of the links performs a task or function which contributes something substantial to the overall task of producing the book and delivering it to the end user, and this contribution is something for which the publisher (or some other agent or organization in the chain) is willing to pay. In other words, each of the links ‘adds value.’”³⁴ Thus, in the content providing section, the most serious shortcoming is skipping the links. Sometimes, because of time pressure or, in institutions, because of the lack of

³⁴ THOMPSON, John B. *Merchants of Culture. The Publishing Business in the Twenty-First Century*. Cambridge: Polity, 2010, p. 15–16.

planning and infrastructure, authors' manuscripts are submitted directly to the call, with rather technical reviews. The committee appointed by the Ministry does not evaluate content quality (task allocated to reviewers) but takes into consideration all projects that meet the formal criteria mentioned in the introduction. As a result, it happens that the same manuscript goes to production without necessary functions performed in the fourth link. Thus, for the benefit of the system, content quality control should be remodeled and improved. E.g., the evaluation committee should pay more attention to language, editing, manuscript consistency and other aspects of basic publishing craftsmanship.

In the second section, the most obvious shortcoming is timing. University textbooks should be in distribution at the beginning of the academic year (September/October), at a time when the Ministry only publishes its decision on allocated grants. Moving the schedule to the beginning of the calendar year, with a call published in January, would provide sufficient time for publishers to meet the most conspicuous academic deadline. The problem with timing is even more obvious in journal publishing, as the calls are distributed for the current year, and results published usually in August, meaning that publishers and editors work for eight months without the possibility to make any stable financial plans.

The third section – production, marketing, distribution, and sale – largely depends on the publishers' format. While privately owned publishing companies have expertise and infrastructure in this regard, institutions such as universities or institutes mostly lack both. It happens that authors do the typesetting on their own, books are stored in inappropriate places (e.g. behind the tables in teachers' offices) or in best cases in some small stockrooms, and they are not promoted at all. Many institutions are simply *brandless* as publishers, and their books go unnoticed in the market. There is a lot of space for improvement in this aspect. Institutions could be stimulated to cooperate with sufficiently experienced partners (e.g. design studios, typesetters, booksellers) in order to deliver edited, visible, and accessible content that meets basic publishing standards. As both visibility and accessibility depends on the e-format, and due to the fact that scholarly publishing entered the e-arena at an early stage, one of the criteria for granting a subsidy should be the project's online availability. Positive experiences with journals strengthen such an argument. Regarding the p-format, in the geographically small market such as the Croatian, a single warehouse and distribution center for academic books (and, perhaps for all books published by non-profit scholarly and heritage institutions) could be established.

To develop a model in the recommended way, it would be necessary to invest more in a system and less into single projects. Furthermore, despite remarkable differences in publishing expertise and infrastructure between professional publishing companies and public institutions, both are, according to the current model, supported from the same fund and according to the same criteria. Due to their very nature, public institutions could invest a received grant in a single project only, while publishing companies tend to finance broader business operations and cover direct as well as and indirect costs of production. Moving towards different criteria for different subjects would, perhaps, provide more effective investment.

Regardless of the mentioned deficits, any discussion on academic publishing in Croatia and about the model of subsidies considered in this paper should result in a final and very simple conclusion: regarding the size of the market, the underdeveloped marketing and sales policies for academic publications in Croatia, the purchasing power of a considerable group of individual buyers targeted by academic publishers (students), and other similar circumstances, the supply-side model sustained by the Ministry of Science and Education makes at all possible an overwhelming majority of publishing projects in the field of national academic publishing.

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