



Croatian Bureau of Statistics



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**Mini-Presentation for SPPI on
Publishing of directories and mailing lists (ISIC 5812)
Publishing of newspapers, journals and periodicals (ISIC 5813)
– with the emphasis on ISIC 5813**

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1. INTRODUCTION

Development of the SPPI in Croatia for Publishing activities began in 2015 as one of the Eurostat's projects. According to the market conditions in Croatia, the development of methodology and the production of SPPI for J 58 is confined to ISIC 5811 (Book publishing), ISIC 5813 (Publishing of newspapers, journals and periodicals) and ISIC 5820 (Software publishing), while the ISIC 5812 (Publishing of directories and mailing lists) and ISIC 5819 (Other publishing activities) were excluded from the observation. The decision to exclude those activities from the observation was made due to insignificant share in number of employees and turnover.

The first pilot survey was carried out for the first quarter of 2015 and SPPI surveying continued in 2016 as a regular quarterly survey. In April 2016, SPPI on J 58, on two digit level, was disseminated nationally for the first time.

The methodology of data collection is designed considering its characteristics of output, market and data availability, but respecting general methodological guidelines and the EU regulation on STS and common conceptual framework of SPPI production as designed within this project and by the Croatian Bureau of Statistics.

2. DESCRIPTIONS AND CHARACTERISTICS OF THE INDUSTRY

2.1 DEFINITION OF THE INDUSTRY

According to the International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4, class 5812, Publishing of directories and mailing lists, includes the publishing of lists of facts/information (databases) that are protected in their form, but not in their content. These lists can be published in printed or electronic form.

This class includes:

- publishing of mailing lists
- publishing of telephone books
- publishing of other directories and compilations, such as case law, pharmaceutical compendia etc.

Class 5813, Publishing of newspapers, journals and periodicals, according to ISIC, Rev. 4, includes:

- publishing of newspapers, including advertising newspapers
- publishing of periodicals and other journals, including publishing of radio and television schedules.

Publishing can be done in print or electronic form, including on the internet.

In the Central Product Classification (CPC), the products of Publishing of directories and mailing lists (ISIC 5812) and of Publishing of newspapers, journals and periodicals (ISIC 5813) are classified under category Other manufacturing services; Publishing, printing and reproduction services; Materials recovery services (CPC 89110), while in the Statistical Classification of Products by Activity (CPA 2015) the products of Publishing of directories and mailing lists (ISIC 5812) and Publishing of newspapers, journals and periodicals (ISIC 5813) are classified as follows:

- **58.12 Publishing services of directories and mailing lists**
- 58.12.1 Directories and mailing lists printed or on physical media
- 58.12.2 On-line directories and mailing lists
- 58.12.3 Licensing services for the right to use directories and mailing lists
- 58.12.4 Sale of advertising space in directories and mailing lists
- **58.13 Publishing services of newspapers**
- 58.13.1 Printed newspapers
- 58.13.2 On-line newspapers
- 58.13.3 Advertising space in newspapers
- **58.14 Publishing services of journals and periodicals**
- 58.14.1 Printed journals and periodicals
- 58.14.2 On-line journals and periodicals
- 58.14.3 Advertising space in journals and periodicals
- 58.14.4 Licensing services for journals and periodicals

For national purposes, the Croatian Bureau of Statistics uses the Statistical Classification of Economic Activities in the European Community NACE Rev.2.

The J 58.1 Publishing of books, periodicals and other publishing activities is classified according to NACE Rev. 2 classification as follows:

58.1 Publishing of books, periodicals and other publishing activities

- 58.11 Book publishing
- 58.12 Publishing of directories and mailing lists
- 58.13 Publishing of newspapers
- 58.14 Publishing of journals and periodicals
- 58.19 Other publishing activities

Classification issues

Publishing of directories and mailing lists includes the publishing of lists of facts/information (databases); these lists can be published in printed or electronic form.

The use of printed directories is waning, as internet listings and other online tools have largely supplanted the phonebook as the primary source for telephone numbers, addresses, and related local information.

In recent years, according to the Statistical Business Register, there have been no active legal units in Croatia registered under the class code 5812 Publishing services of directories and

mailing lists (ISIC) either as main or even secondary activity. For example, some companies, registered in division 61 Telecommunications (ISIC), publish online telephone books, but they do not register activity under code 5812, not even as third or fourth activity. Due to lack of information, code 5812 was excluded from the observation.

An important characteristic of Publishing of newspapers, journals and periodicals is its connection with advertising. A large part of income for publishers (especially for newspapers), hence of publishing production, is constituted by the sale of advertising space. Sales of advertising can occur in many different industries. Some of these industries in which advertising sales are considered primary revenue are newspapers and periodical publishing, radio broadcasting, television broadcasting, internet service providers, web search portals, etc. Advertising sales in Publishing and these other industries are not considered as part of advertising services (NACE 731), but this can raise a problem of distinguishing between publishing and advertising services.

2.2 MARKET CONDITIONS AND CONSTRAINTS

Importance of the industry

Activity J 58 is one of the six subsections (divisions) within section J Information and communication of the NACE Rev. 2 classification. In terms of turnover, in 2017, the strongest division in section J was J 61 (Telecommunications), producing 46.0% of turnover, but with 21.9% of employment and only 4.6% of enterprises. The highest share of employment (44.1%) and enterprises (40.2%) were observed in the division J 62, with 30.2% of turnover. Division J 58 Publishing activities generated 7.4% of total turnover in section J with the share of employment of 11.7% and the share of enterprises of 12.8%.

Table 1: Distribution of turnover, enterprises and persons employed for section J in Croatia, 2017

NACE Rev. 2 code	Activities	Turnover	Number of enterprises	Number of persons employed
		In %	In %	In %
J 58	Publishing activities	7.4	12.8	11.7
J 59	Motion picture, video and television programme production, sound recording and music publishing activities	4.9	9.2	4.2
J 60	Programming and broadcasting activities	7.9	3.0	11.5
J 61	Telecommunications	46.0	4.6	21.9
J 62	Computer programming, consultancy and related activities	30.2	61.3	44.1
J 63	Information service activities	3.6	9.1	6.6
Total	Section J	100.0	100.0	100.0

Source: Structural Business Statistics, 2017, CBS

Table 2: Share of J 58 in non-financial services (sectors G, H, I, J, L, M, N and S division 95, NACE Rev. 2), 2017

NACE Rev. 2 code	Number of businesses	Turnover	Number of persons employed
J 5811	0.3%	0.2%	0.3%
J 5812	0.0%	0.0%	0.0%
J 5813	0.1%	0.2%	0.3%
J 5814	0.1%	0.1%	0.1%
J 5819	0.1%	0.0%	0.0%
J 5821	0.0%	0.0%	0.0%
J 5829	0.1%	0.1%	0.1%
J 58	0.7%	0.6%	0.8%

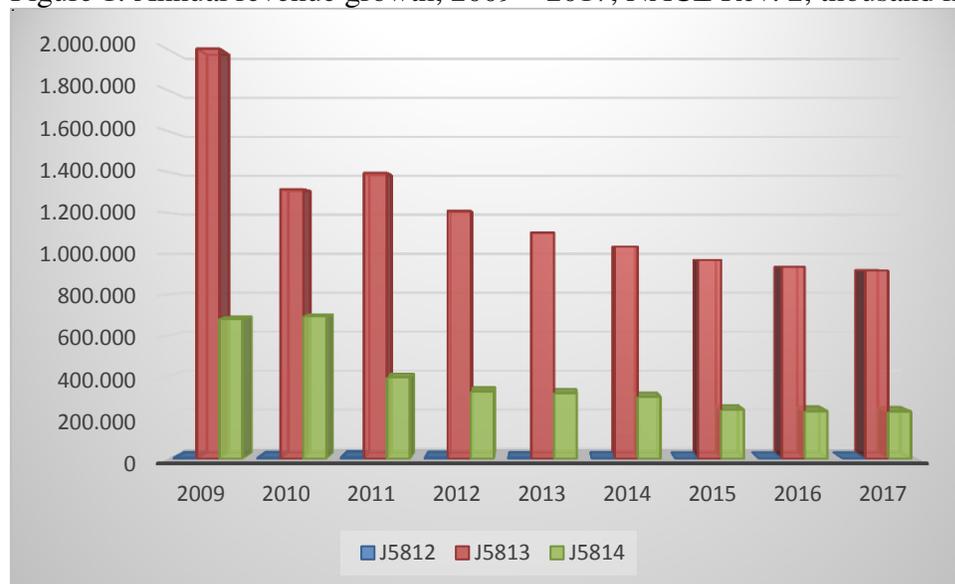
Source: Structural Business Statistics, 2017, CBS

According to the Structural Business Statistics (2017), J 58 Publishing services (NACE Rev.2) is quite a small industry within non-financial services (sectors G, H, I, J, L, M, N and S division 95). Division J 58 generated 0.6% of total turnover in non-financial services with the share of employment of 0.8%. In terms of turnover and employment, the strongest classes in division J 58 Publishing activities were J 5811 Book publishing and J 5813 Publishing of newspapers, each with contribution of 0.2% of turnover and 0.3% of employment each, within non-financial services. Class J 5814 Publishing of journals and periodicals contributed with 0.1% of turnover and 0.1% of employment share, while there were no active businesses, persons employed and generated turnover in class J 5812 Publishing of directories and mailing lists.

Market situation and trends

The global financial crisis left a mark in the media industry. The publishing part of the media industry entered its mature phase by the end of the twentieth century, and, with full digitisation of production and distribution of content, the decrease rate in the circulation of printed editions grew faster than decreased readership. Due to declining demand for printed publications, the process of transformation of print to digital editions was partly copied to the Croatian market. Printed editions, such as newspapers, journals and periodicals, followed global trends of decrease, but did not fully develop the growth segment of the digital market. Revenue from digital editions is still rather small, generated mostly from web advertising. Audiences in Croatia are averse to paying for the news or being distracted by ads online, which makes it even harder to develop a viable online business model for news, despite increasing online news audiences. Traditionally low newspaper subscription habits offline have not been reversed in the online environment.

Figure 1: Annual revenue growth, 2009 – 2017, NACE Rev. 2, thousand kuna



Source: Structural Business Statistics, 2009 – 2017, CBS

The Centre for Media and Communication Research (Centar za istraživanje medija i komunikacije – CIM) has emerged as the first university center for the study of media and communication in Croatia. According to CIM, in 2018, in the newspaper market, the most popular title was the tabloid *24 sata* (36%) owned by the Austrian company Styria, followed by *Jutarnji list* (30%), which is owned by Hanza Media, Croatia's largest print media company, along with *Slobodna Dalmacija* (10%).

Advertising spending has continued to decline for print (-8% in 2015 – 2016), but the overall advertising market increased in 2016 by 2% to reach 1 493 billion kuna (€199 million). Advertising on the internet rose by 27% in relation to the previous year, and television and outdoors rose by 2%. Most online media rely on digital advertising with little evidence of digital subscription.

SOURCES OF NEWS

Croatia



DEVICES FOR NEWS

Croatia



Source: <http://www.digitalnewsreport.org/survey/2018/croatia-2018/>

Concentration within the industry

In Table 3, the actual coverage of statistical units in terms of NACE Rev. 2 classes is given for this activity. In J 58, the highest share of turnover (42.4%) and employment (39.5%) was observed in the activity class J 5813 Publishing of newspapers. The highest share of enterprises (40.9%) was recorded in the class J 5811 Book publishing, with the second highest share of

turnover (31.4%) and employment (33.1%). The class J 5814 Publishing of journals and periodicals contributed with 10.7% of turnover share, 12.2% of employment share and 18.0% of enterprises share, while there was no generated turnover and persons employed in class J 5812 Publishing of directories and mailing lists.

Table 3: Coverage of statistical units for J 58 by NACE Rev. 2 classes of activities

NACE Rev.2 code	Turnover	Enterprises	Persons employed
	%	%	%
5811	31.4	40.9	33.1
5812	0.0	0.2	0.0
5813	42.4	10.5	39.5
5814	10.7	18.0	12.2
5819	3.5	13.1	5.4
5821	2.5	1.5	1.2
5829	9.5	15.8	8.6
Total J58	100.0	100.0	100.0

Source: Structural Business Statistics, 2017, Croatia

In Table 4, the distribution of enterprises by size according to the number of enterprises and their turnover for classes J 5812, J 5813 and J 5814 in Croatia is presented for 2017.

Table 4: Distribution of enterprises and turnover by size of enterprises for J 5812, J 5813 and J 5814

NACE Rev. 2 code	Persons employed	Enterprises		Turnover
		Number	In %	In %
J 5812	0 – 1	1	50.0	-
	2 – 9	1	50.0	-
	Total 5812	2	100.0	-
J 5813	0 – 1	39	41.9	0.8
	2 – 9	29	31.2	5.7
	10 – 19	12	12.9	3.3
	20 – 49	6	6.5	7.3
	50 – 249	5	5.4	47.7
	250+	2	2.1	35.2
	Total 5813	93	100.0	100.0
J 5814	0 – 1	84	52.8	8.5
	2 – 9	61	38.0	47.8
	10 – 19	12	8.0	26.9
	20 – 49	1	0.6	2.6
	50 – 249	1	0.6	14.3
	Total 5814	159	100.0	100.0

Source: Structural Business Statistics, 2017, Croatia

In class J 5813 Publishing of newspapers, medium-sized and large enterprises earn the biggest share of the class turnover, over 82 percent, while in class J 5814 Publishing of journals and periodicals, medium-sized and large enterprises generated only 16.9 percent of the share of class turnover. There was no generated turnover in class J 5812 Publishing of directories and mailing lists.

Type of consumers of the services

The actual compilation of SPPI in Croatia relies on the B2All concept. It is often difficult to separate prices charged to different end-users of publishing services, but, regarding advertising space in newspapers, journals and periodicals (printed and online), the price collection for advertising sale is targeted at business users.

Horizontal/vertical integration

Publishing includes the following stages of development: acquisition, copy editing, production, printing (and its electronic equivalents), marketing, and distribution.

Magazine publishers often consume their time buying or commissioning copies; newspaper publishers, on the other hand, usually hire their staff to produce copies, although they may also employ freelance journalists.

In terms of printed publication, once a newspaper, or another publication is printed, the publisher may use a variety of channels to distribute it. Newspapers and magazines are typically sold in advance directly by the publisher to subscribers, and then distributed either through the postal system or by newspaper carriers. Periodicals are also frequently sold through newsagents and vending machines. The distributors are remunerated by a commission. Publishers are obliged to buy back unsold publications.

In terms of online publications, electronic distribution is part of a process that can be called electronic commerce and it is a transaction that uses information systems to avoid a physical exchange. It is important because the benefits in terms of lower cost of selling over the internet are particularly clear. Instead of manufacturing a product and distributing it to a physical retailer (or directly to the customer), the producer can eliminate manufacturing costs and physical distribution costs, while at the same time inventories are no longer needed. At the same time, many intermediaries that were previously required, including manufacturers, distributors, retailers, and delivery services, are no longer necessary. New intermediaries take on this role, such as IT experts.

2.3 SPECIFIC CHARACTERISTICS OF THE INDUSTRY

Publishing is the activity of making information available to the general public. In some cases, authors may be their own publishers, which means that originators and developers of content also provide media to deliver and display their content. Traditionally, the term refers to the distribution of printed works, such as books and newspapers. With the advent of digital information systems and the internet, the scope of publishing has expanded to include electronic resources such as the electronic versions of books and periodicals, together with micropublishing, websites, blogs, video game publishers, etc.

Newspapers are regularly scheduled publications that present recent news, typically on a type of inexpensive paper called newsprint. Most newspapers are primarily sold to subscribers, through retail newsstands or are distributed as advertising-supported free newspapers.

Periodical publishing involves publications that appear in a new edition on a regular schedule. Newspapers and magazines are both periodicals, but within the industry, the periodical publishing is frequently considered a separate branch that includes magazines and even academic journals, but not newspapers.

Electronic publications are edited websites and/or portals containing electronic versions of printed press and/or media information, thus being available to general public regardless of their volume.

Most online media in Croatia rely mostly on digital advertising with insignificant revenue of digital subscription. In general, a large part of income for publishers is constituted by the sale of advertising space.

An advertisement is a paid information the publication of which is ordered mostly by a legal entity with the intention to promote the legal trade of a product, service, real estate, rights or obligations, to attract business partners or to create a reputation or good name in the public. Advertising is performed with financial or other compensation or for the purpose of self-promotion.

3. MEASUREMENT OF THE SPPI

3.1 GENERAL FRAMEWORK

Objectives of key users

From 2016, SPPIs for J 58 SPPI were nationally disseminated for the first time and data are now regularly published in quarterly dynamics. The results of that survey are effectively used in the national accounts as deflators. SPPI for J 58, together with other industries, will also be used in the compilation of the ISP (index of services production).

Concept of national accounts, measurement issues

The concept and the methodology used are consistent with the European System of National and Regional Accounts (ESA 2010). The classification of business entities by activities is in line with the NKD 2007, which is directly comparable to the NACE Rev. 2 classification. The product classification, which was used for the calculation of GVA in current and constant prices by activities, is harmonised with the National Nomenclature of Industrial Products and Services, which is comparable to the PRODCOM classification. The GDP estimates include all activities within the ESA 2010 production boundary and cover the total territory of the Republic of Croatia. The estimates are prepared on an accrual basis. The calculation of the GVA at current prices is based on data from regular surveys of the Croatian Bureau of Statistics, the Croatian National Bank, the Croatian Financial Services Supervisory Agency, the Croatian Regulatory Authority for Network Industries and the Croatian Pension Insurance Institute (CBS, 2017, GDP, Notes on methodology). Deflators used in the quarterly GDP calculation for J 58.1 Publishing of books, periodicals and other publishing activities is a combination of the CPI and the SPPI.

3.2 MEASUREMENT ISSUES

Product structure in industry

The framework for the selection of services by reporting units is a classification scheme of service groups. This classification is closely related to CPA and only minor modifications were introduced due to market and output characteristics in Croatia. The relation between the classification of service groups and CPA is given in Table 5 below.

The purpose of the classification scheme by service groups is twofold:

- first, the table designed on the basis of this scheme is used for collecting data on the structure of turnover of the surveyed activity by service groups
- second, this classification, together with the information on turnover reported by service groups, is a starting point for the specification of services for which representative prices will have to be collected.

Table 5 Relation between service groups in SPPI J 58 questionnaire and CPA v.2.1 classification for classes J 58.13 and J 58.14

Service groups in SPPI J 58 questionnaire	CPA classification code
Publishing of printed newspapers	58.13.10
Publishing of on-line newspapers	58.13.20
Advertising space in newspapers (printed and on-line)	58.13.30
Publishing of printed journals and periodicals	58.14.10
Publishing of on-line journals and periodicals	58.14.20
Advertising space in journals and periodicals (printed and on-line)	58.14.30
Licensing services for journals and periodicals	58.14.40

Data on turnover share by group of services are collected for the previous year by using the SPPI survey carried out during the first quarter of each year. Figure 2 below shows that, in terms of turnover, the strongest groups of services in the SPPI survey of J 58 in 2017 were Publishing of printed newspaper with 40.22% of turnover share, Publishing of printed books with 28.04% of turnover share, Advertising space in newspapers (printed and on-line) with 15.04% of turnover share and Publishing of printed journals and periodicals with 8.04% of turnover share. Publishing of on-line newspapers contributed with 2.75% of turnover share, while Publishing of on-line journals and periodicals and Advertising space in journals and periodicals (printed and on-line) each contributed with about 1.00% of turnover share. These data show that printed publications still generate the biggest turnover share within the industry, with insignificant revenue of digital subscription.

Figure 2: SPPI survey, share of J 58 turnover by group of services, %, 2017

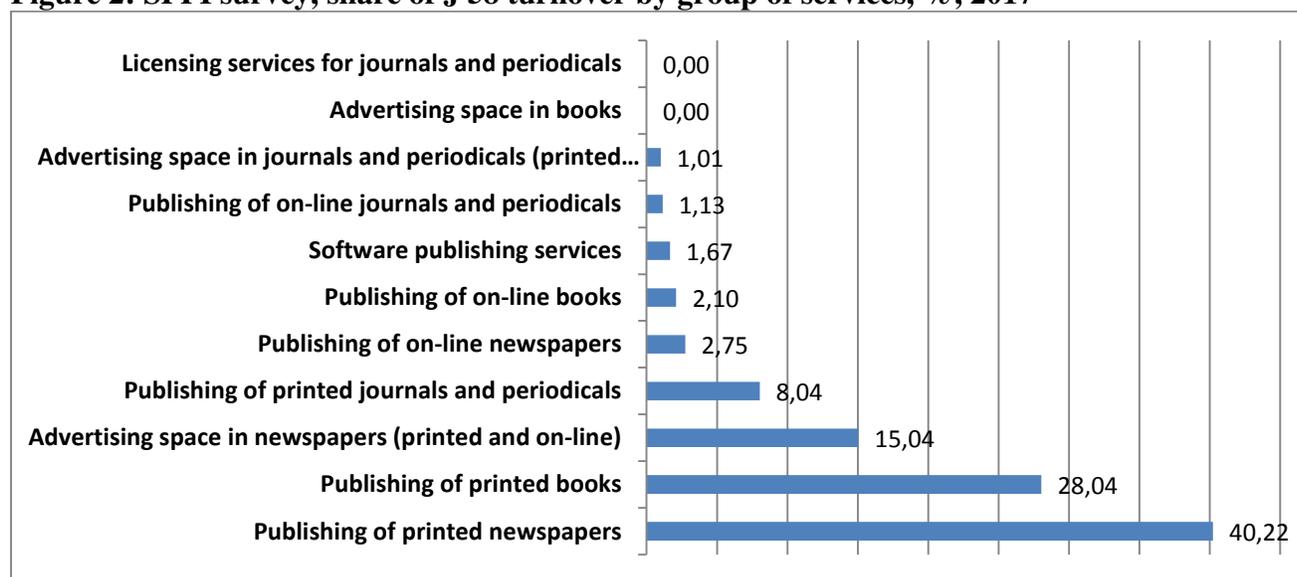
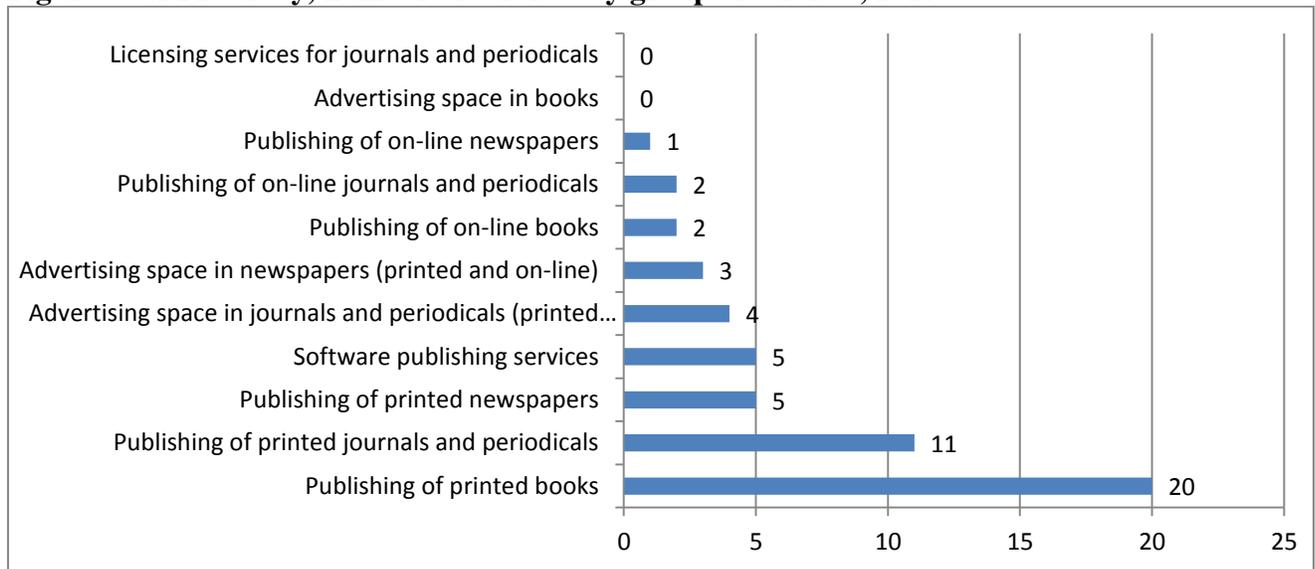


Figure 3 below shows a different picture than turnover shares. In terms of the number of services in the SPPI survey of J 58 in 2017, the strongest groups of services were Publishing of printed books with 20 services and Publishing of printed journals and periodicals with 11 services, which can be justified with the number of specialised publications. Group of services Publishing of printed newspapers has the biggest turnover share, but only five representative services in the SPPI survey. The reason for this is that, regarding printed newspapers, the market is dominated by the Croatian Europapress Holding and the Austrian Styria Media Group companies, which publish their flagship daily papers *Jutarnji list*, *Večernji list* and *24 sata*. Other widely read national daily papers are *Novi list* and the government-owned *Vjesnik*.

Figure 3: SPPI survey, number of services by group of services, 2017



Type of SPPI, sampling unit – Industry/Product

Methodology used for the compilation of SPPI in Croatia is based on the product approach. Product-based indices are created from service groups selected by sampled reporting units. In the questionnaire form, reporting units have to provide information on the prices of representative services for each of the service group, for which they reported data on the turnover share. Price movements for those services are then aggregated to form price indices for service groups. The price index for the activity as a whole is calculated by using price indices of service groups.

Other data sources

The SPPI surveys in Croatia are conducted mostly through web-based questionnaires. The turnover and price data used in the compilation of the SPPI for J 58 are collected using a quarterly survey, which is, for now, the best solution because of difficulties encountered in capturing changes in productivity in this industry and also because of a lack of other data sources.

Sampling design

The sample of units for SPPI survey for J 58 took into account market and other relevant characteristics of the studied activity. It is designed as a cut-off method according to the turnover in every NACE class for Publishing activities industry. The sample consists of 35 units.

Table 6 Top down turnover coverage in the sample

NACE code	Enterprises	Turnover coverage
5811	15	> 70%
5813	6	> 70 %
5814	10	> 50%
5829	7	> 60%

Source: Statistical Business Register, CBS

Sample frame construction

The sample frame consists of all units from the Statistical Business Register satisfying the following criteria:

- That their main activity is Publishing activity (NACE code 58)
- They have at least one employee
- Their turnover is not 0

The above-stated threshold criteria provided that only a small part of the population was excluded from the frame and consequently from the sampling procedure.

Sampling weights

SPPI weights are updated annually; data on turnover share according to the group of services at the lowest level are collected for a previous year by using the SPPI survey carried out during the first quarter of each year.

3.3 DESCRIPTION OF PRICING METHODS AND CRITERIA FOR CHOOSING THE METHOD

Price determining characteristics of the service and price method chosen

Publishing of printed newspapers includes newspapers published at least four times a week covering multiple topics with the intent of appealing to a broad audience.

Price determining characteristics of the service are usually as follows: the name of the newspaper; the circulation, e.g. weekday; the distribution channel; on subscription or not; the duration of the subscription; prepaid or not. Printing as colored or black and white is not relevant (in recent years, all newspapers are printed as colored).

On-line newspapers include on-line newspapers issued on the internet where the main content is updated at least four times a week at fixed intervals, usually on a daily basis.

Price determining characteristics of the service are similar to those for printed newspaper, only the distribution channel is excluded.

The publishing services of newspapers, printed or on-line, are relatively homogeneous, and the pricing method used in SPPI is a direct use of repeated services.

Publishing of journals and periodicals includes newspapers, journals and periodicals published less than four times a week. They can be general interest journals and periodicals or business, professional and academic journals and periodicals.

Price determining characteristics in publishing services of printed journals and periodicals are usually as follows: the name of the periodical; circulation e.g. weekday or weekend; on subscription or not; the duration of the subscription; prepaid or not; the distribution channel; number of pages and format.

On-line journals and periodicals includes on-line provision of journals and other periodicals issued on the internet where the main content is updated less than four times a week at fixed intervals, usually on the weekly or monthly basis.

Price determining characteristics of the on-line journals and periodicals are quite similar to those for printed publications, but the distribution channel, number of pages and format are excluded.

The pricing method used in SPPI for publishing services of printed journals and periodicals (printed and on-line) is a direct use of repeated services as well.

In terms of **Advertising space in newspapers, journals and periodicals**, there are some differences between printed newspaper, journal or periodical ads and advertisements placed on the internet in the banner. A banner is an advertisement placed on a website, which includes graphic images and text, and links to the advertiser's website or to another page in the same website. Banners can be placed anywhere on a website.

Price determining characteristics in Advertising space in printed newspapers, journals and periodicals services are usually as follows: the name of the newspaper/journal/periodical; the format of the ad; sections of the paper of the ad; the frequency with which the ad runs; type of the ad (commercial or non-commercial).

Price determining characteristics in Advertising space in on-line newspapers, journals and periodical services are the following: the name of the newspaper/journal/periodical; the type of banner (half page, billboard, mega billboard, ticker, takeover...), pixel dimensions (2x340x1050, 1680x150, 900x600, ...), the position on a page, the frequency with which the ad runs.

The pricing methods used in SPPI for advertising space in newspapers, journals and periodicals (printed and on-line) are the following: a direct use of repeated services; contract pricing and unit value method (an average price per column centimeter for printed ads and an average price per CPM for banners).

Column centimeter for printed ads is a unit of measure in which advertising space is sold. Each unit is one column wide and one centimeter high. Width of the column, which may vary from one publication to another, remains unchanged within a publication.

CPM (cost per mille) is a digital marketing term also called cost per thousand. CPM measures the cost of an online ad per 1000 impressions. An impression is when the ad is displayed on a web

page. CPM is usually used in bidding systems. These systems use CPM to indicate how much the ad will cost for every thousand people exposed. For example, if a CPM price is set at €3.00, the advertiser needs to pay €3.00 for every thousand impressions of their ad.

Index estimation procedure

The SPPI survey is conducted through a web-based questionnaire. IT application covers all phases of the SPPIs production: it has the functionality of data collection through web-based questionnaires, plausability checks, data editing and calculation of the index.

The base period in SPPI is the last quarter of a previous year. Enterprise turnover of the previous year of the surveyed activity is the basis for compilation of weights and it is annually updated.

A SPPI number is a specific measure of average price movement of a certain group of products (services). Index calculation of SPPI is performed through the following steps:

- In the first step, compilation of ratio (individual price index for a service of a service group for enterprise) is done.

$$Ip_{sge}^{qy/4y-1} = \frac{p^{qy}}{p^{4y-1}}$$

- The next step is a calculation of a simple (unweighted) price index for services within the same service group at a company level. The Jevon's formula is used here.

$$Ip_{ge} = \sqrt[n]{Ip_{sge1}Ip_{sge2}.....Ip_{sgen}}$$

$I = 1, 2, \dots, sgen$; number of services s within service group g in enterprise e

- Then the calculation of price index for service groups is performed, using price indices of service groups by companies (as elementary aggregates) and weighting them by share of turnover of that group in a company's turnover for that activity. Arithmetic weighted average is used as a compilation formula, which approximates the Laspeyre's index.

$$Ip_g^{qy/4y-1} = \frac{\sum_{e=1}^E Ip_{ge}^{qy/4y-1} W_{ge}}{\sum_{e=1}^E W_{ge}}$$

- Finally, the last step is to calculate the price index for the activity as a whole, using price indices of service groups and corresponding weights calculated as a sum of turnover for group of services by companies.

$$Ip^{qy/4y-1} = \frac{\sum_{g=1}^G Ip_g^{qy/4y-1} W_g}{\sum_{g=1}^G W_g}$$

Symbols used:

$s = 1, 2, \dots, nge$ (number of services for group g in enterprise e)

$e = 1, 2, \dots, E$ (number of enterprises producing service within group g)

$g = 1, 2, \dots, G$ (number of group of services g in activity SPPI)

qy = quarter q of year y
 $q-1y$ = previous quarter of year y
 $q4y-1$ = 4th quarter of previous year (base period)
 Wge = weight at period $y-1$ for group g in selected price reporting unit e
 Wg = weight at period $y-1$ for group g
 $psge$ = price of product s of group g in selected price of reporting unit e .

It is worth noting that weights are changed yearly. Thus, SPPI series are calculated using the chain-linking approach. Such an approach reduces bias inherent to Laspeyre's formula and also facilitates yearly updates of samples of reporting units and services.

Estimation of missing prices

This method is applied in a situation when the reporting unit, which was active in the first quarter and correctly completed the report, is not in the position to later report the current price of a service. Such a situation occurs when:

- Price for current period is missing due to temporary or final (ultimate) exclusion of the service from production (item non-response)
- Reporting unit did not complete the survey because it ceased the activity or stopped to cooperate; (unit non-response); in this case, CBS does not receive the questionnaire.

In SPPI processing system, imputations for missing prices are implemented automatically.

If price for current period is missing (item non-response) temporarily, imputation methods for current period:

Table 7 Price temporarily not available in current quarter

Pricing method	Direct use of prices of repeated service	Unit value method	Contract pricing
Imputation method	Imputation by correction of base price (4qe-1) with price index of the same group service q/4qe-1	Imputation by correction of base price (4qe-1) with price index of the same group service q/4qe-1	Imputation by carry forward

If the price for current period is missing (item non-response) when the service is cancelled, new (substitute) service is introduced. If a new service has available substitute prices for current and base period, the imputation method used is overlap method.

If a new service has available substitute price only for the current period, imputation methods used are the same as shown in Table 7 for price temporarily not available in a current quarter.

Quality adjustment methods

Assurance of price comparability over quarters in the sense that a price ratio reflects a genuine change of price (without any other impact such as quality change) is one of the key methodological challenge of data collection phase. On the web-based questionnaire form, several rules are implemented: when a reporting unit reports a representative service, this service has to be specified by service code, by detailed factors that are relevant for its price formation and by pricing method used for reporting the price. Also, the reporting unit has to provide information on price in current and previous periods, on unit of measure referring to the reported price and on reason of price changes or reasons for data missing.

Web applications for SPPI surveys have several types of automatic data check at micro level (individual web questionnaire (WQ)):

- Errors: at data entry, essential errors are identified, which forces the reporting unit (RU) or administrator to eliminate them; if not, the WQ cannot be successfully completed.
- Warnings: in the process of filling in WQ, RU is informed on deviations from methodological guideline and on inconsistencies, but these failures are tolerated and WQ can be completed and submitted anyway.
- Logical and numerical control (LNC): LNC of selected variables after complete data entry.
- Control at questionnaire level (search WQ)
- Administrator's individual investigation of WQ with selected characteristics.

Frequency of collection

Prices are collected quarterly and they are used as an estimate of the average price throughout the period. SPPI data are transmitted to Eurostat 90 days after the end of the reference quarter and disseminated nationally 90 days after the end of the reference quarter.

3.4 EVALUATION OF COMPARABILITY OF PRICE DATA WITH OUTPUT DATA

Since 2017, the CBS has supplemented the quarterly dynamics of conducting turnover survey with a monthly dynamics of turnover changes in service activities. The data are based on the Monthly Report on Distributive Trade and Other Services and administrative data sources (databases of value added tax reports). The short-term indicator „turnover from activities of other services“ encompasses sections from G to N. Publishing services are collected and disseminated nationally on monthly basis at the two-digit level. The turnover data are also regularly sent to Eurostat, on the monthly basis.

For calculation of ISP, when the deflation of the monthly turnover in service activities is in question, the fact is that most of the service price indices are available only at the quarterly level and if we use them for deflation purposes there is a need to disaggregate them into three monthly indices. In CBS, two methods will be used for disaggregation, depending on the data availability. For a certain activity group, as well as for publishing services for which the quarterly deflator is

on disposal, sufficiently correlated auxiliary index, applying the model-based approach in using this auxiliary information, will be used.

4. EVALUATION OF MEASUREMENT

The global media market in the sector of printed publications has been facing a decreased circulation for several years now. This trend of print editions has not bypassed Croatia and this led to a noticeable decline in circulation, as well as to the bankruptcy of publishers. Convergence of the media industry and the decline in sales of circulation print media are partially compensated by digital edition subscriptions. The continued decline in print circulation and the increase of digital edition subscriptions set up a completely new situation. Croatian market of printed magazine shows the trend of decreasing sales, which is in line with global trends. At the same time, Croatian newspaper, magazine and periodical industry does not receive much of additional revenue from digital edition through subscriptions, but mostly from on-line advertising.

The data from the SPPI survey of J 58 in 2017 shows that printed publications still generate a biggest turnover share within industry, with insignificant revenue of digital subscription. In terms of turnover, the strongest groups of services in the SPPI survey of J 58 in 2017 was Publishing of printed newspaper with 40.22% of turnover share, while Publishing of on-line newspapers contributed with only 2.75% of turnover share. Publishing of printed journals and periodicals contributed with 8.04% of turnover share, while Publishing of on-line journals and periodicals generated only 1% of turnover share. Advertising space in newspapers (printed and on-line) generated 15.04% of turnover share.

One of the issues is that in recent years, in Croatia, there have not been active legal units registered under the class code 5812 Publishing of directories and mailing lists (ISIC) as main or even secondary activity. For example, some companies registered in division 61 Telecommunications (ISIC) publish online telephone books, but they do not have registered activity 5812, not even as third or fourth activity. Due to lack of information, that class is excluded from the observation.

The SPPI survey for J 58 in recent years shows that prices for publishing services of printed newspapers, journals and periodicals tend to be relatively flat in the second and third quarter and that changes mostly occur in the first and fourth quarter, while the major newspapers and magazines are sold at the same prices for several years. Quality of the services remains mostly constant if we follow different press titles and distinguish printed from on-line publication. Although some newspapers and other periodicals sometimes offer free gifts with their publication, this kind of promotion is excluded.

Various challenges and problems appear in conducting SPPI for J 58, but the majority of them are manageable so far. Despite all the burden on reporting units and shortcomings, the overall response rate for this survey is rather high – it amounts up to 90% on average.