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Article

Determining Some Factors of the Financial Situation in the European Union Publishing Sector

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Determining Some Factors of the Financial Situation in the European Union Publishing Sector

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Abstract: The publishing sector is probably a cultural industry with one of the greatest economic projections due to its huge turnover and contribution to the Gross Domestic Product of countries. In order to gain a better understanding of this sector, this paper examines a sample of the most important companies belonging to this sector in the European Union, focusing on studying their economic-financial profile. In order to achieve this, multivariate statistical techniques are used to create indicators on the evolution of the main variables and financial ratios of these companies over recent years. The specific objectives are: to summarise the information in a smaller number of factors, which in turn enable us to construct a robust and reliable synthetic indicator; and investigate the relationship between the constructed index and different variables such as company age, size and localisation. The changes experienced in this sector are reflected in the obtained results and provide a richer understanding of cultural industries.

Key words: Financial Ranking, Financial Ratios, Publishing Sector, Synthetic Indicator

JEL Classification: C38, G00, Z11

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Introduction

The publishing industry has been studied from several perspectives, whether for the purpose of understanding its performance and evolution or in order to predict its expected behaviour and adaptation to new technologies (IPA 2015, FEP 2015). However, economic and financial analyses of the sector have seldom been undertaken.

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With the aim of gaining a deeper understanding of specific economic sectors, their companies' financial structure and even financial efficacy in recent years, a number of studies have been conducted that resort to financial ratios that draw upon accounting information provided by the companies themselves. The techniques of financial analysis have been applied in this way on numerous sectors of the economy, such as the banking sector (Gómez-Borrero, 1986), Spain's electricity sector (González et al. 2013), the wine industry (Arimany et al. 2016) and several others.

In the literature, we can find a fair number of studies on ratio-based business bankruptcy prediction, including those by Alfaro et al. (2008); Holsapple and Wu (2011); Lee et al. (1996); Martín-Oliver and Salas-Fumás (2012); Olson et al. (2012) and Wilson and Sharda (1994). Few contributions, however, focus on the evolution of ratios over time or in connection with the typology of companies involved. Serrano et al. (2005) use multivariate analysis techniques in order to assess the effects of company size and country on financial profitability; Costa and Carini (2016) explore differences regarding output and employment in Italian cooperative businesses by means of several analyses that factor in the geographical regions where the companies are based, while Delen et al. (2013) perform an exploratory factor analysis to identify the dimensions underlying a set of financial ratios and subsequently use decision tree algorithms to evaluate the impact of these dimensions on business results.

The use of synthetic indexes is becoming increasingly common, particularly in the public sector, but also, in more recent times, in private sectors. In our country, there are specific cases where they have been employed for purposes such as the evaluation of sustainable tourism in Andalusia (Blancas et. al., 2010), the assessment of the olive sector's sustainability in the same region (Gómez-Limón and Arriaza, 2011), or, once again, an analysis of sustainability in the tourism sector at large (Thiel and Navarro, 2013).

The purpose of this paper is to build a financial performance synthetic index on the basis of profitability and solvency ratios of EU-28 companies operating in the publishing sector in years 2012 and 2014. Our paper's original contribution lies in using composite or synthetic indexes to compare the efficiency of these companies for the above designated period and ascertain whether or not the companies' size, age, geographical location or legal status have a bearing on their financial performance.

The remaining part of this paper is structured as follows: the following section collects information on the publishing sector in Europe that provides the main data on the sector; the third section focuses on the research design by identifying the data sources, describing the study population and outlining the several stages needed to produce a synthetic index; the fourth section is devoted to presenting the paper's results in their various aspects; finally, the paper closes with a section devoted to conclusions as well as a list of the bibliographical references used.

1. The publishing sector in Europe

Cultural industries in Europe constitute a relevant economic sector: one that is even ahead of other sectors such as the energy business or agriculture. In 2010, creative industries contributed roughly 4.5% to the gross value added of the then EU-27 —more

specifically, 6.5% in the United Kingdom, 4.9% in France, 4.2% in Germany, 3.8% in Italy and 3.6% in Spain. The percentages of those employed in cultural industries out of all employed show a correlation with the above, with a global 3.8% for the whole of EU-27 and member states percentages as follows: 5.4% in the United Kingdom, 3.7% in France, 4.1% in Germany, 3.6% in Italy and 3.5% in Spain (Tera Consultants, 2010).

Furthermore, the publishing industry is the subsector that generates the greatest wealth within the entire range of cultural industries. To mention a single example, data for the United Kingdom are revealing, because in 2014, the nominal contribution of the British publishing sector to the gross value added increased by 2.8% compared with the previous year and has increased by an average of 1.6% year over year in the period 2008 – 2013 (Creative Industries Council 2014). According to data supplied by the Federation of European Publishers (FEP 2015), the total revenue obtained in 2014 by book publishers in the 28 countries making up the European Union amounted to €22 billion, while the number of full-time employees working in this industry reached 125,000. In comparison with 2012, there was a decrease both in revenue (2.22%) and in employment (3.85%), while the publication of new titles rose (1.87%), as well as the number of titles in print (active catalogue) (87.78%). Since the slowdown of 2009 has ended, the sector's growth over the last few years has been tied to an increase in exports, the licensing of translation rights and sales of e-books.

The publishing industry has a large potential thanks to opportunities afforded by technological advances and development of communications, but it also faces numerous problems, as it is forced to quickly adapt to changes in the population's consumption patterns. According to predictions made in a report titled Global Entertainment and Media Outlook: 2013-2017 elaborate by PricewaterhouseCoopers (2013), it is expected that by 2017, digital media will represent 37% of all advertising revenue, in contrast with their share of 26% in 2012, while purchased physical books will only account for 53% of consumers' total spending. The publishing industry is introducing innovations in its production models and combating piracy and unfair competition.

Regarding the sector's legislation, there are differences in prices and VAT rates applicable across EU countries. In most of them, however, the price of books is regulated through so-called fixed price agreements. As an example, we may mention the Loi 81/766, of 10 August 1981 in France, and Ley 10/2007, of 22 June 2007 on reading, books, and libraries in Spain, as well as Decreto-Lei 176/96, of 21 September 1996 in Portugal. These countries include Austria, Denmark, Germany, Greece, Hungary, Italy, the Netherlands, Portugal, France and Spain, which thus subscribe to the official position of the European Parliament. Fixed price laws establish that publishers are entitled to fix the price of books, which must then remain identical in all sales points, notwithstanding the possibility of applying discounts of a maximum of about 5%, the exception being book fairs and sales to public libraries. On the other hand, some countries resort to a free price system. Among them are Belgium, Finland, Ireland, Luxembourg, the United Kingdom, Sweden and Switzerland, where there is opposition to protectionist measures in the cultural sector. A controversial issue in most countries, however, is the VAT rate applicable to printed and digital books as regulated by Directive 2008/8/EC, which claims that an electronic book is a digital download service which must be taxed at rates between 18% and 21%, while printed books have reduced VAT rates in all

countries with the exception of Denmark (25%). In 2015, France and Luxembourg changed their tax rate to 20% and 17%, respectively, following a ruling by the European Union's Court of Justice after several years of recurring breaches of European law.

An important attribute of this sector is its degree of concentration, both in geographical and business terms. According to the report The Global Ranking of the Publishing Industry (Rüdiger Wischenbart Content & Consulting, 2015), in 2014, the top 57 publishing groups accumulated revenue worth €59,328 million, i.e. 11% more than in 2013, while the 10 largest groups alone earned €31,820 million. In 2014, the most powerful European markets were Germany, the United Kingdom, France, Spain and Italy, whose total market value is estimated at €36-38 billion. On the other hand, even though numerous companies are based in these countries, it is only a small number of them that dominate the market, the remainder being occupied by a large number of small and medium-sized businesses. For example, in Germany, the big companies with total sales worth over €50 million take up nearly 70% of the sector's total revenue; in Spain, 4% of the largest firms represent over 64% of the industry's turnover; in the United Kingdom, over 50% of companies have annual sales figures below £100,000. In the French book distribution sector, the top five companies have a combined market share of 50%.

2. Research design

After this bird's eye view of the publishing sector in Europe, we will conduct an empirical analysis of available financial data corresponding to a selection of European companies. This section details the analysed population as well as the sources of financial data used, and describes the method for building a synthetic index using the multivariate procedure of factorial analysis.

2.1. Study population and data sources

The data have been extracted from Amadeus (2016), a database compiled by Bureau Van Dijk, and therefore do not constitute a random sample of all EU-28 companies. However, they do provide valuable economic and financial information on a set of 2,356 businesses.

The editorial sector contains great disparities among the companies that make it up. For this reason, and in order to work with companies that are as homogeneous as possible, we decided to include in the sample only those whose operating revenue was above €1,000,000 in the year 2014. Moreover, we singled out those companies for which we had data concerning all ratios employed in the factor analysis for the years 2012 and 2014 —i.e., the data we would need in order to define their financial performance index. Based on these criteria, we were eventually left with a total number of 794 businesses.

2.2. Constructing synthetic or composite indexes

The construction of composite indexes has been used for some time now in multiple public management tasks such as those involving the economy and social development. More generally, the procedure has been employed in many instances of scientific research (Saisana and Tarantola, 2002; Munda, 2005; Nardo et al. 2008).

Pertaining methodology, we need to construct a function containing several variables that can together measure a single characteristic in the individual items under scrutiny (Schuschny and Soto, 2009). As for the reasons that justify the use of synthetic indexes, these would have to do with "the ability to sum up and interpret information as well as to evaluate in a simple way complex and multidimensional phenomena" [our translation] (Blancas et al., 2010, p.3). The use of indexes does not only make it possible to summarise a set of data, but moreover, it enables us to observe tendencies in the situation that is being studied, analyse their evolution over time and even make future predictions. This in turn allows us to make comparisons or establish rankings, both over time (longitudinal) and at specific points in time (cross-sectional).

One of the most common criticisms of this approach is that it involves subjective choices by the analyst along the several stages of the process: singling out the simple indicators to work with, normalising data or setting up a weighting system are compulsory tasks which no doubt involve prior connotations and may bias results in one direction or another. This is why it is critical to reduce such subjectivity as much as possible by employing a methodology that enables us to cut down on the number of decisions to be made by the analyst (Munda, 2005). It also becomes particularly relevant to explain in a clear and precise way the process whereby the index is constructed, thus facilitating the understanding of final results.

Adhering to recommendations of several authors (Boulanger, 2009; Nardo et al., 2005; OECD, 2008), the present paper proposes the following stages in the construction of a composite index: conceptual framework, variable identification and selection, measuring, weighting, aggregating and disseminating results.

In our case, the aim is to construct a synthetic index that represents the financial performance (FPI) of companies in the publishing sector of EU-28. This index will then be used to conduct a series of further studies on the similarities and differences that can be found in the sector itself. The starting point was to define a series of variables or sub-indicators that portray the financial situation of the companies under scrutiny. Table 1 features the variables' code and name as well as their description, both in the case of variables used in constructing the index and also of variables that will later be used to conduct specific studies.

The weight assignment procedure poses some challenges, since it is in this part of the process where a possibly biased approach may produce significant differences among the indicators thus obtained, which would in turn weaken their validity (Nardo et al. (2005). Multivariate techniques provide adequate solutions and, more particularly, principal component analysis —i.e., the method chosen for the purposes of this research— eliminates redundant information by correcting overlaps that may exist between two or more variables. On the above-mentioned initial data, we applied a factor analysis whereby factors were extracted by principal components in order to conduct the weighting procedure using percentages of explained variance.

Table 1. Variables: codes and description

Code	Variables	Description
R1	ROE using P/L before tax (%)	(Profit before tax / Shareholders funds) * 100
R2	ROA using P/L before tax (%)	(Profit before tax / Total assets) * 100
R3	ROE using Net income (%)	(Net income / Shareholder funds) * 100
R4	ROA using Net income (%)	(Net income / Total Assets) * 100
R5	Profit margin (%)	(Profit before tax / Operating revenue) * 100
R6	EBITDA margin (%)	(EBITDA / Operating revenue) * 100
R7	EBIT margin (%)	(EBIT / Operating revenue) * 100
R8	Cash flow / Operating revenue (%)	(Cash flow / Operating revenue) * 100
S1	Current ratio	Current assets / Current liabilities
S2	Liquidity ratio	(Current assets - Stocks) / Current liabilities
S3	Solvency ratio (Asset based) (%)	(Shareholders funds / Total assets) * 100
S4	Gearing (%)	((Non current liabilities + Loans) / Shareholders funds) * 100
OR	Operating revenue (Turnover) th. EUR	Total operating revenues (Net sales + Other operating revenues+ Stock variations). The figures do not include VAT
PL	P/L for period (Net Income) th. EUR	Net income for the year before deduction of minority interests if any (Profit after taxation + Extraordinary and other profit).
TA	Total assets th. EUR	Total assets (Fixed assets + Current assets)
NE	Number of employees (last value)	Total number of employees

Source: Amadeus (2016)

In the aggregation stage, additive and multiplicative methods are the most typical —the weighted sum of indicators being the most common (Gómez-Limón and Arriaza, 2011). In our case, we have used the following formula:

$$FPI = \sum_{i=1}^{j} FS_i \; x \; w_i \tag{1}$$

Where FS_i are factor scores obtained by each company in each of the components defined, while w_i is the percentage of explained variance of each component.

$$w_i = \frac{Explained\ variance\ for\ each\ component}{\sum_{i=1}^{j} explained\ var.of\ the\ whole\ set\ of\ selected\ components} \tag{2}$$

Once indexes have been calculated for each company and every year, the combined information is provided in a summarised and compiled form.

3. Results

We now present the results, commencing with a general descriptive analysis of the firms' financial data and defining the interest groups so as to interpret the index. The results of the factorial analysis are then provided and used to build the synthetic index. The section concludes with an analysis of the financial performance index from various standpoints: depending on the type of firm and the quintile of the indicator.

3.1. Initial analysis

In this section, we will present the sector's aggregated data. First, a joint study is conducted, where the values of all variables are presented in a systematic, summary-like form. Second, we divide the assessed companies into several groups according to four different typologies.

a) Descriptive analysis

Table 2 and Table 3 show a descriptive study of the analyzed variables. A first look at the data shows that Pearson's coefficients of variation are very high, which points to a large dispersion for all variables. By comparing average values for the two years under scrutiny, we observe that all profitability ratios for 2014 rose when compared to 2012, that is with the exception of the two ratios related to the ROE variable. Profit margin saw the highest increase (9.70%), whereas the most important drop was that of the ROE variable when estimated on the basis of net income (12.79%). As regards structural ratios, the only increase takes place in the solvency ratio, while the liquidity ratio remains stable and both the current ratio and financial gearing undergo a decrease, which is more pronounced (8.46%) in the latter case. Regarding size-related variables, profits in 2014 increased compared to 2012 (4.30%), as did total assets (2.53%), while the average values for both operating revenue and number of employees dropped.

Table 2. Descriptive analysis 2014

	N	Mean	Median	Std. Dev.	Coeff. Var. (%)	Minimum	Maximum
R114	794	15.90	10.54	48.57	305.49	-394.43	439.24
R214	794	6.47	4.14	12.21	188.73	-43.60	82.14
R314	794	9.41	6.90	41.73	443.71	-394.43	408.73
R414	794	4.50	3.01	9.97	221.58	-46.07	56.34
R514	794	5.88	4.10	11.87	201.97	-50.85	53.52
R614	794	8.83	7.25	11.72	132.79	-46.60	53.87
R714	794	5.75	4.63	10.98	190.99	-46.94	51.06
R814	794	7.16	5.76	10.99	153.44	-46.60	52.00
S114	794	2.67	1.80	2.80	104.81	0.24	34.11
S214	794	2.03	1.30	2.35	115.69	0.03	22.36
S314	794	46.44	44.35	24.15	52.01	1.08	97.06
S414	794	60.69	17.62	107.52	177.16	0.00	814.36
OR14	794	20315.70	3622.20	90155.20	443.77	1001.09	1793000.00
PL14	794	1492.23	105.23	13670.10	916.08	-22743.60	345482.00
TA14	794	25944.70	4109.99	114885.00	442.81	155.47	2214800.00
NE14	665	93.41	22.00	470.17	503.33	1.00	8554.00

Source: Own elaboration

Table 3. Descriptive analysis 2012

	N	Mean	Median	Std. Dev.	Coeff. Var. (%)	Minimum	Maximum
R112	794	16.13	11.29	52.96	328.32	-391.76	587.48
R212	794	6.03	4.27	12.30	203.90	-52.79	87.51
R312	794	10.79	7.82	43.24	400.80	-341.10	428.08
R412	794	4.33	2.95	10.18	235.13	-48.87	72.45
R512	794	5.36	3.75	12.02	224.19	-74.13	66.39
R612	794	8.31	6.85	11.93	143.47	-52.42	67.69
R712	794	5.36	4.41	11.14	207.96	-56.23	63.21
R812	794	6.79	5.45	11.19	164.79	-59.73	67.54
S112	794	2.73	1.81	3.08	112.80	0.09	30.41
S212	794	2.03	1.32	2.45	120.32	0.03	25.29
S312	794	45.80	44.69	24.63	53.77	1.35	97.73
S412	794	66.30	18.57	123.45	186.19	0.00	998.30
OR12	794	21747.80	3512.01	103767.00	477.14	289.53	1995700.00
PL12	794	1430.71	90.13	8955.46	625.95	-22075.90	128900.00
TA12	794	25305.40	3934.03	112829.00	445.87	126.17	2143500.00
NE12	637	94.68	21.00	512.00	540.77	1.00	10152.00

Source: Own elaboration

b) Group analysis

In order to gain a deeper understanding of the index's meaning, we will use classificatory variables with several characteristics measuring company age, location, size and legal form in order to analyse how the index changes in each of the groups under consideration.

Company age (Age_Cod) will be recoded into three categories: 15 years or below, between 15 and 30 years and over 30 years. Such a classification is warranted due to the fact that the companies in this sector tend to be quite old. For this reason, we decided to group together all businesses below the age of 15 (i.e., recently created companies together with those with a somewhat longer history); and at the opposite end, we have grouped companies above the age of 30, including 13 firms that exceed the 100 year mark.

The geographical region (Coun_Cod) where the company is based is another variable where we have established groups as follows: Region 1 (Mediterranean) includes Spain, Greece, Italy and Portugal; Region 2 (Central Europe) is made up of Germany, Austria, Belgium, France, Ireland, Luxembourg, the Netherlands and the United Kingdom; Region 3 (Northern Europe) consists of Estonia, Finland, Latvia and Sweden; and Region 4 (Eastern Europe) groups together Croatia, Slovakia, Slovenia, Hungary, Poland and the Czech Republic.

In order to analyze size, the variable that will be used measures the company's total assets over a given year. This has been recoded into four groups: assets of €5 million or less, between €5 and €10 million, between €10 and €50 million and over €50 million.

Finally, the company's legal form has been recoded into three subcategories: Private limited companies, Public limited companies and other legal forms —the last including the remaining types and making up a very small group.

Table 4 shows the values whereby the several variables have been subdivided into groups as well as the number of companies making up each of these groups.

Table 4. Classificatory variables: values and number of companies

Age_Cod	N	Coun_Cod	N	TA_Cod (th. €)	N	Legal_Form	N
≤ 15	234	Region 1	330	≤ 5000	452	Private	477
15 – 30	291	Region 2	315	5000 – 10000	115	Public	284
> 30	269	Region 3	53	10000 – 50000	160	Other	33
		Region 4	96	> 50000	67		

Source: Own elaboration

3.2. Factor analysis and index construction

The approach of this part of the research consists in performing a principal component analysis of the initial information matrix provided by 794 companies and 12 variables for the years 2014 and 2012, and then using the results of this analysis to construct a financial performance index for each year.

The Kaiser-Meyer-Olkin measure of sampling adequacy shows values of 0.572 and 0.547 respectively for years 2014 and 2012, while the p-values yielded by Bartlett's test of sphericity are clearly lower than 0.05. On the other hand, the communalities and the principal diagonal of the anti-image correlation matrices exhibit high values, which suggests that we should not exclude any variable from the analysis. The reproduced correlation matrix reflects percentages of non-redundant residuals at 16% and 22% respectively for the years 2014 and 2012, which confirms the goodness-of-fit of our analysis. All measures and indexes obtained by means of this method confirm its validity and the inclusion of all variables used, there being no need to exclude any of them.

Based on the 12 initial variables, and adhering to Kaiser's criterion, our factor model extracts four factors that explain 89.417% of the total variance for the year 2014 and 88.664% for 2012. Table 5 includes the eigenvalues for each factor as well as the percentages of both the explained variance for each factor and the cumulative variance. In Table 6 we can see the factors' coefficients after the varimax rotation.

Table 5. Percentages of explained variance 2014 and 2012

	Initial Eigenvalues		Rotation Sums of Squared Loadings			
Component	2014	2012	% of variance 2014	Cumulative % 2014	% of variance 2012	Cumulative % 2012
1	5.970	5.746	39.660	39.660	37.871	37.871
2	2.593	2.598	19.157	58.816	20.385	58.256
3	1.142	1.267	19.027	77.844	18.813	77.069
4	1.026	1.030	11.574	89.417	11.595	88.664
5	.435	.491				
6	.301	.318				
7	.235	.260				
8	.134	.138				
9	.095	.075				
10	.050	.063				
11	.016	.014				
12	.005	.003				

Extraction method: Principal component analysis.
Source: Own elaboration

Bearing in mind the variables' correlations with the extracted factors, our interpretation of the latter for the year 2014 would be as follows:

F1. Business profitability: this factor is highly correlated with ratios R2, R4, R5, R6, R7 and R8. It measures operating or sales profitability, as well as the gross margin resulting from operations.

F2. Liquidity: this factor is correlated with S1 and S2, which indicate cash availability.

F3. Financial profitability or shareholder value: this factor is highly correlated with ratios R1 and R3.

F4: Solvency: this factor bears a positive correlation with the solvency ratio S3 and a negative correlation with gearing S4.

Table 6. Rotated component matrix

	Component 2014					Component 2012			
	1	2	3	4		1	2	3	4
R614	.941				R612	.937			
R714	.929				R712	.920			
R514	.914				R512	.915			
R814	.884				R812	.899			
R214	.770				R212	.712			
R414	.754				R412	.705			
S114		.977			R312		.931		
S214		.970			R112		.925		
R314			.918		S112			.970	
R114			.908		S212			.964	
S414				-.948	S412				-.944
S314				.646	S312				.639

Extraction method: Principal component analysis.
Rotation method: Varimax with Kaiser normalisation.
Rotation converged in 5 iterations for 2014 and in 6 iterations for 2012.
Source: Own elaboration

For the year 2012, the factors remain the same, the only difference being the order in which they appear, with the second and the third factor swapping places. This, however, has no effect on index construction.

Once this factor analysis has been conducted, we proceed in estimating the synthetic index by using the formula described above. Since the values originally obtained in the index are not expressed on a representative scale and differ for the two years being studied, the next step consists in normalising the index so that it varies from 0 to 100. This is achieved by using the following formula:

$$FPIN = \frac{FPI - min(FPI)}{max(FPI) - min(FPI)} \times 100 \qquad (3)$$

Since we have been working with a very large sample of companies (794), we next provide a synthetic summary of the information in Table 7 and in Figure 1, which shows the number of operating companies in each of the 5 score ranges —going from the lowest value (0) to the highest one (100)— following index normalisation.

Table 7. Number of entities by score range

Groups	Index range	N 2014	% 2014	N 2012	% 2012
Group 1	0 – 20	19	2.39	11	1.38
Group 2	20 – 40	183	23.05	80	10.08
Group 3	40 – 60	487	61.33	540	68.01
Group 4	60 – 80	92	11.59	143	18.01
Group 5	80 – 100	13	1.64	20	2.52

Source: Own elaboration

Figure 1. Number of entities by score range

Source: Own elaboration

3.3. Analysis of the financial performance index (FPI)

Once the index has been obtained, we will conduct two different types of analyses for the years being studied. First, we will compare the mean indexes based on several variables such as age, geographic region, total assets and legal form, in order to identify significant differences within these categories and trace their evolution. In our second analysis, we will group together the index values in quintiles and examine their influence on the variables profits-and-losses and number of employees.

a) Analysis of FPI by company type

The age variable only shows significant differences at the 10% level for the mean index of the three categories defined —and this only in figures for 2014. Such differences are not significant in 2012, as can be seen in Table 12. Table 8 shows that the index decreases as company age increases.

Table 8. Summary Statistics for Company Age

Age_Cod	N	Mean 2014	Median 2014	Mean 2012	Median 2012
≤ 15	234	47.9467	45.0551	52.2251	50.1836
15 – 30	291	47.1435	45.6035	51.4258	49.8419
> 30	269	45.5312	45.4386	50.7869	50.4098
Total	794	46.8340	45.5278	51.4449	50.1439

Source: Own elaboration

In the case of geographical regions or zones where we have grouped together several sets of countries, Table 12 shows that in the two years observed by our study, there are significant differences across regions. In both years, the geographical region that exhibits the clearest differences compared with the rest is region 4, with higher indexes than the others. The others, in turn, share values that are closer to one another as can be seen in Table 9, which also demonstrates that region 2 has experienced a slight decrease, with mean values below those of region 3.

Table 9. Summary Statistics for Geographic Region

Coun_Cod	N	Mean 2014	Median 2014	Mean 2012	Median 2012
Region 1	330	45.6721	44.0172	49.6943	48.2671
Region 2	315	45.9522	44.7188	52.2401	50.8002
Region 3	53	46.5994	47.9978	51.3309	52.4625
Region 4	96	53.8507	50.1035	54.9165	51.8169
Total	794	46.8340	45.5278	51.4449	50.1439

Source: Own elaboration

Regarding total assets, Table 12 illustrates that there are no significant differences among the indexes for the four groups that were defined. While not significant, however, it is worth mentioning that the mean values of the created indexes increase as total assets grow, with the exception of a small "swap" of values occurring between the two middle categories for the year 2014, as can be seen in Table 10.

Table 10. Summary Statistics for Total Assets

TA_Cod (th. €)	N	Mean 2014	Median 2014	Mean 2012	Median 2012
≤ 5000	452	45.8941	44.4053	50.6379	49.1500
5000 – 10000	115	48.4046	48.2243	51.3860	49.1188
10000 – 50000	160	47.6930	47.4109	52.9598	52.6470
> 50000	67	48.4271	47.9901	53.5351	52.1557
Total	794	46.8340	45.5278	51.4449	50.1439

Source: Own elaboration

As far as legal form is concerned, values in Table 12 show that in this variable as well, no significant differences occur across indexes corresponding to the several legal forms that companies may have. Table 11 indicates that the greatest difference regarding the legal forms considered here occurs within the group "Other Legal Forms", which exhibits the biggest drop between the years 2012 and 2014.

Table 11. Summary Statistics for Legal Form

Legal_Form	N	Mean 2014	Median 2014	Mean 2012	Median 2012
Private	477	47.3908	45.4386	52.1085	50.3282
Public	284	46.3323	46.5594	50.1934	50.0688
Other	33	43.1036	44.3589	52.6228	50.1087
Total	794	46.8340	45.5278	51.4449	50.1439

Source: Own elaboration

Table 12. Statistics for equality of variance and equality of means/medians contrasts. Company age, Geographical Region, Total Assets and Legal Form

Variable	Factor	Levene	P-value	F Ratio	P-value
Age_Cod	FPIN14	0.0638	0.9382	2.31	0.0996*
	FPIN12	0.2898	0.7485	0.77	0.4629
Coun_Cod	FPIN14	1.7927	0.1471	11.18	0.0000***
	FPIN12	3.2314	0.0219**	18.39[a]	0.0004***
TA14_Cod	FPIN14	1.4044	0.2402	1.93	0.1224
TA12_Cod	FPIN12	0.4894	0.6897	1.88	0.1306
Legal_Form	FPIN14	6.7620	0.0012***	2.10[a]	0.3504
	FPIN12	1.9625	0.1412	2.09	0.1240

[a] *Kruskal-Wallis statistic is used.*
** Significant at 10%, ** Significant at 5%, *** Significant at 1%.*
Source: Own elaboration

b) FPI quintiles: their influences on variables profits-and-losses and number of employees

In our second analysis, we have split up our sample of companies into quintiles obtained using the 2014 index and subsequently focused on the mean values of two additional variables inside each of the quintiles: profits-and-losses and number of employees. In order for all information to refer to the same companies, we will only use index values for the year 2014. Regarding the profits-and-losses variable, Table 13 shows a mean increase of €61,520 in company profits from 2012 to 2014 —i.e., a 4.30% rise. However, a closer inspection of information within the quintiles reveals a decrease of mean profits in the first four quintiles between the years 2012 and 2014, especially in the first two quintile (792.61% in the first and 66.85% in the second). In the last quintile, there is a marked increase (64.47%). In both years, and both for mean and median values, we

observe an increase as we move into a higher quintile (see Table 13): in other words, the higher the index is, the larger the companies' profits are. These differences are statistically significant, as is made evident in Table 15. Another observation that corroborates a strong positive correlation between the obtained index and the variable reflecting profits and losses is the fact that Spearman's rank correlation coefficient is 0.7352 for the year 2014 and 0.7547 for the year 2012.

Table 13. Summary Statistics for Profits-and-Losses

QUIN14	N	Mean 2014	Median 2014	Mean 2012	Median 2012
1	159	-750.256	-106.673	94.656	2.661
2	159	243.178	23.331	733.474	29.943
3	158	1293.060	106.263	1595.670	90.284
4	159	1393.160	270.658	1519.960	163.931
5	159	5280.770	616.476	3210.830	454.367
Total	794	1492.230	105.231	1430.710	90.134

Source: Own elaboration

On the other hand, between 2012 and 2014, there was a 2.81% decrease in employment (see Table 14) in the companies making up the study sample (an occurrence that, as was mentioned in this paper's introduction, is shared by the whole of the companies in the sector). Such a decrease, however, is not equally distributed but rather depends on the quintile a given firm's index for 2014 occupies. In other words, companies included in the first four quintiles did experience a decrease in their number of employees, although there are differences among them, since companies in the third quintile experienced a bigger drop in this regard with staff cuts equivalent to 10.77%, in contrast with the 3% observed in the other three quintiles. However, companies with a high index increased their staff by 9.68%. The high degree of dispersion exhibited by this variable within every single quintile defined for the purpose of this study means that these differences between values in the several quintiles are not statistically significant, as is shown in Table 15.

Table 14. Summary Statistics for Number of Employees

QUIN14	N	Mean 2014	Median 2014	Mean 2012	Median 2012
1	131	50.244	19.0	52.710	18.0
2	118	100.890	23.0	105.059	23.0
3	119	139.790	20.0	156.664	18.0
4	121	68.736	26.0	69.752	27.0
5	122	118.377	25.5	107.926	26.5
Total	611	94.732	22.0	97.466	22.0

Source: Own elaboration

Table 15. Statistics for equality of variance and equality of means/medians contrasts. Profits-and-Losses and Number of Employees

Variable	Factor	Levene	P-value	Kruskal-Wallis	P-value
PL14	QUIN14	8.2786	0.0000***	432.34	0.0000***
PL12	QUIN14	4.6030	0.0011***	159.98	0.0000***
NE14	QUIN14	1.9698	0.0976*	4.35	0.3606
NE12	QUIN14	2.2544	0.0620*	3.71	0.4472

** Significant at 10%, ** Significant at 5%, *** Significant at 1%.*
Source: Own elaboration

Conclusions

Cultural industries have consolidated their position in Europe as an outstanding economic sector, both from the point of view of gross value added and in respect of employment. Within these cultural industries, it is the publishing sector that contributes the greatest wealth, providing full-time jobs in EU-28 for 125,000 people and generating a total revenue worth €22 billion. A distinctive characteristic of this sector is its high degree of both geographic and business concentration.

With the aim of studying the publishing sector, this paper has defined a synthetic index that measures the financial performance of companies in this sector. In order to construct such an index, we have singled out a number of profitability and structural ratios that collect information on the financial situation of the companies under scrutiny from several points of view.

Our first analysis of the data showed that between 2012 and 2014, there was a widespread increase in profitability ratios —with the exception of ROE—, solvency, profits and total assets. Gearing, operating revenues and the number of employees experienced a decrease.

In order to create the financial performance index, factor analysis boils down the information provided by the initial 12 ratios into 4 new factors that account for nearly 90% of the total variance for each of the two years targeted by our study, so that the index meets reliability standards. These new factors are: business profitability, financial or shareholder value, liquidity and solvency. The results obtained show that the majority of companies reach index scores within the central interval; about 70% of them fall into this interval.

As for the analysis by business type, the constructed financial performance index shows differences regarding company age, the highest values being reached by the youngest companies. There are also significant differences in connection with the geographical regions where companies are based, with Eastern Europe (Croatia, Slovakia, Slovenia, Hungary, Poland and the Czech Republic) standing out from the rest. In terms of size, there are no significant differences between the defined categories, even though it may be observed that when the companies' total assets rise, so does their FPI. As regards legal form, no significant differences were detected.

Moreover, when the FPI is grouped into quintiles and its influence on other variables is analyzed, the results obtained for profits and losses show significant differences across quintiles, where the highest scoring companies achieve the best results —an occurrence that is completely consistent with the index's meaning. When the same effect is analyzed from the point of view of employment, it turns out that the companies with the highest index are the only ones that have increased their staff numbers, while the rest have lost jobs in all cases, albeit not following a single pattern.

As a final conclusion, we may argue that the main contribution of this paper is the design of a model for evaluating financial performance in companies within the publishing sector that has enabled us to measure the efficiency of each business with regard to the rest while keeping in mind its profitability and financial structure variables.

The technique used to construct the synthetic indicator proves to be robust and is supported by a number of applications in other fields of research. One prominent future line of research may thus involve this type of study being replicated over time in an effort to examine the stability of the results obtained in the publishing sector. It may also be applied to firms in any other financial sector, comparing the outcomes with those that emerge here.

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