PROFITABILITY AND LIQUIDITY OF ITALIAN GAMBLING COMPANIES: QUANTITATIVE PROFILES BEFORE AND DURING THE PANDEMIC FOR COVID-19*

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ABSTRACT

One might think that the pandemic had a devastating effect on gambling businesses, due to the long-time closures of arcades. This could have also damaged public finances, considering the revenue from taxes and duties, the fact that the serious social risks due to possible deviance.

This research analyses the economic and financial dynamics of Italian gambling companies between the two major international crises, while also trying to verify possible relations with the general economic cycle.

Research methods. The financial statement data of about 1200 firms with a turnover of more than €800,000, for the 2009-2020 decade, were analysed, illustrating the average trends of Roa and Quick Ratio, for Italy and each of its macro-areas (North, Centre, and South). The data have been subjected to statistical processing. The Anova and Tukey-Kramer methods were used for comparison between macro-regions.

The results show that the companies in the sample have an irregular but always positive and increasing ROA, with some exceptions. There are no significant differences between the varioust geographical areas. An excellent short-term financial situation is evident everywhere, with increasing and sometimes excessive cash balances.

This study complements the economic literature on gambling companies, which is lacking. It confirms some of the findings of other scholars who have already highlighted the reduction in profitability during crises, when other authors have highlighted similar profitability trends in other sectors. This quantitative research highlights the high earnings that justify proliferation of gambling companies. Public policies should be attentive to the sector that complements national GDP, but can generate serious social pathologies. In the theoretical profile, the aggregation of balance sheets used, however, organised, can prospectively become a useful model for interpreting complex phenomena.

***Keywords**: gambling companies, Italy, performance, Roa, Quick ratio, Anova.*

S-ar putea crede că pandemia Covid-19 a avut un efect devastator asupra afacerilor cu jocuri de noroc, din cauza închiderii îndelungate a localurilor cu aparate jocuri de noroc. Acest lucru ar fi putut, de asemenea, să afecteze finanțele publice, având în vedere veniturile din taxe și impozite, astfel creând unele riscuri sociale din cauza posibilelor abateri.

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* ***This paper is the result of collaboration between the two authors. It is however possible to attribute to Monica Di Stazio the paragraph "Main results", with relative sub-paragraphs. The other paragraphs are by Guido Migliaccio..***

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În această lucrare se analizează dinamica economică și financiară a companiilor italiene de jocuri de noroc între cele două crize internaționale majore, pentru a verifica, de asemenea, posibilele relații cu ciclul economic general.

Au fost analizate datele privind situația financiară a aproximativ 1200 de firme cu o cifră de afaceri mai mare de 800.000 de euro, pentru perioada de zece ani 2009-2020, ilustrând tendințele medii ale Roa și Quick Ratio, pentru Italia și pentru fiecare dintre macrozonele sale (Nord, Centru și Sud). Datele au fost supuse unei prelucrări statistice. Pentru comparația între macroregiuni, au fost utilizate metodele Anova și Tukey-Kramer.

Rezultatele au demonstrat că companiile din eșantion au un ROA neregulat, dar întotdeauna pozitiv și în creștere, cu câteva excepții. Nu există diferențe semnificative între zonele geografice. O situație financiară foarte bună pe termen scurt este evidentă peste tot, cu solduri de numerar în creștere și uneori excesive.

Acest studiu completează literatura economică privind companiile de jocuri de noroc, care este foarte deficitară. Se confirmă unele dintre concluziile altor cercetători care au evidențiat reducerea profitabilității în timpul crizelor, pe când alți autori au evidențiat tendințe similare de rentabilitate în alte sectoare. Această cercetare cantitativă evidențiază profiturile ridicate care justifică proliferarea companiilor jocuri de noroc. Politicile publice ar trebui să fie atente la acest sector care contribuie la formarea PIB-lui național, dar care poate genera patologii sociale grave. În profil teoretic, agregarea bilanțurilor utilizate, oricât de organizată, poate deveni, în perspectivă, un model util pentru interpretarea unor fenomene complexe.

***Cuvinte-cheie**: companii jocuri de noroc, Italia, performanță, Roa, Quick ratio, Anova, testul Tukey Kramer.*

Можно предположить, что пандемия Covid-19 оказала разрушительное воздействие на игорный бизнес, в связи с длительным закрытием залов игровых автоматов. Это также могло нанести ущерб государственным финансам, учитывая доходы от налогов и сборов, представляя серьезные социальных риски из-за возможных отклонений.

В данном исследовании анализируется экономическая и финансовая динамика итальянских игровых компаний в период между двумя крупными международными кризисами, а также проверяются возможные связи с общим экономическим циклом.

Были проанализированы данные финансовой отчетности около 1200 компаний в области игорного бизнеса с оборотом более 800 000 евро за десятилетний период 2009-2020 гг, показывающие средние тенденции коэффициентов Roa и Quick Ratio для Италии и каждого из ее макрорегионов (Север, Центр и Юг). Данные были подвергнуты статистической обработке. Для сравнения между макрорегионами использовались методы Anova и Tukey-Kramer.

Результаты исследований показали, что компании в выборке имеют неравномерную, но всегда положительную и растущую рентабельность активов, за некоторыми исключениями. Между географическими регионами нет существенных различий. Повсеместно наблюдается очень хорошая краткосрочная финансовая ситуация, с растущими и иногда чрезмерными остатками денежных средств.

Данное исследование пополняет экономическую литературу, касающуюся игровых компаний, которой очень не хватает. Оно подтверждает некоторые выводы других ученых, которые уже отмечали снижение прибыльности во время кризисов, тогда как другие авторы отмечали подобные тенденции рентабельности в других секторах. Данное количественное исследование подчеркивает высокие доходы, которые оправдывают распространение игорных компаний. Государственная политика должна быть внимательна к сектору, который способствует формированию национального ВВП, но может порождать серьезные социальные патологии. В теоретическом плане используемая агрегация балансовых отчетов,

как бы она ни была организована, в перспективе может стать полезной моделью для интерпретации сложных явлений.

***Ключевые слова**: игорный бизнес, Италия, производительность, Roa, коэффициент быстродействия, Anova.*

INTRODUCTION

Gaming meets the need for entertainment. The outcome may depend on the skill or luck of the players (Caillois et al., 2007). Randomness characterises gambling (Altavilla, 1963). Occasional gambling is not a pathology. It becomes so when it compromises psychophysical balance (Galimberti, 2019).

Few specialised suppliers of equipment, gaming software, if not self-produced, and financial transactions characterise the industry supply chain (Vaughan-Williams & Siegel, 2013).

High international competition characterises the market. People of different social classes and education play.

Business operational risks are modest, mainly related to the development of the regulatory framework. Problems related to the security of financial transactions and computer fraud are less likely to occur in addition to sports fraud.

The profit margin also depends on taxation.

Growth and business development possibilities depend on the physical or virtual market or the differentiation and diversification of games.

In Italy, the Customs and Monopolies Agency supervises legal gaming (Sbordoni, 2010). Studies and debates have followed one another in a necessary interweaving of psychological, sociological, legal, and economic aspects (La Rosa, 2016a), while the reflection on the managerial and economic-financial characteristics of the companies of the sector to which this contribution is dedicated became relatively marginal, answering some questions:

RQ1: what was the trend of profitability in the decade considered?

RQ2: How did the financial dynamics evolve?

RQ3: has the location of companies affected profitability and financial balances?

RQ4: What have been the effects on the sector of national policies to deal with the pandemic?

Everything refers to the Italian context, which may be a useful reference for other countries. After the main bibliographic references, the methodology used to elaborate the values of the financial statement is outlined. Then, the main results, implications, limitations of the research, and possible developments of the study with critical considerations and conclusions.

LITERATURE REVIEW

The bibliographic sources are numerous (Teucci, 2019). More recently, an extensive literature search on the subject has been proposed using four emerging keys: adolescent gambling, health conditions, and problem gambling, and dark nudging (Buchanan & Shen, 2021).

It is first necessary to refer to the themes of addiction (Gambling Disorder), which is, unfortunately, more frequent among fragile people: adolescents (Zenarolla, 2017) and the elderly (Croce et al., 2017). On these aspects, it is necessary to refer to contributions from psychology and sociology (Galimberti, 2019; Zappolini & Scigliano, 2019). There are frequent public health scares (Capitanucci, 2004) and possible criminal deviance (Berrittella & Provenzano, 2016).

Recently, probably also due to the effect of the pandemic, there has been an increase in studies on market dynamics more or less related to typical gambling methodologies. This is the case, for example, of the research by Chen et al. (2021) who studied the relationships between gambling sentiment and stock market outcomes, to the extent of measuring how gambling captures market bubble events and how it predicts stock and option returns (Chen & Gan, 2021). These are important assumptions that correlate classic gambling patterns with market trends in other assets and with the choices of stock market investors who are motivated by the expectation of capital gains over rising stock price assumptions (Zhu et al., 2021). Indeed, stock market speculators are also gamblers...

There has also been a proliferation of studies on gambling promotions, especially on their advertising (Micangeli, 2021). This is in the context of more articulated marketing analyses that sometimes distinguish between different types of players, their perceived values, the satisfaction they have for gambling, and their propensity to reach specific destinations where gambling is widespread and technologically advanced (Li et al., 2020). Indeed, technology has given a considerable boost to gambling, especially online (Liu et al., 2021).

Closer to the intentions of this research is the study by Lim and To (In press) who analysed the economic impact of a pandemic on the tourism economy. However, the authors focused their studies only on Macao's destination, which had already been the subject of some previous valuable analyses (Liu et al., 2020), concluding that the local situation is characterised by a gambling-dependent economy. This conclusion is justified because the revenues of the local gambling industry are mainly dependent on tourists. The local industry is experiencing an unprecedented decline in revenue due to the collapse of tourism because of the pandemic. However, this is a different context from Italy where gamblers are predominantly residents. In the last decade, profound changes have taken place in the regulation of the gambling market in Italy, making it the largest in Europe. This has had intuitable social effects only partially offset by the rise in tax revenues that have generated justified concerns about the distributional effects of related tax revenues, given that it is widely recognised that poorer individuals are more attracted to gambling (Gandullia & Leporatti, 2019).

It is precisely this significant opportunity for Italian tax revenues that leads to the presumption that the local gambling industries are highly profitable. From this justified presumption, the first research hypothesis derives:

(H1) companies have positive and sometimes high profitability, measurable through the classical balance sheet ratios.

This is considering the characteristics of the betting market in Italy.

Scientific contributions of a typically economic-business matrix are more scarce.

The study by Ligonie (2018) impregnated on strategies is useful. The studies by Mazza (2012) and Calvosa (2013) focus on the Italian situation. More numerous are the writings that focus on the communication methods for gambling companies to promote their product (Ciofalo et al., 2016; La Rosa, 2016a), through links with other goods (Maher et al., 2006).

Studies on personnel are also reported to prevent pathologies (Kalke et al., 2011; La Rosa, 2016a) (Kalke et al., 2011; Ramaci, 2016).

The accounting and reporting aspects have not given the development they deserve. This quantitative analysis wants to remedy this shortcoming, also to verify whether the collection normally in cash favours financial management. That is, it is necessary to verify whether the following:

(H2) companies have a good financial situation, measurable through the classical balance sheet ratios.

Additionally, it should be verified whether

(H3) there is a relationship between the economic-financial balance of the companies and the territory.

This is especially true in Italy, considering the socio-economic imbalances that characterise the three macro-areas of the country. The propensity to gamble could be related to the degree of diffusion of culture and economic well-being.

It is also possible to check whether, in times of crisis, there is a greater inclination to gamble to try to compensate for lost earnings (La Rosa, 2016a; La Rosa & Bernini, 2018). In other words, it is necessary to study whether the following:

(H4) there is a relationship between financial statements performance and cyclical economic trends.

Other research, from other sectors, has shown, albeit utilizing financial statement analysis, that there is an obvious relationship with general economic trends (Migliaccio & Tucci, 2020).

The purpose of the research

The purpose of this study is therefore to outline an initial analysis of the economic and financial situation of Italian companies with Ateco code 92.00 (Activities concerning lotteries, betting, casinos), also distinguishing them by geographical area, in the period 2009-2020, using the study of the temporal evolution of two indices (Roa and Quick ratio) obtained from the analysis of their financial statements.

RESEARCH METHODOLOGY

From the "Aida" database, the financial statements of about 1,200 companies (1,212 for the decade 2009-2018; 1,197 for 2011-2020), with a turnover of more than € 800,000, were taken, although the amount of information available was always lower.

The national data were then broken down into the three national macro-areas and subjected to statistical processing and represented graphically.

The main descriptive statistical processes were average, standard error, median, mode, standard deviation, sample variance, kurtosis, asymmetry, interval, minimum, maximum, range of variation.

The graphical representation of the trend of the average annual data for each index also required the determination of the interpolating curve, using, as a rule, the polynomial equation of degree 6 that maximised the value of R^2.

ANOVA methods (with 0.05 level of significance) and, if necessary, Tukey–Kramer were used for comparison between macro-regions. Each outcome is illustrated and commented on.

MAIN RESULTS

ROA assesses the profitability of invested capital. It is calculated using the following formula: operating profit/total assets %. It considers characteristic management, non-characteristic management, and equity and debt investments. It is therefore considered a 'global' profitability index. The evaluation of its average values improves through temporal and, where possible, spatial comparisons.

Table 1 shows the number of data available for Italy and its macro-areas (1a) and the average value of the index for each year (1b).

Table 1

Determination of the ROA trend

Table 1a: Available data

	Italy	North	Center	South
2009	289	107	83	99
2010	320	120	88	112
2011	338	131	96	111
2012	348	141	92	115
2013	373	156	91	126
2014	400	165	97	138
2015	406	165	96	145
2016	404	161	94	149
2017	376	153	86	137
2018	227	111	56	60
2019	365	149	87	129
2020	69	34	22	13

Table 1b: ROA - annual average values

	Italy	North	Center	South
2009	4,29	-1,10	5,18	9,37
2010	8,04	7,24	6,13	10,40
2011	12,28	13,02	8,81	14,40
2012	6,26	9,22	2,33	5,77
2013	4,00	5,47	-0,75	5,61
2014	9,77	14,96	2,28	8,82
2015	8,20	16,44	1,03	3,57
2016	14,06	14,51	19,72	9,99
2017	12,95	14,83	6,57	14,86
2018	15,80	16,37	13,03	17,33
2019	10,85	11,13	9,68	11,32
2020	0,11	-5,91	-6,54	27,11

Source: elaboration on AIDA data

To plot the trend graph of annual average values, we first determine the interpolating equation that maximises the R^2 value (Table 2).

Table 2

Equations of ROA interpolating curves

Area	Equation	R^2
Italy	$y = -0{,}0002x^6 + 0{,}0116x^5 - 0{,}2428x^4 + 2{,}5853x^3 - 13{,}625x^2 + 31{,}981x - 16{,}785$	0,8568
North	$y = -0{,}0018x^6 + 0{,}073x^5 - 1{,}1569x^4 + 9{,}1979x^3 - 37{,}88x^2 + 75{,}684x - 47{,}528$	0,9081
Centre	$y = -0{,}0002x^6 + 0{,}0117x^5 - 0{,}2652x^4 + 2{,}9311x^3 - 15{,}269x^2 + 32{,}878x - 15{,}69$	0,6455
South	$y = 0{,}0028x^6 - 0{,}1004x^5 + 1{,}3725x^4 - 8{,}773x^3 + 26{,}428x^2 - 34{,}113x + 24{,}583$	0,857

Source: elaboration on AIDA data

This results in Figure 1, which shows an irregular index trend.

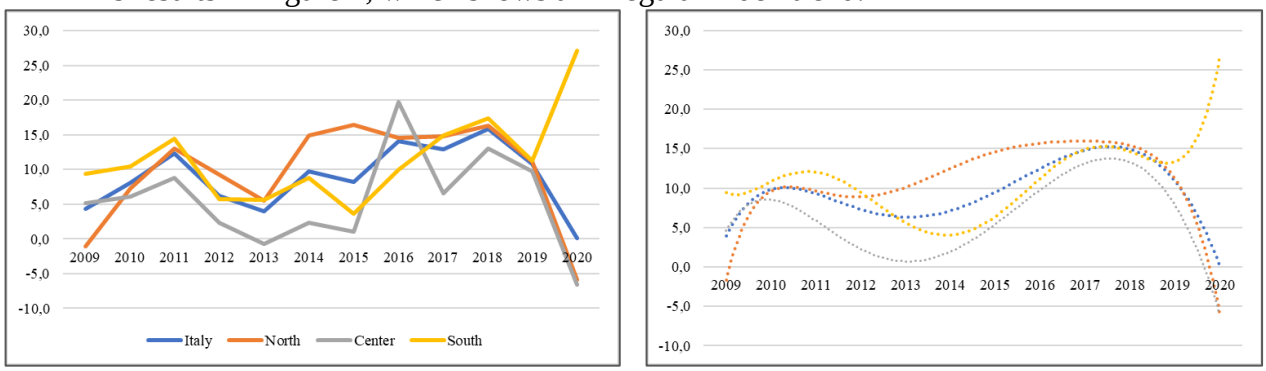

Figure 1: ROA trend 2009-2020

Source: elaboration on AIDA data

The lowest values characterise the Center (often below 6%), except in 2016 when it reached 19.72%. In the North and South, on the other hand, ROA has higher values. Moreover, in 2009 in the North, in 2013 in the Center, and 2020 in the South, ROA takes on negative values, due to operating losses. In the South, on the other hand, there is a significant increase in ROA to 27% in 2020.

The decline in profitability due to the pandemic-related closures in the last year seems evident. The higher profitability due to the increase in online games has therefore uncompensated for the losses certainly resulting from the prolonged closure of gaming rooms. The only exception is for businesses in southern Italy. This last evidence, however, is affected by the more modest number of financial statements currently available: the anomalous data need further study to be justified.

The trend of the average Roa data can be further elaborated by calculating some statistics (Tables 3 and 4).

Table 3

ROA descriptive statistics – Italy

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	4,29	4,45	36,80	1354,16	-349,24	307,26	656,50
2010	8,04	5,81	30,40	924,43	-241,96	322,94	564,90
2011	12,28	8,94	30,28	916,87	-177,58	283,68	461,26
2012	6,26	3,96	24,67	608,51	-73,16	260,53	333,69
2013	4,00	3,57	24,10	580,90	-173,71	84,33	258,04
2014	9,77	8,02	36,43	1327,39	-140,02	529,23	669,25
2015	8,20	6,05	62,53	3909,62	-764,32	679,87	1444,19
2016	14,06	6,23	58,33	3402,27	-86,15	780,56	866,71
2017	12,95	7,75	43,67	1906,67	-141,31	731,39	872,70
2018	15,80	11,63	22,90	524,29	-94,40	97,09	191,49
2019	10,85	8,05	33,87	1146,89	-465,39	273,51	738,90
2020	0,11	-0,12	36,75	1350,53	-209,75	99,79	309,54

Source: elaboration on AIDA data

Table 4

ROA descriptive statistics - Macro areas Italy

NORTH

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	-1,10	5	46,84	2193,94	-349,24	48,36	397,6
2010	7,24	9,24	32,16	1034,37	-241,96	68,41	310,37
2011	13,02	13,39	30,96	958,52	-177,58	88,03	265,61
2012	9,22	6,82	21,29	453,35	-73,16	75,90	149,06
2013	5,47	4,34	28,80	829,42	-173,71	84,33	258,04
2014	14,96	8,98	48,45	2347,07	-119,95	529,23	649,18
2015	16,44	7,59	69,66	4852,41	-303,93	679,87	983,80
2016	14,51	5,71	66,06	4363,93	-86,15	780,56	866,71
2017	14,83	7,09	62,69	3930,38	-94,86	731,39	826,25
2018	16,37	11,60	25,02	626,07	-94,40	97,09	191,49
2019	11,13	7,27	18,69	349,29	-43,95	81,93	125,88
2020	-5,91	-3,06	41,06	1686,27	-209,75	65,19	274,94

CENTRE

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	5,18	2,27	37,69	1420,28	-41,85	307,26	349,11
2010	6,13	3,15	38,80	1505,39	-65,66	322,94	388,6
2011	8,81	2,64	36,35	1321,35	-78,41	283,68	362,09
2012	2,33	0,70	33,31	1109,53	-61,49	260,53	322,02
2013	-0,75	0,63	18,46	340,82	-72,07	39,58	111,65
2014	2,28	3,29	21,64	468,09	-81,64	50,51	132,15
2015	1,03	3,45	32,94	1084,91	-191,84	66,66	258,50
2016	19,72	5,05	80,41	6465,60	-62,68	644,59	707,27
2017	6,57	5,85	26,00	675,89	-141,31	63,09	204,40
2018	13,03	11,83	17,15	294,16	-27,92	77,54	105,46
2019	9,68	7,57	18,25	333,23	-56,55	80,92	137,47
2020	-6,54	-5,10	23,21	538,66	-55,44	51,88	107,32

SOUTH

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	9,37	5,12	18,96	359,66	-48,2	75,52	123,72
2010	10,40	6,3	18,94	358,67	-37,59	65,9	103,49
2011	14,40	13,56	22,79	519,29	-109,71	73,40	183,11
2012	5,77	4,73	19,65	386,23	-55,81	52,54	108,35
2013	5,61	5,33	20,81	433,19	-79,37	81,95	161,32
2014	8,82	9,42	25,60	655,29	-140,02	105,48	245,50
2015	3,57	5,58	67,97	4620,07	-764,32	85,65	849,97
2016	9,99	6,62	21,13	446,39	-86,03	87,76	173,79
2017	14,86	11,40	20,22	408,71	-70,08	95,84	165,92
2018	17,33	13,04	23,59	556,60	-38,27	91,37	129,64
2019	11,32	10,47	51,31	2632,46	-465,39	273,51	738,90
2020	27,11	19,18	33,16	1099,84	-7,40	99,79	107,19

Source: elaboration on AIDA data.

The national figure shows a median that is a little different from the average. The distribution of the data is therefore asymmetrical: most of them have values below the average. The standard deviation and the variance have high values: it is, therefore, possible to say that the Return on Assets has considerable variability.

ROA has negative minimum values (in 2015 in the South the minimum value was -764.32%) and positive maximum values (in the North in 2016 it reached 780.56%) that characterise much variation. However, these particularly high or low values are, rare, even though they influence the average.

Initial observation of the graphs and careful evaluation of the descriptive statistics does not show significant differences between the three macroareas. To better measure and evaluate the differences, the annual average data of the ROA were subjected to the ANOVA test (Table 5).

Table 5

ANOVA tests on ROA

SUMMARY						
Groups	*Counting*	*Sum*	*Average*	*Variance*		
North	12	116,17708	9,6814237	51,333558		
Center	12	67,473088	5,6227573	46,655005		
South	12	138,55027	11,545856	40,258297		
VARIANCE ANALYSIS						
Origin of the variation	*SQ*	*gdl*	*MQ*	*F*	*Significance value*	*F crit*
Between groups	220,1279	2	110,06395	2,388422	0,107462366	3,2849177
In groups	1520,7155	33	46,082286			
Total	1740,8433	35				

Source: elaboration on AIDA data

ROA shows greater differences within groups than between groups. The analysis of variance revealed no statistically significant differences between the groups considered (F < of F crit). Since the null hypothesis is accepted, the post-Anova test is not necessary.

Quick ratio

The immediate liquidity ratio assesses the ability to meet upcoming financial commitments with liquid or easily liquidated resources. Its formula is current assets - inventories/short-term receivables.

When the Quick ratio:

- is greater than 1.5, there is a situation of imbalance due to excess liquidity;
- is slightly greater than one 1, there is a consolidated liquidity situation characterised by cash more than short-term debt, without excess;
- is less than 1, there is an unbalanced situation, with the risk of default.

The informative value of this index should be enhanced with a detailed analysis of the forecast of future cash flows (Ferrero et al., 2006, p.135).

The data obtained from the AIDA database on the liquidity index are shown in Table 6.

Table 6

Determination of the Quick ratio trend

Table 6a: Available data

	Italy	North	Center	South
2009	282	104	81	97
2010	311	118	86	107
2011	333	131	92	110
2012	340	137	90	113
2013	365	152	90	123
2014	392	162	95	135
2015	397	163	94	140
2016	396	159	93	144
2017	371	152	86	133
2018	222	109	56	57
2019	356	146	84	126
2020	62	30	21	11

Table 6b: Quick ratio - annual average values

	Italy	North	Center	South
2009	1,14	1,05	1,12	1,24
2010	1,19	1,18	1,09	1,28
2011	1,33	1,3	1,32	1,39
2012	1,3	1,23	1,26	1,43
2013	1,27	1,33	1,12	1,29
2014	1,4	1,49	1,22	1,42
2015	1,51	1,57	1,34	1,56
2016	1,59	1,75	1,36	1,57
2017	1,72	1,89	1,42	1,73
2018	1,95	2,15	1,62	1,89
2019	1,91	1,90	1,84	1,97
2020	2,12	1,95	1,91	3,02

Source: elaboration on AIDA data

The Quick ratio is always between 1 and 2 in all macro-areas, except for 2018 in the North, where it is 2.15, and 2020 in the South, where it is 3.02, and for Italy as a whole (2.12) in 2020. Therefore, it can be said that the gambling sector is in a good financial situation, with resources that are sometimes surplus in the short term: it can easily cope with debts coming due soon and should find appropriate uses for excess liquidity.

For the elaboration of the trend graph, we first determine the interpolating equation that maximises the value of R^2 (Table 7).

Table 7

Equations of Quick-ratio interpolating curves

Area	Equation	R^2
Italy	$y = 3E\text{-}05x^6 - 0{,}0011x^5 + 0{,}0158x^4 - 0{,}1013x^3 + 0{,}3015x^2 - 0{,}3198x + 1{,}2402$	0,9845
North	$y = 3E\text{-}05x^6 - 0{,}0011x^5 + 0{,}0144x^4 - 0{,}0833x^3 + 0{,}2037x^2 - 0{,}0821x + 1{,}0003$	0,9731
Centre	$y = 4E\text{-}06x^6 - 0{,}0002x^5 + 0{,}0035x^4 - 0{,}0256x^3 + 0{,}0715x^2 - 0{,}0117x + 1{,}0635$	0,9504
South	$y = 9E\text{-}05x^6 - 0{,}0031x^5 + 0{,}0423x^4 - 0{,}2751x^3 + 0{,}873x^2 - 1{,}189x + 1{,}7907$	0,9901

Source: elaboration on AIDA data

The equations show a high level of interpolating reliability with a range of R^2 from 0.9504 to 0.9901. This results in Figure 2, which shows a regular trend in the index.

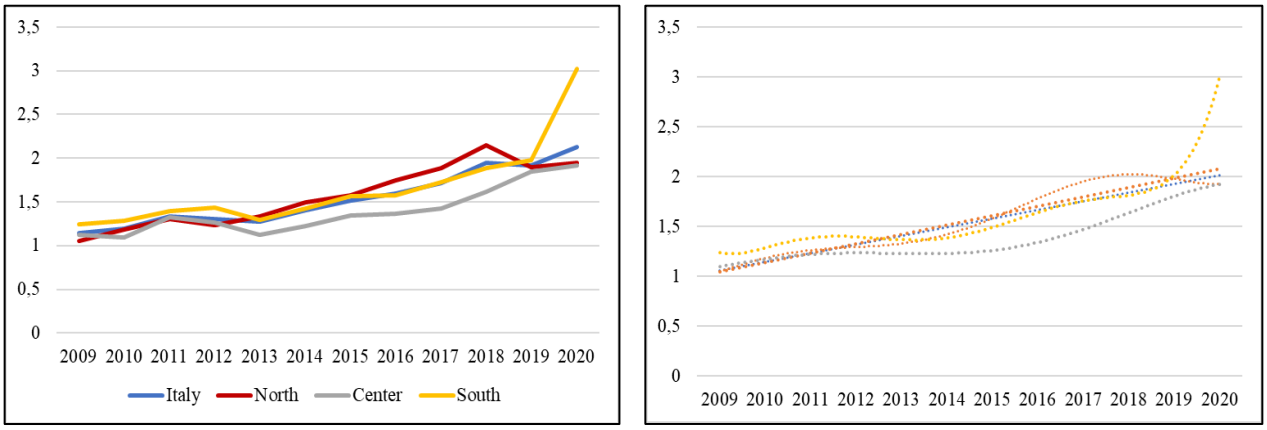

Figure 2: Quick-ratio trend 2009-2020
Source: elaboration on AIDA data.

The trend is similar in all macro-areas: in the early years, it is particularly close to 1, while recently, it is closer to 2. Companies in the sector are therefore experiencing increasing and sometimes excessive liquidity. This is the case even in years when profitability was lower.

The main descriptive statistics (Tables 8 and 9) allow for a more detailed analysis.

Table 8

Quick-ratio descriptive statistics – Italy

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	1,14	0,83	1,19	1,41	0,01	8,64	8,63
2010	1,19	0,97	1,03	1,05	0,00	6,67	6,67
2011	1,33	1,00	1,27	1,60	0,04	9,83	9,79
2012	1,30	0,99	1,08	1,16	0,00	6,33	6,33
2013	1,27	0,97	1,05	1,10	0,01	8,02	8,01
2014	1,40	1,04	1,19	1,42	0,06	8,27	8,21
2015	1,51	1,14	1,31	1,72	0,09	8,53	8,44
2016	1,59	1,23	1,34	1,80	0,01	9,43	9,42
2017	1,72	1,29	1,47	2,15	0,02	9,69	9,67
2018	1,95	1,44	1,62	2,62	0,06	9,46	9,40
2019	1,91	1,41	1,61	2,60	0,01	9,86	9,85
2020	2,12	1,47	1,88	3,53	0,14	8,62	8,48

Source: elaboration on AIDA data

Table 9

Quick-ratio descriptive statistics - Macro areas Italy

NORTH

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	1,05	0,84	1,05	1,11	0,03	8,64	8,61
2010	1,18	0,99	0,97	0,94	0,11	6,67	6,56
2011	1,30	0,97	1,24	1,54	0,10	8,53	8,43
2012	1,23	0,98	1,01	1,01	0,13	6,33	6,20
2013	1,33	1,01	1,17	1,36	0,12	8,02	7,90
2014	1,49	1,13	1,28	1,64	0,07	8,27	8,20
2015	1,57	1,23	1,31	1,70	0,09	8,22	8,13
2016	1,75	1,27	1,60	2,54	0,12	9,43	9,31
2017	1,89	1,40	1,68	2,83	0,14	9,49	9,35
2018	2,15	1,62	1,88	3,54	0,06	9,46	9,40
2019	1,90	1,34	1,77	3,13	0,16	9,86	9,70
2020	1,95	1,27	1,76	3,10	0,22	6,30	6,08

CENTRE

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	1,12	0,88	1,19	1,43	0,01	8,45	8,44
2010	1,09	0,86	1,03	1,06	0,00	6,24	6,24
2011	1,32	0,93	1,34	1,80	0,09	8,38	8,29
2012	1,26	0,90	1,15	1,33	0,00	5,55	5,55
2013	1,12	0,84	0,90	0,82	0,09	5,67	5,58
2014	1,22	0,99	0,95	0,90	0,06	5,54	5,48
2015	1,34	1,06	1,20	1,43	0,10	8,53	8,43
2016	1,36	1,07	0,92	0,85	0,01	5,92	5,91
2017	1,42	1,16	0,91	0,83	0,30	5,24	4,94
2018	1,62	1,28	0,99	0,99	0,30	4,94	4,64
2019	1,84	1,41	1,39	1,94	0,06	9,64	9,58
2020	1,91	1,20	1,72	2,96	0,40	8,24	7,84

SOUTH

	Average	Median	Standard deviation	Variance	Minimum	Maximum	Range of variation
2009	1,24	0,81	1,31	1,72	0,04	8,19	8,15
2010	1,28	1,02	1,08	1,17	0,06	5,47	5,41
2011	1,39	1,15	1,24	1,54	0,04	9,83	9,79
2012	1,43	1,13	1,10	1,20	0,02	4,53	4,51
2013	1,29	1,04	1,00	0,99	0,01	6,30	6,29
2014	1,42	1,10	1,23	1,52	0,11	7,80	7,69
2015	1,56	1,15	1,39	1,93	0,13	8,45	8,32
2016	1,57	1,26	1,25	1,56	0,03	8,41	8,38
2017	1,73	1,28	1,47	2,16	0,02	9,69	9,67
2018	1,89	1,38	1,54	2,36	0,24	7,38	7,14
2019	1,97	1,51	1,57	2,47	0,01	8,54	8,53
2020	3,02	1,83	2,36	5,56	0,14	8,62	8,48

Source: elaboration on AIDA data

The median is very often slightly lower than the average. The largest number of data is therefore characterised by smaller values than the mean. The standard deviation and variance have minute values: there is little variability in the sample and mean is therefore significantly representative.

The minimum values are close to zero. Thus, there are companies with an unbalanced financial situation in the short term. The maximum values, on the other hand, exceed 2, often approaching 7, 8, and 9, due to companies with excess liquidity. This results in several variations, with the largest number of companies in a balanced situation.

The measurement and evaluation of the difference between the groups are entrusted to the ANOVA test (Table 10).

Table 10

ANOVA test on Quick-ratio

SUMMARY

Groups	*Counting*	*Sum*	*Average*	*Variance*
Nord	12	18,786027	1,5655023	0,1269238
Centro	12	16,623452	1,3852877	0,0745255
Sud	12	19,791205	1,6492671	0,241315

VARIANCE ANALYSIS

Origin of the variation	*SQ*	*gdl*	*MQ*	*F*	*Significance value*	*F crit*
Between groups	0,4367158	2	0,2183579	1,4795089	0,2424661	3,2849177
In groups	4,8704072	33	0,1475881			
Total	5,307123	35				

Source: elaboration on AIDA data.

The ANOVA test confirms that the variability of the sample is minute, both between (0.436715794) and within groups (4.870407).

The liquidity index does not show statistically significant differences between North, Centre, and South (F < F crit; p-value = 0.242466075). Therefore, we accept the null hypothesis H_0 (the mean of the quick ratio is the same in all groups) and reject the alternative hypothesis H_1 (at least one of the group means is different).

This result, therefore, renders the post-ANOVA test useless.

CONCLUSIONS

The copious studies on the psychological, sociological, and legal aspects of gambling are complemented in this paper with a quantitative analysis derived from the study of the trend of two ratios that well express the short-term profitability and financial balance.

Answering the first research question (RQ1), the first hypothesis (H1) is confirmed: gambling firms have positive and sometimes high profitability. It is always positive even if fluctuations are evident due to the general economic trend. In 2009, due to the global financial crisis, low values are recorded, as well as low values during the years of the reverberation of the crisis (2012-13) that started in the American context. Profitability plummeted, although remaining positive on average, also because of the pandemic and the associated closures of gambling halls. The possibility of playing online has therefore uncompensated for the losses due to government measures. Moreover, the relief granted by the public authorities has not been sufficient to maintain similar levels of profitability as before.

This also answers the fourth research question (RQ4) and confirms the fourth hypothesis (H4): there is a clear relationship between profitability outcomes and cyclical economic trends. However, to make a more precise and considered judgement, it is also necessary to check whether there is also a relationship for financial performance.

The financial index shows an increasing availability of liquid or otherwise available resources in the short term. Responding to the third research question (RQ3) the third hypothesis (H3) is thus also confirmed: the Italian gambling companies have a prosperous cash situation, constantly increasing, regardless of their location.

The dynamics of liquidity, therefore, are not correlated with the economic cycle and are therefore independent of economic periods. Profitability is affected by the economic cycle, but the short-term financial equilibrium is not. Overall, confirming the fourth research hypothesis (H4) only partially.

The territorial location is indifferent in the income and financial perspective. The differences in the three macro-regions are minimal, statistically irrelevant, as ANOVA confirmed. The propensity to gamble is independent of the economic-social conditions of the three Italian macro-regions, which are known to be different.

The reduction in profitability during the crisis was already highlighted by (La Rosa, 2016a, pp. 101–103) during the most acute period (2007-2009) that, however, had not recorded a reduction in the propensity to gamble (La Rosa, 2016b, p. 28; Sabatino, 2016, p. 61), instead of the one typical of the following years.

It is worth noting similar income outcomes in other sectors that were also affected by the reverberations of the crisis in the period 2012-13, such as the wine industries (Migliaccio & Tucci, 2020).

This analysis is undoubtedly useful for the operators of gaming rooms, whether in presence or online because it allows useful comparisons of their economic and patrimonial situation with the average of the sector, to identify possible significant gaps that could be harbingers of future crises. The positive judgement on profitability and treasury, however, excludes significant imbalances.

Therefore, if the operators can be pleased with the conclusions of this study, certainly the information that derives from it is, in contrast, worrying from a social perspective because always positive income and the abundance of liquidity could induce new investments with the risk of uncontrolled propagation of gambling and the relative possible deviance. The effort of public authorities, therefore, should be to educate people about gambling and avoid addiction: schools, first, should launch appropriate awareness campaigns. If it is true that legal gambling is a source of considerable revenue for the Treasury, it is also true that the prevention and treatment of addiction could have high economic and social costs, as well as consequences for public order.

This study is also useful for all other stakeholders: good economic and financial balance guarantees the stability of employment and favours lenders who can calmly invest in a sector that seems to be doing well even in periods when there are serious crises and bankruptcies elsewhere.

The research re-evaluates the importance of financial statements and quantitative approaches, reaching conclusions based on official information rather than mere theoretical constructs.

It also makes it possible to systematise the accounting results of individual companies, putting them into a systemic perspective. Spatial and temporal comparisons allow synthetic assessments of the sector's performance based on the precise recording of all economic and financial events that characterise the day-to-day life of companies. The company's records, therefore, are no longer only aimed at fulfilling civil and fiscal obligations, but they assume a useful value for appropriately and adequately informed managerial decision-making processes. The aggregation of financial statements, however, organised, can prospectively become a useful model for interpreting complex phenomena.

In the future, however, the analysis should be detailed, using also other indices and correlating the results obtained using other non-accounting factors such as, for example, the gender, age, and income of the players, as well as considering their habitual residence. Everything should also be assessed from an interdisciplinary perspective, considering the psychological and social aspects of

gambling. Indeed, economic analyses are not enough to solve pathologies. Instead, what is needed is the individual's willingness to become independent (Carr, 2015), with the help of families (Corleto, 2019; Rossi et al., 2018) aided by the institutions that have the difficult task of preventing and, if necessary, sanctioning (Capitanucci, 2004).

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