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The Accounting Ratios Stress During Covid-19 Pandemic – A Sector Analysis in Portuguese Companies

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ABSTRACT: The pandemic raised questions about the strength and weaknesses of some sectors of activity. This article aims to determine the impact of the Covid-19 pandemic on Portuguese companies according to the values obtained in calculating liquidity, profitability and structure/debt ratios. One studied a sample of 15,367 companies operating between 2018 and 2020. Two aspects are highlighted in this study: i) the liquidity and profitability of companies fell, in most sectors, a fact that worsened the capital structure of companies and increased their degree of indebtedness, and ii) there were negative and positive impacts for different sectors of activity. Those most affected by the pandemic were tourism and public administration activities. Those least affected were the agriculture and information and communication activities. This study identifies the sectors in which public support policies were successful and those that should receive special attention given their contribution to the Portuguese Gross Domestic Product.

KEYWORDS: Covid-19; sectorial economic impact; financial reports; financial autonomy; liquidity ratios; economic ratios; financial ratios; solvency ratios; return on equity; return on assets; public policies supporting companies.

I. INTRODUCTION

Wiersinga et al. (2020) reported that the disease caused by COVID-19, and originated in the Chinese city of Wuhan in late 2019, was confirmed on July 1, 2020, in more than 200 countries. The World Health Organization, national health authorities and governments, acted quickly to control the spread of the virus. The measures ranged from the level of personal hygiene and spaces, the use of masks, awareness to avoid clusters of people, quarantines, and the closure of schools, museums, cinemas, tax offices, social security and other public places to the closing of companies, the adoption of teleworking, etc. This situation has led to a rapid transformation in our daily lives, mainly due to the uncertainty associated with this pandemic and post-pandemic period (Hwang and Höllerer, 2020). In Portugal, Covid-19 appeared in March 2020. According to Banco de Portugal statistics, the economic and financial impact felt by companies and individuals was devastating (Bpstat, 2020). Companies generally took on about 1.6% more indebtedness than the previous year, namely in the non-food commercial sector and hotels and restaurants (Bpstat, 2020). According to the same source, these sectors of activity reported a more significant negative impact on the evolution of business and the contribution to national GDP, being the small and medium-sized companies with the highest level of indebtedness. However, despite most sectors of activity having been affected by the pandemic, it was found that, for example, the electricity, gas and water sector had economic growth and a decline in their levels of indebtedness by around 12% (Bpstat, 2020). However, the sectors of activity that immediately felt the most significant impact were tourism, transport, culture and sport, as all travel and face-to-face events were cancelled (Zemcik and Araujo, 2020).

The Banco de Portugal (2020b) pointed out the drop in private consumption at around 13% and disposable income at around 2%, leading to an increase in the household savings rate. This decrease in consumption had a differentiated impact on the families' shopping basket, increasing consumption of foodstuffs by 2.9% and the purchase of pharmacy and over-the-counter products by around 41%, and decreasing durable goods and services by around 17%. It also pointed to health concerns, fear of contagion, mandatory social distancing, and restrictions on personal mobility with repercussions on the various economic activities during the period of confinement as reasons for that situation. The pandemic crisis caused changes in the health system and the economic and financial landscape, placing countries with an increase in their public debt (Mingatos, 2021). The drastic decrease also shook financial markets in stock exchange transactions and the falls in bond prices, dragging many companies into bankruptcy (Zhang et al., 2020).

Thus, with the emergence of Covid-19, almost all countries went through a deep and sudden economic recession (Cantuche, 2021). Eurostat data from 04/19/2021 shows a contraction of 6.1% in GDP in the European Union economy, 6.6% in the Eurozone and 8% in Portugal (Cantuche, 2021). The considerable growth in teleworking and online commerce are impacts that will, for sure, change the patterns of work and consumption of populations around the world (Silva, 2022). This study aims to:

1. Determine the impact of the Covid-19 pandemic on national companies through the values obtained in calculating the ratios.

1.1. Understand if companies have treasury difficulties by analysing the liquidity ratios.

1.2. Understand if companies present any risk in settling their debts by analysing the structure/debt ratios.

1.3. Understand how companies' performance was affected by analysing the profitability ratios.

2. Trace an impact profile by sector of activity, and compare sectors based on the ratios.

In this context, it was also analysed the main measures provided by the Portuguese Government and which were most adopted by companies.

II. LITERATURE REVIEW

The coronavirus arrived in Portugal on March 2, 2020 (https://eco.sapo.pt/2020/03/02/portugal-regista-dois-primeiros-casos-confirmados-de-coronavirus/). According to the General Directorate of Health, on November 3rd, 2022, there were about 3,380,263 suspected cases, 21,285 deaths and 2,876,177 recovered cases (https://covid19.min-saude.pt/ponto-de-situacao-atual -in Portugal/). The Portuguese health authorities started a set of measures to control the advance of the pandemic, similar to what was happening worldwide: telework, sanitary fences, suspension of face-to-face service activities in both the public and private sectors, closure of schools and universities, control of entries and exits at the country's borders, blocking of flights from China and countries with new strains of the virus, imposition of the use of masks, safety distance, frequent hand washing or use of disinfectant, quarantines for those who contract the disease or enter Portugal, etc. (García et al., 2022).

Naturally, the problems associated with the disease affected the national economy. The amount of financial aid spent by the Portuguese State increased by 8.4%. After the periods of confinement that took place throughout 2020 and 2021, the return to activity reduced the amounts of public expenditure, particularly in Health, Action and Social Security, as well as in Industry and Energy. The interruption of economic activity led to some sectors of activity having lower staff costs per worker (Pordata, 2021), namely in the manufacturing sectors (-0.22%), transport and storage (-6.9%), accommodation, catering, and similar activities (-6.9%), real estate activities (-3.5%), education (-6%), human health and social support activities (-2.9%), and other sectors (-0 .34%). The drop in expenses with workers may be due to the public support that was provided to companies: the extension of deadlines for payment of Value Added Tax (VAT) and Companies' Earnings Tax (IRC), the suspension of tax foreclosures, the creation of plans for payment of debts, moratoriums on companies, support for employment through the simplified layoff, support for hiring young people and people with disabilities through a reduction in social contributions, reinforcement of credit lines for the social sector, co-participation in the payment of rents, and support for tourism with its financing lines.

For individuals, the State allowed moratoriums on mortgage credit and education credit agreements and co-payment of house rents. Despite all the efforts of the State, the impacts of Covid-19 were negative on the country's economy, with a drop in GDP of 6.7% (García et al., 2022).

To understand the evolution of companies, it is possible to measure the development of their financial and non-financial indicators, quantitative and qualitative, which are linked to the business strategy (Kaplan and Norton, 2008). In this study, we analyse the financial indicators, which are the most available in the short term, in the different sectors of economic activity in Portugal. For Elnahas et al. (2017), the business decision-making process should be based on information from financial reports. Financial reports include various financial statements that, as a whole, make it possible to describe the financial situation, measure financial performance and also make predictions related to the future financial aspects of a particular company (Shahnia and Endri, 2020). In this context, one of the most used procedures to calculate the economic, financial position and business performance is the application of ratios or indices (Sakinç and Bilgener, 2021), an approach that has long been used (e.g., Altman, 1968; Beaver, 1966). Thus, the analysis of financial ratios allows the economic and financial evaluation of a company (Endri et al., 2020; Guo et al., 2021; Nikolaos et al., 2020), preventing financial risks and problems (Amendola et al., 2017). In addition, the ratios are helpful estimators to compare the values of the financial statements, namely the balance sheet and the income statement (Tampakoudis et al., 2018).

Since the studies by Beaver (1966), financial ratios are classified by groups: liquidity, profitability, debt, activity, solvency, growth, risk, leverage, and operations (e.g., Bastos, 2018; Elnahas et al., 2017; Endri et al., 2020; Farinha, 2020; Fernandes et al., 2019; Lartey et al., 2013; López and Sanz, 2015; Mota et al., 2020; Nikolaos et al., 2020; Pié et al., 2019; Pinho and Tavares, 2012).

The liquidity ratios aim to assess whether a company has cash and other current assets to immediately meet its obligations (Endri et al., 2020). These ratios show the period for which financial resources are needed to repay obligations which, in the case of these ratios, are always short-term (Papadeas and Sykianakis, 2017). Rinaldo and Endri (2020) reinforced that these ratios do not provide any information beyond one year. Pié et al. (2019) showed that these ratios figures allow us to conclude the sacrifice of significant investments that a company fails to make to ensure its growth on an annual basis.

Activity ratios are intended to provide information on the performance and evolution of the business, that is, on asset management (Endri et al., 2020). Notably, the speed with which companies' stocks move, the claims rate and the debts being paid to suppliers (Nikolaos et al., 2020). They also provided information on income value and economic and financial results from company assets (Endri et al., 2020).

Solvency ratios indicate a company's ability to meet its long-term obligations (García et al., 2022). Financial autonomy/indebtedness shows the risk of a debt default (Pié et al., 2019).

Profitability ratios aim to show how the company makes the capital created with the business profitable (Harahap, 2018), as well as the profit margin and the growth of its operational activity (Endri et al., 2020). To Lartey et al. (2013) and López and Sanz (2015), these ratios show the company's financial health. Also, to Lartey et al. (2013), and Nissim and Penman (2003), they contribute to estimating future financial results.

In any financial analysis, the most crucial thing for Wang et al. (2014) is to make a fine selection of financial ratios so that the forecasts can be as reliable as possible. These ratios allow responding to the intended objectives, either through evidence taken from the information of the financial pieces used or through the values obtained in the chosen ratios. Regardless of the classification adopted, it is necessary to choose the indicators that best clarify the analysis to be carried out. To Santos (2020), no better method or selection shows us the best indicators and ratios. For Cunha (2021), these techniques and instruments allow diagnosis of the actual situation of the economy and which sectors have the most significant impact.

It should be noted that each ratio analyses a specific economic and financial parameter. Given the range of options, the choice depends on the type of analysis, the study's objectives, the methodology used, etc. This research chose the rations with more consensus in the literature, the most cited and universally accepted for the economic and financial analysis of the business fabric. Furthermore, the liquidity, profitability, debt and solvency ratios are enough to analyse the significant impacts of exogenous variables, in this case, the health emergency caused by the pandemic (e.g., Bastos, 2018; Mota et al., 2020).

According to Deloitte (2021), the Covid-19 crisis brought challenges that forced national companies to be more resilient and robust, with the ability to adapt to fluctuations and obstacles not previously experienced, such as the immediate need for the digital transition of business activity. It is possible to infer that, even during the pandemic, the Portuguese companies showed good business resilience (Reeves and Whitaker, 2020) and organizational toughness (Author, 2020), mainly in Construction (F), Consulting (M), Manufacturing (C), Real estate (L), and Agriculture (A) activity sectors (INE (2021).

III. METHODS

Financial liquidity ratios (current liquidity and current liquidity), structure/debt ratios (financial autonomy and solvency) and profitability ratios (return on invested capital/return on investment and return on assets) were analysed to achieve the objectives of this study. This paper used secondary data published in a database (https://sabi.bvdinfo.com/) that has information from 800 thousand Portuguese organisations.

1. Sampling

According to data, there were around 1,335,006 companies in Portugal in 2019 (https://www.pordata.pt/Portugal/Empresas+total+e+por+sector+de+actividade+econ%C3%B3mica-2856).

One used in this paper a database (https://sabi.bvdinfo.com/) with information from 800 thousand of Portuguese organisations. Filtering this database through the variables needed to calculate the ratios between 2018 and 2020, we arrive at a universe of 15,367 companies, with a distribution across 19 sectors of activity. This universe is the available sample of data on Portuguese companies in February 2022 (Table 1). Companies were grouped under the Economic Activities Code (CAE, 2007). In the rest of the paper, it will be presented only the first activity in each sector to avoid repeating their denominations.

Table 1. Number of organizations by activity sector

Category	Activity sector	CAE	Number of companies
A	Agriculture, animal production, hunting, forestry and fishing	01+02+03	285
B	Extractive industries	05+06+07+08+09	59
C	Manufacturing industries	10+11+12+13+14+15+16+17+18+19+20+21 +22+23+24+25+26+27+28+29+30+31+32+33	3368
D	Electricity, gas, steam, hot and cold water and cold air	35	203
E	Water collection, treatment and distribution; sanitation, waste management and depollution	36+37+38+39	182
F	Construction	41+42+43	1112
G	Wholesale and retail trade; car and motorcycle repair	45+46+47	5504
H	Transport and storage	49+50+51+52+53	777
I	Accommodation, catering and similar	55+56	310
J	Information and communication activities	58+59+60+61+62+63	477
K	Financial and insurance activities	64+65+66	616
L	Real estate activities	68	598
M	Consulting, scientific, technical and similar activities	69+70+71+72+73+74+75	750
N	Administrative and support services activities	77+78+79+80+81+82	504
O	Public Administration and Defence; and Mandatory Social Security	84	12
P	Education	85	79
Q	Human health activities and social support	86+87+88	363
R	Artistic, shows, sporting and recreational activities	90+91+92+93	109
S	Other service activities	94+95+96	59
TOTAL			**15,367**

Source: authors.

2. Variable measures

After extracting the companies' financial data, they were organized according to liquidity, profitability and indebtedness ratios. These ratios were organized by the years of activity of the companies between 2018 and 2020, as well as by the activity sector.

The ratios are presented in table 2, their definitions being known to academics and professionals (e.g., Pinho and Tavares, 2012).

Table 2. Ratios and calculation formulas

Ratio	Formula	Definition
Current liquidity	Current assets / Current liabilities	Current liquidity is an indicator used to measure a company's ability to honour its short- and long-term obligations.
Quick liquidity	Net financial resources / Current liabilities	
Financial autonomy	Equity / Assets	Financial autonomy is an indicator of the capitalization of companies. It measures the percentage of company assets that are financed by equity. An increase in financial autonomy suggests a strengthening of the capitalization of companies.
Solvency	Equity / Liabilities	It means the company can honour its financial commitments to third parties, that is, the ability to pay debts to creditors.
Return on equity	Net income for the period / Equity	It is a measure used to assess a company's efficiency in creating a return from using its capital.
Return on assets	Operating results / Assets	It is an indicator, in percentage, that measures the profit created by each currency unit of assets.
Economic profitability	Earnings before interests and taxes / Assets	It is the benefit obtained from commercial activity, considering the supply of goods and services.
Financial profitability (Return on sales)	Gross profit / Sales and services provided	It is an indicator, in percentage, that measures how much each currency unit sold is transformed into profit.
Indebtedness	Liabilities / Assets	These are indicators used by financiers when trying to assess the risk of non-compliance with debt service by companies.

Source: authors.

The period between 2018 and 2020 was chosen to carry out the study, as it allows an understanding of trends in business performance before and during the Covid-19 pandemic. It should be noted that the year 2021 was not analysed because of the scarcity of data in the database used.

IV. RESULTS AND DISCUSSION

1. Determine the impact of the Covid-19 pandemic on national companies through the values obtained in calculating the ratios.

The ratios analysed in this investigation indicate that the impact of Covid-19 on companies in Portugal was severe; companies went bankrupt, some managed to maintain open their activity, and many others showed serious difficulties in remaining in operation. Therefore, given the different sectors of activity operating in Portugal, the impact was different, particularly in terms of liquidity, indebtedness, solvency and profitability ratios.

The liquidity ratios show the financial complexity faced by companies, the need for money, the increase in expenses, and the scarcity of goods and services. Hence the intervention of the Portuguese State to provide support to the health, social security, education, companies and families to lessen the impacts experienced. Due to a direct relationship, the lack of liquidity in Portuguese companies led to an increase in short-term indebtedness. As a result, the degree of financial autonomy of companies that resort to multiple forms of credit with lines of financing, some created by the Portuguese State, with easier access and lower interest rates. Also, in terms of solvency, companies faced the year 2020 with financial fragility, which improved slightly in 2021 and with an upward trend in 2022 (pre-war period in Ukraine). As a consequence of the increase in the level of indebtedness of companies, profitability was not strongly affected, of course, more visible in some sectors of economic activity than others. However, in the overwhelming majority of cases, it was positive, with a drop due to the absence of value creation and a decrease in performance due to interruptions in the closing of the national economy.

In short, we have a mix of the impacts caused by the pandemic on companies since some had a more significant impact on liquidity, others on indebtedness, others on solvency and still others on profitability.

1.1. Understand if companies have treasury difficulties by analysing the liquidity ratios.

Analysing the quick liquidity ratio (Table 3), it presented better results than the current liquidity in the sectors of Agriculture (A), Manufacturing (C), Electricity (D), Information (J), Financial (K), Administrative (N), and Artistic (R). The results in these ratios are justified by the Government's support measures to stimulate the economy (Banco de Portugal, 2020a) in force in April, May and June (BMEP, 2020). In addition, these economic sectors never ended their activity, except for Artistic, shows, sports and recreational activities (R).

Table 3. Evolution of financial ratios

Sector	Financial autonomy			Current liquidity			Quick liquidity		
	2018	*2019*	*2020*	*2018*	*2019*	*2020*	*2018*	*2019*	*2020*
A	0.40	0.40	0.40	2.01	2.41	2.96	2.31	2.78	3.34
B	0.42	0.40	0.42	1.68	1.46	2.29	1.99	1.80	2.67
C	0.44	0.43	0.42	1.53	1.57	1.80	2.11	2.17	2.45
D	0.29	0.26	0.14	1.76	2.45	3.22	1.78	2.47	3.25
E	0.41	0.41	0.37	1.68	1.66	1.68	1.85	1.81	1.84
F	0.33	0.32	0.35	-5.99	2.87	2.02	44.23	7.33	4.86
G	0.39	0.38	0.31	2.11	1.71	2.65	2.83	2.45	3.55
H	0.06	-0.01	-0.02	2.01	1.93	3.68	2.03	1.95	3.71
I	0.39	0.39	0.37	24.29	1.33	2.71	29.45	1.63	3.39
J	0.14	0.31	0.31	1.69	1.80	1.95	1.73	1.85	2.00
K	0.42	0.26	0.39	26.36	27.82	50.87	27.99	28.57	52.20
L	0.32	0.34	0.17	23.06	11.54	5.67	45.26	17.70	12.89
M	0.37	0.36	0.33	13.95	5.76	12.61	15.72	5.91	13.21
N	0.28	0.26	0.27	1.75	2.15	3.10	1.86	2.24	3.19
O	0.65	0.50	0.57	5.93	1.03	1.01	12.80	1.07	1.01
P	0.41	0.38	0.36	1.24	1.07	1.24	1.26	1.08	1.25
Q	0.42	0.35	0.33	2.44	1.97	1.75	2.51	2.04	1.83
R	0.24	0.12	0.18	1.32	1.44	2.32	1.38	1.51	2.49
S	0.47	0.51	0.53	4.90	2.10	1.51	5.06	2.21	1.74

Source: authors.

Other factors that may explain the results of the ratios were the drop in prices in industrial production by 4.6% year-on-year (INE, 2020b), which may explain the increase in consumption with a surplus. According to same source, 84.5% of households had an internet connection at home, but 81.7% used a broadband connection (+3.6 percentage points compared to the previous year). With the internet, the amount of orders through e-commerce has increased significantly. The number of users who placed three to five orders increased by 4%; those who put six to ten orders increased by 9.5%; and those who placed more than ten orders increased by 6.9% (INE, 2020b). In addition to e-commerce, other branches of activity recorded higher increases in turnover compared to the same period last year, between March and December 2020, such as the manufacture of basic pharmaceutical products and pharmaceutical preparations (+18.1%), the scientific research and development (+10.5%), the activities related to computer programming; information services activities (+7.7%), and the telecommunications (+3.9%) (INE, 2020b). Separately, the information and communication activities showed turnover levels higher than those seen in the same period of the previous year by more than 30% in the northern interior regions of Portugal (INE, 2020b). Real estate activities also registered the highest year-on-year increase in the amount invoiced in seven sub-regions (INE, 2020a). Also, Agriculture, animal production, hunting, forestry and fishing registered the highest year-on-year rate of positive change in recent years (INE, 2020a).

However, the opposite (current liquidity ratio > quick liquidity ratio) occurs in the Construction (F), Accommodation (I), Consulting (M), Public Administration (O), Human Health (Q), and Other (S).

These results are corroborated by information from INE (2020a), which showed that in 2020 it was a significative drop in sales of motor vehicles, accommodations and restaurants, in the employment rate, productivity, the turnover index in services, the production in construction, in the quantitative indicator of private consumption, in imports and exports, and payments at automatic payment terminals. The average annual unemployment rate rose to 8.1% (350.9 thousand people) (INE, 2020b), accumulating with the closure of some activities. In summary, the reasons for this situation (current liquidity ratio > quick liquidity ratio), taking into account the analysis of the sectors with variation values (from 2019 to 2020) in the liquidity ratio above 1.5 and those that represent the most significant impact on national accounts:

- In the construction sector, in May 2020, the production index decreased by 1.2% (INE, 2020). The number of construction licenses decreased (BMEP, 2020), as well as the construction of buildings and civil engineering activity (INE, 2020b). At the end of 2020, an aggravating factor happened due to the rise of raw-materials prices and labour costs, around 2.3% (INE, 2020b).
- In April 2020, the tourist accommodation sector fell by around 97% (INE, 2020b). The hotel sector was enormously affected, with a generalized decrease in turnover and the number of employees working (BMEP, 2020). However, at the end of 2020, the sector recorded a recovery that stood at 77% (INE, 2020b), with the reopening of those activities.
- Increase in expenditure on social security, both with companies and with families, in social support. Data from the Ministry of Labour and Social Security on 06/23/2020, 113,853 companies, which employed 1.35 million workers, applied the simplified lay-off regime (BMEP, 2020). Specifically, this regime was adopted by 22% of companies in the Accommodation and Wholesale sectors, and around 10% of the Manufacturing (BMEP, 2020).
- In the Health sector, current expenditures rose 6.6% in April 2020 (INE, 2021). At the end of the year, it rose by more than 10%, reaching the highest value since 2009 (INE, 2021). The increase was due to hospital treatment, vaccination and testing.
- Real estate companies lost around 14% of their investment due to the waves of oscillations between confinement and unconfinement (Savills, 2020).

4.1.2. Understand if companies present any risk in settling their debts by analysing the structure/debt ratios.

Due to the Government's support measures to stimulate the economy, public expenditure increased to 98.1 billion euros, corresponding to 48.4% of GDP (INE, 2020a), divided into support for businesses and families. In public spending, the most affected functions were health and education, with 6.6% and 4.4% deterioration, respectively (INE, 2020a). Faced with this economic reality, the increase in expenses broke the liquidity of many sectors of activity, including the Portuguese State itself, due to the support offered to social security, public-private partnerships, environmental protection, defence, sport, etc. (INE, 2020a). With expenditures in the public sector, GDP decreased by 8.4% in 2020 (INE, 2021). The explanatory reasons for the values obtained in GDP were the fall in imports and exports and gross capital formation (INE, 2021). Accompanying expenses incurred in the public sector, public administration funding increased by 12.3%, while in companies, only 1.6%, compared to 2019 (Banco de Portugal, 2020a).

Public administration and defence, mandatory social security and human health and social support activities had a high cost in supporting families and companies. Families supported by the Government increased in 100,000 households (INE, 2020c). The companies helped represented between 19% and 30% of the total, depending on the supporting programme. Most beneficiary companies assess these programmes as crucial for their liquidity situation (INE, 2020c).

There was an increase in indebtedness in practically all sectors of activity (Table 4). Data from Banco de Portugal (2021a) shows that net debt increased by 11.7%; in terms of expenditure, the break in economic activity was essentially due to the behaviour of exports (-18.6%) and private consumption (-5.9%); the increase in credit to companies extended to those that benefited from support for bank financing and relief from debt service efforts; and the companies that experienced significant cash difficulties were the smaller ones and resorted to moratoriums and secured credit lines. All these results were corroborated by INE (2021) report.

Table 4. Activity sectors that were most indebted with Covid-19

Sectors	Reasons for debt over 60%
C - Manufacturing Industries	The drop in private consumption. Contraction in exports of goods. Drop in gross disposable income of the economy of 4.3%.
D – Electricity, gas, steam, hot and cold water and cold air	Current non-food consumption fell by an unprecedented 8.3%. Restrictions on mobility, the normal functioning of activities, and fears of contagion, mainly affected the consumption of services that require greater personal interaction.

G – Wholesale and retail trade; car and motorcycle repair	The drop in private consumption. Contraction in exports of goods. The fall in production in the arts and culture, commerce, accommodation and catering, transport and storage and business services sectors was more than 12.5% . These sectors were the ones that most increased their use of credit and benefited from support measures. The increase in private deposits reflected the increase in savings for precautionary reasons and involuntary savings resulting from the restrictions imposed by the general duty of confinement. The activities of wholesale and retail trade, repair of motor vehicles and motorcycles decreased by 4.2% and industrial activities by 4% and together accounted for 57.2% of the total reduction.
H - Transport and storage	Unprecedented decrease in the number of hours worked (9.2%). Using telework reduces the use of public transport.
I – Accommodation, catering and similar	A decline in tourism activity. Around 40% of the value of new loans for more than one year to companies was granted under the public guarantees regime to meet immediate liquidity needs or to build up reserves. The moratorium regime, introduced in March 2020, made it possible to suspend the payment of instalments or extend credits with payment at the end of the contract. Credit in arrears reached 33% of the credit value in the second quarter, a proportion that remained until the end of the year. Increase in food consumption by 4.7%, reflecting the long periods of closure of the restaurant sector. The constraints on international travel implied a drastic reduction in tourism flows, heavily penalizing exports of services. From March to December 2020, the billing amounts for "Accommodation activities" and "Arts, shows, sports and recreational activities" represented less than half of the amount billed in the same period in 2019.
M - Consulting, scientific, technical and similar activities	A decline in services provided to companies (about 12.5%).

Sources: Banco de Portugal (2021a) and INE (2021).

When we cross the indebtedness data (Table 5) with the structure of companies in terms of financial autonomy (Table 3), we can see that the ability of companies to cover their assets with equity was small. All sectors of activity had weaknesses in this ratio, as a reasonable value for this ratio is around 33% (Farinha, 2021) and, according to other authors (e.g., Fernandes et al., 2019), it should be between 50 and 66%. In the collected sample, no company presents values close to these values considered "healthy". In 2020, the highest ratio in terms of financial autonomy was found in the activity sector K – Financial, with 12%. It is not surprising that, as the level of indebtedness increases, the degree of financial autonomy of companies decreases, but the decrease in companies' equity was lower than expected given the economic context (Banco de Portugal, 2021b).

4.1.3. Understand how companies' performance was affected by analysing the profitability ratios.

The study of the ratios is synthesized from a double perspective: first, to present the calculation of the value of each type of ratio (e.g., Tables 3, 5 and 7), and second, to show the justifications for the most and least affected by the pandemic, since it is intended to obtain an analysis of the impact of Covid-19 on Portuguese companies for the period under observation (Tables 6, 8, 9, and 10).

Table 5. Evolution of economic and financial profitability and indebtedness indicators

Sector	Economic profitability (%)			Financial profitability (%)			Indebtedness (%)		
	2018	***2019***	***2020***	***2018***	***2019***	***2020***	***2018***	***2019***	***2020***
A	4.71	5.97	7.64	17.04	4.16	18.82	60.39	59.53	56.66
B	3.77	6.22	7.92	5.88	14.25	13.79	59.87	58.11	56.22
C	5.80	5.92	5.60	-0.19	19.75	13.33	57.01	56.01	54.60
D	7.68	10.35	10.76	67.97	63.51	24.49	74.36	70.61	66.67
E	5.57	4.03	5.52	4.84	11.49	14.29	58.66	58.70	57.01
F	-4.46	7.09	9.47	20.37	27.92	20.20	67.78	66.65	61.69
G	7.16	6.88	7.05	16.88	4.93	23.21	61.69	60.78	58.74
H	-4.36	2.61	4.65	-8.52	11.46	-0.30	101.37	93.76	70.39

I	8.60	9.17	-3.30	21.41	27.99	-79.27	60.71	60.72	62.57
J	8.31	-8.93	13.24	45.05	35.84	15.00	68.56	86.12	64.62
K	9.53	7.55	9.29	21.03	14.45	14.38	69.77	50.74	50.19
L	5.16	6.94	17.02	-21.95	26.11	41.92	66.30	67.56	59.69
M	9.37	9.46	11.63	20.55	18.67	30.74	63.79	63.00	59.65
N	6.42	7.32	4.38	-22.92	-4.13	2.83	73.57	72.19	72.26
O	5.82	-5.58	2.55	-2.52	-16.30	5.71	49.95	34.57	36.29
P	5.76	4.87	5.30	77.49	-10.70	25.87	62.18	59.07	61.13
Q	5.68	4.81	3.61	26.95	21.00	34.34	65.21	58.02	70.18
R	-8.45	3.58	-4.41	27.91	26.46	-3.76	88.12	76.14	81.74
S	10.75	8.69	8.40	19.14	15.15	1.95	49.36	53.15	58.79

Source: authors

The values of the return ratios presented in table 5 will be discussed further below, together with the other return ratios on assets and equity, shown in table 7. After analysing liquidity and indebtedness, it remains to complete this economic and financial study with solvency analysis to understand how Portuguese companies are at this level. Observing by company typology the reasons that justify weak solvency (Table 6) compared to the values of the percentages of ratios present in table 7, we can note the existence of financially vulnerable sectors during the pandemic period in 2020. This fact is not strange because solvency measures the liability covered by equity, translating the risk that creditors face. The existence of liquidity difficulties and the increase in indebtedness predict solvency weakness, which is more visible in some sectors than others (Table 6). The solvency ratio shows the proportion of equity higher than liabilities (Breia et al., 2014). If the ratio value is less than 1, there is a risk of activity maintenance and increasing indebtedness (Farinha, 2021).

Table 6. Reasons for solvency greater than 60%.

Sectors	Reasons for solvency greater than 60%
I – Accommodation, catering and similar	42% of accommodation and catering companies recorded a value of liabilities higher than that of assets. The increase in companies with negative equity was particularly significant for accommodation and catering companies. The gross disposable income of companies decreased by 11.4% in 2020 after having increased by around 15% in accumulated terms in the previous four years. Despite the increased disposable income, families strongly reduced their consumption expenditures in a context of more significant uncertainty and consumption limitations.
N - Administrative and support services activities	This unprecedented increase in the population's absents from work resulted from the reduction in activity and the measures implemented in response to the pandemic crisis – a simplified layoff, family support, and absence in a situation of prophylactic isolation - in addition to situations of illness. In this context, the evolution of hours worked better reflects the economic contraction registered in the wake of the pandemic shock.
O - Public Administration and Defence; Mandatory Social Security	Discretionary measures to support the sector corresponded to 1.7% of national income and about 15% of the sector's income, with the greatest weight associated with subsidies to companies - namely the simplified layoff and the extraordinary incentive to normalization - and the suspension of payments on behalf of the IRC.
P – Education; Q - Human health activities and social support	By allowing physical distancing, digital technologies have proved to be fundamental for preserving part of the socioeconomic system, particularly in education, health, entertainment and maintaining contact between friends and family.
R – Artistic, show, sporting and recreational activities	The operating margin of companies was reduced by 13.5%, with the break in activity and the maintenance of remunerations representing the largest share of costs. Assessing the shock as temporary, companies adjusted employment in a less pronounced way, avoiding dismissal and subsequent hiring costs.
S - Other Service Activities	

Source: Banco de Portugal (2021a).

In the period under analysis, we can highlight that the sectors that had a decrease in their equity or an increase in their liabilities were: I – Accommodation; N – Administrative; O - Public Administration; P – Education; Q – Human health; R – Artistic; and S – Other. Except for the sectors mentioned, all the others had a solvency ratio that guarantees the rule of financial balance, especially H - Transport, because it had the highest value (23.38%). As for the analysis of the profitability ratios, one uses the figures from table 5 (economic and financial profitability) and, as a complement, those from table 7: the return on invested capital, that is, on equity, and the return on assets.

By analysing profitability, is possible to observe how, among other variables, companies' profits are found concerning the assets held and how companies are doing regarding economic and financial efficiency (Breia et al., 2014). As for asset profitability (Table 7), we can see that the Covid-19 pandemic accentuated a drop in operating profitability caused by the company's assets' lower performance or poor value creation.

Table 7. Evolution of capital and assets return and solvency indicators

Sector	Return on equity			Return on assets			Solvency ratio		
	2018	***2019***	***2020***	***2018***	***2019***	***2020***	***2018***	***2019***	***2020***
A	10.76	9.74	13.51	4.71	5.97	7.64	39.61	40.46	43.34
B	6.80	10.68	10.69	3.77	6.22	7.92	40.13	41.89	43.78
C	11.30	11.54	9.17	5.80	5.92	5.60	42.99	43.99	45.40
D	-3.64	36.78	18.65	7.68	10.35	10.76	25.63	29.39	33.33
E	8.79	10.08	10.23	5.57	4.03	5.52	41.33	41.30	42.99
F	16.78	20.14	14.94	-4.46	7.09	9.47	32.22	33.35	38.31
G	17.86	17.50	-14.75	7.16	6.88	7.05	38.31	39.21	41.26
H	-1.17	18.18	20.26	-4.36	2.61	4.65	-1.36	6.24	29.61
I	18.75	21.30	-8.27	8.60	9.17	-3.30	39.28	39.28	37.43
J	48.68	32.01	39.20	8.31	-8.93	13.24	31.44	13.87	35.38
K	12.59	10.37	15.90	9.53	7.55	9.29	26.44	41.88	42.04
L	15.56	18.73	28.49	5.16	6.94	17.02	33.70	32.44	40.31
M	16.89	5.30	26.22	9.37	9.46	11.63	36.18	36.98	40.32
N	25.81	20.70	15.25	6.42	7.32	4.38	26.43	27.81	27.74
O	12.21	-9.36	4.41	5.82	-5.58	2.55	50.05	65.43	63.71
P	28.74	-10.64	-4.57	5.76	4.87	5.30	37.82	40.93	38.87
Q	19.83	14.24	20.62	5.68	4.81	3.61	34.79	41.98	29.82
R	-4.48	163.66	-67.46	-8.45	3.58	-4.41	11.88	23.86	18.26
S	10.76	9.74	13.51	4.71	5.97	7.64	39.61	40.46	43.34

Source: authors

Table 8 presents some explanatory reasons for the decrease in the profitability of the companies most affected by the pandemic.

Table 8. Reasons for a return of less than 4%

Sector	Reasons for a return of less than 4%
I – Accommodation, catering and similar	More than half of the companies reported a negative or very negative impact on the current evolution of turnover associated with the reduction of orders/customers (59%) and containment measures (56%). These percentages rose to 84% and 82%, respectively, among companies in the Accommodation and Restaurant sector.
N - Administrative and support services activities	The general Government deficit was 5.7% as a percentage of GDP. Public administrations recorded a deficit in 2020 after a surplus in 2019 (https://bpstat.bportugal.pt/conteudos/noticias/1205).
Q - Human health activities and social support	Difficulty in hiring qualified personnel and a reduction in the relative weight of insufficient production capacity (https://www.ine.pt/xportal/xmain?xpid=INEandxpgid=ine_destaquesandDESTAQUESdest_boui=472473861andDESTAQUESmodo=2)

R – Artistic, show, sporting and recreational activities; S - Other Service Activities	In 2020, the return on assets of non-financial corporations, measured by the EBITDA/asset ratio, decreased to 6.1%.

Source: Banco de Portugal (2021a)

In other sectors, profitability was shaken, but there were no negative losses in sectors B - Extractive Industries, D - Electricity, F – Construction, and H - Transport.

On the other hand, there were sectors whose return on assets increased: A - Agriculture; L - Real estate; M - Consulting; O - Public Administration; and P – Education (Table 7). In terms of agriculture, there was an improvement in consumer confidence from May onwards, and the confidence level in retail trade improved from June 2020 (BMEP, 2020). For these sectors of activity, some of the reasons justifying the increase in asset profitability can be observed in table 9.

Corroborating these results, Banco de Portugal (2020a) reported that asset profitability decreased from 2019 to 2020 and that the decline was transversal to all sectors of activity except the electricity sector, whose profitability in the pandemic period rose. The highest value occurred in the real estate activity sector with 10.08%, i.e., for every 100 euros in the net assets of companies in this sector, 10 euros of operating income was created.

Table 9. Reasons for a return greater than 4%

Sector	Reasons for a return of more than 4%
A – Agriculture, animal production, hunting, forestry and fishing	There were no stops. It needed to supply the food industry.
L - Real Estate Activities	Works were carried out, and construction permits were granted, which prevented the sector from stopping.
M - Consulting, scientific, technical and similar activities	Research support activities have increased, as has support for testing Covid.
O - Public Administration and Defence; Mandatory Social Security	The support obtained from the European Union allows for a financial inflow and ensures the sector's profitability.
P - Education	There were no stops even during the confinements, teaching to take place at a distance.

Source: Banco de Portugal (2021b).

Within the scope of the return on equity, which gives us an insight into the performance of companies (Breia et al., 2014), it is clear that the pandemic has worsened the profitability of companies in general. For this author, this ratio shows how shareholders are remunerated. From the shareholders' perspective, the values of this ratio contributed to breaking the percentage of profit received by investors.

If the returns are analysed together, it is possible to establish the negative impact of the pandemic in the following sectors: C - Manufacturing; D - Electricity; F – Construction, I – Accommodation; R – Artistic; and S – Other. It should be noted that the sectors without negative impacts on economic and financial return were excluded from this analysis, as well as those that presented a low, although positive, profitability (Table 5). Based on the results of table 5 and table 7 (return on equity and return on assets), it is possible to make a joint summary of the reasons for the worst results in table 10.

In the other sectors (BMEP, 2020), it was found that the return on equity did not present negative losses but still a decrease in profits, especially in the sectors: B - Extractive Industries; E - Water; and H – Transport. In extractive industries, there was an increase in confidence in construction in June. About 82.1% of national industries maintained their activity in April, 16.4% temporarily closed, and 1.5% closed permanently. In the first half of June, the percentage of active companies rose to 95.2%.

Table 10. Summary of reasons behind the worst returns.

Ratios	Sectors	Most significant negative impact
Equity return	C - Manufacturing Industries	There was a decrease in the number of companies (-1.5%), in employees (-3.4%), in gross value added (-7.2%), and in gross operating surplus (-9.3%).

Return on assets Economic profitability Financial profitability	D – Electricity, gas, steam, hot and cold water and cold air	With the closure of factories, schools, hotels, and restaurants, business consumption decreased, and domestic consumption increased. Even so, the effect on profitability corresponded to a decrease. The average electricity consumption on a working day registered a year-on-year change of 7.1% in 2020.
	F - Construction	In the case of civil engineering works, there was a 5.4% decrease in the value of works carried out on transport infrastructure, dams and irrigation systems. In 2020, the number of properties transacted decreased by 19.7% compared to the previous year, with its overall value decreasing by 19.2%. On the contrary, the average value of properties transacted in 2020 increased slightly (0.5%) compared to 2019, from 112.5 thousand euros to 113.1 thousand euros.
	I – Accommodation, catering and similar	Since the beginning of the pandemic, in March 2020, every month, there have been significant decreases in the number of overnight stays in most tourist accommodation facilities. Stays in campsites fell 43.8%, and in holiday camps and youth hostels fell 68.2% and 65.7%, respectively. By type of accommodation, the situation regarding overnight stays at the end of 2020 compared to 2019 was as follows: hotels: -79.4%, local accommodation establishments: -66.1%, Hostels: -74.9%, tourism in rural areas and housing: -53.6%. In the first eleven months of 2020, there was a decrease of 62.5% in total overnight stays. Likewise, the restoration and similar activities suffered from the same problems.
	R – Artistic, show, sporting and recreational activities	From March to November 2020, the billing values of artistic shows, sports and recreational activities represented less than half of the amount billed in 2019.
	S - Other Service Activities	Because they are support activities for the sectors listed, then they suffered from the same problems.

Sources: INE (2020a, 2020b, 2020c)

These results are corroborated by the literature review, which points to an increase in profitability in Small and Medium Enterprises (6.1% to 6.2%). However, it appears that in the case of large companies, the profitability dropped from 9.3% to 9% (INE, 2021). It should be added that in the particular case of public companies, their profitability was negative (-3.4%) (INE, 2021), explained by the closure of most public services and revenue loss.

In the same line of assessment of the economic situation of companies, financial profitability consists of an assessment of the profitability of sales and services provided. According to Banco de Portugal (2020a) statistics, around 44.5% of companies in the non-financial sector showed a negative financial return; in terms of turnover, the loss was around 10%; on return on assets, the break was 6%; and 4% in return on equity. The most significant breaks occurred in the transport and storage and accommodation and catering sectors, reaching a return of -20% (Banco de Portugal, 2020a).

A high financial profitability ratio can show how good a business strategy can be for the company. The sectors of activity that showed attractive profitability, or at least that were little affected by the pandemic, belong to those listed in table 11. For different reasons, one tries to explain the causes for the limited impact of Covid-19. As an example, in the case of administrative activities, during the first and second quarters of 2020, the use of telework had a tremendous increase in support service activities, among others, in schools to allow the transition to distance learning and also in administrative support to public services in answering calls from the population.

Table 11. Reasons for a return greater than 4%

Sector	Reasons for a return of more than 4%
A – Agriculture, animal production, hunting, forestry and fishing	The decrease in imports of goods compared to exports (-17.4%) shows the increase in consumption of national production. There is an increase in domestic consumption of food products. If, on the one hand, there is a reduction in the volume of fishing in national waters due to the immobilization of several local and coastal vessels, in particular in the species of higher commercial value, generally destined for restoration, on the other hand, the captures in external fishing grounds increased, considering that these vessels spent several months at sea, having been less affected by the pandemic.
E – Collection, treatment and distribution of water; sanitation waste management and depollution	Due to the contraction of economic activity and restrictions on the mobility of people, greenhouse gas emissions were reduced by 8.5% compared to 2019, energy consumption decreased by 7.2%, air quality improved, with 33.8% of the days with "very good" air quality, and energy produced from renewable sources represented 59.6% of consumption (https://www.ine.pt/xportal/xmain?xpid=INEandxpgid =ine_destaquesandDESTAQUESdest_boui=473650158andDESTAQUESmodo=2).
G – Wholesale and retail trade; car and motorcycle repair	Considering the various stops that occurred due to the confinement, they were not felt much, having obtained a total turnover of 18,601,420 euros (https://www.ine.pt/xportal/xmain?xpid=INEandxpgid= ine_indicadoresandcontecto=piandindOcorrCod=0006441andselTab=tab0).
L - Real Estate Activities	The construction sector showed resilience, recording average values of licensing of buildings and dwellings very close to the average of the 12 months before the pandemic. The evolution of cement sales indicates that the activity of the construction sector has indeed been relatively resilient to the pandemic.
M - Consulting, scientific, technical and similar activities	Gross value added grew by 3.2%, reaching 11.2 billion euros and gross operating surplus increased by 8.4%, amounting to 3.1 billion euros, mainly due to the performance of IT services, translating the most considerable demand for this type of service in the pandemic context.
N - Administrative and support services activities	Increase in domestic consumption of electricity (+14.5%) and natural gas (+16.2%). In the second quarter of 2020, 22.6% of the employed population were always or almost always in telework. In the third and fourth quarters of 2020, with the slowdown of the measures to contain the pandemic, this proportion decreased to increase again in the first quarter of 2021, with the implementation of new restrictive measures and new confinement.
H - Transport and storage	Transport, storage and financial and insurance activities recorded the most significant positive contributions to the change in total investment in 2020 (+3.1% and +0.7%., respectively), corresponding to growth rates of 39.6% and 9.8%, respectively.
P - Education	Adoption of the distance learning regime.
Q - Human health activities and social support	Despite temporary closures, 5.7% of people aged 16 and over could not meet medical care needs, and 13.1% dental care needs. There was an increase in the percentage of people who rated their health status as good or very good, from 15.6% in 2020.

Sources: INE (2020a, 2020b, 2020c, 2021).

Machado (2021) stated that the most significant break in profitability occurred in the extractive industry (43.9%), with accommodation, catering and similar activities also suffering a lot from the pandemic (33%). Likewise, the administrative activities and support services sector decreased by 30%, similarly to wholesale and retail trade, repair of motor vehicles and motorcycles (21.7%). The opposite situation in terms of economic and financial profitability was observed in the construction sector, which rose by 27%, as well as in real estate, by around 24% (Machado, 2021).

It should be noted that some sectors maintained an acceptable standard of economic and financial profitability, remaining positive, although suffering a decrease, like the following: B - Extractive Industries; D - Electricity; F – Construction; and H – Transport. The main explanatory reason for the profitability of these sectors is due to increases in turnover compared to the last year: Manufacture of basic pharmaceutical products and pharmaceutical preparations (+19.8%), Scientific research and development (+10.7 %), Consultancy and related computer programming activities; information services (+7.6%), Telecommunications (+4.4%) and Construction (+4.0%) activities (INE, 2020a).

These data corroborate the previous conclusions regarding the profitability of sales and services provided, assets and equity. The Securities Market Commission referred that in 2019 there was continued growth in the profitability of Portuguese companies and an improvement in their ability to meet debt commitments, but that was significantly reversed in 2020 due to the pandemic context (CMVM, 2021). Thus, it is clear that the impact of the pandemic on national companies was significant due to advances and setbacks in the opening of the economy and access to services. This factor aggravated the economic and financial crisis and the social crisis experienced.

2. Trace an impact profile by sector of activity, and compare sectors based on the ratios.

Tracing a profile by sector, there seems to be evidence that companies belonging to the sectors A – Agriculture, B – Extractive Industries, C – Manufacturing, H – Transport, and O – Public Administration, had the lowest impacts during the pandemic period, with some even improving their economic activity. However, we cannot forget the mixed effects felt by each sector in terms of the ratios studied above: liquidity, indebtedness, solvency and profitability, so there is a mix between medium-low and medium-high impacts. Regarding this fact, we can mention that while the F - Construction sector was better in terms of liquidity, but experienced difficulties in terms of returns. Sector H - Transport resorted to indebtedness offset by good profitability and solvency. In sector B - Extractive industries enjoyed strong returns but little liquidity. While sector M - Consulting showed good levels of liquidity and profitability but had their level of indebtedness increased. Regarding sector O - Public Administration, one can notice that it assured liquidity and profitability but compromised its solvency. The P – Education sector showed that the schools were more profitable and with a higher level of solvency. Finally, the S sector – Other presented companies with a good level of liquidity due to increased indebtedness but weak profitability.

On the other hand, the most significant impact was felt in the sectors of activity that declined sharply due to, among other circumstances, mandatory stoppages and interruptions decreed by the Portuguese government to contain the spread of the pandemic, the following stand out: C - Manufacturing, I - Accommodation, and R – Artistic. In addition to the consecutive stops, these sectors suffered more from Covid-19 because citizens were afraid of returning to hotels and restaurants and all kinds of shows. The manufacturing industries had an impact caused by the scarcity of raw materials, particularly those from abroad and difficulties with the workforce that affected workers due to the disease. These facts are corroborated by INE (2021) data, which notes that industrial production fell by around 11% in 2020 due to the pandemic.

The main conclusion about which sector was most affected by the pandemic is tourism. However, we can say that it was one of the sectors with the most significant support from the State (Manteu, 2021). Of the companies supported, around 90% were large companies. They resorted to teleworking, simplified layoffs and suspension of payment of tax and contributory obligations (Caetano, 2022). In addition to this support, other actions were taken at the most different levels, as described in table 12.

Table 12. Supporting and protecting measures during Covid -19 in 2020

Intervention area	Actions taken
Health and the National Health Service (SNS)	Suspension of overtime limits; Simplified regime for the recruitment of workers; Workers' mobility; Hiring retired doctors without being subject to age limits; Postponement of the vacation period; Exemption from user fees on the SNS for the diagnosis and treatment of COVID-19; Exceptional regime for procurement and expenditure in the health sector; Strengthening mental health support measures: regional plans and microsite; Profit margin limited to 15 percent on the sale of medical and protective equipment, as well as ethyl alcohol and alcohol-based skin disinfectant gel; Reduction of VAT rate for masks and disinfectant gel.
Taxes and Social Security contributions	Deferral of payment of taxes (VAT, IRS and IRC) for companies and self-employed workers; Reduction to 1/3 of social contributions due in the second quarter of 2020; Deferral of the remaining 2/3 to the third quarter of 2020; Automatic eligibility for self-employed workers and companies with up to 50 workers. Companies with up to 250 workers, if the drop in turnover is more than 20 percent, and large companies, if the drop in turnover is more than 20 percent, as long as they operate in the tourism, civil aviation or other sectors closed to the public; Suspension of tax enforcement proceedings.

Liquidity and access to credit	13 billion for loans to support SMEs and large companies with extra support for restaurants; travel agencies; tourism, and industry; Line of credit to support the treasury of companies and extras for the tourism, fisheries and aquaculture sector; Support for exports in the metallurgical, metalworking and moulds sectors, works abroad and short-term exports; Suspension of expiry of lease contracts; Guarantee of non-suspension of the supply of essential services (water, electricity, natural gas, telecommunications); Financing the entrepreneurial ecosystem of start-ups; Acceleration of the payment of incentives within the scope of Portugal 2020; Acceleration of all payments for goods and services by the Public Administration.
Employment maintenance and training	Simplified temporary lay-off regime (70% paid by the State + 30% by the employer); Access to credit lines and the simplified temporary lay-off regime implies no redundancies; Extraordinary support for professional training.
Extension of social protection	14-day prophylactic isolation; Cash benefit to assist children/grandchildren in the event of a widespread illness, whether for employees or self-employed workers; Extraordinary extension of unemployment protection benefits; Flexibility of access to social unemployment benefit; Flexibility of access to social insertion income; Financial support for emergency reinforcement of social facilities.
Protection of workers in the workplace	Option for teleworking; Offer by the government free technological solutions in Portuguese to support telework; Absences are justified for workers who have to stay at home to accompany children under the age of 12.
Others	Restrictions on freedom of movement and economic activity; Mandatory use of a mask; Suspension of all face-to-face activities in the classroom; Control of the land border with Spain and air, rail and sea connections, some suspended.

Source: authors

Manteu (2021) shows that with the measures adopted, companies' liquidity improved in recovering their economic activity, being the prices of products and services relatively stable, which helped Portuguese families immensely.

As a result of the use of telework, communications companies were the ones that profited the most from the pandemic. As Mamede et al. (2020) stated, these companies increased their activity by 50% in voice and data services, explaining the decrease in the unemployment rate due to the need to hire more operatives, as happened in health services, logistics and customer service centres. As a result, new tools were made available to students and teachers of all levels of education. In public administration services, work was done on a digital platform; until then, with little use. Online consumption has increased, with home deliveries, a fact that has gained importance never seen before. This fact explains the emergence of many companies venturing into the modality of e-commerce because commerce in physical terms was closed for a long time (Mamede at al., 2020).

CONCLUSIONS

This sectorial analysis of ratios differs from a typical financial analysis in that it was not intended to make known the evolution of a company or group of companies but to contextualise its business situation concerning the pandemic period to understand its behaviour. The interpretation of the analysed ratios sought to highlight the performance of companies and the support impact the Portuguese government provided to each activity sector. The present study deepened the literature focused on the pandemic period by introducing sectorial accounting ratios in three dimensions: liquidity, solvency and profitability. In short, the impact was evident across all Portuguese companies. However, it is possible to determine three different types of impacts of the Covid-19 pandemic on national companies through the values obtained in calculating the ratios: strong, medium-high and medium-low impacts.

The sectors least affected by the pandemic in terms of liquidity, showing more quick liquidity than current liquidity, were the following: Agriculture (A), Manufacturing (C), Electricity (D), Information (J), Financial (K), Administrative (N), and Artistic (R). The explanatory reasons for this phenomenon were the Government's support measures to stimulate the economy and the non-closing of its activity in the middle of the confinement period. In the remaining sectors of activity, the impact of the pandemic was, in some cases, devastating, leading to the definitive closure of several commercial establishments. Due to liquidity difficulties, companies resorted to credit. They increased their level of indebtedness, even those that benefited from support for bank financing and relief from the effort with debt service.

Those that suffered the most were the smallest firms. Some explanatory reasons for this were the fall in private consumption, disposable income and exports. Due to their commercial/industrial nature, they generally have the greatest need for credit, as they depend not only on turnover but also on almost immediate receipts. The decrease in liquidity combined with an increase in the level of indebtedness has triggered alarm signals on solvency, which has proved weak, although more visible in some sectors of activity than in others.

Large companies have easier access to credit, whether in banking, the financial market, the sale of assets, attracting new investors, or other factors where small companies cannot compete as easily.

The most affected sectors in the solvency ratio were Accommodation (I), Administrative Activities (N), Public Administration (O), Education (P), Human health (Q), Artistic (R), and Other (S).

In terms of profitability, whether economic, financial, assets or equity, the most affected sectors were Accommodation (I), Administrative (N), Health (Q), Artistic (R), and Other (S). The explanatory reasons are a fall in business volume, difficulty hiring qualified personnel and a drop in the companies' assets and equity. The decrease in net income for the period, as a result of a drop in invoicing, mainly affected activities in its current activity due to the fall in individual and collective consumption, which caused a significant decrease in industries, particularly in Accommodation (I), , Financial (K), and Artistic(R) activities.

In short, some sectors of activity have better results in a typology of ratios and worse in others. For example, construction and transport were better in terms of liquidity and worse in terms of profitability and indebtedness. Consulting (M) showed good levels of liquidity and profitability, but their level of indebtedness increased. Education (P) was the sector of activity with the best result in solvency, despite decreased liquidity and profitability. With a very negative impact, Accommodation (I) stand out, as well as Artistic (R) activities. In these sectors of activity, around 90% were large companies, which resorted to teleworking, simplified layoffs and suspension of payment of tax and contributory obligations. As a counterpoint, communications companies were the ones that least felt the impact of the pandemic due to the use of telework, sale of new IT tools, development of remote assistance and other forms of work implemented and made available to all. Office workers, teachers, students, call centres, and many other workers saw their way of working move to the digital realm.

Despite the weight of the negative impacts experienced in the pandemic period, positive impacts in economic and social terms should be noted. The positive impacts verified occurred in specific sectors of activity in a particular way. We highlight, for example, the increase in the number of domestic internet users and the increase in the turnover of companies with online sales, so it is not surprising that the information and communication activities sector has grown more than 30%. It should be noted that activity sectors, like Agriculture (A), Real Estate (L), Consulting (M), Public Administration (O), and Education (P), increased profitability during the pandemic due to increased consumer confidence in retail trade. Small and Medium Enterprises' profitability increased by 0.1% and fell by 0.3% in large companies. The construction sector showed the most extraordinary resilience during the pandemic, explained by the increase in the licensing of buildings and dwellings and sales of construction materials, especially cement. These positive aspects, in some sectors of activity, are allied to the resilience factor of national companies that managed, in a difficult period, to improve their results in terms of liquidity, solvency and economic and financial profitability.

In short, we can see that after the health, economic and social crisis, the degree of resilience of national companies was achieved, among other things, with support from the Portuguese State.

This virus brought pain, lamentations, deaths, many discussions, and an economic crisis. Companies, like people, have experienced a painful and tremendous upheaval in their daily lives. Some reinvented themselves, others died, and still, others managed to bypass an economic, social and financial crisis that we never thought we would experience in the present times. More than anything for Portuguese companies, it was necessary to believe to survive.

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