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Pietro Pavone

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## Relationship between economic performance and capital structure: some empirical evidence

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Pietro Pavone

Department of Political Science,  
University of Naples Federico II,  
Via Rodinò 22/a, 80138, Naples, Italy  
Email: [pietro.pavone@unina.it](mailto:pietro.pavone@unina.it)

**Abstract:** This paper investigates the relationship between corporate financial choices and economic performance. The analysis concerns a sample of Italian companies in the construction sector in the period 2008–2017. Descriptive statistics, correlation and regression are used to analyse the data. Return on equity (ROE), ROA and ROI are used as measures of company performance; short-term debt, long-term debt, and total debts are used as independent variables. The findings of the study show that short-term debt has a positive and statistically significant effect on the ROI of real estate development companies, while it has a negative and statistically significant effect on the ROE of construction companies. The study also shows a positive and significant relationship between long-term debt and the ROI of real estate project development companies and between total debt and the ROE of construction companies.

**Keywords:** construction sector; economic performance; capital structure; ROE; return on equity; ROA; return on asset; ROI; return on investment; short-term debt; long-term debt; total debts.

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**Biographical notes:** Pietro Pavone, PhD in Business Economics, is currently Postdoctoral Researcher at the University of Naples Federico II. He obtained a degree in *Business Administration* at the University of Milano-Bicocca and a 2nd level postgraduate master's degree in *International Tax Law* at the University of Rome Tor Vergata. He is also a public official of the Italian Ministry of Economy and Finance – Criminal Investigations Division.

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### 1 Introduction

The maximisation of a company's profits and competition in the competitive environment also depend on the capital structure choices (Abor, 2005). These are very important managerial decisions, because in addition to influencing shareholder returns they have an influence on the overall business risk.

Therefore, managers continually seek a balance between leverage and equity that allows the durability of the entrepreneurial initiative, that in this way will be able to face

both favourable and recessive general economic situations. In this perspective, the analysis of the financial structure makes it possible to identify the level of risk of the corporate business: a weak financial structure increases the probability of default in negative contextual conditions. On the contrary, the strengthening of net capital helps to maintain financial independence and therefore to minimise risks, as well as to reduce financing costs and improve profitability (Tze and Heng, 2011; Gitman, 2006). Moreover, if the profitability of the loans is higher than the financing costs, it is also possible to sustain the previous investments, developing desirable virtuous circles.

Since the study by Modigliani and Miller (1958), valid in perfect market conditions, many researchers have tried to study the relationship between financial structure and profitability through empirical research that took into account the real, often imperfect, market conditions (information asymmetries, presence of transaction costs, differences in the tax treatment of dividends and capital gains etc.). The researchers aim to outline, as far as possible, an optimal level of indebtedness, in order to minimise the cost of capital for the company and to maximise the overall value of the company. Over the years, there have been divergent scientific results: some authors (Rajan and Zingales, 1995; Cassar and Holmes, 2003; Luper and Isaac, 2012) highlight negative effects of debt on company profitability; others (Roden and Lewellen, 1995; Margaritis and Psillaki, 2007, 2010), in contrast, emphasise a positive relationship. A third set of authors (Javed et al., 2014) find both effects in their studies.

The various variables, the heterogeneity of the samples, the different contexts considered and the difference in methodological tools explain the strong contradiction of the results of these empirical studies and, at the same time, confirm the multiform nature of the particular object of study. However, although there have been several studies on the relationship between capital structure and economic performance, there are no sectoral studies of this relationship. Therefore, the purpose of this paper is to understand the relationship between capital structure and economic performance of Italian companies in the particular construction sector over a period of 10 years (from 2008 to 2017).

The development of this type of research in the Italian construction context is very interesting, if we consider that:

- the Italian capital market is largely inefficient and bank-oriented
- the greater propensity to debt rather than the risk capital of Italian companies can be linked to the characteristics of the corporate structure, strongly based on the presence of family businesses with a high degree of closure with respect to the entry of new shareholders or other external investors (Bianchi et al., 2005)
- the construction industry has a significant impact on the country's economy, considering that construction accounts for about 50% of the value of national investments and about 10% of Italian GDP (Rugiero et al., 2018)
- the performance of this sector is affected by the expansionary or recessionary dynamics of aggregate demand and income; it is therefore often at the centre of the attention of policy makers, because it anticipates the economic cycle.

The choice to focus on the construction industry derives from the importance of the role of this sector in economic growth (Oladinrin et al., 2012; Erol and Unal, 2015), so much so that very recent studies are focusing on its productivity determinants in emerging

countries (Camino-Mogro and Bermudez-Barrezueta, 2021) and the implications for building policies (Saka and Olanipekun, 2020).

The paper is organised as follows. Section 2 presents a review of international literature, Section 3 defines the aims and research hypothesis, Section 4 discusses the research methodology defining the collection of data, the variables and the empirical analysis model. Sections 5 and 6 propose the empirical results (statistics and regression). Finally, Section 7 summarises the results of the research and concludes the discussion.

## **2 Theoretical background**

The scientific starting point of corporate finance studies is peacefully recognised in the theory of Modigliani and Miller (1958): in the absence of taxation, the financial structure has no impact on the cost of capital of the company and, therefore, is not able to influence the overall value of the company. Thus, this model, known as the “theory of irrelevance”, is valid in perfect capital markets. More realistically, moving away from this hypothesis of market perfection, four theories on the structure of capital have been developed over time, four different interpretative approaches to the phenomenon under study.

The first, the oldest, is the Trade-Off Theory (Kraus and Litzenberger, 1973; Frank and Goyal, 2004), according to which capital structure choices are the result of a compromise between possible benefits and disadvantages. Thus, there are costs and benefits associated with the use of debt and equity, such as the tax benefit represented by the deductibility of the interest payable on the loan and the disadvantage of a higher default risk in the event of difficulties or financial crises. Later, even Modigliani and Miller (1963), have recognised that, in imperfect markets with the presence of taxation, company value increases with higher financial leverage.

Within this theory, some authors (Ross, 1977; MacKie-Mason, 1990) highlight the «bankruptcy costs» to explain the negative effects of debt on company profitability: the use of debt, above certain levels, increases the company’s operational and financial risk, increasing its probability of insolvency and, therefore, reducing its value.

The second theory, Pecking Order Theory (Donaldson, 1961; Myers and Majluf, 1984; Shyam-Sunder and Myers, 1999; Akeem et al., 2014) establishes a hierarchical order in the company’s financing choices. In other words, managers, in deciding how to finance a new investment, give priority to internally developed resources (disposal of reserves, undistributed profits, excess liquidity etc.); if internal funds are not sufficient to finance new investment opportunities, companies turn to the outside, to the capital market, with the preference at first for low-risk debt financing and, as a last option, for share financing. Some authors (Frank and Goyal, 2003), adhering to this theory, affirm that not only companies use too much equity financing, but they also do it at the wrong times, therefore in contrast with the principles proposed by the Pecking Order Theory (Fama and French, 2002; Leary and Roberts, 2004). Gertler and Gilchrist (1994) see a decrease in default costs and growth in internal cash flows available for new investments (thus a reduction in external debt) in cases of strong economic growth, thus linking the financing choices of companies to trend of economic cycles.

The Agency Costs Theory considers the general problem of agency between managers and shareholders and, in particular, also considers another factor of disadvantage connected to debt: the conflict of interests between debt-holder and share-

holder (Jensen and Meckling, 1976; Jensen, 1986). This theory starts from the following consideration: the managers of low-debt companies use the available financial resources not for the sole purpose of maximising the return on investments (ROI). On the contrary, when in the capital structure of a company, there is a considerable debt, the fact of having to pay periodic interest on that debt limits the available cash flows for investments, which are therefore certainly used more profitably. In this perspective, the payment of the interest payable on the loan exerts a pressure on the managers so as to induce them to more efficient behaviours, attenuating the conflict of interests existing between debt-holder, worried about the payment of the interests, and share-holders who wish to maximise the value company.

Information asymmetry is greater when considering smaller companies, as they are usually not obliged to release a lot of information and do not want the costs of a voluntary disclosure (Michaelas et al., 1999). To compensate for probable opportunistic behaviour, creditors are willing to pay the debt less and demand higher interest rates. Furthermore, to reduce information asymmetry, they require a series of additional information (special financial statements, detailed and interim financial statements, financial reports, analysis of independent external parties etc.); these are agency costs for the company, with the consequent reduction of its value (Berk and Demarzo, 2008).

Finally, Signal Theory (Ravid and Sarig, 1991; Akoto and Gatsi, 2010; Kebewar, 2013) is useful for describing behaviour when two parties (individuals or organisations) have access to different information. Generally, the sender must choose how to communicate an information and the receiver must choose how to interpret the signal. Signal theory suggests, according to various operational declinations, that, in the presence of asymmetric information, a company's financing strategy sends diversified signals to potential financiers about its financial structure and its degree of financial dependence. Thus, managers attempt to transfer their good expectations about the future business to creditors through various signals. Lenders judge the truth of these signals and then decide if and how to finance. In detail, the managers, having more information than all the other stakeholders, transmit, through signals, to potential financiers, a certain level of confidence about the future prospects of the company (Barclay and Smith, 2005). In fact, they must pay the interest to the holders of the debt because otherwise they risk bankruptcy and they can also decide not to distribute dividends to the shareholders (productive factors in residual position; Capaldo, 1998) or in any case to reduce the distribution of dividends. For these reasons, adding further debts to the capital structure of the company can be a credible sign of greater expected future cash flows (Ross, 1977); in other words, the increase in leverage is used as a potentially effective signalling device to influence the choices of potential investors and lenders.

For example, recently the impact of financial leverage and supply chain finance on firm performance of Vietnamese construction sector was studied by Bui (2020), demonstrating how the impact of financial structure on profitability in the construction sector is a very current topic (Nga and Nguyen, 2020). Part of the scholarship (Dulaimi, 2005; Gunduz and Yahaya, 2018; Batra and Hyde, 2020) explored the behavioural paradigm in this specific industry, including the constructs of leadership, commitment, and socialisation that escape budget analyses. Other research focuses on sustainability-related challenges, such as Wen et al. (2020) which deal with the topic of energy efficiency.

### 3 Objectives of the study and research hypothesis

The main purpose of this study is to investigate the relationship between financial debt, as a proxy of capital structure choices and economic performance in the construction sector in Italy. In particular, the research questions are:

- *RQ1*: what was the evolution of the main profitability ratios of the construction sector companies in Italy in the period 2008–2017?
- *RQ2*: how did the 2008 crisis affect profitability dynamics and the capital structure of the construction sector companies in the period in question?
- *RQ3*: considering these companies, are there relations, positive or negative, between economic performance and capital structure?
- *RQ4*: in the case of an affirmative answer to the RQ3, are there any differences in the relations between performance and capital between the two sub-sectors of the construction macrosector in Italy?

We will try to answer these questions starting from the following research hypotheses:

- *H1*: the global economic crisis has reduced corporate profitability and changed the capital structure choices;
- *H2*: financial debt choices have effects on overall economic performance;
- *H3*: the relationships between performance and financial structure are statistically significant.

## 4 Methodology

### 4.1 Data description

The research hypotheses were tested on a sample of 15.889 companies operating in the construction sector in Italy. The selection of balance-sheets is based on the international NACE Rev. 2 classification that divides the economic activities of the Construction sector into two different subclasses: development of real estate projects and construction of buildings. The first companies develop projects for the construction of residential and non-residential buildings, by finding financial, technical and physical resources to build real estate units for sale; companies of the second sub-class are active in the construction of residential and non-residential buildings. Therefore, based on this distinction, the sample is broken down into two separate data populations: 1.399 companies active in the development of real estate projects and 14.490 building construction companies (residential and non-residential buildings). Data used in this study were collected from the 2008–2017 period, to also consider the effects of the 2007–2008 international economic crisis which, in Italy, particularly affected the construction and real estate investment sector.

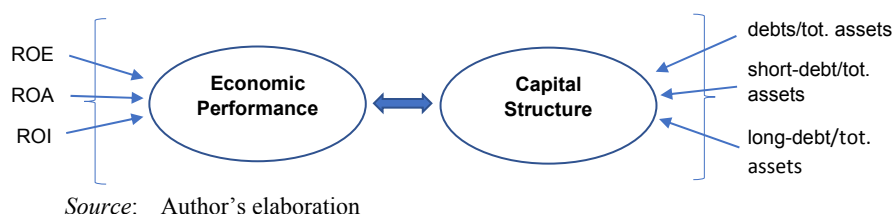
## 4.2 Conceptual framework

Taking care of ethical consideration issues, particularly present in quantitative studies, the analytical description of all the logical and empirical steps followed is provided, to facilitate the replicability of the study and allow to control the effective advancement of knowledge.

It is not easy to identify the key factors that can influence the financial structure of companies (Titman and Wessels, 1988; Harris and Raviv, 1991), also because internal factors (specific variables of the company) and external factors (specificities of the financial system of Country of reference) contribute to shaping their debt.

The conceptual framework underlying this study is outlined in Figure 1.

**Figure 1** Conceptualisation of the relationships between economic performance and capital structure (see online version for colours)



In order to study the relationships existing between the choices of capital structure and the profitability of construction companies, some indexes are used. It was decided to measure the economic performance with the three classic profitability indicators: return on equity (ROE), return on assets (ROA) and ROIs.

From the point of view of the financial structure, the loan capital can be considered according to two perspectives: referring to the entity that lends the capital to the company or from the point of view of the period of time in which the capital must be repaid. This second perspective is taken in this study. In fact, to represent the capital structure, the following three indices were constructed using the balance sheet data provided by the AIDA database: total debts/total assets (TDA), short-term debt/total assets (SDA) e long-term debt/total assets (LDA).

### *Return on equity*

This indicator compares net profit to equity and provides a first summary measure of the overall profitability of the entire company. Here it acts as a dependent variable.

### *Return on assets*

It is used as a dependent variable. It is calculated as the mathematical division between net income and total assets. It is a valid indicator of the company's efficiency in making profits from its total assets.

### *Return on investment*

ROI, dependent variable, measures the percentage profitability of the company's only characteristic management. It is a relationship that has the operating result in the

numerator and in the denominator a sum that expresses the capital invested in that management area. Aida database calculates it as follows: equity + bonds within 12 months + bonds over 12 months + banks within 12 months + banks over 12 months + other lenders within 12 months + shareholders for loans within 12 months + shareholders for loans over 12 months + other lenders over 12 months.

#### *Short-term debt to assets*

Mathematically it can be represented as the relationship between short-term debt and total assets and, in this study, is an independent variable. It shows the portion of company's assets which are financed with debt payable within one year.

#### *Long-term debt to assets*

Long term debt to total asset ratio is the ratio that represents the financial position of the company and the company's ability to meet all its financial requirements. It shows the percentage of a company's assets that are financed with loans and other financial obligations that last over a year. It is an independent variable.

#### *Total debt to assets*

Mathematically expressed by the total debt/total assets ratio, it represents an independent variable. It shows the proportion of a company's assets which are financed through debt, meaning the mix of short-term liabilities and long-term liabilities.

### 4.3 Empirical framework

To answer the research questions, a multiple regression model has been built that can explain a variable based on other variables; so, the dependent variable (economic performance) was isolated from the independent variables (TDA, SDA and LDA) representing the capital structure. Therefore, it is possible to explain economic performance as a function of the aforementioned indices, through the following three equations, each of which measures the dependent variable with a different profitability ratio (ROE, ROA and ROI):

$$ROE = c + \beta_1 TDA + \beta_2 SDA + \beta_3 LDA + \varepsilon$$

$$ROA = c + \beta_1 TDA + \beta_2 SDA + \beta_3 LDA + \varepsilon$$

$$ROI = c + \beta_1 TDA + \beta_2 SDA + \beta_3 LDA + \varepsilon$$

where:

ROE is return on equity

ROA is return on assets

ROI is return on investment

TDA is total debt/total assets

SDA is short-term debt/total assets

LDA is long-term debt/total assets



$c$  is a mathematical constant

from  $\beta_1$  to  $\beta_3$  are the regression coefficients

$\varepsilon$  is the residual error term.

Obviously, a first immediate measure of a business's success is provided by the profit derived from it. Thus, profitability indicators help an investor in his decision-making process. The capital structure also provides important indications, especially in terms of the incidence of debts on total assets. The choices on the part of assets that is convenient to be burdened by debts with third parties have repercussions on the overall economic performance of the company.

The regression analysis, carried out starting from the above equations, involved both sectors considered: development of real estate projects and construction of buildings.

## 5 Descriptive statistics

Table 1 shows the descriptive statistics of the dependent and independent selected variables.

**Table 1** Descriptive analysis of variables

<i>Real estate project development companies</i>					
	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Median</i>	<i>Std. Dev.</i>
ROE	-145.60	111.60	0.66	0.70	34.51
ROA	-399.94	149.79	1.13	1.21	23.27
ROI	-28.13	28.97	2.31	1.65	6.84
TDA	-0.06	25.36	0.81	0.89	1.02
SDA	-0.04	17.06	0.45	0.33	0.77
LDA	0	51.75	0.40	0.25	1.94
<i>Building construction companies</i>					
	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Median</i>	<i>Std. dev.</i>
ROE	-149.43	144.82	11.62	7.19	30.29
ROA	-788.56	424.77	4.56	3.31	17.02
ROI	-29.76	29.98	7.09	5.83	9.06
TDA	0	4322.06	1.43	0.81	59.06
SDA	-0.52	4316.91	1.06	0.62	45.59
LDA	-0.22	8.77	0.16	0.05	0.27

Source: Author's elaboration

From the quantitative analysis, values and indicators emerge that reflect the generalised crisis that has affected the construction sector. Beginning with the analysis of profitability indicators, the changes occurring in the last two years (2015–2017) that represents a phase of relative economic recovery, after the crisis that began in 2007–2008, are underlined. In previous years, especially ROE has often recorded values  $< 0$ , reaching

even the negative average value of  $-3.48$  in 2012. The changed behaviour of the banking system that has increased the cost of money and tightened the conditions of financing in response to the great international crisis in progress has undoubtedly exerted depressive effects on the real estate market. ROE, ROA and ROI for construction companies are higher and, also in this case, higher average values are noted in the last two/three years of the observation period.

In particular, ROE shows the greatest volatility, going from 13.02 in 2008 to 8.75 in 2013.

With regard to debt, construction companies are the most indebted. The main difference between the two types of companies is the following: construction companies have made greater use of short-term debt, while in companies that develop real estate projects there is less disequilibrium between short and long debts, with a slight preference for the short term. In particular, the TDA of real estate project development companies shows a decline in the years 2012–2013–2014 and a recovery in the last years of the decade that allowed to return to the average ratio recorded at the beginning of the decade (0.80). Furthermore, very similar mean and median values and a low standard deviation make the described considerations significant and reliable. Fairly regular, excluding the 2012 peak (average value 5.49), the average value of the TDA of construction companies (0.70). However, the increase in 2012 debt is explained by the large increase in short-term exposure in that year.

Considering the median values, also in this case there is a response to the crisis with a greater use of short-term exposure.

Then, this study uses correlation analysis (Table 2) to investigate the existence of a linear relationship between economic performance and financial debt. Precisely, the Pearson's co-efficient is used at 1% and 5% level of significance.

**Table 2** Correlation analysis between variables

<i>Real estate project development companies</i>						
	<i>ROE</i>	<i>ROA</i>	<i>ROI</i>	<i>TDA</i>	<i>SDA</i>	<i>LDA</i>
ROE	1	0.16	0.69	0.27	0.57	0.02
ROA		1	0.58	0.17	0.31	0.60
ROI			1	0.23	0.50	0.59
TDA				1	0.82	-0.08
SDA					1	-0.09
LDA						1
<i>Building construction companies</i>						
ROE	1	0.85	0.92	-0.08	-0.37	-0.67
ROA		1	0.96	-0.19	-0.43	-0.66
ROI			1	-0.11	-0.39	-0.63
TDA				1	0.91	0.28
SDA					1	0.40
LDA						1

Source: Author's elaboration

Table 2 shows that the analysis gave results of both positive and negative relationships. In fact, the best correlated profitability indicators with the indices that represent the capital structure are ROE with SDA (0.57), ROA with LDA (0.60) and ROI with LDA (0.59). These relationships are significant. Furthermore, ROE, ROA and ROI are weakly positively correlated with TDA (0.27; 0.17; 0.23).

In the case of construction companies, there are negative relationships. Specifically, ROE is negatively correlated with LDA (-0.67). ROA is also negatively correlated with SDA (-0.43) and LDA (-0.66). Instead, the relations, however negative, between profitability indicators and TDA are negligible, because they are statistically insignificant.

**Table 3** Regression test summary

<i>Real estate project development companies</i>					
<i>Dependent variable</i>	<i>Intercept</i>	<i>TDA</i>	<i>SDA</i>	<i>LDA</i>	<i>Regression statistics</i>
ROE	-8.5491	0.2671	0.0776	0.8268	R Square: 0.4730 Adjusted R Square: 0.2095 F: 1.7954 p-value: 0.2480
ROA	-2.5575	0.6508	0.2997	0.0680	R Square: 0.5173 Adjusted R Square: 0.2760 F: 2.1439 p-value: 0.1959
ROI	-0.4961	0.1624	0.0258	0.0176	R Square: 0.7687 Adjusted R Square: 0.6531 F: 6.6497 p-value: 0.0245
<i>Building construction companies</i>					
ROE	50.2028	0.0477	0.0477	0.0808	R Square: 0.7398 Adjusted R Square: 0.6097 F: 5.6873 p-value: 0.0345
ROA	14.6066	0.1850	0.1487	0.1385	R Square: 0.6180 Adjusted R Square: 0.4271 F: 3.2368 p-value: 0.1027
ROI	16.3849	0.0738	0.0664	0.1520	R Square: 0.6751 Adjusted R Square: 0.5126 F: 4.1560 p-value: 0.0651

*Source:* Author's elaboration

## 6 Regression analysis

All the variables are studied through the regression test, used to estimate the regression coefficients of the equations described above. The results of the regression test are shown in Table 3.

Considering real estate project development companies, the analysis first reported three negative relationships ( $\beta < 0$ ): in fact, the dependent variable (ROE, ROA and ROI) always results in a negative relationship with the independent variable TDA. However, as can be seen from the results of the regression analysis (Table 3), in all three cases the relationships are not statistically significant at the significance level of the 0.05. Instead, ROA and ROI are always positively linked both with SDA and with LDA, but only the ROI results in a statistically significant relationship with the two debt finance indices: p-value (0,02 e 0,01) < 0,05.

Considering the construction companies, the analysis highlighted negative relationships ( $\beta < 0$ ) of all profitability ratios (ROE, ROA and ROI) with SDA and LDA. However, only the negative relationship between ROE and SDA (p-value: 0.04 < 0,05) and that, positive ( $\beta > 0$ ), between ROE and TDA (p-value: 0,04 < 0,05), can be considered statistically significant, at the level of the 0.05.

The other relationships that were found to be positive ( $\beta > 0$ ), between ROA and ROI with TDA do not take on a statistically appreciable meaning.

## 7 Conclusions

This study investigates the impact of capital structure on firm performance in Italian industrial sector of the constructions, considering also the effects of the global crisis of 2008. The differentiation by sector, according to the NACE Rev. 2 classification, highlighted some important differences. The study, answering to the RQ1 research question, showed higher average profitability values for construction companies than real estate project development companies. In the considered decade, the construction companies recorded an average ROE of 11.62 against 0.66 of the ROE of real estate project development companies. ROA of construction companies is on average 4.56 compared to 1.12 for real estate companies. ROI of companies active in the construction sector (7.08 on average) was also higher than the average ROI of real estate companies (2.31).

It has also been shown that the entire construction sector has suffered a marked downsizing since 2008, with the international crisis (RQ2). In fact, it is to be considered that the trend of this sector is very much affected by the expansionary or recessive dynamics of aggregate demand and incomes. Data showed an overall recessive sector dynamic until 2012–2013, with some recent signs of recovery. In the last years of the decade, in fact, all profitability indicators are recovering and this is true both for real estate project development companies and for construction companies. Furthermore, the first half of the decade is characterised, for both companies, by an increase in total debt, favoured in the first few years by an increase in short-term exposure and by a reduction in the medium-long term one. Therefore, in a sector where the most suitable technical form to finance operations is medium-long term financing, in response to the crisis, the path of short-term debt has been preferred, considerably more expensive and therefore more

penalising for company balance sheets. Given these results, the first hypothesis is confirmed (H1).

With regard to the relations between capital structure and economic performance, the described multiple regression model has allowed to highlight different forms of relationship between representative variables of the two dimensions object of this study (RQ3). The results, though confirming the second hypothesis (H2) are, however, discordant (RQ4). In particular, the TDA negatively influences the economic performance of real estate project development companies. The SDA and LDA independent variables are negatively linked to the ROA and ROI of the real estate project development companies, while the relationship is positive with the profitability ratios of the construction companies. Instead, the TDA variable is positively related to ROE, ROA and ROI.

Finally, the third hypothesis (H3) found only partial confirmation. In fact, not all the relationships highlighted are statistically significant. The following relationships are statistically relevant:

- ROI with SDA and LDA of real estate project development companies (both positive relationships);
- ROE with SDA and TDA in construction companies, with the distinction that the ROE-TDA relationship is positive and that ROE-SDA relationship is negative.

It should be noted that the same independent variable (SDA) has opposite effects on economic performance if we consider the sector of real estate project development companies or that of construction companies. This second type of companies, with greater cyclical characteristics, suffer more, in terms of ROE, the imbalances in the structure of liabilities towards short-term exposures.

The main limitation of the research is represented by the heterogeneity of the sample data; in the future, in similar research, it will be necessary to study the relationship between performance/debt financing taking into account the dimensional profiles of the companies, so as to improve the accuracy of the estimate, as recently suggested by Dvouletý and Blažková (2021), in light of the risks associated with quantitative analyses (Maula and Stam, 2019; Aguinis et al., 2019).

However, the study proposed in this publication may have different implications. The findings of the research can guide the choices of companies and creditors of loans, as well as political planners in the formulation of policies relating to the structure of capital. Furthermore, using a similar methodology, it is possible to replicate the study, for comparative purposes, considering other sectors and other countries. This research also studies the financial structure-profitability relationship in an environmental context of economic crisis. Therefore the implications are also related to the intertwining of microeconomic dynamics in periods of economic crisis, recently defined as 'exuberantly irrational' (Huck et al., 2020), which can represent significant laboratories for scientific investigation.

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