Velia Gabriella Cenciarelli

CORPORATE FINANCIAL DISTRESS: NEW PREDICTORS AND EARLY WARNING

FrancoAngeli

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ECONOMIA - *Ricerche*

Velia Gabriella Cenciarelli

CORPORATE FINANCIAL DISTRESS: NEW PREDICTORS AND EARLY WARNING

Preface by Giulio Greco

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TABLE OF CONTENTS

To my son

PREFACE

In the complex contemporary business landscape, corporate financial distress poses a major threat to firms' stability and longevity. The ability to anticipate and mitigate financial distress is a critical skill for financial reporting users – market participants and other stakeholders – and preparers, such as Chief Financial Officers (CFOs), whose roles have evolved to encompass not only financial stewardship but also strategic foresight. This book provides valuable insights into early warning signs and new predictors of financial distress, with a particular focus on underexplored areas such as intellectual capital and earnings management.

The traditional indicators of financial distress, including liquidity ratios, leverage ratios, and profitability metrics, have long been the cornerstones of financial analysis. However, the dynamic nature of today's corporate environment necessitates a broader perspective. Intellectual capital represents a critical, yet often overlooked, component of a company's value, increasingly impacted by advancements in artificial intelligence. By examining intellectual capital resources, financial reporting users and preparers can gain deeper insights into the sustainability and resilience of their firms.

Earnings management involves the manipulation of financial statements to project a desired image of the company's financial health. While not necessarily fraudulent, these practices can obscure the true financial condition of a business, delaying the recognition of underlying issues. Understanding the nuances of earnings management techniques, such as income smoothing, revenue recognition timing, and expense manipulation, can provide a more accurate understanding and assessment of financial performance and potential distress.

This book delves into these new predictors, offering theoretical frameworks and analytical tools to help identify early warning signs of financial distress. It draws on recent research and empirical data to illustrate how intellectual capital, earnings management and tax avoidance can be systematically evaluated and monitored. The book demonstrates that by integrating these predictors into their financial analysis, financial professionals can significantly improve their ability to anticipate and address financial challenges before they escalate.

In a world where corporate failures often have far-reaching consequences, the ability to foresee and forestall financial distress is paramount. This book not only broadens the scope of traditional financial analysis but also encourages CFOs to become proactive stewards of their companies' financial health. By focusing on intellectual capital and earnings management, it provides a fresh perspective on early warning signs and predictors for financial reporting users.

Pisa, 10 July 2024

Prof. Giulio Greco
Scientific Director Master CFO
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INTRODUCTION

Scope of book

The number of bankruptcy was formerly few. However, over the last 30 years, due the financial crisis, COVID-19 pandemic, and energetic issues, corporate financial distress has evolved dramatically. The large number of bankruptcy and the increase of default risk has raised the interest for bankruptcy prediction model. Academic literature on accounting and finance has paid attention on bankruptcy prediction in order to find the variables that improve its predictive ability. Bankruptcy prediction models, also called credit scoring models, allow to assess the future ability of firms to meet its obligations and to evaluate firms' credit risk. Prior researches find two approaches to predict the likelihood of firm's default: accounting-based bankruptcy prediction models and market-based bankruptcy prediction models. These models use historical financial and market data to assess future firm's performance. Since financial statement allows firms to share information about current and expected performance with stakeholders and market, the accounting-based bankruptcy models use information gathered from financial statement to predict the likelihood of firm's default by distinguishing between financially distressed firms and "healthy" firms. The latter approach is based on the assumption that the information provided by financial statement are reliable and enough to assess the financial health of firms. Nevertheless, there is no clear consensus in the literature on which variables are good bankruptcy predictors.

However, in recent years academic literature of accounting and finance highlights the limitation of financial ratios as predictors of bankruptcy (Beaver, 2005). Particularly, these studies provide evidence that other variables could affects firm's future performance and solvency. Given the limitation of the information gathered from financial statement (financial ratios) to predict default, this book attempts to investigate whether and how different financial and non-financial variables influence corporate financial distress and bankruptcy prediction. In this book, we investigate the relevance of including "*new*" variables in traditional credit scoring models. We develop new models for public firms that predict financial distress and bankruptcy. Unlike previous studies, the models applied in this work use a combination of financial ratios, earnings management information, intellectual capital performance proxies and tax avoidance variables to analyze whether models containing these three kinds of variables are able to enhance the predictive power of bankruptcy prediction models.

The purpose of present study is to provide models with high predictive ability by reducing the misclassification between bankrupt firms and non-bankrupt firms. Specifically the book aims to produce more reliable bankruptcy prediction models for creditors, investors, analysts and firm's stakeholders in general.

Relevance of bankruptcy prediction studies

Bankruptcy negatively affects all firm's stakeholders: management, creditors, investors, and regulators. More specifically, by implementing a bankruptcy prediction model, management could recognize financial distress in an earlier stage and take the necessary remedial actions to avoid the negative effect of default. Managers can use prediction models to assess future firm's performance in order to timely review their strategy and improve its financial position.

Creditors and financial institutions are intensely interested in the prediction of bankruptcy due to better measure and price credit risk. Essentially, financial institutions could avoid misclassification between bankrupt and non-bankrupt firms in order to reduce potential capital loss and enhance potential profits from lending. On the other hand, banks and financial institutions need to develop bankruptcy prediction models (credit scoring models) to manage their lending activity. Evaluation of loan by reliable bankruptcy prediction models provide better analysis of creditworthiness and successful allocation of financial resources, reducing credit risk of banks and financial institutions.

Bankruptcy prediction is relevant also for individual and institutional investors who can use prediction models in their investment decisions.

Specifically, investors could discriminate between good stock and poor stock in their portfolios by using prediction models. Academic literature shows that, corporate bankruptcy risk is not correlated with high returns. Academic literature suggests that stocks with high likelihood of distress receive anomalously low returns. These studies underlines the relevance of bankruptcy prediction models for investors who using such models can increase the success in investment decisions.

The estimation of the probability of default assumes an important role for regulators. Specifically, the Basel Capital Accord aims to implement an international standard that can be used by national regulators to establishing capital requirements for banks. Under the Basel accord, banks can use internal models for bankruptcy prediction (IRB) to minimize credit risk and to ensure better allocation of capital within firms.

Basing on the abovementioned assumption, we can said that bankruptcy prediction is significant for every stakeholder. Thus, bankruptcy can imply several consequences and costs, which can affect the economic system considered as whole. Financial distress and bankruptcy are costly also for non-financial stakeholders, such as customers, suppliers, and employees (e.g. bankruptcy causes jobs losses).

Chapter outline

This work consists of 3 chapters. After the introduction, the book provides an overview of historical evolution of financial distress concept. Specifically, in **Chapter 1** we explore the historical evolution on corporate financial distress concept analyzing the definitions provided by the Italian doctrine and the causes that generate distress situations. Firstly, we critically review the definition of financial distress phenomenon, discussing key concepts and terms. Then, we provide a brief overview of both national and international early studies on bankruptcy prediction.

In **Chapter 2**, we provide a literature review of bankruptcy prediction studies. Specifically, by critically examining previous studies, this chapter highlights the key topics, methodologies, and findings that have shaped the field and focuses the current research within this broader scholarly landscape. In undertaking this literature review, the primary objective is to offer a comprehensive overview of the theoretical and empirical developments relevant to the research topic. This involves a systematic evaluation papers, books, and other academic sources that contribute to the understanding of the topic matter. The review is organized thematically to provide clarity and coherence, guiding the reader through the evolution of ideas and debates in the field.

Chapter 3 focuses on the role of new variables to predicr corporate financial distress. Specifically, in this chapter we investigate the role of earnings management, intellectual capital and tax avoidance in assessing likelihood of firm default. Examining a sample of US public companies during the period from 1985 to 2019, we test whether new predictors reduces the probability of bankruptcy. We use several proxies as aggregate measure of earnings management, corporate intellectual capital performance, and tax avoidance. The second part of this chapter is dedicated to investigate the role played by new predictors on the predictive power of bankruptcy prediction.

Finally, we provide the conclusions and we review the contribution of my study. Particularly, the thesis mainly contributes to both the accounting literature and to the bankruptcy prediction literature. To conclude, we discuss the relevance of the findings arguing how the main findings add to the understanding of bankruptcy prediction literature.

***

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The responsibility for the book’s contents is solely of the author.

1.
CORPORATE FINANCIAL DISTRESS IN THE ITALIAN "ECONOMIA AZIENDALE" AND IN THE INTERNATIONAL LITERATURE

1.1. Corporate financial distress phenomenon: an introduction

Several national and international accounting scholars studied the corporate financial distress concept. Nevertheless, academic literature and doctrine do not provide a unique and shared definition of this phenomenon. Defining the corporate financial distress phenomenon is not easy. Indeed, it is not easy identify the limits and the boundaries between healthy firms and distressed firms[1].

This paragraph aims to provide a historical perspective on the corporate financial distress phenomenon as developed by the Italian doctrine[2].

[1] RIPARBELLI, A., *Il contributo della Ragioneria nell'analisi dei dissesti aziendali*, edizione Stabilimenti Grafici Vallechi, 1950; CARAMIELLO, C., *L'azienda nella fase terminale*. C. Cursi, 1967; DE SARNO, M., *Equilibrio e crisi delle imprese*, Padova, Cedam, 1982; VERGARA, C., *Disfunzioni e crisi d'impresa. Introduzione ai processi di diagnosi*, 1988; MARINIELLO FIUME, L., *Crisi e insolvenza d'impresa: la prospettiva aziendalistica*. Rivista italiana di Ragioneria e di Economia aziendale, 2006.

Specifically, Riparbelli (1950, p. 39 translated) argues that: "(…) the issue of healthy and distressed firms is difficult to solve: if from theoretical and abstract point of view the separation line between normal conditions and abnormal conditions is clear, in practice it is very difficult to say whether it is in physiology field or in the pathology field (…)". See RIPARBELLI, A., *Il contributo della Ragioneria nell'analisi dei dissesti aziendali*.

[2] Corporate financial distress has been extensively studied also in international academic literature. We can distinguish two different streams of research on the topic of corporate distress. The first has focused mainly on the relationships between the distressed firm and its creditors, defining corporate distress (*financial distress*) as synonymous with insolvency, bankruptcy, default or failure (Gordon, 1971; Gilson, 1989; Wruck, 1990; Ward and Forest, 1997). According to this approach, a firm faces distress when it is no longer able to repay the debts incurred during its operations. A second stream of research has focused on the turnaround concept, viewing distress not as an irreversible phenomenon associated with insolvency, but as a phase that precedes insolvency and, if adequately managed, can lead the firm back to a state of economic and financial equilibrium (Platt and Platt, 2002; Altman and Hotchkiss, 2010). According to this approach, distress does

More specifically, I focus on the concept of corporate financial distress, examining the historical evolution through the study of Italian accounting scholars, so called *Economisti Aziendali*.

The concept of corporate financial distress, and more precisely, the peculiarities of this phenomenon, can change according to the different definition of *azienda*[3]. Since the concept of *azienda* have long and ancient origins, I find it convenient to organize the discussion by distinguishing and analysing the most relevant theoretical orientations developed in Italian doctrine (*teorie aziendalistiche*). Analyzing the concept of "*azienda*" through the study of various theories[4] aims to identify the main ideas related to the phenomenon of corporate financial distress. Specifically, addressing the principal accounting theories and examining the different concepts of "*azienda*" aligns with the desire to contextualize the various definitions of corporate financial distress within the historical and economic contexts in which they emerged.

Accordingly, I explore the abovementioned phenomenon through a brief overview of the main Italian accounting theories: "contractual" theory, "systemic" theory and "organicist" theory[5].

Contractual theoretical perspective, developed during the second half of nineteenth century and the first part of twentieth century, describes the azienda as a bundle of coordinated contracts, which regulate every relation within the juridical entity[6].

not necessarily lead to the bankrupt of the firm; the causes of the deterioration process can be promptly identified and adequately managed to restore conditions of equilibrium, allowing the firm to survive.

[3] According to previous studies, I do not translate the term "*Azienda*" in this paragraph because of its specific features. In the rest of the book "*Azienda*" is translated as "firm"; ZAMBON, S., & ZAN, L., *Accounting relativism: the unstable relationship between income measurement and theories of the firm*. Accounting Organizations and Society, 25, 799-822, 2000; ALEXANDER, D., & SERVALLI, S., *Economia Aziendale and financial valuations in Italy: Some contradictions and insights*, Accounting History, 16, 291-312, 2011; SARGIACOMO, M., SERVALLI, S., & ANDREI, P., *Fabio Besta: accounting thinker and accounting history pioneer*. Accounting History Review, 22, 249-267, 2012; LAI, A., LIONZO, A., & STACCHEZZINI, R., *The interplay of knowledge innovation and academic power: Lessons from "isolation" in twentieth-century Italian accounting studies*. Accounting History, 20(3), 266-287, 2015.

[4] Kerlinger (1986) defines theory as "a set of interrelated constructs (concepts), definitions, and propositions that presents a systematic view of phenomena by specifying relationships among variables, with the purpose of explaining and predicting phenomena". KERLINGER, F. N., *Foundations of behavioral research*, 3, 1986, p. 3.

[5] For a review of Italian accounting theories see: CATTURI, G., *Appunti di economia e governo aziendale*, n. 2, 2005.

[6] Melis (2007) notes how the contractual theory is close to Rochester school orientation. MELIS, A., *Financial statements and positive accounting theory: The early*

According to abovementioned theoretical orientation, every relationship and event gives rise to legal rights and obligations[7].

Cerboni (1948)[8] suggests a first notion of azienda emphasizing its juridical aspects. Specifically, Cerboni's concept of azienda includes: the administrated substance (sostanza amministrata) and the administrative substance or action (sostanza amministrabile). The administered substance is relate to the owner and managers, agents and correspondents carry out administrative action. More specifically, Cerboni defines the administrative substance as:

(…) the overall amount of the rights and obligations of the entity to whose mandate the economic administration is conducted[9].

Fabio Besta in his writings assumes the same position of his "*Maestro*" Cerboni, stressing the legal elements of *azienda*. More specifically, Besta provides a new definition of *azienda* arguing that:

The sum of phenomena, negotiations, or relationships to manage concerning an accumulation of capital that composes a whole in itself, or a single person, a family, any union, or even a distinctive class of those phenomena, negotiations or relationships[10].

Thus, the theoretical perspective on *azienda* concept, as described by Cerboni and Besta, considers the *azienda* as a legal entity consisting of a nexus of contracts among different stakeholders (owner, managers, agents…)[11].

contribution of Aldo Amaduzzi. Accounting, Business & Financial History, *17*(1), 53-62. The Rochester school of accounting considers a firm as "a legal entity that serves as a nexus for a complex set of contracts (written and unwritten) among disparate individuals". JENSEN, *Organization theory and methodology.* Accounting review, 1983, p. 276.

See also CATTURI, G., *Appunti di economia e governo aziendale*; MARCHI, L., *I sistemi informativi aziendali.* Giuffrè, 2003.

[7] CATTURI, G., *Teorie contabili e scenari economico-aziendali*. Cedam, 1989.

[8] CERBONI, G., *Quadro di contabilità per le scritture in partita doppia (con metodo logismografico) per la Ragioneria generale dello Stato.* Stamperia Reale, Roma, 1987.

[9] See CERBONI, G., *Quadro di contabilità per le scritture in partita doppia (con metodo logismografico) per la Ragioneria generale dello Stato.* Stamperia Reale, Roma, 1987, p. 14.

[10] BESTA, F., *La ragioneria*, vol. I. Vallardi, Milano, 1922, vol. I, 3.

[11] Giovanni Massa adopt the same theoretical position of Besta. Specifically, Massa (1907) states that: "a well-established asset, a physical or juridical person who disposes and administers it; a set of acts and facts that constitute such administration affirms the existence of an entity, distinct from the other, which has a itself organism which carries

Although the abovementioned Authors do not provide a specific definition of corporate financial distress, the analysed concepts seem to lay the foundations of legal notion of insolvency. More specifically, we could be seen distress as inability of *azienda* to meet its obligations. This corporate financial distress concept is strictly closed to the juridical concept of bankruptcy[12]. This definition, although accurate, appears partial. Indeed, if corporate financial distress is defined as an inability of the *azienda* to fulfil its current obligations, the examination of corporate financial distress phenomenon could be limited to the analysis of legal aspect and consequences of bankrupt firms. This theoretical approach does not take into account the economic context and the internal and external factors of corporate financial distress[13].

In the mid-twentieth century, the juridical conceptualization of *azienda* was progressively supplanted by systemic theory. Specifically, Gino Zappa (1927)[14] introducing for the first time the notions of economia aziendale[15], analyzed the economic entity from a systemic and holistic viewpoint[16].

out its existence. This entity is what it calls with a generic name 'azienda'". MASSA, G., *Trattato Completo di Ragioneria*, Vol. VIII, 1907.

[12] According to Art. 5 of Bankruptcy Italian Law "The state of Insolvency occurs by failures or other external factors which show that a debtor no longer able to regularly meet his obligations". The new Corporate Crisis Code reaffirms this definition but replaces the term "bankruptcy" with "judicial liquidation" ("liquidazione giudiziale"). According to some court rulings, indications of insolvency can be detected even before any payment defaults occur, if it is anticipated that the debtor will be unable to consistently meet their debt obligations. See LEGISLATIVE DECREE JANUARY 12TH, 2019, n. 14.

[13] Riparbelli notes: "The economic and administrative corporate distress phenomenon is not generate by law, but is recognized, established and disciplined by herself. For example, bankruptcy, which is nothing more than the legal conception of the corporate financial insolvency, should be analyzed, not only in its legal conception but also in its organic and economic substance, considering bankrupt firms as an organism affected by disorder and alterations". See RIPARBELLI, A., *Il contributo della Ragioneria nell'analisi dei dissesti aziendali*, p. 286.

[14] ZAPPA, G., *Tendenze nuove negli studi di ragioneria: discorso inaugurale dell'Anno Accademico 1926-1927 nel R. Istituto superiore di scienze economiche e commerciali di Venezia*. Istituto editoriale scientifico, 1927.

[15] Zappa defines economia aziendale as: "a unitary science that studies the conditions of life and the manifestations of the existence of the 'Azienda'". ZAPPA, G., *Le produzioni nell'economia delle imprese,* Tomo I, Giuffrè, Milano, 1956, p. 3.

[16] Zappa (1927) defining the *azienda* as "ongoing economic coordination created and carried for the satisfaction of human needs", stress the relevance to study the dynamic nature of the azienda's events and relationships. See ZAPPA, G., *Tendenze nuove negli studi di ragioneria: discorso inaugurale dell'Anno Accademico*, p. 54. In the 1956, Zappa considers the azienda as:"an economic institution destined to endure over time, for the satisfaction of human needs, orders and conducts in continuous coordination the production, or the procurement or the consumption of wealth". See ZAPPA, G., *Le*

This theoretical orientation describes the azienda as a "dynamic system". Thus, the concept of *azienda* arise in this context, is an open system, able to adapt to environmental changes and to respond to external factors[17]. Basing on this theoretical perspective, the *azienda* aims to persist over time maintaining his financial and economic equilibrium. The achievement of the equilibrium conditions, related to economic, financial, and capital aspects, determines the *azienda's* ability to survive over the time[18].

According to systemic theoretical orientation, corporate financial distress occurs when the azienda is unable to adapt to environmental change and moves from an equilibrium condition to disequilibrium or disorder[19].

produzioni nell'economia delle imprese, Tomo I, 1956, p. 37. Even Giannessi in his writings does not neglect to refer to system theory. Specifically, he describes the *azienda* as: "a superior structure that we can call 'system'". GIANNESSI, E., *Le aziende di produzione originária: Le aziende agricole* (No. 4). C. Cursi, 1960, p. 53. In addition, Amaduzzi adopt a systemic perspective. More specifically, Amaduzzi argues that the *azienda* is "a system of economic forces that develops, in the environment of which it is a complementary part, a production process and consumption to stakeholder (*soggetto economico*) as well as to other corporate stakeholders". AMADUZZI, A., *Aziende di erogazione: primi problemi di organizzazione, gestione e rilevazione*. Principato, 1936, p. 19. Thus, Onida (1971) describes the *azienda* as: "(…) dynamic system in which realized the unity in the multiplicity, the persistency in the mutation". ONIDA, P., *Economia d'azienda*. Utet, Torino, 1971, p. 4. Finally, Paganelli (1976) highlights how the *azienda* is "a complex system (…) aimed at achieving certain objectives". PAGANELLI, O., *Il sistema aziendale: note ad uso degli studenti*. Cooperativa Libreria Universitaria Editrice, 1976, p. 10.

[17] Bertini (1990) highlights that: "The azienda systemic character depends on the management operations' nature which are intrinsically linked to each other by a 'cause-effect' relationship. As a whole, all events of azienda world are a single body of phenomena governed by the same laws and oriented towards common ends. Therefore, it outlines a higher order structure, which may be called 'system'. This structure is dynamic, in the sense that it is continuously renewed due to the change of internal constraints and environmental conditions". BERTINI, U., *Il sistema d'azienda. Schema d'analisi*. Giappichelli, 1990, p. 9. Anselmi (2006) resuming the Bertini's notions, argues that: "The azienda, as a complex system, includes several operations and heterogeneous phenomena, clearly distinct, which allow to identify four basic system: the system of production; the system of relationships between azienda and external environment, the management's system and the information's system. (…) the system of relationships between azienda and external environment is the characteristic of 'open system' (…)". ANSELMI, L., *Modelli economico-patrimoniali per il bilancio e la contabilità di Stato* (Vol. 5). Giuffrè, 2006, p. 6.

[18] On the concept of equilibrium, see AMADUZZI, A., *Conflitto ed equilibrio di interessi nel bilancio dell'impresa*. Francesco Cacucci, 1949.

[19] RIPARBELLI, A., *Il contributo della Ragioneria nell'analisi dei dissesti aziendali*, Stabilimenti Grafici Vallechi, 1950; GIANNESSI, E., *Le aziende di produzione originária: Le aziende agricole* (No. 4). C. Cursi, 1960; DE SARNO, M., *Equilibrio e crisi delle imprese*. Cedam, Padova, 1982.