



INDIRECT COSTS OF BANKRUPTCY: EVIDENCE FROM ITALIAN SMES

MARCO BISOGNO* AND ROBERTO DE LUCA

Department of Management & Information Technology, University of Salerno, Salerno, Italy

*Corresponding Author: Email- mbisogno@unisa.it

Received: September 18, 2012; Accepted: October 22, 2012

Abstract- The aim of the paper is to measure indirect costs generated by financial distress, as a consequence of filing for a bankruptcy procedure, by implementing a model suitable for Italian small and medium size entities (SMEs).

There are only few papers that provide evidence of the indirect costs of financial distress, but they often used variables appropriate for big corporations and/or listed companies, analyzing prevalently US companies. This paper provides empirical evidence to the field applying its scientific contribution to the SME's world, also shedding light on the Italian context, as a representative case of civil-law based countries.

We analyzed financial statements and other available data concerning failed Italian SMEs, which went into bankruptcy in 2011, collecting the information from the official databases of the main Italian courts (Milan, Rome and Naples). We compared the results concerning failed firms with those regarding a control sample of non-failed firms. We used the AIDA Italian database, which includes financial statements of all limited liability and stock corporation Italian companies. The analysis covers five years prior to the bankruptcy, in order to highlight the trends of some financial ratios.

The results are partially consistent with some previous literature, according to which firms in financial distress suffer damages due to connected indirect costs even before bankruptcy.

Keywords- indirect costs, bankruptcy procedures, financial distress, Italian SMEs, financial ratios.

Citation: Marco Bisogno and Roberto De Luca (2012) Indirect Costs of Bankruptcy: Evidence from Italian SMEs. Journal of Accounting and Finance, ISSN: 2249-3964 & E-ISSN: 2249-3972, Volume 2, Issue 1, pp.-20-30.

Copyright: Copyright©2012 Marco Bisogno and Roberto De Luca. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Introduction

The nature and magnitude of costs originating from bankruptcy procedures concern at least three areas of research [1]:

- The optimal capital structure;
- The premium on risky debt;
- The reform of bankruptcy legislation, in order to improve its efficiency.

International literature has concentrated prevalently on the first and the second topic, analyzing the bankruptcy costs issue under the heading of the capital structure since the trade-off theory in particular considers them one of the most influential elements to take into account, in order to evaluate the optimal debt/equity ratio [2-4]. However, despite decades of research, there is no unanimous consensus on the theory's empirical relevance. This lack of agreement is largely driven by differences in how researchers have estimated the present value of financial distress costs, due to the very heterogeneous approaches used to identify and evaluate them.

This paper focuses on the third area of research, in order to analyze bankruptcy costs within the theoretical framework of the (*ex post*) efficiency of bankruptcy procedures, which means that the outcome of a procedure available to be divided between the debtor and the creditors should be maximized, through a reduction of costs (and time) expended during a bankruptcy procedure. Taking into account that such costs have been divided into two categories (direct and indirect), previous literature [5-8] has concentrated prevalently on the estimation of the *direct costs* of financial distress, in order to measure the incidence of all the expenses linked to professional fees (such as for financial advisors, lawyers and others) directly originated during the procedure.

There are only few papers concerning *indirect costs* of financial distress [9-11], which tended to adopt variables suitable for big firms and/or listed companies (such as market value, stock return and so forth).

The aim of our research is to implement a model of estimation of these costs suitable for small and medium size entities (SMEs),

which characterize the Italian economic environment, by analyzing financial statements and other available data of two non paired samples of failed and non-failed firms.

The first sample is composed of Italian SMEs which filed for bankruptcy in 2011. We collected the information from the official databases of the main Italian courts (Milan, Rome and Naples). Non-failed firms based in the same areas (Milan, Rome and Naples) make up the second sample. The analysis covers five years prior to the bankruptcy (i.e. from 2006 to 2010), in order to highlight the trend of our test and control variables. We used descriptive statistics and regression models with the aim of assessing the magnitude of financial distress costs and the factors that affect them the most. We also compared results concerning both failed and non-failed firms in order to ascertain if the differences between them are statistically significant.

Findings from our study suggest that indirect costs exist, are relevant and that, taking into account the Italian context and the Italian bankruptcy legislation, the procedures are not efficient enough, especially if they are applied to SMEs.

The paper is articulated as follows. The next sections summarize the scientific background and review the literature, introducing research hypotheses. Section 4 clarifies the research design and methodology; section 5 illustrates results while section 6 draws some conclusions, also suggesting improvements for future research.

Scientific Background

As stated above, many studies have attempted to analyze the bankruptcy costs issue within the framework of capital structure and cost of capital assessment. An early discussion was provided by Baxter [12] and more sophisticated treatments have been offered by other Authors [13-16].

Within this framework, there are two competing positions on the importance of the costs of financial distress.

According to the *first perspective*, based on the Coase's theorem [17], *these costs are regarded as necessarily marginal and not particularly significant* [18]. As a consequence, bargaining costs are assumed to be small and thus stockholders and debt holders, in the case of financial distress, will agree to informal reorganizations before substantial deadweight costs are incurred.

According to the *second perspective*, Scholars have argued that factors linked to bankruptcy costs, such as free-rider problems, loss of investment opportunities and so forth can impede efficient outcomes of the operations of the firm [19-21]. As a consequence, this branch of literature has assumed that *bankruptcy costs are relevant* and companies need to take them into account when making financial decisions.

Moving from this second perspective, which considers financial distress costs relevant and sometimes quite significant, we address the bankruptcy costs issue within the framework of the efficiency of bankruptcy procedures.

Generally speaking, it is unlikely that an ultimate procedure exists [22], even if the quality of a procedure can be evaluated through an analysis of the characteristics of bankruptcy legislation [23].

In this perspective, it is essential to shed light on the possible objectives of a bankruptcy law.

The first one concerns *ex ante efficiency* [24-26]: because firms raise funds borrowing money, a bankruptcy procedure should guarantee the rights of the creditors by providing some economic or social penalties (for the debtor) and/or some incentives (for both the debtor and the creditors) in order to encourage them towards the timely onset of a bankruptcy procedure [27,28].

The second objective concerns *ex post efficiency*, whose goal is to maximize the outcome of the procedure available to be divided between the debtor and the creditors. In order to reach this goal, legislation should provide tools which affect costs (and time) required by the procedures, by rapidly selling the assets of the firm in order to pay debts and by maximizing the percentage of claims reimbursed to the creditors.

The recent reforms of the Italian bankruptcy law (decrees no. 35/2005, no. 5/2006 and no. 169/2007) emphasize the importance of *ex post efficiency*, pursuing the following objectives:

1. Avoiding the inopportune liquidation of firms, in an attempt to safeguard the value of companies. As a consequence, bankruptcy law lost its initial punitive aspect, considering default as a physiological stage in the life cycle of entrepreneurship; therefore, if there is a concrete possibility of re-starting the activity, legislation should help firms manage this phase, considering liquidation as an extreme solution;
2. Reducing time of liquidation: if a firm is insolvent, it is important to rapidly sell its assets in order to pay debts, because the longer a procedure takes, the more the value of the assets could decrease;
3. Reducing overall costs, in order to increase the average ratio of claims reimbursed to the creditors. In fact, taking into account that costs are normally divided in two categories - direct and indirect - pre-distressed value (PDV) of a firm can be expressed as follows [1]:

$$PDV = DC + IC + NVR$$

Where:

PDV = pre-distressed value;

DC = direct costs;

IC = Indirect costs;

NVR = net value recovered by claimholders.

Direct costs concern all the expenses paid for lawyers, accountants, financial advisors and other professionals; they are carried out as a direct result of entering the formal bankruptcy process, so they are relatively easy to calculate.

Many papers have investigated these costs for bankruptcy and reorganization procedures and they were prevalently based on samples of US firms, analyzing (direct) costs of Chapter 7 and Chapter 11. [Table-1] summarizes the results of these researches.

The evidence is not homogeneous, because these studies cover a wide variety of firms [35]; as a consequence, the range of estimated costs is quite wide (means range from 1% to about 10% and medians from 2% to 6%).

Table 1- Estimation of direct costs of formal bankruptcy proceedings in the U.S.

Study	Sample	Time period	Estimated costs
Traditional Chapter 11 cases			
Warner [5]	11 bankrupt railroads; estimated mean market value \$50 million at filing	1933-1955	Mean 4% of market value of firm one year prior to default Mean 4% (median 1.7%) of firm value just prior to bankruptcy for 12 retailers; 9.8% (6.4%) for 7 industrial firms
Altman [9]	19 Chapter 11 cases; mean assets \$110 million before filing	1974-1978	Mean 3.1% (median 2.6%) of firm value prior to filing
Weiss [29]	37 cases from 7 bankruptcy courts; average total assets before filing \$230 million	1980-1986	Mean 3.9% (median 3.4%)
Betker [6]	75 cases; mean assets FYE before restructuring \$675 million	1986-1993	Mean 2.5%
Lubben [7]	22 cases; median assets \$50 million	1994	Mean 9.5%; median 2%
LoPucki and Doherty [30]	48 cases from Delaware and Southern District of NY; mean pre-bankruptcy assets \$19.8 million	1995-2001	Mean 9.5%; median 2%
Bris, et al [8]	225 cases from Arizona and Southern District of N.Y.; mean pre-bankruptcy assets \$ 19.8 million	1995-2001	
Prepackaged bankruptcies			
Betker [6]	48 prepackaged Chapter 11 cases; mean assets FYE before restructuring \$675 million	1986-1993	Mean 2.8% (median 2.4%) of pre-bankruptcy total assets
Tashjian, et al [31]	39 prepackaged Chapter 11 cases; mean book value assets FYE before filing \$570 million	1986-1993	Mean 2.8% (median 1.4%) of book value of assets at fiscal yearend preceding filing
Chapter 7 cases and liquidations			
Ang, et al [32]	86 liquidations, Western District of Oklahoma; estimated mean pre-bankruptcy assets \$615,516	1963-1979	Mean 7.5% (median 1.7%) of total liquidating value of assets
Lawless and Ferris [33]	98 Chapter 7 cases from 6 bankruptcy courts; median total assets \$107,603	1991-1995	Average 6.1% (median 1.1%) of total assets at filing
Bris, et al [8]	61 Arizona and S.D.N.Y. Chapter 7 cases; mean pre-bankruptcy assets \$201,866	1995-2001	Mean 8.1% (median 2.5%) of pre-bankruptcy assets

(Source- Altman and Hotchkiss [35]).

Unlike direct expenses, *indirect costs* represent the joint outcome of suboptimal actions carried out by corporate stakeholders. Some authors [35,36] state that the indirect costs are actually substantially higher than the direct ones, although they may be confounded with costs that would have arisen with pure business dislocation and distress. In any case, indirect costs are very hard to estimate, because they are largely unobservable opportunity costs (such as lost sales determined by the deterioration of a firm's financial conditions and lack of management attention on the business itself), arising because of asymmetric information, conflicts of interest, free-rider problems, loss of sales and competitive position, higher operating costs, risk shifting, over/under investment issues and ineffective use of management's time [37].

Previous Literature on Indirect Bankruptcy Costs and Hypothesis Development

One of the earliest and best known attempts to measure indirect costs of financial distress interpreted in terms of revenue losses, is that of Altman who examines a sample of firms that went bankrupt [9]. The Author measures the decline in sales of these firms compared to sales of competitors in the same industry and appraises the indirect costs of bankruptcy as the difference between earnings realized in each of the three years prior to the firm's bankruptcy and earnings that could have been expected at the beginning of each of those years for a sample of 19 firms filing for Chapter 11. The empirical findings of this research highlight that indirect costs are significant, since, on average, the difference in earning amounts to 10% of firm value just prior to bankruptcy, indicating that the distressed firms lost both sales and earnings.

The main limitation of this research is the lack of clear understanding of how these losses should be attributed to financial distress: specifically, the unexpected declines in sales are likely to have contributed to financial distress in the first place and not the other way around. In other words, the nexus of causality between the observed sales drops and financial distress may be the exact opposite to that assumed by the author.

In order to isolate the connection and the possible autocorrelation between economic performance and financial distress, Cutler and Summers investigate abnormal share price reactions surrounding various events in the Texaco-Pennzoil litigation [38]. They argue that the amount of the award (or of the fine) represents a pure wealth transfer, so that variations in the joint value of the firms would likely reflect the direct and indirect costs of the litigation process. Their estimates indicate that, under these circumstances, shareholder wealth declined by approximately one billion dollars: this amount significantly exceeds most estimates of direct bankruptcy costs and thus may represent the economic value lost due to the disruptive effects of the formal proceedings. The Authors evaluate that for every dollar Texaco lost, Pennzoil gained only 17 cents: they argue that a major reason for this wealth loss is connected to the cost of financial distress that Texaco suffered as a consequence of the lawsuit. For example, Texaco officials asserted that the trial made it more difficult to finance and operate the business and stock-market analysts expressed concern about Texaco's inability to refinance debt, lost investment opportunities and diversion of management attention.

All in all, lawsuits are not zero-sum games, since defendants lose more than plaintiffs gain: despite all the reasons that could produce this asymmetric wealth effect (direct legal costs, changes in combined tax liability, misuse of free cash flow by the victor), Cutler and Summers argue that they are insufficient when summed together to explain the asymmetry of wealth effects in Pennzoil v. Texaco: they suppose, consequently, that the most important factor was the higher bankruptcy likelihood and the increased costs of financial distress. The same conclusion is reached by other studies [39], according to which direct costs alone are unlikely to explain the wealth asymmetry.

On the same wavelength, Bhagat, et al. provide a large-sample analysis of stock-market reactions to interfirm lawsuits [40]. Using lawsuits is very useful and interesting because they can cause

financial distress without placing a firm in economic distress. Consistently with one of the previous investigations [38], the study shows significant combined wealth leakages. For the average pair of opponent firms in the sample, announcement of the filing results in a decline in joint equity value of about 1% (around \$21 million).

Another interesting research [10] selects industries that have experienced economic downturns, investigating whether firms in those industries with high financial leverage prior to the distressed period perform differently than their more conservatively financed counterparts. Their findings demonstrate that highly leveraged firms lose sale and market share to their less leveraged competitors in industry downturns, due to different kinds of losses:

- *Customer-driven losses*, that may signal the unwillingness of customers to do business with distressed firms, especially regarding companies that make specialized products, which need a high standard of post-sales service [12,19,41];
- *Competitor-driven losses*, that arise since financially sound firms may exploit these distressed periods to aggressively advertise or price their products, attempting to put more vulnerable competitors out of business;
- *Management-driven losses*, because more leveraged firms are quicker and more willing to efficiently downsize in response to an industry decline.

Opler and Titman [10] measure firms' performances during the distressed period through stock returns, sales growth and changes in operating income compared with industry averages. When the whole industry is in a distressed situation, sales growth is 13.6 percent lower for firms in leverage deciles 8 to 10 than for less leveraged competitors. In stock return regressions, the coefficient of the leverage interaction variable is negative: high leveraged firms in distressed industries experience an 11.9% larger decrease in equity value than firms with a lower debt/equity ratio.

One of the forms of management-driven losses highlighted by the Authors manifests itself also through asset sales; the Authors, performing a regression analysis, assert that financial distress does affect decisions regarding the divestment of assets, since highly leveraged firms sell them to a greater extent than their less leveraged counterparts, although this aspect is not extremely significant.

Another of the abovementioned studies [42] reaches the same conclusion, analyzing a sample of thirty-one highly-leveraged transactions involving firms that became financially, not economically, distressed, in order to isolate the effects of the costs of financial distress. The research highlights the costs linked to a decrease in capital expenditure, that lead to a reduction in firms' market value ranging from 10% to 20%.

[Table-2] summarizes the results of this research, also showing the variables used to estimate the indirect costs of bankruptcy procedures.

The above mentioned studies prevalently estimate indirect costs by including in their models the market value and/or shareholders return of the firms investigated; in addition, they often make reference to listed companies, expressing indirect costs in terms of reductions in stock returns. Bearing in mind that our study con-

cerns small-medium non-listed firms, we needed to extrapolate a suitable set of variables from the models suggested by previous research and consequently we prevalently considered indirect costs as opportunity costs expressed in terms of:

- Lost sales and a drop in operating profits [9,43];
- Reduction in investment in long-term assets or, in more general terms, loss of profitable investment opportunities [37].

Table 2- Estimation of indirect costs of financial distress in the U.S.

Authors	Sample	Variables	Estimated costs
Altman [9]	12 retailers and 7 other industrial firms	Industry sales	8.1% of TV (year t-3)
		Industry profit margin	7.1% of TV (year t-2)
		Firm estimated sales	6.6% of TV (year t-1)
		Firm expected profit	-10.5% of TV (year 0)
		Firm actual profit	
		Total value of the firm (TV)	
Cutler & Summers [38]	Case study: Texaco vs Pennzoil lawsuit	Equity value	"Leakage" of 83% of combined change in wealth (each dollar lost by Texaco is offset by only 17 cents gained by Pennzoil)
			-\$20 million SW (matched)
Bhagat, et al. [40]	330 firms with lawsuit filings and settlements as defendant or plaintiff (1981-1983): in total 550 observations	Shareholder wealth (SW)	
		Cumulative abnormal return (CAR)	-1% CAR (matched)
Opler & Titman [10]	46.799 firm-years of data (1972-1991) in distressed industries	Debt / assets	Firms in leverage deciles 8 to 10: SG 13.6% lower
		Sales	
		Sales growth (SG)	Firms in leverage deciles 10 vs decile 1: SG 26.4% lower
		R&D expense / sales	
		Stock return (SR)	SR 11.9 lower for distressed firms
Andrade & Kaplan [42]	31 firms defaulted after highly-leveraged transactions (HLT)	Operating income change	
		Debt/total capital	From pre-HLT to year 0:
		EBITDA/interest expense	EBITDA/sales growth = -12.8%
		EBITDA/sales	CAPEX/sales growth = -47.6
		Capex margin	Total costs of distress: 10% to 20% of firm value
		Net cash flow margin	
		Return on total capital	
Return on equity			

Lost sales and operating margins, as well as reduction in long-term investments, can be the consequence of both lower trust on the part of suppliers and customers (who are less willing to do business with a company that could not be able to assure post-sales services, maintenance and so on) and lack of management attention on the business itself (because of financial problems). In situations of financial distress, in fact, managers might tend to adopt a short term approach, focusing their attention on financial and liquid-

ity problems. In this perspective, indirect costs could be defined as the cost of reducing this mismatch by increasing liquid assets (and/ or renegotiating debts) [44].

The research hypotheses are the following.

H1: *The closer a company gets to bankruptcy, the more its sales decline.*

H2: *When a company is close to bankruptcy, its operating margins drop.*

H3: *Capex (considered as a proxy for long-term investment and growth opportunities) decreases in the years prior to bankruptcy.*

We expected a decline in both sales and operating profits, becoming more pronounced as firms get closer to bankruptcy (i.e. in the two years preceding bankruptcy). We also supposed a decline in investment in property, plant and equipment as well as in long-term deferred expenses (such as R&D).

Research Design and Methodology

In order to test the abovementioned hypotheses, we analyzed the financial statements and other available data pertaining to two non-paired samples of Italian SMEs.

Companies which filed for bankruptcy in 2011 make up the first sample. We collected the information from the official databases of the main Italian courts (Milan, Rome and Naples, situated, respectively, in the North, Centre and South of Italy). Within Italian bankruptcy law, firms can file for procedures similar to the American

equivalents (Chapter 7, Chapter 11 and pre-packaged bankruptcies); for the aims of our research, we considered only procedures that led to the liquidation of firms, corresponding to US Chapter 7 (we did not examine other procedures because of their low frequency of use in the Italian context [45]). We excluded from the initial sample sole proprietorships and partnerships because, according to the Italian law, they are not obliged to prepare financial statements. Consistent with previous studies [10], we did not include in our sample companies belonging to finance and banking industries, since their financial statements are subject to different rules and their accounting ratios are not comparable with those recorded by firms in other sectors. On the same wavelength and for the same reason, we left out other industries, such as insurance, real estate development and agriculture. In any cases, despite these exclusions, we analyzed firms belonging to different sectors: even though the analysis of a specific sector of activity leads to better results compared to those obtained from a sample selected from different sectors [46-48], in our case we were forced to include in the sample companies belonging to different sectors because if we had selected only firms of a single industry, we would have reduced the analysis to very few units, with the consequence of obtaining non statistically significant results.

Moreover, as stated in previous studies concerning the Italian context [46], some failed firms do not regularly submit their financial statements in some of the years prior to bankruptcy. As a consequence, because we analyzed financial statements going back five years, these firms have been excluded. [Table-3] shows the final sample of failed firms studied.

Table 3- Failed firms sample description

Court	Total failed firms	Sole proprietorship and Partnerships	Joint-stock companies	Limited liability firms	Cooperatives/ consortia	Firms excluded	Sample final composition
Milan	1,059	141	62	831	25	1,042	17
Rome	708	49	39	601	19	696	12
Naples	407	96	1	307	3	396	11
Total	2,174	286	102	1,739	47	2,134	40

The second sample is composed of Italian SMEs which did not fail. In order to properly compare the results from this sample with those of the previous one (failed firms), we extracted a random sample from the selected sectors within the whole population of firms based in Milan, Rome and Naples (i.e. the same sectors and the same areas from which we selected the failed companies). Taking into account that the whole population consists of 66,988 firms and considering $e = 0.05$ and $a = 0.05$, we extracted a random sample of 386 firms, applying the formula below:

$$n \leq \frac{z^2(1-\alpha/2)}{4e^2}$$

The analysis of both samples was based on variables included in their financial statements; we used the AIDA Italian database, which includes financial statements of all Italian limited liability and stock corporation companies, assembled from the Italian local Chamber of Commerce depository. The analysis covers five years prior to bankruptcy (i.e. from 2006 to 2010).

Bearing in mind both the variables suggested by international literature [Table-2] and the characteristics of our samples, we tested

our hypotheses by including the following variables in the model:

- Net revenues ($\Delta REV = REV_t - REV_{t-1}$);
- Operating margins ($\Delta EBITDA = EBITDA_t - EBITDA_{t-1}$);
- Operating margins/Revenues ratio ($\Delta EBITDA/REV = EBITDA/REV_t - EBITDA/REV_{t-1}$);
- Investment in Long Term Assets ($\Delta LTAssets = LTAssets_t - LTAssets_{t-1}$);
- Liquid assets ($\Delta CASH = CASH_t - CASH_{t-1}$);
- Interest expenses ($\Delta INT = INT_t - INT_{t-1}$);
- Interest/Sales ratio: INTEREST EXPENSES/NET SALES;
- Interest coverage ratio (Proxied by the EBITDA/Interest costs ratio) ($\Delta EBITDA/INT = EBITDA/INT_t - EBITDA/INT_{t-1}$);
- Total debt/Total assets: LEVERAGE (We used this ratio following Andrade and Kaplan [42], who consider the book value of Debt/Total capital in their analysis. Moreover, this ratio gives results very close to the ones obtained by using Rajan and Zingales' total Debt/Capital ratio [47]).

We used descriptive statistics and performed two regression models in order to assess both the magnitude of the indirect costs of bankruptcy for SMEs and the factors that affect them the most. The analysis also took account of changes in the values of the above-mentioned parameters which occurred in the period from 2006-2010, estimating them on a yearly basis.

Consistently with previous literature and our hypotheses, the model uses some of the ratios (Δ REV; Δ EBITDA; Δ LTAssets) as test

variables, whereas the others can be interpreted as control variables.

Results

Results of Test Sample

The descriptive statistics concerning all the indicators for each of the years considered, together with the yearly changes, are summarized in [Table-4] and [Table-5], which refer to failed firms.

Table 4- Descriptive statistics (Failed firms)

Variables	2006			2007			2008			2009			2010		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Mean	Median	Std. dev.
Revenues	3,707,821	1,291,627	6,816,496	4,307,924	1,716,843	7,189,696	4,642,367	1,934,317	7,791,839	4,179,741	1,745,470	6,965,547	5,397,399	2,121,847	9,678,048
EBITDA	228,954	58,855	495,402	334,923	138,713	507,902	374,447	135,705	613,466	79,581	66,299	1,202,009	99,691	66,247	1,625,277
EBITDA/Revenues	7.53%	5.18%	10.16%	8.79%	6.89%	10.83%	7.88%	5.23%	12.62%	5.14%	3.98%	18.81%	-5.20%	2.59%	42.01%
Long Term Assets	440,949	95,216	727,054	360,543	91,208	545,021	487,422	144,006	755,305	380,642	145,397	533,766	323,244	105,425	512,018
Cash	231,313	48,766	521,956	309,102	45,029	887,273	282,994	85,083	518,932	315,279	71,972	680,172	287,432	48,853	601,197
Interest expenses	51,998	8,375	101,764	79,030	16,088	151,126	111,671	16,082	232,296	82,045	21,692	159,140	65,740	15,369	116,411
Int.expenses/Sales	1.40%	0.81%	2.52%	2.21%	0.64%	4.15%	2.21%	0.66%	4.22%	1.88%	0.54%	3.70%	2.12%	1.01%	4.01%
Interest coverage	0.11	0.15	0.70	0.30	0.17	0.43	0.55	0.25	0.83	0.40	0.12	2.69	-0.02	0.04	1.26
Debts/Total assets	82.15%	88.78%	22.76%	82.24%	87.56%	21.93%	82.96%	90.81%	22.33%	86.59%	91.06%	28.41%	112.42%	90.32%	100.23%
EBITDA/Tot. assets	9.66%	6.72%	10.42%	10.22%	7.45%	10.97%	8.01%	7.21%	13.30%	4.15%	17.07%	-1.20%	3.41%	29.66%	155.67%
Sales/Tot. assets	157.81%	129.86%	137.14%	164.49%	139.96%	111.07%	153.49%	117.53%	138.35%	136.81%	109.84%	110.76%	166.18%	113.97%	256.67%
LTAssets/Tot. assets	15.04%	9.50%	15.07%	11.39%	7.57%	11.50%	14.66%	9.01%	16.55%	14.41%	8.39%	16.72%	13.73%	6.48%	19.45%

Table 5- Changes in mean and median values (Failed firms)

Variables	Δ 2007/2006		Δ 2008/2007		Δ 2009/2008		Δ 2010/2009		Δ 2010/2006	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Δ Revenues	16.18%	32.92%	7.76%	12.67%	-9.97%	-9.76%	29.13%	21.56%	45.57%	64.28%
Δ ebitda	46.28%	135.69%	11.80%	-2.17%	-78.75%	-51.14%	25.27%	-0.08%	-56.46%	12.56%
Δ ebitda/Sales (%)	16.75%	32.87%	-10.44%	-24.12%	-34.71%	-23.91%	-201.11%	-34.84%	-169.02%	-50.01%
Δ Long Term Assets	-18.23%	-4.21%	35.19%	57.89%	-21.91%	0.97%	-15.08%	-27.49%	-26.69%	10.72%
Δ Cash	33.63%	-7.66%	-8.45%	88.95%	11.41%	-15.41%	-8.83%	-32.12%	24.26%	0.18%
Δ Interest expenses	51.99%	92.09%	41.30%	-0.03%	-26.53%	34.88%	-19.87%	-29.15%	26.43%	83.50%
Δ Interest expenses/Sales	57.77%	-20.91%	-0.36%	3.02%	-14.96%	-19.28%	13.12%	88.30%	51.22%	23.85%
Δ Interest coverage	173.38%	17.57%	85.13%	41.92%	-26.37%	-51.04%	-105.83%	-68.65%	-121.71%	-74.39%
Δ Debt/Total Assets	0.11%	-1.37%	0.88%	3.72%	4.37%	0.27%	29.84%	-0.81%	36.85%	1.73%

If we look at the yearly changes in the mean values, *hypothesis 1* cannot be confirmed in the first place: average net sales do not show a decrease between 2006 and 2010 (on the contrary, they augment quite significantly). This outcome is very interesting and should be interpreted on the basis of the composition of the sample and starting from a fundamental premise: SMEs convey less information than big companies. This element could prevent customer-driven sales losses [41], since clients of SMEs will be less aware of the financial conditions of the firms they are buying from. Another explanation for the trend in revenues could be the following: SMEs might manipulate their accounting results in order to show better performance (due to the increase of revenues) and good cash availability (due to cash inflows from sales) in order to keep obtaining credit from banks. In fact, the Debt/Total assets ratio - one of our control variables - registers an upward trend (+ 36.85%). The fact that lending institutions have kept providing funds to the companies of our sample can be interpreted at the very least as a sign of behaviors intended to manipulate financial statements on the part of the management.

Moreover, growing sales solve some of the issues raised in previous research [9] that considered revenue losses as a consequence of bankruptcy, whereas it could be argued that the link moves in the opposite direction: on the basis of the values of net sales, we can state that bankruptcy is mainly caused by financial distress and

bad capital structure choices, as proven by the abovementioned trend in the Debt/Total asset ratio and by the decreasing median values of the Interest expenses coverage ratio, that records negative variations in the three years preceding bankruptcy.

The results of our statistics, on the other hand, offer strong support for *hypothesis 2*, since operating margins dramatically drop from 2006 to 2010: average EBITDA shrinks by 56.46% of its initial value. The same conclusion can be reached analyzing operating margins as a percentage of the revenues of the companies: the mean EBITDA/Sales ratio actually turns negative in 2010, highlighting a considerable decrease of almost 170% over the whole time interval. The decrease in profitability of the companies is confirmed by an analysis of the capability of assets in place to generate income: as we will show later on, together with the return on revenues, the EBITDA/Total assets ratio also shows a downward tendency, moving from around 10% in the first two years to a below-zero value (-1.20%) in the year prior to bankruptcy.

Therefore, notwithstanding an increase in their turnover, companies record plummeting operating margins, lower return on sales and poorer assets profitability. At this point, a contradiction seems to emerge: on the one hand, net sales increase quite remarkably while, on the other, operating margins decrease. However, this contradiction is only apparent, since it can be interpreted, for example, as a management-driven loss [10]: the closer firms get to

bankruptcy, the more likely it is they might be badly run, because managers neglect the operational aspects of the company and mainly focus on the financial side, in order to avoid a bankruptcy proceeding. Moreover, these opposite trends might suggest that pre-distressed companies tend to “push up” sales (in order to obtain cash inflows and more credit from banks, as previously highlighted) but they frequently sell below cost and/or at “crippling conditions” (and, as a consequence, operating margins go down). A further explanation can be found in light of the results concerning the third hypothesis.

In fact, regarding *hypothesis 3*, data are again in line with our predictions: the value of long term assets declines by 26.69% in our investigation period demonstrating that, on average, capital expenditures were not significant because management tends to adopt a short term approach. This result is even more noteworthy if we analyze it in the light of the trend of the cash balance held by the firms, which increased quite considerably from 2006 to 2010 (almost 25%) and could be generated by a policy of assets sales in order to keep a buffer presumably assigned to debt repayments, as already highlighted in some previous works [42]: in fact, notwithstanding good cash availability, which could also be derived from the increased revenues (especially in 2006 and 2007), these firms have preferred not to invest in their future growth and development.

Finally, we also attempted to summarize the indirect costs of bankruptcy, proxied by our test variables, modifying them into deflated, homogenous, indicators; we have not been able to use the market value of the firms or stock returns as reliable parameters to carry out this estimation because our sample is composed of non publicly listed SMEs. Therefore, we took into account the value of total assets, using this factor as the denominator of the new ratios we calculated, estimating yearly changes together with the variations occurred between the first and the last year of our research, through:

- Calculating, for each company, the changes in the values of the test variables between year t and year t-1;
- Comparing, for each company, the resultant values with the total asset value for every year, providing a proportional measure of the variation of the test variables;
- Estimating, for every year, the mean and median values of all the ratios previously obtained;
- Repeating the same operations in order to analyze the changes occurred between 2006 and 2010, which convey a definitive measure of the indirect costs of bankruptcy [Table-6].

Table 6- Magnitude of indirect bankruptcy costs

Variables	Failed firms (no. of observations: 40)									
	Δ 2007/2006		Δ 2008/2007		Δ 2009/2008		Δ 2010/2009		Δ2010/2006	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Δ Revenues/Total Assets	4.23%	7.78%	-6.68%	-16.03%	-10.87%	-6.54%	21.47%	3.77%	5.31%	-12.23%
Δ EBITDA/Total Assets	5.72%	10.89%	-21.57%	-3.29%	-48.27%	-51.43%	-128.96%	-2.73%	-112.42%	-49.34%
Δ LT Assets/Total Assets	-24.28%	-20.29%	28.67%	18.90%	-1.70%	-6.89%	-4.73%	-22.72%	-8.75%	-31.80%

The tendency of changes in the Net sales/total assets ratio is consistent with the variations in annual turnover expressed in absolute terms: also the deflated estimation of revenues shows an increase between 2006 and 2010 (+ 5.31%), although the yearly trend is quite irregular. This outcome therefore leads us to reject once again hypothesis 1, for the reasons already highlighted.

Shifting the investigation from sales to operating margins, it is worth noticing that during the five years of our analysis, operating earnings deflated against the total asset value decreased by 112.42%, expressing the loss of efficiency and the erosion of margins suffered by the firms in the time span considered. Long term assets/Total assets ratio also registered a decline (- 8.75%), even if it is much less marked than the one shown by the previous indicator: this deterioration expresses the influence of the indirect costs of financial distress on the future development of the examined companies.

Results of Control Sample

In order to evaluate whether the outcomes obtained from the examination of failed companies are linked to their situation of financial distress, we carried out the same analysis on a control sample, constituted by companies that did not go bankrupt. Descriptive statistics and the yearly changes are summarized in the following [Table-7] and [Table-8].

The results from the control sample are expected, of course, to be

in contrast to the previous assumptions.

With regards to *hypothesis 1*, concerning the sales trend, the healthy firms registered, on average, a slight increase between 2006 and 2010 (+ 5.86%), which is what we would have expected in the first place. Nevertheless, this outcome has to be analyzed also in the light of the same value for the sample of failed companies, whose revenues grew by around 45%.

We explained this occurrence with two possible reasons, one of which is completely in accordance also with *hypothesis 2*: as previously highlighted, financial distressed firms can push on selling both their products and their assets, in order to raise as much money as possible and to make their financial statements look sound, but they do it at “crippling conditions”.

The consequence of these “fire sales” for failed companies is a strong decrease in operating margins (EBITDA/Sales), which non-failed businesses do not experience: these firms, on the contrary, notwithstanding a smaller increase in revenues compared to the companies of the first sample, show better “quality” of sales, recording a significant improvement in their operating performances. Apart from the will to push up sales, the difference in profitability values for the control sample can also be explained by the lack of abovementioned management-driven losses [10], which can be an important factor in identifying the difference between failed and non-failed companies.

Table 7- Descriptive statistics (Non-failed firms)

Variables	2006			2007			2008			2009			2010		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Mean	Median	Std. dev.
Revenues	6,753,252	1,831,094	17,809,736	7,692,743	1,957,802	21,350,073	7,881,490	2,228,068	20,563,867	7,120,037	2,022,415	19,370,473	7,148,694	2,054,209	17,155,914
EBITDA	413,932	118,839	1,053,405	520,323	125,314	1,378,45	462,562	123,073	1,456,663	403,537	111,215	1,675,727	477,285	118,347	1,827,806
EBITDA/Revenues	-5.09%	6.49%	241.41%	5.95%	6.47%	48.38%	7.95%	5.88%	95.00%	23.37%	5.52%	428.97%	7.78%	5.57%	25.14%
Long Term Assets	1,333,790	115,982	5,801,556	1,378,009	146,477	5,458,193	1,633,557	167,454	5,791,706	1,623,809	170,367	5,780,958	1,599,475	179,256	5,700,000
Cash	311,967	90,026	630,468	368,825	94,157	1,255,638	431,273	104,695	1,712,278	449,085	105,178	1,706,529	394,878	87,885	1,273,180
Interest expenses	108,457	12,026	457,984	140,884	15,439	562,512	145,759	19,731	541,063	94,599	19,589	315,762	80,869	16,761	246,303
Int.expenses/Sales	2.24%	0.74%	7.68%	3.09%	0.81%	12.49%	4.89%	0.90%	33.49%	3.03%	0.86%	17.54%	2.40%	0.67%	14.14%
Interest coverage	-143.84	6.82	21,911.38	442	5.12	6,762.96	8,795	4.34	107,778.11	2,854	4.98	33,877.33	2,755.06	6.30	31,459.15
Debts/Total assets	79.89%	85.33%	19.23%	80.42%	85.92%	19.64%	78.05%	84.18%	21.47%	76.86%	82.59%	22.03%	76.80%	82.52%	23.95%

Table 8- Changes in mean and median values (Non-failed firms)

Variables	Δ 2007/2006		Δ 2008/2007		Δ 2009/2008		Δ 2010/2009		Δ 2010/2006	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Δ Revenues	13.91%	6.92%	2.45%	13.80%	-9.66%	-9.23%	0.40%	1.57%	5.86%	12.18%
Δ ebitda	25.70%	5.45%	-11.10%	-1.79%	-12.76%	-9.63%	18.28%	6.41%	15.31%	-0.41%
Δ ebitda/Sales (%)	216.96%	-0.18%	33.56%	-9.20%	193.85%	-6.19%	-66.72%	1.00%	252.74%	-14.13%
Δ Long Term Assets	3.32%	26.29%	18.54%	14.32%	-0.60%	1.74%	-1.50%	5.22%	19.92%	54.56%
Δ Cash	18.23%	4.59%	16.93%	11.19%	4.13%	0.46%	-12.07%	-16.44%	26.58%	-2.38%
Δ Interest expenses	29.90%	28.38%	3.46%	27.80%	-35.10%	-0.72%	-14.51%	-14.44%	-25.44%	39.37%
Δ Interest expenses/Sales	37.83%	9.77%	58.35%	10.47%	-37.99%	-3.85%	-20.97%	-22.19%	6.96%	-9.28%
Δ Interest coverage	407.54%	-24.93%	1888.18%	-15.15%	-67.55%	14.67%	-3.48%	26.44%	2015.39%	-7.66%
Δ Debt/Total Assets	0.67%	0.69%	-2.95%	-2.02%	-1.52%	-1.89%	-0.09%	-0.09%	-3.87%	-3.30%

The joint values of this indicator for the two samples allows us to accept the *second research hypothesis* even more firmly.

The outcomes of the control sample, being opposite to the results showed by the test sample, can lead us to accept also *hypothesis 3*: the average value of long term assets, for non-distressed companies, increased by almost 20% between 2006 and 2010. Since we have considered this factor as a proxy for profitable investment opportunities [37], we can consequently acknowledge that a situation of financial distress is an issue that can lead companies to miss good deals and to sacrifice future development in order to

solve short-term liquidity problems, raise cash and pay debts. In contrast, firms belonging to the control sample, on average, do not exhibit a similar trend, proving that they have not adopted a short-term perspective and they have kept focusing on their future development and profitability.

In order to perform a complete comparison between the two samples, we have carried out an analysis of deflated indicators also for non-failed companies, using again, as denominator, the total value of assets in place, since also the control group is made up of non publicly listed firms [Table-9].

Table 9- Magnitude of indirect bankruptcy costs

Variables	Non-Failed firms (no. of observations: 386)									
	Δ 2007/2006		Δ 2008/2007		Δ 2009/2008		Δ 2010/2009		Δ 2010/2006	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Δ Revenues/Total Assets	-0.54%	0.77%	-5.48%	-2.71%	-6.20%	-6.41%	4.16%	-0.62%	-8.14%	-8.80%
Δ EBITDA/Total Assets	-1.89%	-3.08%	-4.67%	-11.64%	-15.73%	-8.66%	-3.02%	-4.77%	-23.57%	-25.51%
Δ LT Assets/Total Assets	2.70%	4.42%	3.90%	-1.97%	0.46%	-13.17%	-1.76%	1.57%	5.30%	-9.72%

Among the three test indicators, it is worth focusing especially on the last two since, as already highlighted, the results regarding the revenues are quite heterogeneous and irregular and thus they do not allow us to state that costs of bankruptcy affect the amount of sales companies are able to generate.

Considering the fields of new investment and future development, the trend of long term assets registered a positive performance also when analyzed as a deflated indicator.

Finally, profitability of long-term assets in place, while exhibiting a decrease, still showed a much better value compared to the same indicator for distressed companies. Moreover, this value is affected by the average increase of the denominator of the ratio (value of long-term assets), which lowers the whole indicator.

Results Comparison

As the last step of our research, in order to assess the significance

of the outcomes investigated, we compared results concerning failed and non-failed firms.

[Table-10] summarizes the final assessment of bankruptcy costs for the two samples, pointing out the differences in mean values for the main indicators between 2006 and 2010.

Table 10- Magnitude of indirect bankruptcy costs: comparison between failed and non-failed companies

Variables	Failed companies (Δ 2010/2006)	Non-failed companies (Δ 2010/2006)	(Failed vs. non-failed) Δ 2010/2006
Δ LT Assets/Total Assets	-8.75%	+ 5.30%	-14.05%
Δ EBITDA/Total Assets	-112.42%	- 23.57%	-88.85%

The two test variables just analyzed show how significant the magnitude of indirect bankruptcy costs might be for distressed companies.

Together with the abovementioned test variables, it is also interesting to analyze the results recorded by our control variables, which mainly refer to firms' capital structure and debt sustainability. While the indicators of failed companies record an increasing indebtedness (+36%), higher interest expenses both in absolute value and compared to sales (+ 26.43% and + 51.22%) and lower capacity to cover interest outlays, the same ratios show an almost opposite trend for healthy businesses, as synthesized in the [Table-11].

Table 11- Trend of control variables over the period 2006-2010

Variable	Failed companies	Non-failed companies
Debt / Total assets	36.85%	-3.87%
Interest expenses	26.43%	-25.44%
Interest expenses / Sales	51.22%	6.96%

In the wake of previous studies [37], in order to check whether the mean values are statistically significant and linked to the composition of the samples, we performed a hypothesis test using the Z-test, which can be used instead of the Student's T-test because of the size of the samples (both contain more than 30 observations).

The null hypothesis is that there are no differences between the two groups, therefore, rejecting the null hypothesis would permit to consider our results statistically significant and to conclude that the discrepancies in test and control variables do depend upon the characteristics of the companies we have examined (failed vs non-failed).

The results of the Z-test are displayed in the [Table-12].

Table 12- Z-test results and p-values

	Test Z	p-value	
EBITDA / Total assets	-1.91657	0.0553	*
LT assets / Total assets	-0.661341	0.5084	
Sales / Total assets	0.968936	0.3326	
EBITDA	-0.837125	0.4025	
EBITDA / Interest expenses	-1.56866	0.1167	
EBITDA / Sales	-1.796	0.0725	*
Interest expenses	1.83688	0.0662	*
Int. Expenses / Sales	0.692105	0.4889	
Sales	1.07421	0.2827	
Cash	-0.254799	0.7989	
Debt / Total assets	2.21002	0.0271	**

Significant at: 99% level (***); 95% level (**); 90% level (*).

According to these outcomes, for one of our test variables (EBITDA/Total assets ratio), we can reject the null hypothesis (at 90% level), hence acknowledging that the observed differences in the mean values of the indicators taken into account are linked to the very nature of the samples, which can be considered as a binomial variable itself. The statistical significance of operating performance is confirmed also by the control variable that best represents the profitability generated by the firms' revenues (EBITDA/Sales), which is also significant at 90% level.

Other significant control variables are related to the capital structure of the analyzed companies, that is to say Interest expenses (90% level) and, especially, the Leverage ratio (95% level). These results, combined with the trend observed in sales value, allow us to state that bankruptcy is caused more by an unbalanced capital structure than by a drop in revenues; consequently, indirect costs generated by financial distress do not manifest themselves as diminished sales, but mostly as a decrease in operating perfor-

mance, sales profitability and lack of long-term investments (although the difference between the mean values of this variable is not statistically significant).

With the aim of obtaining more statistically significant results, as with previous pieces of research [10,42], we also introduced a regression analysis to our investigation.

In the first step we performed a univariate regression between our grouping parameter (bankruptcy/non bankruptcy) and our test variables, considered as the dependent variables. [Table-13] shows the results.

Table 13- Univariate regression analysis: test variables vs. bankruptcy

	Coefficient	Std. Error	t-ratio	p-value	
Dependent variable: EBIDTA/Total Assets					
const	-0.0253459	0.00970335	-2.6121	0.00932	***
Bankruptcy	-0.08918	0.032336	-2.7579	0.00607	***
Dependent variable: LTAssets/Total Assets					
const	0.00905521	0.00843321	1.0738	0.28355	
Bankruptcy	-0.0229017	0.0281033	-0.8149	0.41559	
Dependent variable: Sales/Total Assets					
const	-0.135246	0.0662576	-2.0412	0.04185	**
Bankruptcy	0.193482	0.2208	0.8763	0.38138	

Significant at: 99% level (***); 95% level (**); 90% level (*)

Confirming the Z-test outcomes, bankruptcy has a statistically significant effect only on the EBITDA/Total assets ratio. The coefficient being negative supports our hypothesis, allowing us to state that financial distress has a harmful effect on the assets profitability of the companies.

Moreover, in order to broaden the perspective and increase the R-square of the regression model, we included other variables in the analysis, starting from those whose Z-test showed a statistical significance (Debt/Total assets and Interest expenses). We did not add the EBITDA/Sales ratio because of a too high correlation with the test variable. Instead, EBITDA/Interest expenses has been encompassed, in order to provide another indirect measure of the capital structure of the companies and of their capacity to face their liabilities [Table-14].

Table 14- Multivariate regression analysis: test variables vs. bankruptcy

	Coefficient	Std. Error	t-ratio	p-value
Dependent variable: EBIDTA/Total Assets				
const	-0.0309025	0.00881719	-3.5048	0.00051 ***
Bankruptcy	-0.0167479	0.0313504	-0.5342	0.5935
Interest expenses	-3.27E-09	2.82E-08	-0.1159	0.90778
EBITDA/Interest expenses	8.41E-07	2.90E-07	2.8983	0.00397 ***
Debt/Total assets	-0.23121	0.0249575	-9.2641	<0.00001 ***
R-squared	0.221481	Adjusted R-squared		0.213308
F(4, 381)	27.09773	P-value(F)		8.36E-20

Significant at: 99% level (***); 95% level (**); 90% level (*)

The bankruptcy dummy variable keeps its negative coefficient, even though it loses its statistical significance. On the other hand, the two indicators concerning companies' capital structure and ability to repay debt are statistically significant and they also show the expected coefficients sign: the Debt/Total assets ratio is negatively correlated to operating profitability, whereas the EBITDA/Interest expenses ratio records a positive coefficient. These outcomes should be analyzed jointly: the more a company is indebted

and the lower its interest coverage capacity is, the more the quotient between EBITDA and Total assets will diminish, proving a decrease in the operating performances of firms and supporting our second hypothesis.

The multivariate regression, combined with the previous univariate analysis, suggests that, apart from the official filing for the bankruptcy procedure, even just a situation of financial distress (excessive indebtedness and low interest coverage capacity) can lead to management-driven losses, which express themselves through a drop in the profitability of a company.

Conclusions and Limitations of the Study

The results of our study show some differences compared with the conclusions drawn by previous researches. We noticed that on the one hand, revenues did not decrease in the five years preceding bankruptcy, while on the other operating margins declined drastically; in addition, the leverage of firms increased.

More specifically, our findings suggest that the main variables expressing the magnitude of indirect bankruptcy costs are not loss in revenues or firm (market) value but a decrease in EBITDA and Long term assets deflated against Total assets.

These results are probably due to the object of the analysis: small and medium size entities, whose main stakeholders are banks and whose financial statements are not widely distributed to the public. From this perspective, the results are consistent with the strong relationship between Italian small firms and banks [48]: the more a pre-distressed company shows a negative trend in revenues, the more likely it is that a bank will not continue to finance it in the future; consequently, firms, in pre-bankruptcy periods, try to show a positive trend in revenues (as illustrated in previous sections).

In other words, especially in pre-distressed periods, it is vital that these firms continue to obtain credit.

In order to attain this objective, SMEs try to “hide” their financial difficulties by increasing sales, even if they frequently tend to sell below cost and/or at crippling conditions. In addition, as already pointed out, this growth in revenues allows us to avoid the possible autocorrelation between economic performance and financial distress, suggesting that we focus our attention on margin and investment in long term assets.

One of the aims of the reform of the Italian bankruptcy law was to reduce direct and indirect costs, in order to maximize the ratio of claims reimbursed to the creditors. Considering the incidence of indirect costs [Table-6], this objective leads to an emphasis on the importance of the timely onset of a bankruptcy procedure, as implicitly suggested by a negative trend in the Δ EBITDA/Total assets ratio since 2007/2008. This situation would recommend the prompt re-negotiation of debts through formal or informal procedures, in order to avoid further worsening of the financial condition of the company. However, this is not the case.

In other words, because the operating margins have dramatically decreased during the four or five years preceding the bankruptcy, highlighting losses (especially management-driven losses) which affect the magnitude of (future) indirect bankruptcy costs, the law should have provided tools to allow managers and/or creditors to initiate a (formal or informal) procedure in a timely manner: if the

procedure was started in 2008, for example, the negative trend in the Δ EBITDA/Total assets ratio (a proxy of the incidence of indirect bankruptcy costs) would have been of 21.57% (and not more than 100%). A possible objection could be that a more accessible procedure might generate more strategic defaults as well; however, as stated by Ferro and Di Carlo [52], these strategic defaults are very rare in the Italian context.

The study presents some limitations and requires some additional efforts in order to gain a better understanding of bankruptcy costs within the context of the efficiency of bankruptcy legislation; in this perspective, a future step for our research could be an extension of the sample of failed firms and/or an analysis of different and more homogeneous sub samples of firms belonging to the same sectors, in order to obtain more statistically robust results. In addition, bearing in mind the characteristics of the Italian auditing system, it could be interesting to analyze the role of (internal and external) auditors in discovering the earnings management behaviors of firms in the five years preceding bankruptcy.

References

- [1] Branch B. (2002) *International Review of Financial Analysis*, 11 (1), 39-57.
- [2] Myers S.C. (1977) *Journal of Financial Economics*, 5(2), 147-175.
- [3] Harris M. and Raviv A. (1991) *Journal of Finance*, 46(1), 297-355.
- [4] Myers S. (2001) *Journal of Economic Perspectives*, 15(2), 81-102.
- [5] Warner J.B. (1977) *Journal of Finance*, 32(3), 337-347.
- [6] Betker B.L. (1997) *Financial Management*, 26(4), 56-68.
- [7] Lubben S.J. (2000) *American Bankruptcy Law Journal*, 74(4), 508-552.
- [8] Bris A., Welch I. and Zhu N. (2006) *Journal of Finance*, 61(3), 1253-1303.
- [9] Altman E.I. (1984) *Journal of Finance*, 39(4), 1067-1089.
- [10] Opler T. and Titman S. (1994) *Journal of Finance*, 49(3), 1015-1040.
- [11] Pulvino T. (1999) *Journal of Financial Economics*, 52(2), 151-186.
- [12] Baxter N. (1967) *Journal of Finance*, 22(3), 395-403.
- [13] Stiglitz J. (1974) *American Economic Review*, 64(6), 851-866.
- [14] Kraus A. and Litzenberger R.H. (1973) *Journal of Finance*, 28 (4), 911-922.
- [15] Scott J.H. (1976) *The Bell Journal of Economics*, 7(1), 33-54.
- [16] Kim E.H. (1978) *Journal of Finance*, 33(1), 45-63.
- [17] Coase R.H. (1960) *Journal of Law and Economics*, 3, 1-44.
- [18] Haugen R. and Senbet L. (1988) *The Journal of Financial and Quantitative Analysis*, 23(1), 27-38.
- [19] Titman S. (1984) *Journal of Financial Economics*, 13(1), 137-151.
- [20] Sharpe S. (1994) *The American Economic Review*, 84(4), 1060

-1074.

- [21] Eisdorfer A. (2008) *Journal of Finance*, 63(2), 609-637.
- [22] Galletti D. (2006) *La ripartizione del rischio di insolvenza. Il diritto fallimentare tra diritto ed economia [The analysis of default risk. A law&economics approach]*, Il Mulino, Bologna.
- [23] Hart O. (2000) *Harvard Institute of Economic Research*, 1903.
- [24] Cornelli F. and Felli L. (1996) *Social Science Research Network*, doi: 10.2139/ssrn.34857.
- [25] Barontini R. (1997) *Costi del fallimento e gestione della crisi nelle procedure concorsuali [financial distress and costs of bankruptcy procedures]* in Caprio L. (Ed.), *Gli strumenti per la gestione delle crisi finanziarie in Italia: un'analisi economica*, Mediocredito Lombardo, Milan, 81-210.
- [26] Brogi R. and Santella P. (2003) *Social Science Research Network*, doi: 10.2139/ssrn.426961.
- [27] Jensen C. (1986) *American Economic Review*, 86(2), 323-329.
- [28] Hart O. and Moore J. (1995) *American Economic Review*, 85(3), 567-585.
- [29] Weiss L.A. (1990) *Journal of Financial Economics*, 27(2), 285-314.
- [30] LoPucky L.N. and Doherty J.W. (2004) *Journal of Empirical Legal Studies*, 1(1), 111-141.
- [31] Tashjian E., Lease R.C. and McConnell J.J. (1996) *Journal of Financial Economics*, 40(1), 135-162.
- [32] Ang J.S., Chua H.C. and McConnell J.J. (1982) *Journal of Finance*, 37(1), 219-226.
- [33] Lawless R.M. and Ferris S.P. (1997) *Washington University Law Quarterly*, 75(3), 1207-1236.
- [34] Altman E.I. and Hotchkiss E.S. (2006) *Corporate Financial Distress and bankruptcy*, 3rd edition, John Wiley & Sons.
- [35] Hotchkiss E.S., Kose J., Mooradian R.M. and Thorburn K.S. (2008) *Handbook of Corporate Finance: Empirical Corporate Finance*, 2, 235-252.
- [36] Pham T. and Chow D. (1989) *Australian Journal of Management*, 14(1), 75-95.
- [37] Chen G.M. and Merville L.J. (1999) *Review of Quantitative Finance and Accounting*, 13(3), 277-293.
- [38] Cutler D. and Summers L. (1988) *RAND Journal of Economics*, 19(2), 157-172.
- [39] Engelmann K. and Cornell B. (1988) *Journal of Legal Studies*, 17(2), 377-399.
- [40] Bhagat S., Brickley J.A. and Coles J.L. (1994) *Journal of Financial Economics*, 35(2), 221-247.
- [41] Maksimovic V. and Titman S. (1991) *Review of Financial Studies*, 4(1), 175-200.
- [42] Andrade G. and Kaplan S.N. (1998) *Journal of Finance*, 53(5), 1443-1493.
- [43] Kwansa F.A. and Cho M.H. (1995) *International Journal of Hospitality Management*, 14(3/4), 339-350.
- [44] John T.A. (1993) *Financial Management*, 22(3), 91-100.
- [45] Di Carlo A., Bisogno M. and Sensini L. (2009) *Analisi economico-aziendale dei concordati preventivi [Corporate reorganization procedures: an empirical analysis on Italian data]*, in Ferro M., Ruggiero A. and Di Carlo A. (Ed.) *Concordato preventivo, concordato fallimentare e accordi di ristrutturazione dei debiti*, Giappichelli, Turin, 275-312.
- [46] Mensah Y. (1984) *Journal of Accounting Research*, 22(1), 380-395.
- [47] Lincoln M. (1984) *Journal of Banking and Finance*, 8(2), 321-340.
- [48] McGurr P.T. and DeVaney S.A. (1998) *Journal of Business Research*, 43(3), 169-176.
- [49] Di Carlo A., Bisogno M., Fazzari A. and Martini B. (2010) *Le caratteristiche economiche delle imprese fallite: una sintesi del dato nazionale [An analysis of Italian failed firms: empirical evidence from Italian data]*, in: Ferro M. and Di Carlo A., (Ed.). *L'istruttoria prefallimentare*, Ipsoa, Milan, 1-59.
- [50] Rajan R. and Zingales L. (1995) *Journal of Finance*, 50(5), 1421-1460.
- [51] Viganò E. (2012) *Contenuto e finalità del bilancio [Contents and purposes of financial statements]* Cedam, Padua.
- [52] Ferro M. and Di Carlo A. (2010) *L'istruttoria prefallimentare [Application for bankruptcy order]*, Ipsoa, Milan.