

# CORPORATE FINANCIAL DISTRESS AND BANKRUPTCY: A COMPARATIVE ANALYSIS IN FRANCE, ITALY AND SPAIN

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## Abstract

The paper presents a competing-risks approach for investigating the determinants of corporate financial distress. In particular a comparative analysis of three European markets - France, Italy and Spain – is performed in order to find out the similarities and the differences in the determinants of distress.

By using the AMADEUS dataset, two possible causes of exit from the market are considered: bankruptcy and liquidation. For identifying the variables that influence the risk of leaving the market, a competing-risks model for each country is estimated and is compared with a pooled model including all the three countries. In addition, the performance of the competing-risks approach is evaluated versus the single-risk model, in which all states are considered without any distinctions.

The reached results show that the competing risks approach leads to a saving in the number of selected variables that becomes more significant when the model is estimated for each country separately. Moreover, the selected variables for each country enable to identify similarities between the different exit routes across the markets. Some of the differences between Spain and the other two countries may be related to the dissimilar definition of the distress states.

**Keywords:** Competing-risks model, default risk; financial ratios; hazard model.

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## Introduction

Business failure has been widely studied since the seminal papers of Beaver (1966) and Altman (1968). A large amount of the literature is devoted to analyze the firms' survival and to investigate the determinants of the exit decision, without considering possible distinctions among different status (Ohlson, 1980; Zmijewsky, 1984; Lennox, 1999; Shumway, 2001, among others) and without estimating the dynamical evolution (Sexton *et al.*, 2003; Balcaen and Ooghe, 2004; Chava and Jarrow, 2004; Hillegeist *et al.*, 2004; Dakovic *et al.*, 2010; Amendola *et al.*, 2011a).

To overcome these limitations, some authors applied advanced versions of the logistic regression model (e.g. the mixed logit, multinomial error component logit and nested logit model) (Jones and Hensher, 2004, 2007; Hensher, Jones and Greene, 2007; Dakovic *et al.*, 2010) and the competing-risks models (Bhattacharjee *et al.*, 2002; Dickerson *et al.*, 2003; Headd, 2003; Rommer, 2004, 2005; Chancharat *et al.*, 2010; Amendola *et al.*, 2011b).

Therefore, in order to examine the effect of explanatory variables across the diverse states of financial distress, a multi-state approach can be used. Theoretical evidence for considering multi-exits was provided by Schary (1991) which analyzed acquisition and bankruptcy as alternative routes, while Lau (1987) had previously proposed a five state

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prediction model for estimating the probability that a firm enters each of the considered states. The increase in information on different types of exit and the development of statistical methods and computational techniques have caused a renewed interest in analysing how financial factors affect firm survival and the different causes of entry and exit of firms from the market.

Our interest is to investigate the causes of business failure of three European markets - France, Italy and Spain - in order to study the determinants of the probability of alternative exit routes and find out whether there are connections among the predictors of distress in the different countries.

A similar problem has been focused by some previous studies that compare the determinants of failure in several countries. For example, Hunter and Isachenkova (2000) explain the differences in the predictors of failure in Russian and UK firms. Their main results are that liquidity and gearing are not effective for failure in Russian firms, while size, profitability and turnover are good predictors. For the UK firms, it seems that profitability, gearing and liquidity are all important for predicting failure. Bhattacharjee *et al.* (2004) analysed UK and US firms by means of competing risks model, in order to identify the variables influencing the bankruptcy and the acquisition. They found out that adverse macroeconomic conditions increase the bankruptcy hazard while decreasing the acquisition hazard. The difference is related to the diverse bankruptcy definition in the two countries. Ooghe and Balcaen (2002) focus on whether a failure prediction model can be transferred across countries. They used a dataset of Belgian company accounts to build a failure prediction models potentially appropriate for different countries.

To the best of our knowledge, only one paper (Rommer, 2005) analyzes the business failure reasons in the three European markets considered here. Our contributions differ from Rommer (2005) in two main issues. Firstly we considered a larger data set including a huge number of variables and an extended sample period. Secondly, we focus our analyses on a two-way competing-risks model based on the two main exit routes (bankruptcy and liquidation).

In order to compare the effects of micro-economic indicators and firm-specific variables on the different states, we estimate a competing-risks model for each country. This model, unlike the traditional logistic framework, enables to incorporate the time to event as dependent variable in determining the probability of a firm being in a distressed status. Moreover, it allows taking into account whether and when the exit occurs, monitoring the evolution of the risk of each exits type over time. Furthermore, for sake of comparison, we also estimate a *pooled-country model* in which all countries are pooled together and a *pooled-state model* in which all financial distress states are considered at the same time. The significant variables and their sign are compared across the three country models in order to determine the similarities and the differences in the variables that influence the financial distress.

The paper is structured as follows. Section 2 gives the notion of business failure and illustrates the data. Section 3 briefly reports the methodology used in the analysis. Section 4 describes the reached results while the last session gives some concluding remarks.

### **1. The notion of business failure and the data base**

Business failure has been defined in many different ways and it is not easy to agree on a widely accepted definition (Karels and Prakash, 1987; Crutzen and van Caillie, 2007). A failure state has been analyzed from different perspectives depending not only on the context and the characteristics of the firms but also on the interest of researchers (Dimitras, Zanakis and Zopounidis, 1996). In many studies, business failure is defined as a series of different situations that lead to the closing down of the firm due to relevant financial problems (Morris,

1997). However, this definition only concentrates on the financial disease without taking into account other difficulties that can affect the firms' health in the early stages of the failure process (Argenti, 1976).

Given that the empirical literature distinguishes between *economic* and *juridical* business failure (Ooghe and Van Wymeersch, 1986; Weitzel and Jonsson, 1989), the present analysis refers to the economic concept, focusing on those companies that have experienced permanent financial disease, including companies that have voluntarily chosen liquidation for whatever reason. Therefore, our sample is composed of those companies that belong to a specific sector of activity and had entered the economic procedure of bankruptcy in three European countries (France, Italy and Spain) in the period 2004-2010. In particular, we considered a firm as exiting in period  $t$  when it was the last year the firm was in business or active. This study focuses on these countries since they are inspired by the French Commercial Code (La Porta *et al.*, 1998; Rommer, 2005).

The data used in this paper have been extracted from the Amadeus database, a pan-European database, provided by Bureau Van Dijk (BVD). Since our main interest is in investigating the determinants of firms that end up in financial distress in the three markets and in comparing them in terms of different forms of exit and country-effects, we focus on three mutually exclusive states of exit from the market: *bankruptcy*, *dissolved* and *liquidation*.

The bankrupt status includes those firms that have been legally declared as being unable to meet financial obligations to creditors and are under court supervision. The dissolved status includes the company that no longer exists as a legal entity, but the reason for this is not specified. This means that the company is dead, has no more activity or is no longer included in the companies register. The last state includes those companies that no longer exist because they have ceased their activities and are in the process of liquidation. The reference group is provided by active firms.

The distribution of our population consists of 874 companies that went bankrupt, 311 that had entered voluntary liquidation, and 548 that were dissolved. There are 27,292 companies in the active state. The distribution of firms by state and by countries is displayed in Table 2.1.

Looking at the Table 2.1, it can be noted that there are no firms that go bankrupt in Spain and there are no firms that are dissolved in France and Italy. This situation may be related to the different corporate failure laws (García-Posada and Mora-Sanguinetti, 2012). For this reason we decide to join the bankruptcy and the dissolved state for the rest of the analysis.

Table 2.1: Financial distress

	France	Italy	Spain
Active	13,102	12,292	1898
Bankruptcy	264	610	0
Dissolved	0	0	548
In liquidation	37	273	1

The predictors' database for the period of interest (2004 - 2010) is elaborated starting from the financial statements of each firm included in the sample, for a total of 197,181 balance sheets. In particular, we compute  $nv = 72$  indicators selected as potential predictors among the most relevant in highlighting current and prospective conditions of financial distress (Table 2.2) (Dimitras *et al.*, 1996; Altman, 2000; Altman and Hochkiss, 2006).

The selected predictors reflect the main aspects of the firms' structure such as liquidity, operating structure, profitability, turnover and size and capitalization, as shown in

Table 2.2. Moreover, some firm-specific variables, such as national legal status, firm size, firm age, publicly quotation, are also considered. These covariates are transformed into dichotomous variables.

A preliminary analysis is made on the database of predictors to analyze the impact of missing data and investigate the bivariate linear relations among them. Those covariates with a high percentage of missing and with a significative correlation coefficient are excluded from the analysis. It is consider as significant those correlation coefficients greater or equal to  $|0.80|$  point out that correlation below that value are not harmful for an appropriate variable selection. Then we test them at a significance level 5% and we reject the null hypothesis that there is no correlation.

Table 2.2: Financial predictors

	nv
Liquidity	17
Operating structure	13
Profitability	16
Turnover	15
Size and Capitalization	11

## 2. The methodology

The methodology used in this paper in order to compare the determinants of business failure in the three European countries considered is the competing-risks model, one of the most popular settings of the multi-state models (Andersen *et al.*, 1993 and 2002). This model can be considered as an extension of the mortality model for survival analysis and is based on one transient state (state alive) and a certain number of absorbing states that are the death from different causes. All possible transitions are from the state alive. In this paper, we consider two possible causes of exit from the market: bankruptcy and liquidation, and we estimate the probability of transition from state active to the two states.

Let  $T$  be the observed time of exiting the market and let  $D$  be the cause of failure. The possible causes are labelled from 1 to  $K$ .

The main quantity in competing-risks model is the *cause-specific hazard function*, that is the probability of failing due to a given cause  $k$ , after one has reached the time point  $t$ :

$$\lambda_k(t) = \lim_{\Delta t \rightarrow 0} \frac{P[T \leq t + \Delta t, D = k | T \geq t]}{\Delta t}, \quad k = 1, \dots, K$$

Since the cause-specific hazard function may be depend on a set of covariates, the Cox Proportional Hazard model for each cause of exit can be considered:

$$\lambda_k(t | X_k) = \lambda_{k,0}(t) \exp(\beta_k^T X_k(t))$$

where  $\lambda_{k,0}(t)$  is the baseline cause-specific hazard of cause  $k$  which does not need to be explicitly specified,  $X_k$  is the vector of covariates to  $k$ -type cause at time  $t$ , and  $\beta_k$  is the vector of covariates coefficients to be estimated by optimizing the partial likelihood for each cause:

$$L_k(\beta_k) = \prod_{i=1}^{n_k} \frac{\exp(\beta_k^T X_{ik}(t))}{\sum_{l=R(t_{ik})} \beta_k^T X_{lk}(t)}$$

where  $n_k$  is the number of firm in specific hazard  $k$ , and  $R(t_{ik}) = \{l | t_{ik} \geq t_{ik}\}$  is the set of firms at risk at time  $t_{ik}$ .

### 3. The empirical results

This section provides the empirical results obtained from the estimated competing-risks model for each country and for the pooled data set. The effect of strategic factors on the likelihood of exiting the market for different reasons in the three European countries are investigated and the determinants of various exit routes are compared.

The variables considered as the initial set of explanatory variables in the model, in order to assess their effect on the hazard rate of each exit route for each country, are synthetized in Table 2.2. The most relevant variables for each state and each market are selected by stepwise procedure. Then, the significance of the estimated coefficients is checked and the variables that are not significant at least at 10% level are eliminated. This significance level is chosen in order to compare the determinants of exit routes selected in the paper with the results of a few papers in the literature (Chancharat et al, 2010; Rommer, 2004 and 2005).

In addition to the competing-risks model, a single-risk model is estimated where all states of financial distress are pooled together, for all countries.

The number of variables selected and their sign are synthesized in Table 4.1, while the sign of the estimated coefficients for the competing-risks and single-risk models for each country are shown in Tables 4.2, 4.3 and 4.4.

The results show that in the single-risk model (i.e. for predicting the business failure) and in pooled-country model (in which we consider all countries together), 33 variables are selected as potential predictors. Instead, in the competing-risks model, in which the exit routes are estimated separately, a less number of variables are chosen (Table 4.1).

When the single-risk and the competing-risks models are estimated for each country separately, the results show that there is a saving in the number of selected covariates in France and in Spain (Table 4.1).

Now, looking at the sign of covariates, the results show some remarkable differences supporting the need to use not only the competing-risks model over the pooled one, but also the model for each country over a pooled-country model. Moreover, the variables are different in the determinants of the three exit routes and in their sign, not only between the competing-risks and single-risk models, but also between the states for the three countries.

In order to interpret efficiently the results, it is important to state that a positive sign of estimated coefficients means that the failure risk is high for firms with higher values of that variable, while if the sign is negative, the failure risk is lower for higher values of the variable. For further investigation, the hazard ratios, obtained by computing the exponential of coefficients are also checked, giving a measure of the covariates effect on the hazard (the results are available upon requests from the authors).

Table 4.1: Number of variables selected

	Single-risk model				Bankruptcy/Dissolved				Liquidation			
	Pool	France	Italy	Spain	Pool	France	Italy	Spain	Pool	France	Italy	Spain
Firm-specific	4	0	6	4	5	1	5	4	4	1	4	0

variables												
Liquidity ratios	6	5	6	7	6	6	7	4	2	1	2	0
Operating structure ratios	5	3	5	4	3	2	1	4	3	1	3	0
Profitability ratios	5	5	8	3	4	4	8	3	3	1	6	0
Size and capitalization ratios	6	2	3	3	4	2	4	3	4	0	3	2
Turnover ratios	7	2	5	6	6	2	5	6	4	2	6	0
Total	33	17	33	27	28	17	30	24	20	6	24	2

The results for each exit route and for each country are illustrated in order to compare the determinants among the states and the countries.

Looking at the results of the single-risk model (in which all exit routes are pooled together, without distinguishing between them) for the pooled-country model, it can be noted that the joint-stock companies have a greater probability of failure, while the limited partnership and consortium have a lower probability of exit the market. At the same time, the old firms (more than 23 years) have a positive coefficient and their hazard rate decreases.

Then, high values of IND03, IND30, IND46, IND15, IND41, IND47, IND64, IND72, IND10, IND13, IND38, IND50, IND62, IND19, IND20, IND21, IND56, IND59 correspond to increase the hazard rate and the probability of failure, while the coefficients of the IND04, IND06, IND27, IND33, IND47, IND53, IND54, IND61, IND11, IND37, IND70 are negative and consequently the probability of failure is lower.

Unlike the results of the pooled-country model, the joint-stock companies have a lower probability of being bankrupted and dissolved in Italy and Spain. The old firms have a lower hazard rate. As concerns the size of firms, the medium firms in Italy have a higher risk of failure, while for the very large companies the hazard rate is lower. In Spain, the situation is lightly different. In fact the large and very large firms have a higher probability of being dissolved. The difference between Italy and Spain is related to the fact that the definition of the two failure states (bankruptcy and dissolved) is divergent. Moreover, there are some financial ratios in common between the three countries, even though the sign of coefficients is different. For example, IND06, IND24 has a negative coefficient for Italy and France, while it is positive for Spain. The difference of sign is again related to the nature of the states included in the model.

The results of the competing risks framework for the pooled-country model showed that the joint-stock companies, limited companies, limited partnership, limited cooperative societies have a higher risk of being bankrupted. Then for the limited partnership the probability of liquidation is lower; while for consortium and limited cooperative societies the risk of liquidation is higher. As concerns the financial ratios, high values of IND03, IND30, IND15, IND49, IND64, IND72, IND13, IND38, IND20, IND21, IND56, IND69 correspond to high risk of being bankrupt. Moreover, some covariates, such as IND54, IND41, IND71, IND72, IND08, IND20, IND21, have positive coefficients, related to a higher risk of being liquidated. Then, IND04, IND06, IND27, IND33, IND47, IND53, IND54, IND11, IND37, IND70 have negative effect of the bankruptcy, and IND06, IND13, IND54, IND61, IND10, IND11, IND13, IND19, IND58 effect negatively the risk of liquidation.

By checking the results of the competing risks model for each country, it is observed that in Italy more variables are needed for predicting bankruptcy and liquidation than in France and in Spain. One possible reason is related to the period considered in the paper, which included the period 2007-2010 characterized by the global financial crisis. It seems that the effects of the financial crisis have a deeper impact in Italy than in France and Spain.

Table 4.2: The sign of covariates for the pooled model

Code	Variable	Area	Pooled-Country	France	Italy	Spain
SPA	Joint-stock company - Legal Form	Firm-Specific	+		-	-
SAS	Limited Partnership - Legal Form	Firm-Specific	-		+	
Consortium	Consortium - Legal Form	Firm-Specific	-		-	
Old	Old - Age	Firm-Specific	-		-	-
Medium	Medium - Size	Firm-Specific			+	
VeryLarge	Very Large - Size	Firm-Specific			-	+
Large	Large - Size	Firm-Specific				+
IND01	Current assets/Fixed assets	Liquidity			+	
IND03	Cash & cash equivalent/Current liabilities	Liquidity	+			+
IND04	(Current assets - Stock)/Current liabilities	Liquidity	-			
IND06	Working capital/Total assets	Liquidity	-	-	-	+
IND07	Net current assets/Total assets	Liquidity			+	
IND24	Cash flow	Liquidity		-	-	+
IND27	Cash flow/Shareolders funds	Liquidity	-			-
IND30	Current liabilities/Total assets	Liquidity	+	+	+	+
IND31	Current liabilities/(Current liabilities + Non-Current liabilities)	Liquidity		-		-
IND33	Cash & cash equivalent/Total assets	Liquidity	-		-	+
IND35	Cash & cash equivalent/Sales	Liquidity		-		
IND46	Financial Expenses/(Current liabilities + Non-Current liabilities)	Operating structure	+		+	+
IND47	Financial Expenses/Sales	Operating structure	-		-	-
IND53	EBIT/Operating revenue	Operating structure	-	+	+	-
IND54	Sales	Operating structure	-	-	+	-
IND61	EBIT/Financial Expenses	Operating structure	-	-	-	
IND15	Profit (Loss) for Period/Shareolders funds	Profitability	+	+	+	
IND17	Profit (Loss) for Period/Sales	Profitability			+	-
IND29	Profit (Loss) for Period/(Current liabilities + Non-Current liabilities)	Profitability			+	
IND39	EBITDA/Sales	Profitability		-	-	
IND41	EBIT/Fixed Assets	Profitability	+	+		+
IND49	EBIT/Total assets	Profitability	+		+	
IND64	EBIT	Profitability	+		+	
IND71	Standard deviation ROE	Profitability		-	-	
IND72	Standard deviation ROA	Profitability	+	+	+	+
IND10	Shareolders funds/(Current liabilities + Non-Current liabilities)	Size and capitalization	+	+	-	

IND11	Shareolders funds/Capital	Size and capitalization	-		-	-
IND13	(Long Term Debt + Loans)/Total assets	Size and capitalization	+		-	
IND38	Current assets/Current liabilities	Size and capitalization	+			
IND50	Current assets/Total assets	Size and capitalization	+	+		-
IND62	Total assets	Size and capitalization	+			+
IND19	Sales/Current assets	Turnover	+		-	
IND20	Debtors/Sales	Turnover	+	+	+	+
IND21	Sales/Shareolders funds	Turnover	+		+	+
IND36	(Current assets - Stock)/Sales	Turnover			+	-
IND37	Working capital/Sales	Turnover	-			-
IND56	Cash & cash equivalent/Depreciation	Turnover	+	-	+	+
IND69	(Debtors/Operating revenue)*360	Turnover	+			
IND70	(Creditors/Operating revenue)*360	Turnover	-			-

Table 4.3: The sign of covariates for the bankruptcy state

Code	Variable	Area	Pooled-country	France	Italy	Spain
SPA	Joint-stock company - Legal Form	Firm-Specific	+			-
SAS	Limited Partnership - Legal Form	Firm-Specific	+		+	
Consortium	Consortium - Legal Form	Firm-Specific			-	
Old	Old - Age	Firm-Specific	-		-	-
Medium	Medium - Size	Firm-Specific		+	+	
VeryLarge	Very Large - Size	Firm-Specific			-	+
Large	Large - Size	Firm-Specific				+
SRL	Limited Company - Legal Form	Firm-Specific	+			
SCARL	Limited Cooperative Society- Legal Form	Firm-Specific	+			
IND03	Cash & cash equivalent/Current liabilities	Liquidity	+		-	+
IND04	(Current assets - Stock)/Current liabilities	Liquidity	-		+	
IND06	Working capital/Total assets	Liquidity	-	-	-	
IND07	Net current assets/Total assets	Liquidity			+	
IND24	Cash flow	Liquidity		-	-	+
IND27	Cash flow/Shareolders funds	Liquidity	-			-
IND30	Current liabilities/Total assets	Liquidity	+	+	+	
IND31	Current liabilities/(Current liabilities + Non-Current liabilities)	Liquidity		-		
IND33	Cash & cash equivalent/Total assets	Liquidity	-			
IND34	(Current assets - Stock)/Total assets	Liquidity		-	-	-
IND35	Cash & cash equivalent/Sales	Liquidity		-		
IND46	Financial Expenses/(Current liabilities + Non-Current liabilities)	Operating structure				+
IND47	Financial Expenses/Sales	Operating	-			-

IND53	EBIT/Operating revenue	structure Operating structure	-	+	-	
IND54	Sales	Operating structure	-		-	
IND61	EBIT/Financial Expenses	Operating structure		-	-	
IND15	Profit (Loss) for Period/Shareolders funds	Profitability	+	+	+	
IND17	Profit (Loss) for Period/Sales	Profitability				-
IND29	Profit (Loss) for Period/(Current liabilities + Non-Current liabilities)	Profitability			+	
IND39	EBITDA/Sales	Profitability		-	-	
IND41	EBIT/Fixed Assets	Profitability			+	+
IND49	EBIT/Total assets	Profitability	+		+	
IND64	EBIT	Profitability	+		+	
IND71	Standard deviation ROE	Profitability		-	-	
IND72	Standard deviation ROA	Profitability	+	+	+	+
IND08	Shareolders funds/Fixed assets	Size and capitalization			-	
IND10	Shareolders funds/(Current liabilities + Non-Current liabilities)	Size and capitalization	+			
IND11	Shareolders funds/Capital	Size and capitalization	-		-	-
IND13	(Long Term Debt + Loans)/Total assets	Size and capitalization	+		-	
IND38	Current assets/Current liabilities	Size and capitalization	+			-
IND50	Current assets/Total assets	Size and capitalization		+	+	
IND62	Total assets	Size and capitalization		-		+
IND19	Sales/Current assets	Turnover			-	
IND20	Debtors/Sales	Turnover	+	+	+	+
IND21	Sales/Shareolders funds	Turnover	+		+	+
IND36	(Current assets - Stock)/Sales	Turnover			+	-
IND37	Working capital/Sales	Turnover	-		-	-
IND56	Cash & cash equivalent/Depreciation	Turnover	+	-		+
IND69	(Debtors/Operating revenue)*360	Turnover	+			
IND70	(Creditors/Operating revenue)*360	Turnover	-			-

Table 4.4: The sign of covariates for the liquidation state

Code	Variables	Area	Pooled			
			- countr y	Franc e	Ital y	Spai n
SAS	Limited Partnership - Legal Form	Firm-Specific	-		+	
Consortium	Consortium - Legal Form	Firm-Specific	+		+	
Medium	Medium - Size	Firm-Specific	+		+	

SRL	Limited Company - Legal Form	Firm-Specific		-	
SCARL	Limited cooperative societies - Legal Form	Firm-Specific	+		+
IND06	Working capital/Total assets	Liquidity	-	-	-
IND33	Cash & cash equivalent/Total assets	Liquidity	-		-
IND46	Financial liabilities + Expenses/(Current liabilities + Non-Current liabilities)	Operating structure			+
IND53	EBIT/Operating revenue	Operating structure	+		+
IND54	Sales	Operating structure	-	-	
IND61	EBIT/Financial Expenses	Operating structure	-		-
IND17	Profit (Loss) for Period/Sales	Profitability			+
IND29	Profit (Loss) for Period/(Current liabilities + Non-Current liabilities)	Profitability			+
IND39	EBITDA/Sales	Profitability			-
IND41	EBIT/Fixed Assets	Profitability	+		+
IND71	Standard deviation ROE	Profitability	+		+
IND72	Standard deviation ROA	Profitability	+	+	+
IND08	Shareolders funds/Fixed assets	Size and capitalization	+		-
IND10	Shareolders funds/(Current liabilities + Non-Current liabilities)	Size and capitalization	-		-
IND11	Shareolders funds/Capital	Size and capitalization	-		-
IND13	(Long Term Debt + Loans)/Total assets	Size and capitalization	-		-
IND62	Total assets	Size and capitalization			-
IND18	Sales/Fixed assets	Turnover		+	
IND19	Sales/Current assets	Turnover	-		-
IND20	Debtors/Sales	Turnover	+		
IND21	Sales/Shareolders funds	Turnover	+		+
IND36	(Current assets - Stock)/Sales	Turnover			+
IND56	Cash & cash equivalent/Depreciation	Turnover			+
IND58	Non-Current liabilities/Sales	Turnover	-		-
IND70	(Creditors/Operating revenue)*360	Turnover		-	+

### Conclusion

Competing-risks models for corporate failure in three European markets – France, Italy and Spain - have been estimated based on micro-economic indicators and firm-specific variables. The determinants of financial distress have been investigated highlighting the similarities and dissimilarities across countries. In particular a competing-risks approach has

been used to estimate the risk of exit the market for two main reasons: bankruptcy and liquidation.

The reached results show that there are some differences and some similarities in financial ratios for predicting the financial distress in the three countries considered in the paper. In particular, it seems that in Italy a greater number of variables are needed to estimate the probability of failure, while in France and Spain the number of covariates is less. Moreover, the results show how there is a saving in the number of business failure determinants when a model for each country is estimated and/or a model for each exit route is considered.

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