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The alert indices of a corporate crisis
The Alitalia case

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INTRODUCTION

In recent years, corporate crisis have assumed greater importance because of its frequent reoccurrence. Be it a gradual or a sudden change, it undoubtedly gives rise to a problem that must be fixed immediately.
For a company, a crisis is something that can potentially cause damage to its image, its profit, its employees and to the company resources.
Nowadays lots of businesses are facing a complicated moment not only due to the continuous changes in the market and consumer preferences, but also due to the presence of a well-known global economic and financial crisis.
The main goal of this paper is to present the concept of corporate crisis starting with an overview of the literature and then focusing on the warning signs proposed by the National Council of Accountants and Accounting Experts (CNDCEC), through certain indices useful for a preventive identification of this crisis.
On 27 October 2019, the CNDCEC published the summary document of these indices that try to verify the existence of a crisis, in compliance with the provisions of Article 13, paragraph 2, Legislative Decree 14/2019, the actual new Crisis and Company Insolvency Code.
The CNDCEC, taking into account national and international best practices, elaborates at least every three years, the indices which, assessed together, reasonably suggest the existence of a crisis in the company.
These indices are approved by the decree of the Ministry of Economic Development.
In this paper, we highlight the most appropriate information and indices for such prevention and any possible paths that the company can take to limit and solve the instability, introducing and presenting as a business case, the crisis of Alitalia.

To understand this, in the first chapter, we began by providing a definition, as comprehensive as possible, of business crisis, given the complexity of the topic and the significant definitions.

First, we have identified the common characteristics of each crisis, so the stages that characterize it and through which we reach an acute phase of a crisis, then we have presented a possible classification of the causes of the business crisis, both with reference to the origin of the factors that determine the crisis, and to the identification of responsibilities: there have been identified crises resulting from inefficiencies, from overcapacity of the company, from decay of products, but also crises resulting from programming or innovation deficiencies and crises due to financial or equity imbalances.
The chapter continues focusing attention on the tools, introducing the financial statements analysis as a methodology to discover and diagnose the state of crisis.
This technique, using appropriately reclassified Balance Sheet and Income Statement formats, constitutes a valid tool for the "quantitative" analysis of intermediate results aimed at highlighting situations of insolvency and weakness in the financial equilibrium, which is the cause of dysfunctions and imbalances within the company.
However, it was emphasized that the values obtained through the financial statements analysis only make sense if we proceed to a temporal and spatial comparison of these data verifying the existence of worsening or improvements in company performance.
Moreover, such an analysis would be more relevant if market values were used more widely, thus revalued at fair value.

Moving on, the second chapter describes the forecasting models, distinguishing them into traditional and statistical ones: the first based on different types of analysis with more or less advanced models while the second represented by a set of independent variables and statistical relationships.
Therefore, it seemed appropriate to fully examine the various prediction methodologies, from the simplest and most traditional to the most complex and advanced ones, and then, with the presentation of traditional models, taking a focus on the fundamental contribution of Altman and his Z-score analysis, which represents a real "pillar " in the field.

With the prospectuses obtained, the two main criteria of interpretation were dealt, i.e. the analysis by indices and the analysis by flows, evaluating their usefulness in identifying the crisis, in a preventive manner with respect to its explicit manifestation, which occurs only in the most serious stages of it.
After the illustration of the various models, the second chapter is dedicated to the most important part of the paper: the analysis of some of the indices proposed by the CNDCEC.
This section accurately describes and explains the indices to forecast a state of crisis, with the relative thresholds that must be respected in order not to incur insolvency situations.
The proposed indices which reasonably lead to the presumption of the existence of a state of crisis for the company are:

1. Negative equity
2. Six-month DSCR less than 1
3. In the absence of the DSCR, jointly exceeding the thresholds described for the following five indices:
    - Sustainability index of financial charges
    - Capital adequacy index
    - Liquid return index of the assets
    - Liquidity index
    - Social security and tax debt ratio

In the final part of the second chapter, after the introduction of the aforementioned indices, these were presented and described individually, highlighting the thresholds of competence of each of them.
In this section there are different graphs and thresholds to clearly identify when the company is in trouble, to understand the relationship and the correlation between the indices proposed.
This part has been explained in detail for a better comprehension of the analysis made in the fourth chapter discussing Alitalia.

The third chapter analyzes the strategies for overcoming the crisis using internal tools.
After having ascertained the causes of the crisis, it is in fact necessary to check whether it is appropriate to set up a recovery plan, carrying out an extraordinary operation or resorting to a crisis management tool that provides for recourse to the court.
All the alternatives were briefly discussed, trying to explain the pros and cons for each and establishing in which situation and with respect to each type of crisis which instrument is more suitable.
With regard to the definition of a recovery plan, an analysis of the strategic alternatives has been prepared, which can be implemented according to the various causal factors of the crisis, and the phases and basic characteristics of the turnaround process for recovery were briefly illustrated.
The discussion continues with the illustration of the main urgent measures for the setting of the actual recovery plan; these are immediate interventions put in place in order to avoid a further worsening of the crisis and to gain time for the development of the plan.

Finally, in the fourth and last chapter we describe the crisis that hit Alitalia. Initially, we identified the role of Alitalia within the aviation sector, making a brief mention of its historical evolution.
Subsequently, after retrieving the financial statements data from 1998 to 2001, we carried out an analysis to understand whether, thanks to the values of these indices, the crisis that involved Alitalia in 2001 could have been foreseen in advance.
Starting from the analysis of the indices of the CNDCEC document, we decided to study some financial statements ratios that, compared to the ones proposed by the experts' document, could have given more clarity of the Alitalia's insolvency.
We decided to leave out the "negative equity" as Alitalia had no problems related to that (in fact it was definitively above zero) but with the negativity of its operating result.

To replace this index with an indicator able to prevent a negative equity situation and capable to identify the signs of Alitalia's crisis, we decided to use Debt/Equity and the Debt/EBITDA ratios: two indices suitable for determining the debt features and the economic efficiency produced by the company.
Continuing with our analysis, we decided to not calculate the DSCR because it is an index that allows to evaluate the sustainability of the debt, (by considering the ratio between the free cash flows available for the repayment of the debts expected in a period 6 months following the analysis), in a too short time frame to have reliable information and financial statements data to discover the existence of a business crisis; this is the reason why we opted to calculate other indices like the short/long term debt ratio and the liquidity index.
As a consequence, the indices used for the analysis were:

- ROE
- ROI
- DEBT/EQUITY RATIO
- DEBT/EBITDA RATIO
- SHORT-TERM DEBT RATIO AND LONG-TERM DEBT RATIO
- LIQUIDITY

After that, we focused on identifying some of the problems of the company, and in particular its relationship with the Italian government, explaining the actions of the Boards of Directors who tried to prepare recovery plans, aimed at improving the industrial structure, but with negatives results.
We therefore arrived at the declaration of insolvency and admission to the extraordinary administration procedure, since the acquisition of some assets by CAI, a NewCo created with the aim of saving Alitalia and continuing to guarantee the essential public service it produces.
In Italy and abroad, the crisis of the Alitalia Group has created a great disease, casting doubts on the legality of its management: there were quite a few accusations, subsequently confirmed also by the European Union, on the

legality of state aid that was provided by the government to the company, at a time when the irreversibility of the crisis must have already been clear to everyone.

Chapter 1

BUSINESS CRISIS

Throughout its life, a company faces an alternation of positive and negative phases. For this reason, the presence of a negative phase can be considered an ordinary event. On the contrary, what frightens is the continuity and permanence of the above phase which, if not treated properly, represents the prelude to a business crisis and can lead to a dangerous situation. A corporate crisis is "*any event that threatens the continuation of the organization or its ability to attain its corporate objectives*"[1].
From the above definition it is evident that a crisis is an incident that must be managed in order to minimize its bad impact on the organization's resources. Therefore, a crisis threatens the integrity and the reputation of an organization. The phenomena of decline and crisis in the life of all enterprises are usually preceded by symptoms, decadence premonitory symptoms that can underline qualitative and unbalance factors.

This situation occurs when the company does not dynamically reach a prospective balance trend. *A*ccording to Aldo Amaduzzi, that happens when the company "*dynamically pursues a prospective balance*"[2], that comes from the combination between three elements:

-The first is the economic equilibrium, understood as the attitude of the enterprise to produce with continuity a satisfactory income flow in a long-term perspective to cover the costs of the activities. It ensures coverage of related costs to the various business processes through operating income and it is strictly related with the business risk.

-The second is the financial equilibrium, consisting in the pursuit of solvency, to economically survive in the present, and to cover the future capital needs arising from the company's long-term development

[1] Paul Batchelor "surviving a corporate crisis 100 things you need to know",2003
[2] Aldo Amaduzzi "L'azienda nel suo sistema operante", 2002, UTET

period. Such solvency must therefore be understood structurally, in the long term, as a correlation between investment and corporate financing.

-The third is monetary equilibrium, based on the balance between financial income and expenditure that is the equilibrium between expenditure incurred and revenue: in other words, it must be able to prevent or at least foresee transitional cash shortages and draw up plans to deal with them accordingly. Achieving a balanced economic and financial position is an important condition to operate a proper management of the company.

The reduction and loss of positive income flows on one hand and the increase of the company risks on the other are those relevant factors which may lead to a consequent break of such balances and involve situations of decline, degenerating into phases of deep crisis.

In the prevention phase, it is difficult to carry out a complete analysis to diagnose corporate crises (using the balance sheet), because it is necessary to underline and analyze the values individually, through a first stage of reclassification, which allows to derive the factors that produced the data embedded in the annual budget.

We will therefore try to classify the different elements through models analysis of the profit/loss account or balance sheet, and a substantial division between current and consolidated values will be carried out in relation to the time limit.

A correct balance sheet analysis should take into account the different income and financial flows extrapolated from the data. It will also be appropriate to make a proper analysis trying to compare the accounting situations related to, at least, three consecutive exercises to outline the development, the activity of the economic entity and its growth.

This process of analysis is supplemented by a comparison with the market average.

The financial statements have poor capacity to estimate, in a timely manner, different business inefficiencies and represents the monetary result of human actions and relationships between different internal and external variables; so

we need to analyze other aspects by making other proper calculations.
It should be used not only to recognize the current crisis but also to catch the small warning signs to prevent this crisis.
The enterprise must keep in mind the interrelations that unite them, in order to avoid the spread of the crisis. In fact, the crisis of the system inside the firm arises from an economic crisis, due to imbalances between costs and revenues, which subsequently translate into monetary facts.
Therefore, the monetary crisis is a consequence of bad income or financial imbalances.

Mitroff and Anagnos[3], classify all the possible crises into seven segments, in which they explain the type of the crisis and that all companies should be well prepared to have an effective crisis management.

Table 2.1: Major crisis types.

Economic	**Informational**	**Physical (loss of key plants and facilities)**	**Human resources**	**Reputational**	**Psychopathic acts**	**Natural disasters**
Labour strikes	Loss of proprietary and confidential information	Loss of key equipment, plants, and material supplies	Loss of key executives	Slander	Product tampering	Earthquake
Labour unrest	False information	Breakdowns of key equipment, plants and machinery	Loss of key personnel	Gossip	Kidnapping	Fire
Major decline in stock price and fluctuations	Tampering with computer records	Loss of key facilities	Rise in absenteeism	Sick jokes	Hostage taking	Explosions
Market crash	Loss of key computer information with regard to custo-, mers suppliers, etc. (Y2K)	Major plant disruption	Rise in vandalism and accidents	Damage to corporate reputation	Terrorism	Typhoons
Decline in major earnings			Workplace violence	Tampering with corpo-logos	Workplace violence	Hurricanes

Source: Mitroff (2001).

Table 2.1 from “Corporate crisis and risk management”, M. Aba-Bulgu and Sardar (2007)

[3] Mitroff, I. I., & Anagnos, G. “Managing crises before they happen: What every executive and manager needs to know about crises management”, 2001, New York: American Management Association (AMACOM).

As we can see in table 2.1, crisis can come from different scenarios and for different reasons: every firm should pay attention to all the different aspects of the corporate management.

The first condition to be met for the equilibrium of the company is the achievement of the economic balance. It is also said that management must be carried out in accordance with principles of economy that allow the company to cover with the revenues obtained, the costs of inputs and ensure a minimum profit to the entrepreneur.

The economy[4] is therefore the ability of the company to continue to maximize the resources used, the company's performance and compliance with the equilibrium conditions that allow the operation of companies.

Business performance is related to effectiveness, that is, the capacity to pursue the institutional aims (ratio of the target achieved to the set target) with reference to efficiency, that is, the ability to use the available resources rationally to reach these aims.

When the enterprise is in a state of crisis it loses its conditions of economy, both in terms of balance and performance: the company will certainly have an economic imbalance resulting from the loss of productivity and therefore from a level of costs higher than that of revenues, but will also have losses of efficiency and effectiveness because it will no longer be able to pursue its main objective, that is that of survival.

The decline of the enterprise is often analyzed through a quantitative approach, based on the "theory of value creation". This theory sees the increase in the value (economic or market) of capital the basic objective to be achieved, which is linked to the profitability in medium-long term and to control the business risk acceptable to all stakeholder, as it is the only way to ensure the survival of the enterprise.

So, the objective to be pursued by the undertaking must be, in addition to producing wealth, to distribute it, through the policies of dividends, wages, prices and self-financing.

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[4] Tradotta come "Economicità"

The functions of production and distribution of wealth are therefore inseparable and the second represents a condition of the first: the maximizing profitability is only one of the objectives that the enterprise conveniently pursues.

This is what can be expressed for private companies, but in the public field the creation value must be addressed from a subjective point of view, even if it concerns the public value.

Often, companies face different forms of crisis with varying degrees of risk, not always identifiable. It is very important to know a critical situation and to face it in the most effective way. Reid describes a crisis as "*any incident that can focus negative attention on a company and have an adverse effect on its overall financial condition, its relationship with its audiences or its reputation in the market place*"[5].

In Economics the term is used to indicate phenomena of different gravity and amplitude, with the consequence that the causes of the crisis and their meanings can also be different.

In past years the crisis was considered as an exceptional phenomenon, essentially due to external factors and therefore outside any possibility of control and intervention by the company.

Only later the responsibility of the choices of the entrepreneur and managers have been identified in the crisis management, hence the possibility for these entities to identify the causes and to control its risks and consequences.

In this sense, the crisis becomes either external and internal and the enterprise should be focused on continuous research of new solutions and new balances to manage risks.

It must be underlined that there is a relevant difference between the state of crisis and the state of insolvency: in fact, while the former has a temporary nature, the latter has a permanent nature, being the precondition for the declaration of bankruptcy.

[5] Reid, J. "Crisis management: Planning and media relations for the design and construction industry", 2000.

CAUSES OF A BUSINESS CRISIS

During a crisis we find a complex situation and instability, which arise, as mentioned above, relatively from outside or inside the company.
The reasons that lead to system inefficiencies arise with high impact events, so it is necessary to link risk and crisis that the event produces, which will affect future incomes of the economic subject.
Therefore, "*crisis is an event, revelation, allegation or set of circumstances, which threatens the integrity, reputation, or the bottom line of an organization*"[6].
This condition of instability could generate losses of different entity and the increase of a negative operating result leads the company to face different problems.
Doing so, it won't be possible to meet its medium/long-term commitments while maintaining a homogeneous balance between investment and financing.
The next stage to this situation will be the financial failure: in this critical situation, high insolvency will lead the economic entity's inability to cope with the liabilities items, through its own investments.
In this phase there is a decrease in the firm's resources with a breakdown of the enterprise economic factors, which will lead to absorption of budget reserves and capital shares.
We will have a subsequent decrease in liquidity, with an increase in debts and erosion of innovative capacity elements of the enterprise, represented by research and development sources that derive from strategic marketing.
These factors represent key resources needed to identify business strategies essential to penetrate the market and to build successful campaigns that maximize the value of the product.
In this condition, the recovery is certainly more difficult, and this difficulty depends on the duration and size of losses.
The crisis is no longer just a factor within the company, but it has consequences in the external environment as well: loss of customers, inability to meet commitments and deadlines in terms of liquidity and exposure, loss and

[6] Fink, S. "Crisis management: Planning for the inevitable",1986.

the degree of confidence on the possibility of covering the credit granted. Insolvency follows a state of instability which is represented by the persistent state of imbalance in assets. It is possible to find several interventions to stem the phenomenon of crisis, which strictly concern the structure of capital and management but it is obvious that, facing a first-stage crisis is relatively easier and through the prior identification of the crisis, new funds and other solution to fix the instability, aren't necessary.

Often the recognition of the causes of instability is not easy. So, to understand the state of health of the company, we must not focus only on the analysis of balance sheet items and profit and loss account, but it is necessary to evaluate the company using different analysis indices, as will be later explained.

For the assessment of the business crisis it is necessary to keep in mind that the different causes are often attributable, from a subjective point of view to the management of the company.

On the other hand, the causes can also derive from equity holders, who have an active role in the firm and sometimes they could make a wrong choice of management, fearing high risks.

Other criticisms related to the business crisis are attributable to operators, sales force and the organization of the business.

Each crisis therefore results from different inefficiencies, weaknesses, errors and inability of the protagonists of the enterprise and this crisis can often be traced back to extraneous situations of the company structure: the reduction of the demand on the market of a certain product, the general rise in the prices of raw materials, free competition or market conditions within which the profits are minimal, the entry of a new competitor providing the consumer with the same products at a lower price.

In order to understand accurately the origin of a crisis it is preferable to adopt an objective approach, although the other causes should not be left out.

According to this perspective, Guatri[7] and Holla[8] adopt an objective frame and say that five types of crisis can be identified, in function of the causes:

1. ***<u>Crisis of inefficiency</u>***

   The crisis from inefficiency occurs when the result of one or more business areas is lower than that of the competitors.

   Usually, production is the area where these insufficiencies are found, in which the inefficiency can be attributed to the obsolescence of plants and machinery, to the lower level of ability and commitment of workers, for the wrong location of installations or for the overcapacity of staff compared to the real needs of production.

   Usually, production is the area where these deficiencies are found, in which the inefficiency can be attributed to:

   - the obsolescence of plants and machinery
   - the lower level of ability and commitment of workers,
   - the wrong location of installations
   - the overcapacity of staff compared to the real needs of production.

   The identification of such inefficiencies could contribute to possible elimination of them and the avoidance of the crisis factors.

   The state of inefficiency not only invests the productive area, but it can involve also other functions, including the commercial one.

   In this case, inefficiency is generally determined by the existence of a disproportion between the different categories of marketing costs and the results generated by them, such as an investment in advertising carried out inadequately, which does not generate sufficient results.

   In addition, as far as the organizational system is concerned, we can identify some inefficiencies that have particular importance: the lack of programming and control, weaknesses in medium/long-term strategic planning, the managers' behaviors, who are more interested in their advantages and prestige.

[7] Guatri L. "Crisi e risanamento delle imprese", 1986, Giuffrè

[8] Holla Katarina et Al, "Crisis management", 2018, Itechopen

When such inefficiencies become entrenched, businesses tend to assume and develop a security attitude: an organization that in the past has worked well won't be renewed.

The financial area could also be the cause of major business crises, whose inefficiencies are given by the difference between the higher costs of equity compared to competing firms.

Inefficient company acquires resources on the credit market by incurring a higher cost than the competitors, caused by a contractual weakness of the company or more simply, to the incapacity of the employees of the financial department.

2. ***Crisis of overcapacity/rigidity***

   One of the most common causes that can provoke the crisis of a company is excess production capacity, consequently the impossibility of adaptation in the short term end of the fixed costs that derive from them and which are partly wasted.

   This may result by the fact that the firm is no longer in a position to control the market to which it applies, in particular the lack of attention to its developments results in the unattractiveness of the products offered and therefore it is unable to withstand the weight of competition.

   The most frequent situations that cause the overcapacity are:

   - *Overcapacity caused by a sustained reduction in global demand volume for the company*. This situation occurs when the production capacity is higher than the possibilities of market absorption and it has its foundation in one overcapacity of the entire sector, attributable to different factors such as forecasts errors, change in consumers' tastes that drops global demand, which drop domestic demand, overcapacity determined by high exit barriers and the research of economies of scale.[9]

[9] P. PICIOCCHI, "Crisi d'impresa e monitoraggio di vitalità - L'approccio sistemico vitale per l'analisi dei processi di crisi" 2016, G. Giappichelli

The negative consequences of sectoral overcapacity are reflected on the individual companies: the strongest companies react by increasing their market share, reducing the effects of the decrease in global demand in the sector; conversely, the weaker ones suffer a double negative effect because the reduction of the sector's global demand, it is added also the decrease in the relative market share.

Basically, the real crisis only occurs if the reduction of the demand creates inability to adjust the company's costs compared to the different revenue level. The cost adjustment process is a key moment, which can reduce or increase the probability of decline.

- *Overcapacity crisis linked to market loss*.

  In this case the phenomenon only affects a single company, not the entire sector, and it is attributed to particular internal weaknesses of the company, which therefore appear more dangerous.

  The best solution is the rapid contraction of costs, especially those of discretionary nature, but this is not always possible due to the difficulty of admitting the existence of serious anomalies.

  Due to the gravity and scarcity of solutions, the situation described often lead to the firm's disruption.

- *Rigidity crisis linked to a development of lower than expected revenues, against pre-established fixed investments for larger size.*

  The company, based on an expected demand development, would have planned new production capacity in order to increase market share, but various factors did not have the expected increase.

  In this case, the company has to wait for the time necessary for the return of the natural development of the demand, while suffering the associated losses to the hostile situation,

or to attempt new aggressive market policies aimed to improve the market share, in the short term.
The choice between the two solutions depends on the comparison between the expected losses of the first case and the costs and risks associated with the second one.

- *Rigidity crisis originating from cost increases not offset by chosen price changes subject to public control.*
  It is a typical inflation period situation, when costs go up and the adaptation of revenues is difficult for bureaucratic or political reasons.

3. ***Crisis from product decay***
The crisis from decay of products finds is understood as the reduction of positive margins below the limit necessary to cover the fixed and common costs and to ensure a sufficient level of profit.
This situation is often linked to the fact that an entrepreneur offers a mix of products that is no longer effective and unable to stand up to competitors.
This situation of instability will lead the company to an inefficiency condition through imbalances in the first phase and subsequently huge losses. As tools for analyzing this type of crisis, the contribution margin and the gross margin are the most suitable because they both put in relation the selling price of a specific product with its cost.
Sometimes the decay of products is triggered by errors related to their marketing and more generally, to the commercial policies implemented.
The most common mistakes could be:
- an incorrect product mix
- the fall of the image of the company or the brands
- errors in the choice of markets
- the market niches in which the company operate

- the shortcomings and excessive costs of the distribution channels and sales networks.

In this tough situation, the firm may find itself completely without liquidity and in a growth net financial debt at the time that it needs to have adequate resources to start a production reconversion process.

4. ***<u>Crisis due to lack of innovation and planning</u>***

Not preparing the bases to face the future, determines a gradual deterioration of the company's ability to produce income and its capacity to face difficulties.

The lack of planning concerns the inability to adapt structure and strategies to environmental changes.

Companies usually operate taking into account only the immediate commitments, having as the achievement of short-term results, leaving aside the conditions to face the future achievements. Connecting to Riccardo Passeri[10], these enterprises are often unable to set precise objectives for their action and to verify the compatibility between available resources and the objectives.

The inability to plan generates problems also on a social level because, not being able to support the staff who couldn't feel motivated to achieve a common goal.

The staff will not be interested in different business projects and they will participate only with little commitment. During a crisis, most of the companies have problems in programming, due to the inability to be able to define a guideline, necessary to establish and expand the various business objectives. Another very common factor is the lack of innovation and ideas, where in smaller companies the creative concept is based only on the individual entrepreneur's abilities.

In larger companies the input of ideas is based on the research process, investment in research and development.

[10] Riccardo Passeri: "Finanza straordinaria per la crisi d'impresa", 2009, Franco Angeli

In the basis of innovation process, where an environment is subject to important
fast changes and rapid transformations, effective research represents a condition necessary for the survival of the enterprise.
If the research process and development leads to negative results in the short term, in the long term it is an indispensable condition for preserving the company's reality[11].

5. ***Crisis from financial imbalance***

These types of crises arise from several events: the scarcity of own resources (the majority comes from third parties), persistence of short-term debt, inability to liquidate the various current assets and the inability to cope with the various short-term loans. This is an imbalance between revenues and exits that does not allow acquiring resources in time necessary to ensure the running of activities.
Basically, financial imbalance often leads to economic losses due to significant amount of borrowing costs caused by heavy indebtedness and its high costs. In reality, financial imbalances can have different roles: as a secondary factor of an already existing crisis and contribute to aggravating and accelerate losses and decline.

"A crisis is a low probability, high consequence event that is capable of threatening organizational legitimacy, profitability and viability"[12] so we understand that the corporate crisis is a phenomenon caused by the manifestation of multiple factors that occur simultaneously, in relation to different causes.
During the initial phase we can find several deficiencies related to the process of innovation and decay of the various products.
These aspects represent the origin of the inefficiency processes and, during the second phase, they amplify the pathological condition factors such as rigidity

[11] P. PICIOCCHI, "Crisi d'impresa e monitoraggio di vitalità - L'approccio sistemico vitale per l'analisi dei processi di crisi", 2016, G. Giappichelli
[12] Shrivastava P. & Mitroff, "Strategic management of corporate crisis"., 1987, Columbia Journal of World Business

and different financial imbalances. In most cases the first critical factors attributable to the crisis are difficult to identify and the management become aware of the failure only when the firm is generating huge losses.

The process of analyzing and researching the symptoms of the main purpose of the crisis is done to eliminate or reduce the various factors of inefficiency even before they lead to losses.

The prevention process is the only alternative to avoid threats and the recognition of the condition of instability.

The identification of the various symptoms, tracing back to the causes, is a fundamental condition for dealing with them.

ELEMENTS OF THE CRISIS

Probably the most effective description of the financial health of business firms was written and developed by Lau[13]. Instead of the conventional studies, he used five financial aspects to establish the continuity of the company financial health:

1. Financial stability
2. Omitting or reducing dividend payments
3. Technical default and default on loan payments
4. Protection of the Bankruptcy Act State
5. Bankruptcy and liquidation

The first stage is characterized by reduced productivity, reduction on turnover, inadequate coverage of financial needs, excess inventory. It is evident that a crisis faced at this level is more remediable, because irreversible effects have not yet been produced.

However, as said before, the difficulty lies in being able to identify it because these symptoms do not have an evident manifestation.

[13] Lau, A., "A five-state financial distress prediction model", 1987, Journal of Accounting Research

The second stage is related to the maturation, initially characterized by profits' reductions and subsequently by the presence of economic losses with consequent gradual depletion of company resources.
It is an erosion process where we can see: the lack of liquidity, the reduction of resources for corporate functions, the absorption of reserves and equity capital, to cover the losses that gradually arise.
The third stage is insolvency, understood as inability to cope with regularity to the obligations assumed. In this phase some tensions begin in the relationships with credit institutions, suppliers and employees.
Insolvency can be temporary or permanent: in the first case the financial imbalance is mitigated by the residual balance of assets of the firm, from the positive equity, and favorable economic prospects, including restructuring measures.
When insolvency is not remediable, and becomes definitive, the company enters in a situation of instability.
Then, in the fourth stage we consider the protection of the Bankruptcy Act State, an act that provides a series of guidelines useful to give companies protection from creditors.
As a last stage we have bankruptcy and liquidation. In this last stage the crisis generates a series of external effects: loss of image and credibility, flaking of the financial structure, loss of customers, withdrawal of bank credit lines.
In fact, in this phase the company no longer exists: the production process has already been done and begins the liquidation phase conducted by creditors.

According to Mitroff and Pearson[14], operationally all crises pass through five distinct phases.
Considering all these aspects, it is essential to identify the different phases of any type of crisis and the tools and skills that are required to effectively manage an organizational crisis during its different steps.
Phase 1: Signal Detection.
The sensing of early warning signals that, in advance of the crisis itself, announce its possibility of occurrence.

Phase 2: Preparation and Prevention.
Doing as much as possible both to avert crises and to prepare for those that do occur. It involves careful and continual probing of operations and management structures for potential "breaks before they are too big to fix".

Phase 3: Damage Containment.
Intended for the purpose of keeping a crisis from affecting uncontaminated parts of an organization or its environment.

Phase 4: Recovery.
Involves the implementation of short- and long-term business recovery designed to help resume normal operations. These include the identification of the basic services and procedures necessary to conduct minimal business, assignment of related business-resumption accountability and designation of alternative operating sites.

Phase 5: Learning.
Concerned with the examination of critical lessons learned from the organization's own experience and from the experience of other organizations.
Once the main causes of a state of crisis have been individually examined,

[14] Mitroff, I. & Pearson, "Crisis management", 1993, Jossey-Bass.

it is important to clarify whether these act simultaneously or independently.
It is unusual to find only a single cause that generates a state of insolvency so we need to fix different aspects in the firm's operations.

The reversibility of a crisis is the possibility of regenerating a balanced composition of the company, with the elimination of operational malfunctions, resolving any passivity of capital and filling any business deficiencies.
We can identify two levels of reversibility:

1. Objective, referred to the body enterprise as a whole
2. Subjective, referred to the entrepreneurial body or to the structure owner.

For example, a form of subjective reversibility occurs in a weak ownership structure, unable to withstand the financial needs necessary for the sanitation.

Tools to identify the crisis: The financial statements

The literature presents the financial statements as the documents drawn up, by the directors of a firm at the end of each administrative year in compliance with the accounting principles of the legal provisions and the administrative practice.
The financial statements have an informative function, as it aims to provide, to the members of the company and third parties, the information regarding the performance of the various part of business management, at an economic, financial and equity level.
It is a valid information support to be used as a starting tool for carrying out further company's analyses to understand the capital solidity, the profitability and the whole financial situation.
However, the results that emerge from the application of the statutory rules or accounting conventions, do not offer clear information, sufficient to support the decision-making processes of the management and the analyses done by the actors outside the company.
Then, there are also several occasions of "distortion" in the drafting of the financial statements that create strong anomalies between the accounting

situation and the existing one.
These distortions are appropriately kept hidden on the financial statements, particularly if the company is in difficult conditions.
Management activity, in fact, will be aimed internally to recover productivity and reorient the management towards desirable levels of efficiency and effectiveness, and in the effort aimed to maintain the credibility and trust of external actors, possibly obtaining new resources to finance the necessary remediation actions, hiding the existing bad situation that can lead to bankruptcy.
In the effort aimed to maintain the credibility and trust of external actors, management activity will be aimed internally to recover productivity and reorient the management towards desirable levels of efficiency and effectiveness, possibly trying to obtain new resources to finance the necessary remediation actions while hiding the existing bad situation that can lead to bankruptcy.
Indeed, management or the entrepreneur will attempt to mitigate the signs of deteriorating conditions of the company's health.
The financial statements composed, will signal with remarkable delay, the elements and the critical state of the company, not presenting to a first reading, apparent negative symptoms, hidden and cleverly confused among the company's strengths or, more seriously, manipulated by the editors.
Therefore, all the diagnostic analyzes carried out with more or less derivative instruments directly from the balance sheet data, are useful for a first-stage analysis but they must take account of these possible distortions and interpretative limitations.
Excluding a possible distortion, facing corporate crises implies the need to set up a control system aimed at preventing and diagnosing it, based mainly on the quantitative analysis of the balance sheet and the reconstruction of the cash flows.
The diagnosis of weaknesses and causes which may have generated the state of crisis cannot be separated from the careful analysis of the economic, equity and financial situation of the company that comes from the items of the balance

sheet and income statement properly reclassified.

The reclassification of the financial statements is, in fact, a procedure which permits the company to highlight on the financial statement data, the financial, equity and income aspects and calculate different numerical indicators, capable of objectively evaluating characteristics such as efficiency, profitability, liquidity, capital solidity, development and growth capacity of the company, along with any malfunctions and critical situations that can jeopardize the stability and the balance of the company itself.

It should be noted that the reclassification, as well as the valuations of the financial statement items, refer to economic entities with an operational continuity.

In fact, when it is assumed that the business activity is destined to cease (dissolution of the company or a procedure insolvency) the perspective of the editor of the financial statements changes: due to the sensitive situation, the classification and the financial statements presented take a different form and the evaluation of the balance sheet items acquires more importance to better express the financial statements elements.

Chapter 2

PREMONITORY SIGNS OF A CRISIS

The decline of a company is characterized by a series of phenomena which, if promptly addressed, may not cause irreparable damage to the company system.
The crisis can follow different opposed development trajectories, characterized by a decline path that finds its natural conclusion in disruption, as presented in the previous paragraphs, or characterized by a growth path aimed at a turnaround.
The turnaround is a rethinking, reinvention and a redesign of the company through a reform of a strategic program of actions for corporate renewal and restructuring, especially during times of crisis that can lead to an opportunity of relaunch and success of the firm.[15]
Although according to the latter interpretation the crisis may represent a chance of a restart, corporate finalism requires to companies to undertake new growth paths without compromising long term economic equilibrium.
For this reason it is important and essential that the company put in place monitoring and control mechanisms that monitor actions implemented, which evaluate the adequacy of the performances achieved and which allow to promptly identifying the needs for change imposed from the reference environment, facing threats and seizing opportunities from it.
The control function, in fact, can be defined as a system of tools, processes, roles and solutions aimed at enforcing the guidelines set, through individual and organizational behaviors in line with the achievement of business objectives.
This purpose is pursued through the use and empowerment on target parameters.[16]
Management control, together with strategic planning, can be interpreted as a response to the uncontrollability of events. In particular, these processes

[15] A.Foglio, "Turnaround: Ripensare e reinventare l'impresa", 2009, Franco Angeli
[16] N. Merchant, "Il controllo di gestione", 2001, Mc Graw-Hill, Milano

support decision making in the face of risky conditions uncertainty and complexity both inside and outside the company.[17]

The definition of an effective and efficient control system is a prerequisite necessary to achieve the objectives pursued and ensure the survival of the company.

Long-term strategic plans must be translated into objectives and action programs having a limited time horizon and these programs have to be monitored and controlled, to verify if they are in the correspondence with what has been set.

Basically, it is necessary to ensure that management takes place in accordance with what has been defined in the strategic planning.

Once obtained, these results are confronted with the objectives and the signaling of any corrective actions.

As already mentioned, the fundamental objective of the function of control, is to induce individual and organizational behavior balanced with the achievement of corporate objectives.

Further objectives are those of constantly monitoring the progress of the activity, and at the same time evaluating the managerial performance to coordinate the various activities both horizontally and vertically.[18]

Implementing control processes requires the use of technical support equipment, called directional accounting, which allows detection, comparison, analysis and performance evaluation.

The tools used for the control process are various related to the analytical accounting, the accounting system reporting and the analysis of variances.[19]

In relation to the benefits associated with this mechanism, we have to underline its critical points: short-term orientation, rigidity and the risk of actions and decisions, taken by managers, only to reach results in line with those forecasted, focusing only on some critical variables, leaving aside other

[17] A. Riccaboni, "Manuale del controllo di gestione", 2005, Ipsoa.

[18] F. Amigoni, "Misurazione d'azienda", 1995, Giuffrè.

[19] Process that identifies and analyzes the discrepancies between the preventive and final results recorded, respectively with the budget and the analytical accounting.

important factors related to the company worth. Aspects that can negatively influence the efficiency of the operations.

DIFFERENT MODELS

Identifying the symptoms of a corporate dysfunction, and tracing them back to their respective causal factors, represents an essential element to be able to promptly adopt suitable strategies for facing a crisis.
Therefore, to identify the state of crisis, the instruments in support of the analyst, in relation to different needs and situations have utmost importance.
In each situation it is obviously necessary that the resources used are reliable, sustainable and are able to provide the expected answers quickly.
In general, subjective, objective or mixed techniques can be distinguished.
Among the mixed techniques considerable importance is given to the financial statement analysis referring to the processing of the data and the interpretation of the resulting values.
This methodology is based on the calculation of specific indicators that allows the monitoring of the company's state of health effectively and in a rather formalized way, to identify the strengths and weaknesses of the organization, to investigate any imbalances and inefficiencies of the system.
This tool is capable of providing useful ideas for the diagnosis of potential crisis factors.
Moreover, the analysis is done in advance to understand the values achieved, with the aim of predicting and preventing crisis situations.
During these situations, the understanding of values taken from the financial statements, suitably reclassified, support the identification of the causes and the activation of targeted turnaround processes.
An “Ex post” analysis could identify any liability of the directors and assess the awareness of the state of insolvency by third parties for possible revocations, but nothing related to the prevention.

Statistical Models

The first forms of prediction models were conceived and processed the banking system crisis of 1929.

In this difficult context it became particularly important, for financial intermediaries to have reliable assessment tools which were accurate and timely available for customers analyses as well. The aim was to obtain reliable information on the future evolution of companies' performance to push towards the search for investigation tools that are able to simplify and integrate the knowledge acquired.

Although such tools have been conceived to support the awarding decisions of the bank credit, they can also be applied in the operational reality of numerous professional contexts assuming a key role even in the perspective of use in the company.

Statistical insolvency forecasting models can be defined as a coordinated set of independent variables, statistical reports and variables related to the employees.

The latter express a forecast that descends directly from the values assigned to the input variables, once the model has been estimated, once, that is that they have been defined the relations in it includes[20].

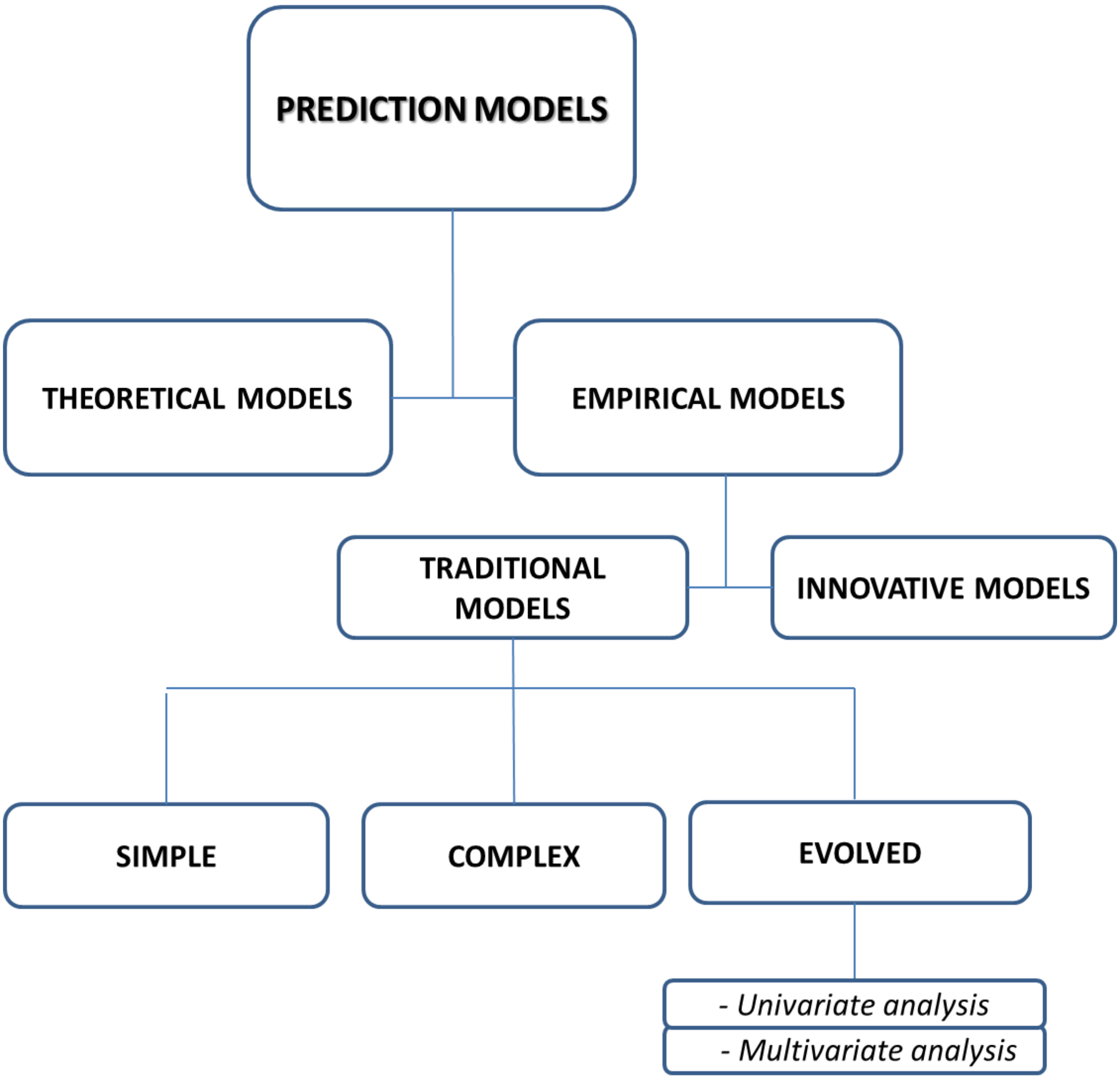
These instruments are obtained mainly by the appropriate combination of the traditional balance analyses and particular mathematical and statist methodologies.

Most of the strengths of such models are related to the introduction of statistics because it guarantees models of forecasting with a reduction of the subjective component and simplifies its application.

In essence, a model consists of a number of independent variables (financial statements indicators) appropriately linked through the application of particular mathematical-statistical techniques.

[20] G. Mariani, "Dalla crisi alla creazione di valore: il processo di Turnaround", 2012.

Joint or separated examination of these parameters allows to obtain a simplified representation of a phenomenon characterized by a high degree of complexity.
Specifically, in the context of crisis diagnosis, these instruments have the task of synthesizing effectively the articulated reality of the company system in conditions of economic and financial hardship[21].
For this purpose, the instruments used are numerous and they can be generically distinguished in theoretical and empirical models.



[21] A.Danovi e A.Quagli "Crisi aziendali e processi di risanamento", 2012

The theoretical models, developed in the context of studies aimed at analyzing the failure, use deductive logic that starts from formulation of purely conceptual considerations, leaving aside links with the real context in which the investigated phenomenon occurs.
Although theoretical models are instruments characterized by an indisputable methodological rigor, they have actually found limited diffusion in the operational field since they have proven to be scarcely reliable in detecting precisely and in time the warning signs of corporate crisis.
The limited reliability is a direct consequence of the abstraction of the hypotheses considered for the elaboration of the model, which involves as object of the analysis, a phenomenon that in the reality has very limited possibilities of feedback.
As for the little timeliness, the reason is that theoretical models concentrate on predicting the terminal phase of the degenerative approach of balance, characterized by illiquidity.
To overcome the lack of the scarce ability to anticipate the events of theoretical models, we use the empirical models; the latter are elaborated following an inductive approach (a bottom-up approach).
Empirical models have an approach that allows the transition from the particular (a sample of enterprises) to the general, through the application of the model built on the sample, in a context much wider.
However, a distinction must be made, empirical models are particularly numerous and characterized by their different degree of complexity; they can be distinguished into traditional, innovative and evolved according to the degree of difficulty of the elaborations that become necessary.
The models on which we will focus are the so called evolved models, which involve as we will see, the application to the method of financial statements analysis, the one-dimensional statistical methodologies or multidimensional from which the terms of univariate and multivariate analysis.[22]

[22] F. Poddighe e S. Madonna, "I modelli di previsione delle crisi aziendali: possibilità e limiti", 2006

Traditional models

Traditional models can interpret these series of signals that occur within the company and only take macro-economic aspects into account.

The most common signs are:

- loss of profitability
- decrease in cash flows
- loss of market share
- reduction in sales
- loss of important managers and highly qualified personnel
- strong increase in debt and strong reduction in liquidity.

The loss of profitability is the clearest and most immediate signal and often leads to a reduction in investments as it alters the financial structures and if the managers take time to introduce adequate measures, the decline can be very fast. The presence of the business crisis is diagnosed through the preliminary detection of the presence of repeated and significant problems, through the study of specific indicators of performance.

One of the limitations of methodologies such as the analysis of financial statements by indices, is represented by the impossibility of attributing, in an objective way, weights to several variables taken into consideration and related to each other.

For this reason, as mentioned above, we talk about univariate analysis and multivariate analysis. Univariate analysis involves the application of statistical methodologies one-dimensional to the financial statements analysis technique, considering individually each of the variables examined in the model.

This statistical methodology answers the following questions:

1. In a sample of truly existing companies, what are the indices that have greater expressive ability in analyzing corporate crises?
2. Is there a value assumed by these indicators, in the periods prior to failure, which allows to diagnose the crisis in advance?

The first significant example was the Beaver study (1966)[23]. He was the first scholar to conduct a statistical analysis that gives to indices a "predictive ability", that is, a signposting ability to diagnose a crisis situation in advance.[24]
Beaver relied on a sample of 158 companies, half of which were in difficulty and the other half in good financial condition.
Each "healthy" company was similar, by sector and amount of capital invested, to an "insolvent" company.
Using the financial statements of these companies, published in the previous 5 years, a sample of thirty ratios was applied to all these firms differentiating them using two techniques: the analysis of profiles and the critical value of the indices and the reclassification error rate.
By analyzing the indices, Beaver separated some indices that had a different trend between healthy companies and the insolvent ones, insolvent for two or three years already.
Then, for each index he has determined the cut-off point, the value at which the error of classification between the two groups is minimal.
The classification error allows to define in quantitative terms the usefulness of the index in predicting the state of crisis: in fact, with a minimum error will correspond a greater signaling capacity of the indicator under consideration.
The contribution of Beaver's research is important, as it not only poses the bases to define an objective methodology that allows to clarify which are the indicators, but also which indices we should consider most, in relation to the purposes, to reach the analysis of the health conditions of a company.
However, the one-dimensional statistical approach presents a not negligible limit that is the lack of consideration of the interdependence existing between the different indices considered as a reference.
But to fix this problem, we can use the multivariate analysis.
The multivariate analysis applies to the balance sheet technique of multidimensional statistical methodologies, where it is particularly significant the so-called discriminant analysis.

[23] William H. Beaver ,"Financial Ratios As Predictors of Failure ", 1966
[24] G. Mariani, "Dalla crisi alla creazione di valore: il processo di Turnaround", 2012

Applied in the context of business crisis prediction models, discriminant analysis expresses if an enterprise belongs to the population of solvable enterprises or to population of insolvent companies.
In determining the parameter that differentiates these companies, we do not rely on a single indicator of balance sheet, but to a statistical index ("the score") which summarizes various adequately weighted accounting ratios.
In other words, the value of the score comes from the definition of a function, called a discriminating function, whose independent variables are constituted by financial statement indicators.
The discriminating function that derives from it takes on the following configuration:

$$Z = a_1 x_1 + a_2 x_2 + ... + a_n x_n$$

Where **Z** is the discriminant value (the score), $\mathbf{x}_i$ are the independent variables/discriminants and $\mathbf{a}_i$ the weights assigned to them.
So, for every business we have a synthetic judgment, expressed by the variable Z, a linear combination of the initial indices.

From the comparison of the score with the cut-off point, that is the critical point of the function, it will be possible to define whether the company is healthy or potentially in crisis. Obviously the first thing to do is to select the discriminants variables to use, for the calculation of the score.
The choice is made not only on the basis of their statistical significance but also on their descriptive and informative capacity in relation to the phenomenon being analyzed.
It should be remembered that, given the bases of multivariate analysis, it is necessary to evaluate the discriminatory and predictive power of the entire function and therefore, evaluate carefully the relationships between the different selected variables.
Later it will be necessary to determine the weighting coefficients whose

function is to increase the differences between the two distinct groups of companies and the value of these parameters will be determined on the basis of the discriminatory capacity of each input variable.
Thus, the model conceived is predictive, as it is capable of anticipating the future state of insolvency of companies with similar characteristics of those in examination.

Altman's Z-Score

The best-known model to be born from the combination of traditional balance sheet analysis and multivariate discriminant analysis is Altman's Z - score. Altman (1968) made strides by developing a multiple discriminant analysis model called the Z-Score model[25].
It is the pioneering work and the most significant in terms of results achieved and still today his Z - score represents a well-recognized model, valid and always at the center of investigations in the context of crisis forecasting.
Professor Edward Altman was the first scholar to come up with a rigorous and methodological accurate model, aimed at predicting the insolvency of a company.
In his study, presented in 1968, the champion examined was of 66 medium-large companies in the manufacturing sector.
To each of the 33 bankrupt companies corresponds a company in physiological conditions having the same characteristics, by size, sector of activity and geographical area.
For the first group the accounting prospectus refers to the five years preceding the bankruptcy judgment and for healthy companies were collected and analyzed the data of the relative financial statements in the same five-year period examined for the "failed" combinations.
Thus, the model identifies 22 indicators with selected forecasting potential, in relation to their popularity in literature and considered the role of primary importance that they covered in other studies.

[25] Edward I. Altman et Al, " Financial Distress Prediction in an International Context: A Review and Empirical Analysis of Altman's Z- Score Model", 2016, Journal of International Financial Management & Accounting

The author preferred to proceed to a further skimming of the indicators in order to obtain a limited number but maintaining a high explanatory and informative power for the purposes of the study.

This step took place on the basis of the following criteria:

- *The statistical significance of each alternative discriminating function, including the definition of the contribution that each quotient makes to the linear combination;*
- *The correlation between the relevant variables;*
- *The predictive accuracy of the various alternative functions;*
- *The subjective assessments of the analyst.*

Therefore, five of the initial 22 indicators have been selected based on the idea that they are characterized by the greater information profile for the purposes of the forecast analysis of states of failure.
The variables included in the model are 5 indices that represent profitability, debt liquidity and the level of solvency of the company.
The logic that emerges from the variables inserted jointly in the model is that an unbalanced financial structure and a poor management efficiency act in a worse sense on the profitability, which in turn produces its effects on solidity, liquidity and operating conditions of the company, producing a vicious circle that contributes to generating a crisis[26].
Having identified the 5 indicators, the independent variables of the function, the next step consists in defining the weighting coefficients.
For each variable, a weight is defined which allows to further amplify the differences between companies in normal conditions of equilibrium and those in a situation of instability already highlighted by the financial statement indicators included in the model.

[26] G. Mariani, "Dalla crisi alla creazione di valore: il processo di Turnaround", 2012

The final configuration of the model (Z-score bankruptcy model) was the following:

$$\mathbf{Z = 0{,}012\ x_1 + 0{,}014x_2 + 0{,}033\ x_3 + 0{,}006x_4 + 0{,}999x_5}$$

*x_1,x_2,x_3,x_4 in percentage

Where:

Z : It is the indicator of health of the company;

$\mathbf{X_1}$: Net working capital/ Total Assets, considering the company, it measures liquid assets

$\mathbf{X_2}$: Retained earnings/ Total Assets, considering the company's age, it measures profitability

$\mathbf{X_3}$: Earnings before interest and taxes (EBIT)/ total assets, it measures operating efficiency apart from tax and leveraging factors.

$\mathbf{X_4}$: Market value of equity / book value of total liabilities

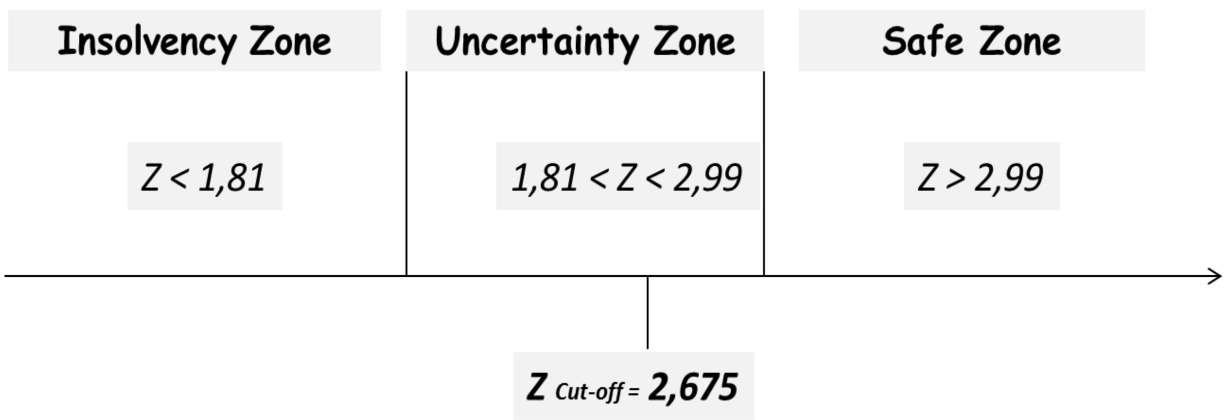
$\mathbf{X_5}$: Sales / Total Assets, it refers to a standard measure for total asset turnover

For the application of this predictive tool it is sufficient to solve the equation substituting the independent balance sheet values assigned for the company examined. The result obtained, which takes the name of "the score", must be compared with the threshold parameter also known as cut point.

Only from this comparison, the companies examined can be qualified as healthy or problematic.

The threshold value was defined by the author, not as a half sum of the Z of the two groups, but by the observation of classification errors; the cut - off was thus determined considering the point at which the judgment of the classification is minimal, at 2,675.

Compared to this value, healthy companies are the firms that present a higher score.
In the other hand, the companies with a score below this threshold number, must be considered insolvent.
In this way, with reference only to the cut-off point, two areas are configured in which the companies are qualified as healthy or in crisis.
In addition to the cut - off point, considering errors in classification, the author defined 2 additional threshold values.
An area of values has been identified: the so-called gray area or area of uncertainty, inside of which are placed the companies considered uncertain, for which further information should be collected and more detailed investigations carry out. This area was included between two parameters that delimit its boundaries: 2.99 for the upper limit and 1.81 for the lower one; only companies with a value of the discriminant function above 2.99 can be considered a zero risk of insolvency.



Once the model was built, Altman tested its predictive ability implementing it on another sample consisting of 25 declared insolvent companies and 66 other "not anomalous" companies, whose financial statements had reported significant operating losses during one of the reference years.

The results were encouraging, given the fact that 96% of the insolvent firms were correctly classified.
The Z score discuss, as said before, was created specifically to report the symptoms of listed company crises belonging to the manufacturing sector.
The need to extend the application of this model, has prompted the author to make some adjustments to be able to use the model in forecasting company failures also for not listed company and in companies that do not belong to the manufacturing sector.

In case we want to evaluate an unlisted company, the variable X_4, that is the relationship between the market value of equity and the book value of the debts must be changed; at the market value of equity is replaced with the book value of equity. Considering that, by modifying both the sample and the variables, it is necessary to change the weights that lead to a new configuration of the model:

$$\mathbf{Z' = 0{,}717X_1 + 0{,}847\ X_2 + 3{,}107\ X_3 + 0{,}420\ X_4 + 0{,}998\ X_5}$$

Considering that the studies show an increase in the possibility of making mistakes, Altman expands the area of uncertainty by reducing its lower boundary from 1,81 to 1,2376.
The second modification made to the model derives from the consideration that the Z - score was developed by studying a sample of companies operating in the manufacturing sector and its application in different industries requires some changes.

In this case, the adaptation process affected the variable X_5= Sales / Total Assets; this variable was found particularly sensitive to the influences of the sector in which the company operates.

FINANCIAL STATEMENT ANALYSIS

The financial statement analysis can be presented in two different forms: static, based on the study of indices, and dynamic, called flow analysis; the latter is an investigation technique aimed at identifying the areas of business management that have produced and absorbed cash flows (sources and loans).

So, the main methods adopted are:

1. The analysis by indices
2. The analysis by flows

The analysis of indices allows, through the understanding of the accounting indicators, to formulate a judgment on the economic, financial and equity aspects of company management.
It must be kept in mind, that an isolate indicator does not have a particularly significant meaning because a correct financial statements analysis must be carried out by comparing accounting situations referring to at least three consecutive years in order to identify what are the trend lines of the company being analyzed.
It is possible, in this way, to obtain valid information on the improvement or deterioration of the health of a company.
If, in addition, to carrying out a temporal analysis, a different analysis could be done (comparing the indicators found with those of competing companies) it is also possible to discover information on any improvements or worsening of the company's competitive position.
The flow analysis, on the other hand, examines the dynamics of loans and sources of financing with the aim of assessing the continuous availability of suitable financial resources.
Given what has been said, the analysis of financial statements, and the documents attached, allows us to extract important useful information through which it is possible to understand the reasons that led to a specific result in the year, allowing, in part, to make rational predictions on the evolution of management.

The logical path through which an interpretation of the results deriving from the reading of the financial statements is reached, must include at least four phases[27]:

1. Reading the financial statements and assessing the reliability of the information it contains, by understanding the criteria used by the directors in defining the estimated items.
2. The reclassification of the financial statements.
3. The calculation of the indices.
4. The identification of the relationships between the different indicators in a unitary system perspective, in order to be able to reach a judgment on the management trend and possible future developments.

ANALYSIS BY FLOWS

A different tool commonly used to identify a crisis, starting from the economic and equity situation of a company, is the analysis by flows with the cash flow statement.

The cash flow statement is a complex tool, which allows to study and represent the monetary and financial dynamics of the company: the dynamics of the exchanges made by the company with the external environment, generating monetary and / or financial values.

The purpose of the cash flow statement is to associate the cash flow it produced or absorbed to each management area in order to identify the causes that produced the change in the net monetary position observed during the exercise.

The cash flow statement is not presented in the simple accounting and regulatory perspective, but as an operational tool, a real analytical and decision-making map, capable of representing the economic, financial and equity dynamics in a single prospectus, whether investigated on a historical basis, or developed in terms prospective (the report is more simply called the

[27] G. Mariani, "Dalla crisi alla creazione di valore: il processo di Turnaround", 2012

liquidity flow map)[28].

This analysis also attempts to explain why and how these financial resources have undergone a certain periodic variation, allowing timely diagnosis of any anomalous situations.

It presents and expresses results of particular significance.

In a normal situation, the cash flow from current ordinary operations should have a positive sign and a high impact on the global net cash flow, obviously the higher this value the more satisfactory the financial dynamics of the company will be , as monetary self-financing and all these self-generated revenues, are used for investments, to reduce the debts, to pay dividends to shareholders and to accumulate liquidity.

In a difficult situation, in which the current operational cash flow is negative and to plug the holes coming from the operational management, financial resources from other areas (divestments, new indebtedness, new contributions from shareholders, use of liquidity reserves such as the increase in the overdraft on the current account) are used.

For the cash flow of investments, a negative flow, although manifesting a use of liquidity, it can reveal an action of renewal or expansion of structural production factors.

On the cash flow from finance, the interpretation is a little more complex as finance is at the service operational management, so if the latter together with the investment area generates liquidity requirements, cash flow from finance should ensure adequate financial coverage.

"*Chew (1997)[29] states that the most used valuation models for determining a firm's market value are based on the discounted cash flow (DCF) method. Under the DCF method, the value of a business organization is obtained by adding the present value of future cash flows to be generated by the business organization's existing and potential assets.*

[28] Furio Bartoli, "Il rendiconto finanziario dei flussi di liquidità", 2008

[29] Chew, D. H., "Introduction: Financial innovation in the 1980s and 1990s.", 1997, The New Corporate Finance. McGraw-Hill.

Following the mathematical methodology adopted by Doherty (2000)[30], this relationship can be shown as:"[31]

$$V_o(E) = \sum_{i=1}^{no} \frac{K_o r_o}{(1+k)^t} + L - D$$

$V_o(E)$ is the value of business of existing assets

K_o the existing cash flow generating assets

r_o the expected rate of return on assets K_o

L the liquid asset

D the current debt

k the cost of capital

no a life time in years

Doherty (2000)[32] said that a firm can face lower values or can have reduced cash flows, because of one of these factors:

1. *"Destruction of existing productive assets: e.g. fire, storm and earthquake.*
2. *Transfer of value to third party: e.g. liability loss and credit loss.*
3. *Shock to the cost function: e.g. currency change, interest rate change and regulatory change.*
4. *Shock to demand: e.g. change in taste, currency change, interest rate change, regulatory change, new entrant to market and change in economy."*[33]

We should note that these factors are related to the different families of crisis identified in the previous pages of this paper[34].

For example, economic, informational and human resource crises can lead to shock to cost function.

The other two types of crisis, reputational and psychopathic acts, can lead to shock to demand and transfer of value to third parties.

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[30] Doherty, N. A., " Integrated risk management: Techniques and strategies for reducing risk", 2000, McGraw-Hill.
[31] M. Aba-Bulgu and Sardar ,"Corporate crisis and risk management" , 2007
[32] Doherty, N. A., " Integrated risk management: Techniques and strategies for reducing risk", 2000, McGraw-Hill
[33] M. Aba-Bulgu and Sardar ,"Corporate crisis and risk management" , 2007
[34] It is linked to page 9 of this paper

Natural disaster and physical crises are directly related to the destruction of existing productive assets.

Basically, the financial statement is an indispensable tool not to identify the state of crisis, but it allows the check the feasibility of the financial recovery plans by showing to what extent the company will be able to finance the capital needs linked to the predefined strategic objectives and to what extent it will be able to turn to the various sources of financing to cover the needs.

It is an important tool in the management of corporate recovery, since it highlights the areas that in the short, medium and long term generate and absorb cash, providing an articulated and effective summary of the information contained in the balance sheet and in the income statement, considering the different financing methods.

ANALYSIS BY INDICES

Liquidity analysis

Liquidity analysis is essentially based on the comparison between two aggregates: current liabilities and current assets both obtained by the reclassification of the balance sheet.

The aggregate of current liabilities expresses the amount of debts payable within the twelve months following the financial statements date, while the current assets represent the amount of investments which, probably, will be transformed into money within the same period.

Taking into account what has just been said, a firm can be defined in a good position if, at the balance sheet date, it is able to virtually repay the short term liabilities without compromising future conditions of equilibrium.

At first, liquidity analysis is carried out by comparing current assets with current liabilities.

Liquidity ratio= Current assets/ Current liabilities

The interpretation of the index takes on a significant value especially if it has negative values (less than 1), because in this case, the amount of the current assets is not sufficient to cover the maturing liabilities and any request for the repayment of short-term debts by the lenders could be satisfied through the disposal of a part of the fixed assets.

In this situation, future conditions of equilibrium would be compromised as the economic and financial position.

In general, the index should be greater or at least slightly less than 2, because crisis situations occur in companies with this index having values between 1 and 1.5, with high stocks of warehouse and characterized by a strong incidence of finished products.

This analysis can also be integrated through the calculation of the rotation / duration ratios, by the calculation of the average days of inventory, the average duration of trade receivables and the average duration of debts.

These indices provide useful information on the duration of the company's

working capital cycle or on the average number of days that pass from the moment in which the debts towards suppliers are extinguished up to the collection of credits by customers for the sale of products.
This indicator informs about the needs generated by the core business and, if its amount is relatively small, it can lead to the formulation of a positive opinion on the company liquidity.

Analysis of firm's solidity

A company is financially solid when the greater fraction of the capital employed come from patient investors: patient investors are shareholders, or those who do not expect immediate benefits; in addition, a company is solid when it can resist to unfavorable events. Solidity is understood as the company's ability to persist over time thanks to its adaptability to changing internal and external conditions, depending on a rational correlation between sources and uses, and with a reasonable degree of independence from third parties.
At first you can start with the analysis of the fixed assets cover indices, the class of indices that allows to evaluate how much a company is financially independent and its ability to cover the costs of investments with equity or with medium / long-term debt.

Coverage index = Equity/ Total Assets

If this index assumes a value equal to or greater than 1, it means that the equity completely finances the fixed assets, if we have a value lower than 1 then the company has external sources.
This latter case does not necessarily reflect a negative situation, provided that it is occurred with medium-long term debt.
It is appropriate to distinguish between the various hypotheses of values lower than 1, identifying as a very critical situation values lower than 0.33, critical situation with values between 0, 33 and 0.50, a financial structure that must be monitored for values around 0.70 and at the end values between 0.70 and 1 are considered to be on average.

The index includes also the capitalization index, or the so-called financial autonomy index:

Financial autonomy index = Equity/Total capital invested

It measures the financing of the company in its own rather than by third parties. This index may have values between 0 and 1.
The firm must have a minimum capital (therefore the index cannot be equal to 0) and it can also be financed only with equity (therefore the index can be 1).
The financial structure is however considered balanced when the index assumes values between 0.55 and 0.66; values between 0.33 and 0.55 are to be kept under control and in the end values of less than 0.33 are considered to be an expression of critical situation as they are significant of possible undercapitalization and lack of financial autonomy from which lot of difficulties in accessing credit, in the extinguishing of the liabilities and in the development could derive.
Linked to the financial autonomy index, we can find the debt ratio (leverage) which is given by the ratio between the capital invested and the equity, so the ratio between the capital of third parties and equity.
An increase in this index indicates an increase in the level of corporate debt: the index is evaluated positively for values lower than 3, while it must be considered dangerous for values higher than 5.
Financially, if we face a high value of this index, the company is perceived by potential creditors as very risky and the most immediate consequence is an increase in the remuneration required by those who bring capital which lead to an increase in financial charges.
Focusing on the sustainability of the debt, a further index is represented by the ratio of financial payables / sales revenues.
The amount of debt for a company becomes dangerous if it exceeds the volume of revenues generated.

The indicator can alternatively be constructed using the numerator to vary the debt in relation to the change in revenue, to verify the balance in the development of the two variables.[35]

Analysis of profitability

The main indices useful to understand the profitability of the company, and therefore for assessing its ability to remunerate production factors, creating wealth and maintaining economic balance, are ROE and ROI.

ROE= Net Earnings/ Equity *ROI= EBIT/Capital Employed*

The reason why ROE and ROI are selected as measure is due to the ROE uses net income as a benchmark in measuring profitability and ROI uses the EBIT. ROI is a ratio used to measure company's ability to generate profits from investing activities; then, ROE measures the company's success in generating profits for shareholders[36].
ROE expresses the profitability of equity, it is an indicator used mainly by current or potential venture capital investors to evaluate the convenience of investing in the company.
ROI instead focuses, as said before, on profitability.
The interpretation of this indicator is linked to the comparisons with the profitability of competitors, and to understand the temporal profitability trend.
ROI can be broken down into two additional indicators that allow to highlight the ways that can be used to improve or consolidate the core business profitability: the so called ROS and the investment turnover.
ROS expresses the profitability of revenues from sales, turnover of investments instead highlights the volume of activities that the company has managed with the invested capital.

[35] A.Danovi e A.Quagli, "Crisi aziendali e processi di risanamento", 2012
[36] S. Ichsani et Al, "The effect of ROE and ROI on trading volume, 2015

INDICES STUDIED BY NATIONAL COUNCIL OF CHARTERED ACCOUNTANTS AND ACCOUNTING EXPERTS

The National Council has been given the commitment by art. 13 paragraph 2 of the Crisis and Corporate Insolvency Code (Legislative Decree 12 January 2019, n.14, published on the ordinary Supplement to the Official Journal n.38 of 14 February 2019 - General series), which assigns to the CNDCEC the task of developing the crisis indicators necessary for the completion of the alert systems, introduced in the system with the delegated law
(19 October 2017, no. 155).
The CNDCEC[37] published a document, on 26 October 2019, explaining the beginning of a problematic company situation.
The document highlights that the predictive capacity of the indices was obtained through a selection process among tens of thousands of combinations, with tests that concerned all the companies with published ordinary financial statements, having regard to default events in the following three years[38].
It can therefore be inferred that the concept of "indicators" used by the code is wider than the concept of "indices" which instead refer to comparisons between economic, asset and financial values.
In particular, the standard prescribes that the CNDCEC, taking into account the national and international best practices, has to elaborate, at least every three years and in reference to each type of economic activity according to the I.S.T.A.T. classifications, the indices which reasonably suggest the existence of a state of crisis in the firm.
As explained in the previous pages, income statement , balance sheet or other financial elements that present imbalances in the business and in its activity, constitute crisis indicators.
Considering these aspects, through specific indices that show the sustainability of the debts, we can analyze the financial situation.
For example, in the previous pages we talk about the measure of the sustainability of debt burdens with the cash flows that the company is able

[37] Il Consiglio Nazionale dei Dottori Commercialisti ed Esperti Contabili
[38] Consiglio Nazionale dei Dottori Commercialisti e degli Esperti Contabili, “Crisi d’impresa gli indici dell’allerta”, 2019

to generate, the adequacy of its own resources compared to those of third parties, delays in payments etc.

All these elements constitute crisis indicators and significant aspects that need to be carefully analyzed but with different indices and indicators compared to those already seen.

Based on the regulatory framework briefly described, the CNDCEC has developed some indices that reasonably assume the existence of a crisis state of the company to be analyzed through a precise progressive hierarchical sequence.

Income, equity or financial imbalances constitute crisis indicators, compared to the specific characteristics of the company and the business activity carried out by the debtor.

Taking into account different aspects like the date of establishment and the beginning of the activity, the crisis is detectable through specific indices that show the sustainability of the debts for at least the following six months and business continuity prospects for the current year or, when the residual duration of the year at the time of the assessment is less than six months, for the following six months.

For these purposes, significant indicators are those that measure the sustainability of debt burdens with the cash flows that the company is able to generate and the adequacy of its own resources compared to those of third parties.

Also repeated and significant delays in payments are indicators of crisis, also on the basis of the provisions of the article 24.[39]

Indices are tools to detect income, equity or financial imbalances, related to the specific characteristics of the company and the business activity of the debtor, taking into account the date of establishment and start of the business[40].

It can therefore be inferred that the concept of "indicators" used by the code is wider than the concept of "indices" which instead refer, as from the examples contained in the first paragraph, to comparisons between economic, asset and

[39] Articolo 13, "Codice della crisi d'impresa e dell'insolvenza", (D.lgs. 12 gennaio 2019, n. 14)
[40] Articolo 13, "Codice della crisi d'impresa e dell'insolvenza", (D.lgs. 12 gennaio 2019, n. 14)

financial values. It is also an indicator, the repeated and significant delay in payments.

Based on the above considerations, the chosen model is to be considered a multivariate model, one of the traditional models explained in the previous pages. The selection of the indices was carried out by the CNDCEC, making use of Cerved's support for the elaborations and tests.

The analysis were done according to a robust scientific approach and as objective as possible, on extensive and representative samples of the field of application, to identify the combination of indices which, evaluated together, make reasonably assume the existence of a crisis state of the enterprise.

For the purpose of selecting the indices, the signals used in this way were taken into consideration in business practice and in the early diagnosis models of corporate insolvency examining fifty ratios attributable to the following management areas:

• Sustainability of financial charges and indebtedness
• Degree of capital adequacy and composition of liabilities by nature of sources
• Financial balance
• Profitability
• Development
• Indicators of specific delays in payments

The analysis was aimed at selecting the financial statements indices that appropriately combined, best identified a group of companies close to insolvency.

The selection phases can be summarized in two macro steps:

- Univariate statistical analysis of the indices, which allowed identification of the short list candidate indices for each area investigated.
- Multivariate analysis of the indices selected in the first step with alternative approaches, which has allowed the identification of signals which, when suitably combined, maximized the target.

From the statistical point of view, before the indices analysis, there can be incorrect reports caused by the wrong estimation of certain parameters,

complex to evaluate, or data influenced by the size of the confidence interval. We could find "false positives", companies whose insolvency is foreseen that in reality will not incur in the time horizon considered, or the second-rate error, the so-called "false negatives", companies whose crisis is not diagnosed but the firm will become insolvent.
The accuracy of a model corresponds to the ability to maximize correct predictions by minimizing the two types of errors.
Nonetheless, even if the accuracy of the errors is equivalent, false positives and false negatives obviously do not have the same impact in terms of consequences on the business system.
The choice to set the model by admitting fewer errors of the first or second type depend on the objectives of the model itself.

ANALYSIS

These are that indices that summarize and reasonably suggest the existence of a state of crisis of the company:

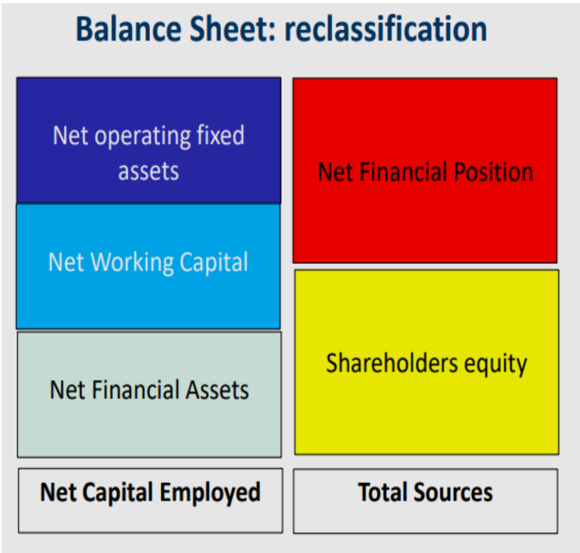
4. Negative equity
5. Six-month DSCR[41] less than 1
6. In the absence of the DSCR, jointly exceeding the thresholds below described for the following five indices:
    - Sustainability index of financial charges in terms of ratio of charges financial and turnover
    - Capital adequacy index, in terms of the ratio between equity and total debts
    - Liquid return index of the assets, in terms of cash flow and assets ratio
    - Liquidity index, in terms of the relationship between short-term assets and short-term liabilities term
    - Social security and tax debt ratio, in terms of the ratio between social security and tax debt and assets

[41] Debt Service Coverage Ratio

Negative Equity

"Negative equity is understood as the worst capital structure of companies in terms of guarantees of meeting the obligations acquired with their stakeholders". [42]

Equity becomes negative or falls below the legal limit due to the effect of operating losses and represents the cause of dissolution of the capital of the company (art. 2484, co. 4 of the Italian civil code).



Stockholders' Equity
Stocks Options Warrants
Redeemable Preferred Stock
Preferred Stock
Common Stock
Retained Earnings
Treasury Stock
Capital Surplus
Other Stockholder Equity

Total Stockholder Equity

Net Tangible Assets

Regardless of the financial situation, this circumstance constitutes an obstacle, until the losses have been settled and the share capital brought back at least to the legal limit.

The fact that equity has become negative can be overcome by a recapitalization. This index is directly detectable from the "equity" data (section of the "liability" of the balance sheet), from which we have to subtract the "receivables from shareholders for payments still due" and any dividends approved not yet accounted for.

[42] Sara Urionabarrenetxea et Al, "Negative equity companies in Europe: theory and evidence", 2016, Academic editor

DSCR (debt service coverage ratio)

$$DSCR = \frac{\text{Ebitda} - \text{Taxes} - \Delta\, \text{NWC} - \text{Capex}}{\text{capital expiring in the period} + \text{financial charges for the period}}$$

It is a crisis index that applies to all companies in the presence of a DSCR at six months less than 1.

The DSCR, in the most simplified version, is calculated as a ratio between the free cash flows expected in the following six months which are available for the repayment of the payables expected in the same period of time.

Any values of this index greater than one, denote the ability to sustain debts over a six-month horizon, while lower values reflect relative inability.

The DSCR can only be used in the presence of data deemed reliable by the supervisory bodies, according to their professional judgment.

The estimation of this data is the task of the management, through the use of adequate structures. The assessment of the relative adequacy is one of the duties of the management which is called upon to constantly evaluate which is the foreseeable performance of the management and whether there is financial balance.

Two approaches based on the treasury budget can be followed for the calculation of the DSCR.

1st approach

The DSCR derives from a treasury budget, drawn up by the company, which represents the cash inflows and outflows expected in the following six months. From this budget, the numerator and denominator of the index are obtained:

- in the denominator the exits contractually foreseen for repayment of financial debts (towards banks or other lenders) must be summed. The reimbursement is intended as payment of the contractually agreed principal amount for the following six months.

- the numerator all the resources available for debt service must be added up. More precisely they are calculated as the difference between cash inflows and cash outflows forecast for the next six months, including the initial cash deposits. Repayments of debts are not considered as they are placed in the denominator.

2nd approach

The calculation is made calculating the ratio between the total free cash flows, at the service of debt, expected in the following six months and the flows necessary to repay the non-operating debt that expires in the same six months.

To the numerator, made up of flows serving the debt, we must add:

a) Operating flows serving the debt. They correspond to the free cash flow from operations (FCFO) of the following six months, determined on the basis of the financial flows deriving from the operating activity by applying the OIC 10 principle[43], by deducting from them the flows deriving from the investment cycle.

b) Initial cash and cash equivalents.

[43] The accounting standard OIC 10 has the purpose of regulating the criteria for the preparation and presentation of the cash flow statement. The financial resource taken as a reference for the preparation of the statement is represented by cash and cash equivalents.

c) The available credit lines that can be used in the reference time horizon. With reference to the self-liquidating lines, they should be considered usable only for the part relating to trade receivables which, on the basis of the agreed provisions, can be 'anticipated'.

The denominator corresponds to the non-operating debt[44] which must be repaid over the next six months.
It consists of:

a) Expected payments, for principal and interest, of financial debts.

b) Overdue Tax or social security debt, including penalties and interest, non-current that is, debt whose payment was not made at the legal deadlines (and therefore has either expired or is subject to installments), the payment of which, also by virtue of agreed installments and deferrals, expires in the following six months.

c) Overdue Debt to suppliers and other creditors whose late payment exceeds the limits of physiology.
In the case of debt deriving from repayment plans granted by the suppliers / creditors, the part of them, including the related ones, is relevant interest, which expires in the next six months.

The choice between the two approaches is left to the supervisory bodies and depends on the quality and reliability of the related information flows, as we said before. For the purposes of calculating the DSCR, the six-month time horizon can be extended to the residual duration of the year if more than six months, if this makes the calculation of the DSCR easier and more reliable.
In any case, the numerator and denominator must be comparable with each other.
If the DSCR is not available, we can use the following five indices to have answers related to the firm situation.

[44] Debt that does not automatically arise with the company's activities

Each of them has different thresholds depending on the sector of activity in which the company operates so we don't have only one correct value adaptable to all firms.
These indices are:

- <u>Sustainability index of financial charges</u>
  It consists of the ratio between financial charges and turnover and includes:

- <u>Capital adequacy index</u>
  It consists of the ratio between shareholders' equity and total debts (financials and not financials).

- <u>Liquid return index of total assets.</u>
  It consists of the ratio between net cash flows and total assets.

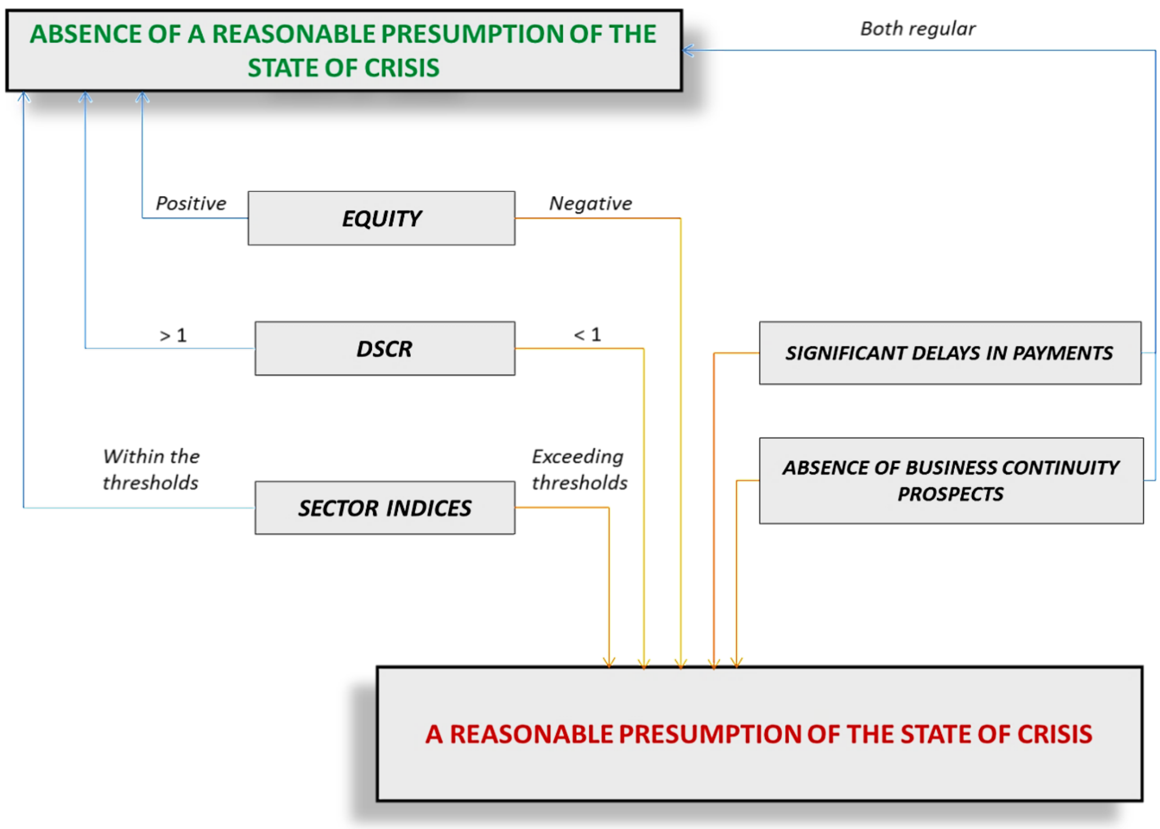
- <u>Liquidity index</u>
  It consists of the ratio between short-term total assets and total liabilities.

- <u>Social security or tax indebtedness index</u>
  It consists of the ratio between debts for social security and taxes debt and total assets.[45]

Basically, the state of crisis lies in the inadequacy of current cash and cash flows to be able to regularly meet existing and expected obligations.
This indication, also taking into account the six-month time horizon, chosen by the legislator, is evidently reductive compared to the possible definitions of crisis suggested by the literature, but constitutes the only legally appreciable effect for the purpose of building the alert system.
In other words, it is possible that there are companies that could in other respects be considered "in crisis" but their critical issues do not reveal this situation until there is a probability of insolvency in the following six months.

[45] Consiglio Nazionale dei Dottori Commercialisti e degli Esperti Contabili, "Crisi d'impresa gli indici dell'allerta", 2019

Having said that, the validity of the indications of the crisis coming from the system of indicators is the result of the professional and unitary evaluation that the supervisory bodies of companies can give considering the set of indicators.
Exceeding the boundaries established by law and by the CNDCEC for the various indices, provides reasonable presumptions of a possible firm's crisis. With the following table we show the consequences related to the exceeding or not of the boundaries of these selected indices.



In summary, the 5 indexes that emerged from the analysis are the result of a determined process and they are based on the following steps:

1. Massive exploration of tens of thousands of alternative models with different combinations of signals that has allowed to map the effectiveness of the indices at a multivariate level;
2. Identification of the indices most frequently present in the most effective combinations, allowing further formulation of the short list of candidate indices;

3. Qualitative analysis of the most significant signals: the candidate indices were assessed with a preference, with the same signal and predictive capabilities, indices that are more easily calculated and interpretable;
4. Final selection of the most robust indices in the various sectors.

Moreover, summarizing these indices, we can set numerator and denominator values that, combined, can highlight the situation of the company:

• **SUSTAINABILITY INDEX OF FINANCIAL CHARGES**

o Numerator> 0, Denominator = 0: Warning signal ON

o Numerator = 0, Denominator = 0: Warning signal OFF

• **CAPITAL ADEQUACY INDEX**

o Numerator = 0, Denominator = 0: Warning signal ON

o Numerator> 0, Denominator = 0: Warning signal OFF

• **LIQUIDITY INDEX**

o Numerator = 0, Denominator = 0: Warning signal ON

o Numerator> 0, Denominator = 0: Warning signal OFF

• **LIQUID RETURN INDEX OF THE ACTIVE INGREDIENT**

o Numerator = 0, Denominator = 0: Warning signal ON

o Numerator> 0, Denominator = 0: Warning signal OFF

• **SOCIAL SECURITY OR TAX INDEBTEDNESS INDEX**

o Numerator> 0, Denominator = 0: Warning signal ON

o Numerator = 0, Denominator = 0: Warning signal OFF

Considering other aspects such as the frequency of controls, Article 14[46] requires that the management constantly assesses (and therefore in the continuum of time) whether there is an economic and financial balance and what the foreseeable management trend is, and requires the supervisory bodies to promptly report it to the management of the well-founded indications of the crisis.

On a substantial level, however, the ability of each company to implement an adequate organizational structure that allows frequent calculation of the crisis indicators depends on the size, complexity and quality of the company organization, the tools available and, ultimately, the human resources employed.

It is therefore necessary to identify a periodicity that allows to reconcile the two needs highlighted above. For this purpose, the provisions of art. 24 , identifies at letter c) of the first paragraph refer to the crisis indicators related to the timeliness of the initiative by the debtor.

In particular, for the timeliness of the crisis adjustment procedure, we consider the exceeding of the alert indices presented either in the last approved financial statements or in any case for a period longer than three months.

The reference to the three months of exceeding the indices implies the need for at least a quarterly assessment of the same.

This evaluation, in the absence of an approved financial statements, will have to be conducted on the basis of interim, voluntary nature financial statements, prepared by the company for the evaluation of the economic and financial performance.

This, in compliance with the principle of proportionality, may also consist only on the balance sheet and income statement, prepared in accordance with the provisions of OIC 30 or , in any case, paying attention to the actual relevance of the records with respect to the indices without prejudice to the need for an adequate preliminary assessment of the shareholder’s equity.

[46] Articolo 14 Codice della crisi d'impresa e dell'insolvenza, “Obbligo di segnalazione degli organi di controllo societari”

The reference to the latest approved financial statements is technically possible exclusively for the equity indicator and for the sector indices.[47]

In particular, it is necessary that the control of crisis indicators is more frequent if the economic, financial or equity conditions of the company are such as to make it necessary.

If the financial statement is not approved by the shareholders' meeting or the interim financial statements are used, they need the approval by the board of directors or, failing that, by the Chief Financial Officer.

[47] While the DSCR calculation is necessarily based on forecast data that must be prepared more frequently.

Chapter 3

<u>POSSIBLE SOLUTIONS TO FIX THE CRISIS</u>

INTERVENTIONS IN CASE OF CRISIS

Once the state of crisis has been ascertained , the first decision to be taken concerns the assessment and the possibility of setting up a recovery plan, if there is the possibility of relaunching the business, or the chance of a total sale or a sale of business branches, or finally the liquidation of the assets.
This decision is not simple, nor rational, because elements of psycho-emotional involvement affect the entrepreneur who, trying to not abandoning his business, ends up by lacking in objectivity on the real needs of the same.
If the rescue of the company is not possible, it becomes inevitable the implementation of bankruptcy procedures, with its related effects.
It is a delicate choice, that must be made quickly: the temporal element is a determining factor for the success of the intervention.
The choice between reorganization, transfer or liquidation must be made following a process of evaluating the costs and benefits associated with each of the different alternatives.
To evaluate the recovery hypothesis, it is essential to prepare a strategic plan summarizing the fixing measures, which will be divided into three phases:

- The initial period, dedicated to the most urgent interventions, which should aim at quick return of the company from a loss situation to a situation of equilibrium and regaining the economic break-even point.
- The intermediate period, in which all interventions have as main purpose the modification of the corporate structural characteristics, so as to lay the foundations for maintaining the balance and income production situation over time.
- The final, hopefully the relaunch period, which concerns the already restored company, trying to reach satisfactory levels.

The recovery process brings the company to profit only after an initial period, characterized by the persistence of management losses since the effects of the causes of the crisis have not yet been completely eliminated.
The recovery plan provides for a gradual increase in profitability during its development, up to a situation of equilibrium in which profitability will tend to have regularity over time.
The other hypothesis that needs to be evaluated is voluntary liquidation, which involves the alienation of individual disjointed assets.
This allows the transfer of the company, or a single branch, from an economic entity (transferor) to a new individual, who according to the national civil law may be an individual company, partnership or limited company.[48] The sale of the company requires the termination of any link between the transferor and the company.
This is the mandatory option when faced with an irreversible crisis, therefore the disposal of the assets takes place at strongly reduced realizable values.
The realizable value of the activities in fact faces significant reductions compared to the operating values, especially for plants and machinery that may no longer have a market value.
Receivables may also present further realization problems, more than in ordinary management situations, due to the lower efficiency of debt collection or the opportunistic behavior of the debtors.
To these losses of value it is necessary to add the specific charges of the liquidation activity (fees for the liquidators, legal fees), any extraordinary costs for the dissolution of existing contracts as well as the expenses necessary for the realization of the company assets (appraisals reports for the calculation of the actual value of assets, as well as expenses for advertising sales charges).

[48] M. Mancin, "Operazioni straordinarie e aggregazioni aziendali Risvolti contabili, civilistici e fiscali", 2016 Giappichelli, Torino

The recovery process

Corporate crises can be tackled by various means depending on the stage they are in and, in any case, the difficult situation is more easily tamed when faced in the initial stages of the decline.
When the degenerative process has already caused losses, the situation becomes more complicated, since deeper interventions are necessary to restore the lost physiological conditions.
Thus, each phase presents different intervention needs: in fact, while in the early stages of the crisis, the interventions requested take place with costs and risks borne by the capital bearers, in the final stages the interventions almost always fall on different subjects, and in particular on creditors.
The reorganization process, also defined as "Turnaround", always involves new choices and the implementation of the consequent rehabilitation actions, which can be:

a) Restructuring, which tends to improve the efficiency of essential production factors, in particular personnel, plants, materials and energy, fixed structure costs and the financial structure?
The restructuring is characterized by the fact that it acts on the endogenous resources of the company, without producing appreciable dimensional changes and keeping the existing product/market combinations.
This strategy is the simplest one to implement since the search for new markets or new customer segments is not necessary, while interventions aimed at modernizing the production or commercial structures, as well as staff retraining actions, are necessary to remove operational inefficiencies in the various management phases.

b) Conversion, which takes place through the research of new product/market combinations and therefore is based on innovation, both technological and on marketing.
The recovery is characterized by the gradual abandonment of the old business area and by the simultaneous transfer of company resources towards a new strategic configuration of the company.

Such a solution is necessary when at the origin of the crisis there are incorrect strategic assessments or a long negative trend in the sector. Significant investments are required since the renewal of most of the technologies and plants, the reconstitution of the distribution network and the requalification of the personnel.

c) Downsizing, which consists in the substantial modification of the company size, usually of a reductive type, through a focus and concentration in the most profitable business areas.
This is the best solution for crises generated by production overcapacity, forecast errors and collapses in global demand.

d) Reorganization, refers to all those operations inherent in the strictly organizational aspects, such as the redefinition of the areas of responsibility, the preparation of a more effective internal control system, a better circulation of company information, the adoption of new sales researches.
These interventions do not entail any change in the company's technical-production structure and they can be placed in an operating area adjacent to the economic restructuring, assuming that any improvement in terms of efficiency is in any case destined to translate into a reduction in management costs.

Despite the different stages of development in which the crisis can be found and the different methods of intervention that can be implemented, it is possible to identify some fundamental phases common to any recovery process. It always starts with the diagnosis, which verifies the situation facing the company affected by the crisis and the causes that triggered the degenerative process.
The diagnosis process is carried out by the top management, which must act in a timely manner to identify the malfunctions of the corporate system, and to evaluate what are the causes that they arose.
The next step is to make the necessary decisions to start the recovery process.

At this point , it is essential to work alongside external professionals, who are not involved in the causes of the crisis, and identify in a more objective way the suitable choices for the relaunch of the company.
The choice to continue the activity requires a considerable professional ability of management, to correctly evaluate the level of endurance of the cost of the operations and the consequences on short and long-term balances. Specifically, it is a matter of going to determine and research adequate coverage, through financial resources, of the cost of the remedial measures and provides for the future income statement within which the resulting charges should be absorbed.[49]
Once the decision to start the recovery process has been made, the next step is to draw up a recovery plan, that is a complex of different interventions connected together and aimed at the gradual achievement of sequential objectives, in order to achieve the objectives while respecting the pre-established times.[50]
The recovery plan must be approved by the group inside the company and often also by the various stakeholders, as sacrifices may be required for the success of the operation.
The objectives of a recovery plan can be general, if they respond to the desire to bring the company back into conditions of managerial balance, or specific, if they can be traced back to objectives of economic or equity balance.
Economic balance objectives can be divided into:

I. Marketing objectives, for which the competitive position of the company must be identified: characteristics of the sector to which it belongs in terms of development, maturity or decline; relationship between sector production capacity and demand; competitive forces analysis; the company's position in the market and its evolution over time.

II. Production efficiency objectives: the company must have a level of production costs that is competitive with the other firms.

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[49] Riccardo Passeri, "Finanza straordinaria per la crisi d'impresa", 2009, Franco Angeli,
[50] Bastia P., "Crisi e risanamento d'impresa: strumenti di pianificazione e controllo", 1987, Clueb, Bologna

III. Reliability of the structures and management, in terms of careful reviews of the tasks and results of each structure, so as to allow reductions and cuts that will have an impact on the level of costs.
In addition, plans must intervene on the incidence of financial charges, as excessive indebtedness is often at the origin of difficult situations.
Regarding management, a replacement is necessary, especially at high levels, of the persons in charge of managing the business.

Chapter 4

<u>THE ALITALIA CASE</u>

HISTORY

"Alitalia-Aereolinee Internazionali Italiane" was founded on the 16 of September 1946 in Rome and 11 years later after absorbing the "LAI-Italian Airlines" it became Alitalia-Italian Airlines.
Alitalia's operations began on May 5, 1947, on the day of its inaugural flight from Turin to Catania via Rome.
The first international flight was operated the following year connecting Rome with Oslo, while the first intercontinental flight with multiple stopovers connected Italy to several world capitals.
Since the early years Alitalia manages to establish itself on the Italian market and the company's success is confirmed in the 1960s when Alitalia became the official carrier of the 1960 Rome Olympics.
The company's growth continued also in the 1970s with the first connections to North America and Japan, which allow it to reach 7th place in the international traffic ranking.
From the outset, the goal of the Italian airline has always been to offer a quality service to its customers by gaining their trust day after day.
In order to achieve these objectives, Alitalia has highly qualified and specialized aircraft, routes and staff making travel a safe and pleasant experience for all its passengers.
In the 1990s, the airline carried almost 28 million passengers per year, but union tensions and an excessive investment plan produced very disappointing budget results. In 1996 the CEO Domenico Cempella carries out an ambitious industrial plan that hinges on the alliance with the Dutch company KLM and the opening of the new Hub at Malpensa.
The agreement with KLM created two joint ventures for the passenger and cargo area which, in the plans of the managers, were to act as prelude to a real merger.

The problem was that Cempella, found a disastrous economic situation: debts of 3,000 billion (lire), a net worth of 150 billion, 10 years of budget losses and above all an internal situation characterized by a strong conflict between all the union parties, which led him to say that the company had technically gone bankrupt and in the year 2000 the Dutch company unilaterally broke the alliance.
The lawsuit subsequently brought by Cempella ends two years later, when international arbitration condemns KLM to pay a net penalty to Alitalia of 250 million euros.
In 2001, Alitalia paid more than the competitors for the drop in demand for its previous structural crisis, especially for the fierce competition from low cost airlines.
Following the transfer by Alitalia of the business branch relating to instrumental services and support for air transport in "Alitalia Servizi", since 2005 the structure of the "Alitalia Group" has been divided into two business branches:

-AZ Fly, which includes all flight activities;
-AZ Services, which includes all ground activities.

Alitalia was therefore a company mainly active in the passenger air transport sector, but it also carried out definition and coordination operations for the passenger transport activities carried out by "Volare" and "Alitalia Express", both 100% controlled, effectively carrying out also the role of holding company of the Group.
The Group also operates in sectors connected with its main activity, including the acquisition of equity investments and interests in diversified sectors of air transport.
After ten years of crisis, in 2006 the government decided to try to privatize the company again and sought a new industrial partner. Air France, which in the meantime had merged with KLM, becoming Air France-KLM, made an offer that included around 3,000 redundancies out of a total of almost 22,000 employees.

The negotiations were long and complicated and, in 2008, the agreement was rejected by the unions and criticized by Silvio Berlusconi, who after a few weeks would become president of the Council again.
Air France-KLM withdrew the offer and its place was taken by a consortium of Italian entrepreneurs, renamed CAI, who had almost no experience in airlines and had very little money to invest in the revitalization of the airline.
Between 2013 and 2014 Alitalia once again found itself one step away from bankruptcy.

CAUSES OF THE CRISIS

It is highly complex to illustrate the causes of insolvency of such a large company interlocked in its corporate and organizational structure. Further aspects of complexity of the company's business can include the fact that it operates internationally, competing within a scenario where the competitive pressure is very strong and constantly evolving along with the continuously growing financial needs.
It is also conditioned, for various reasons, by the behavior of the other players in the supply chain (air traffic control authorities, airport management companies, agents, etc.), being subject to innumerable instability phenomena, such as technological innovation, the evolution of consumer needs and tastes, economic trends, alliances and extraordinary finance transactions, fluctuations in the exchange rates of currencies, etc.
All of these factors entail the continuous change of scenarios, market structures and, consequently, of the business models and strategies to be adopted to compete profitably.
Last but not least, it is absolutely necessary to remember that this company provides an essential public service and therefore has always been, by its nature, subject to various types of constraints (regulations, industrial set-up, etc.) which must be considered as essential and physiological conditions to achieve the conditions of economic and financial equilibrium valid over time.

There is no doubt that the long period of crisis in which the company has been involved has seen the varied combination of different factors, endogenous and exogenous, economic and financial, which in determining the insolvency have often overlapped and fed over time.

"It is to be considered that the crisis of the Alitalia Group has an industrial nature: it is due to the inability of the company to "stay on the market" profitably and with its own strength, due to the increasingly marked absence of economic conditions over time , up to the current situation of the loss of connotations of autonomy, i.e. the ability to disregard systematic external support and durability interventions, or the prospect of continuity".[51]

a) External factors of the crisis

The "external" factors of crisis have undoubtedly resorted to Alitalia's insolvency, that is, they affected the entire air transport sector.
The macroeconomic elements of deterioration of the environmental and competitive scenario that have affected the air transport sector in recent years can be seen in two main factors: the constant and significant growth in the cost of fuel and the weakening of global growth.
The combination of these two elements has structurally impacted the air transport sector, eroding over time the unit revenues per passenger transported and therefore the overall profitability of the company.
These cyclical factors have hurt those companies such as Alitalia that already showed management imbalances and that, because of their economic vulnerability and financial weakness, did not have the ability and the possibility to react adequately to external crisis factors.
Another factor of the macroeconomic scenario that further penalized the air transport sector is the tragedy of the Twin Towers the 11 of September 2001 which had a negative effect on the volumes of demand and therefore of the revenues for the entire sector (as well as on the significant increase in costs related to safety).

[51] Relazione del Commissario Straordinario Prof. Avv.to Augusto Fantozzi

The factors of the crisis essentially concern the industrial set-up, in particular the reference context, that is, the elements of weaknesses of the Italian air transport system that have occurred in recent years.
These factors are:

- The loss of the "monopolistic" position on the domestic market with the liberalization of the European market since 1993 and the advent of low cost carriers;

- The disordered system of sector rules, which did not allow a balanced management of the market liberalization process;

- The situation of "poor market" compared to the main European countries and penalized by the geographical positioning of the country, decentralized with respect to the large intercontinental routes;

- The excessive fragmentation of the national airport system on too many airports, with strong structural problems;

- The country's severe infrastructure shortcomings;

- Strong external constraints to the system.

The set of problems arising from these factors has structurally determined, especially in recent years, on the one hand a strong limit to growth and on the other the company's exposure to the competitive pressure exerted by competitors.

b) <u>Internal factors of the crisis</u>

In a context that recorded the strengthening of traditional competitors and the advent of new competitors, the frequent rotation in the top management, the weakness of the strategic responses developed and the ineffectiveness or failure finalization of the action plans pursued contributed in a determined way to aggravate the group's crisis.
Over the past decade, several industrial plans have been drawn up aimed at the restructuring of Alitalia, but none of these had the results expected.

The failure to establish alliances that were attempted with Air France - KLM, as well as the failure to privatize the airline, was also decisive.
It should be also remembered that Alitalia's operating profitability has become negative since 1999, assuming a structural character.
Continuous losses eroded the company's capital and periodically created serious liquidity tensions.
Following the failure to privatize and the unwillingness of the reference shareholder to continue to meet the coverage of operating losses and financial requirements, leads to the state of insolvency of the Alitalia Group, given the structural inability of the same to reach the conditions of economic and financial equilibrium.

ANALYSIS OF THE CRISIS

In less than five years, different industrial plans have been published for Alitalia, in each of them it was proposed to bring the company back to profit, but this goal has never been achieved or at least touched, and none of these projects has actually, for various reasons, led to a structural balance, both from the financial side that economic-operational of the company, which has been suffering for many years in conditions of structural economic imbalance and high deficits that have marked its adverse fate.
The only way in which the firm was kept alive, to allow it to continue the public exercise of air transport, was the intervention by the state, which often brought fresh aid and availability to society.
The "Achilles heel" of Alitalia could be identified in a non-private management of the company, a very soft and conditioned management, without ever concentrating effectively in achieving full management efficiency and therefore in the company's economic and financial balance.
The public management of the company has in fact always been conditioned by the strong policy of the unions and by the various successive governments, which have contributed considerably to marking a negative spiral for it with only one direction towards bankruptcy.
In addition, the strength of competition introduced by the European Union more than a decade ago, by regulating and by liberalizing the sector, has shown all its effects, and the traveler can choose to fly across Europe with companies that offer air transport service at lower and more convenient prices or with better quality.
The entry, therefore, in the market of more efficient competing carriers highlighted even more the management choices made by the management, which led the company to record a trend of continuous losses, for many years, for a total amount that exceeds three billion euros.
Since the end of the 90s, Alitalia has lost competitiveness and prestige, which for a long time have made it one of the best in the world; the situation worsened despite the repeated changes of the CEOs. So, the management cut

costs, by having disposed of planes and cutting the staff, to achieve a structural balance: but these worthy goals notes were never achieved

However, by carrying out a careful analysis of the company's financial statements (from 1998 to 2002), using premonitory indicators of the state of crisis, it was easy to detect the 2001 crisis:

- we find a negative **ROE** of -108,59%[52].
  Considering the decrease of ROE compared to the previous years (see the table below), this is a very significant fact, which provides an highly negative judgmental element, which underline the unbalanced management of the company and, in essence, indicates that every euro of the capital invested in the company leads to a loss of -108.59%, a result that comments on itself, considering that "if the average ROE is greater than the corresponding cost of capital, then value is created "[53].

ROE	1998	1999	2000	2001	2002
%	14,15	1,00	-17,93	-108,59	5,39

- Going deeper into the analysis, trying to identify the factors that primarily determined this trend, we identify also a dangerous **ROI** of -13.71%[54].
  This index represents the economic return of the entire capital employed in the period regardless of its origin (equity and other capital).
  So, a negative percentage of this index indicates a negative profitability and a bad economic efficiency that lead to the insolvency. As with the other indices, the result reached in 2001, is a direct consequence of the

[52] It should be noted that due to competitive market forces, the ROE value converges towards the average market value over a period of 5-10 years. The long-term average market value of ROE is between 10% and 14%.
[53] Carlo Alberto Magni , "ROE, Market Value Added and shareholder value creation", Department of Economics, University of Modena and Reggio Emilia, 2011.
[54] On the basis of the current situation it can be indicatively established that the ROI is good for values from 8% to 9%.

bad trend of the previous years that, if properly predicted, could have arose doubts on the economic situation of the firm.

ROI	1998	1999	2000	2001	2002
%	10,27	-7,01	-13,26	-13,71	-8,14

- Another relevant index that reveals the company trend is **the debt-equity ratio**: this ratio is calculated by dividing a company's total liabilities by its shareholder equity and is one of the main financial indicators used by banks to judge the level of sustainability of a company.
  In Alitalia we have noticed an increase which, in a few years, has reached a ratio of 1.39. It is clear that if the ratio is high, the margins for lending additional money to the applicant company are lower, as the debt is already high.
  Then, when a company records an increase in the debt equity ratio, the resources to be set aside for interest also increase, reflecting a higher credit risk. The consequence of all this is that the operating income tends to decrease, due to the higher interest to be paid which reduces the result generated by the core business.

DEBT/EQUITY	1998	1999	2000	2001	2002
%	0,28	0,25	0.70	1,39	0,55

- Considering the component of debt and its different features, we decided to analyze the debt with the EBITDA:
  The **Debt-EBITDA ratio** is an index that measures the amount of income generated (before covering interest, taxes, depreciation, and

amortization expenses) available to pay down debt.

This index indicates the company's ability to cover its incurred debt, so, a high ratio result could indicate that a company has a too-heavy debt load.

In the Alitalia case we can notice that from the ratio of 1.08 registered in 1998, we came to a dangerous 422.69 in 2001: analyzing the financial statements we saw a low EBITDA of only 2,74 million that compared to the high total debt, lead to a low capacity of the debt repayment.

The debt-EBITDA ratio compares the company's total obligations (debt and other liabilities) to the actual cash the firm earns, and reveals how capable the firm is of paying its debt and other liabilities with its EBITDA.

DEBT/EBITDA	1998	1999	2000	2001	2002
%	1,03	4,49	-22,97	422,69	9,42

- Considering the component of debt we should calculate an index that specify how the firm is financed: with the debt index, that is the comparison between short-term and long term debts, we highlight the features of the firm's debt and the process of the company's repayment. We can notice that from 1998 to 2001 the debt ratio has decreased as a consequence of a higher use of debt services, from third parties. It must be understood that debt increases the opportunity of the firm but at the same time also the risk of the company increases proportionally.

DEBT RATIO	1998	1999	2000	2001	2002
SHORT-TERM DEBT RATIO	0,70	0,80	0,65	0,66	0,47
LONG-TERM DEBT RATIO	0,30	0,20	0,35	0,34	0,53

- Moving forward we face another important index: the liquidity index. It is the ratio between available assets and short-term liabilities. This index shows a satisfactory situation when it assumes a value of 2: the company has available and realizable assets at least the double of the debts in the short term. The total liquidity index is one of the most significant indices that can be deduced from a firm's financial statements. In our analysis we can see that due to an increase in the short-term liabilities (available assets has changed little) there was a relevant yearly decrease. The ratio changed from the 1.13 in 1998 to a 0.63 in 2001.

LIQUIDITY	1998	1999	2000	2001	2002
	1,13	0,87	0,72	0,63	1,28

Analyzing these indices together we can notice the trend of the company, given by a financial structure made up by third party capital, which greatly amplifies the negative result of the return on investment. Moreover, the ROI of -13.71 % generates a high negative financial leverage that enormously compromises the overall net profitability of the company, thus generating a highly negative return on capital.
At this point, it is necessary to analyze in detail the causes that generate a negative result of operating profitability.
The analysis has been directed to select the financial statement indices, from 1998 to 2000 that, if opportunely synthesized and combined with each other, could have led to best identify the deterioration of economic and financial position of Alitalia. Looking at the value of these indices, as early as 1999, it could have been possible to understand in advance the trend of Alitalia and to act promptly with the appropriate actions of mitigations.
Considering general parameters for a stable corporate situation, the value of most of the indices was above the permitted threshold or even negative.

From 1999, there is an important decrease on the value of ROI and ROE. These two indices make it clear that the return on equity, the profitability and economic efficiency of the whole company's activities that identifies the core of the company's business, didn't work properly.

Paying attention to the financial statements, the situation had been caused by a negative annual result due to the significant incidence of the costs of the company amplified by the high capital invested.

In 1999, Alitalia started to be not properly balanced considering the debt component related to the capital needs. Analyzing the "liquidity ratio" we can see an important reduction from 1999 to 2001 (the year of the crisis).

This reduction and tough situation was caused by the high value of the short-term liabilities that increased the debt component, reducing the profitability of Alitalia.

Alitalia, despite the usefulness of the role played (above all for Italy), has great inefficiencies demonstrated by high functional costs, in comparison with the main competitors.

In fact, it can be noted that from 2000 onwards, the company achieved clearly loss-making operating results, excluding the year 2002, which roughly led to an average loss daily amounting to € 1.42 million. [55]

[55] Source: Alitalia Financial statements of year 2007

RESTRUCTURING PLAN

The 2005-2008 restructuring plan has the industrial objective of allowing Alitalia to position itself as a highly efficient carrier, and it is structured in two distinct phases, temporally separated:
the first aimed at rehabilitation (two-year period 2005-2006) and the second aimed at revitalization (two-year period 2007-2008).

The efficiency plans identified in this plan relate to:

- Rationalization of supplies
- Intervention on personnel costs (reduction of staff and unit costs)
- Relaunch of the effectiveness and efficiency of the commercial structure
- Review of processes in operational areas and central functions
- Separation of flight activities from instrumental and support activities, through the transfer to a newly established company ("Alitalia Servizi") and the investment of a publicly-owned financial company in the new company.

This plan was based on the following financial assumptions:

1) Capital increase by the end of 2005 (hypothesis assumed in the plan: 1,000 million euros);

2) Postponement of the repayment of the convertible bond loan in July 2010;

3) Repayment by the end of 2005 of the 400 million euro loan obtained between the end of 2004 and the first part of 2005;

4) Advance from March 2006 to December 2005 of the ignition of new ones long-term loans for 388 million euros.

Despite the successful outcome of the capital increase carried out in December 2005 and the keeping of overall revenues in 2006, the implementation of the efficiency improvement projects is less and the recovery phase started in 2005 does not end.

In addition, the plan envisaged the return to a positive operating result already in 2006, while the final result was equal to euro 466 million.
In the Report on operations, the directors justify the failure to achieve the set objectives due to union conflicts, increases in the price of fuel, reduction of costs partially missed, and very strong growth in the pressure of low cost carriers in the domestic and international market.
The Alitalia board of directors therefore approved, in August 2007, the Guidelines for a 2008-2010 Survival and Transition Plan, with the primary aim of verifying and pursuing the conditions of sustainability and continuity of the company's business in the short term/medium term, with reference only to the resources available and to the actions that could be implemented immediately, awaiting events related to the change in the company's structure, and the consequent industrial structure definitive.[56]
This Plan highlighted the need to significantly and quickly reduce cash losses and absorption, and for this purpose contained strategic decisions of strong discontinuity, also taking note of the extreme difficulty of recovering the gap accumulated in relation to the main competitors through a new attempt at "autonomous positioning".
The Plan did not presuppose the entry of new financial resources in the form of risk capital, but nevertheless clarified the need for a contribution of new financial resources, through a substantial capital increase to be implemented in the following months (equal to 1 million euros), in order to reduce the debt and start the first development recovery actions.
Linked to this Plan is the second privatization attempt with Air France - KLM, which had shared and approved this program.
But even this attempt at privatization did not go through, and therefore the Council of Alitalia's administration also felt that the aforementioned Plan had failed.

[56] Ministry of Economy and Finance, press release of July 31, 2007

CONCLUSION

In the Alitalia case discussed, by analyzing the financial statements of the company it was possible to calculate some of the main indicators and after taking a cue from the CNDCEC document, it was possible to understand the evidence of the state of insolvency.

From the 2000s onwards, Alitalia's management has mainly focused on the exploitation of inherited assets, neglecting other important elements: the firm made some attempts to seize opportunities for growth through alliances and collaborations, but they never materialized.

The continuous press releases to the market on failed mergers, rather than on takeover offers which did not materialized, have created confusion and discomfort among shareholders.

In 2001 Alitalia was also hit by the decline in demand following its previous structural crisis and especially due to the fierce competition from low-cost airlines. So, in the same year, to limit the damage, it decided to enter into an alliance with Air France and became a part of the SkyTeam, one of the main airline alliances.

The agreement with the French company also provided for a 2% share exchange, by virtue of which the two company heads were to be part of each other's boards of directors. In other words, the idea was a merger which was supposed to attribute 30-35% of the capital of the French network to Alitalia, but the government decided to reject this proposal.

Considering these fact and moving on the financial statements indicators and analysis, we can affirm that already since 1999 there were warning signals that could herald a possible crisis: ROI and ROE indices with negative percentages or just above 0, the liquidity index increasingly over the years and problematic debt ratios undoubtedly highlight a critical situation to say the least.

In our analysis we have calculated indices that provide us with information relating to the company's "health status" and that can anticipate a subsequent study of the indices proposed by the CNDCEC. When the company is on trouble, the solution is the implementation of a reorganization processes, which may

involve restructuring, conversion, downsizing or reorganization of the company.
At the beginning, the first attempt was identified with Air France, as described above, but some conditions of effectiveness contemplated in the contract did not occur, and in particular, the failure to reach an agreement with the trade unions and professional associations of Alitalia, compromised everything.
Despite the various changes in top management and privatization attempts to proceed with a recapitalization of the company, and the various extraordinary finance transactions that may have been useful for attempting the reorganization of a company in crisis were then analyzed, identifying in particular the lease and sale of the company, the merger and the demerger, but these recovery plans implemented by Alitalia have never had positive results.
Moreover, in Alitalia, the management had ample decision-making power in ordinary management, while in extraordinary management its power was limited by certain political interests and considering the responsibility, the management did not pay particular attention to minority shareholders, but maintained a privileged relationship, also at an information level, with the political power.
On the other hand, the political power has tried in every way to limit the responsibilities of the administrators who have followed in the turbulent phases of the Alitalia negotiations.

To sum up, the analysis of the financial statements and the study of the indices, revealed alarm values for the health of Alitalia's profitability which, if promptly identified, could certainly have limited the damage to the company.
This paper highlighted how the indices for the prediction of a crisis situation were "turned on" in the years just prior to 2001.
Claiming that these indices could have led to more effective restructuring plans is perhaps incorrect since they were conditioned by the bad management of the situation and by continuous obstacles in the agreements between the parties.
However, as early as 1999, they could have been used to understand the collapse of Alitalia and opt for more effective solutions, resulting in a certainly milder state of crisis.

In this thesis it was possible to offer a general presentation of the indices proposed by the CNDCEC introducing them through the company crisis and the various tools to prevent it.
Through the financial statements of Alitalia (from 1998 to 2001) we were able to calculate some important ratios useful to formulate an analysis that would allow us to understand if indeed the indices could have highlighted the crisis. We came to the conclusion that the indices calculated in our analysis combined at a later stage with the ratios proposed by the CNDCEC , if observed in advance, could have shown the crisis.

By analyzing some company's aspects that determine the "health" of the economic environment, we found values that were definitely beyond the permitted thresholds.
Nowadays, it is not insignificant that thanks to the interpretation of a few indices it is possible to notice a crisis of a company or keeping the financial situation under control.
Regarding the efficiency of the recovery plans, we can say that their failure was not linked to the development of these indices but to the agreements and actions made by the company's board of directors.

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